

## The Amplification Effect: Foreign Aid's Impact on Political Institutions

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### I. INTRODUCTION

There are two competing hypotheses about how foreign aid affects recipient countries' political institutions.<sup>1</sup> The first hypothesis is optimistic about aid's impact on political regimes (see, for instance, Dunning 2004; Goldsmith 2001). According to this view, foreign aid can have a positive effect on developing countries' political institutions by making them more democratic. The second hypothesis is pessimistic (see, for instance, Bueno de Mesquita and Smith 2009; Smith 2008; Djankov, Montalvo, and Reynal-Querol 2008; Rajan and Subramanian 2007; Bräutigam and Knack 2004; Bauer 2000). According to this view, aid is not only unable to promote democracy in recipient nations. It often has the opposite effect, leading to weaker democracy or more dictatorship in those nations.

This paper offers a third hypothesis about aid's impact on recipient countries' political institutions. We call this hypothesis the "amplification effect." According to our hypothesis, foreign aid neither causes democracies to become more dictatorial nor causes dictatorships to become more democratic. It only amplifies recipients' existing political-institutional orientations. Aid makes dictatorships more dictatorial and democracies more democratic.

We investigate this hypothesis using panel data that cover 124 developing countries over half a century between 1960 and 2009. Our results support the amplification hypothesis. A one standard deviation increase in foreign aid increases the average democracy's Polity score, or strengthens its democracy, by approximately one standard deviation. The same increase in aid decreases the average dictatorship's Polity score, or strengthens its dictatorship, by nearly half

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1. See Wright and Winters (2010) for a review of this literature.

a standard deviation. Our results suggest that both the optimistic and pessimistic views of aid's effect on political institutions ascribe too much power to aid's ability to influence recipients' political institutions. Aid does not alter recipient countries' institutional orientations. It amplifies their existing ones.

Our paper is most closely connected to a small but growing literature that suggests foreign aid's effects may be more institutionally stabilizing than institutionally reversing.<sup>2</sup> Morrison (2007, 2009) considers the relationship between aid and regime transition among aid recipients. He finds that non-tax revenues, such as foreign aid and oil revenue, have institutionally stabilizing properties. Those revenues reduce the probability of regime transitions in democracies and dictatorships.

Kono and Montinola (2009) examine the relationship between aid and political-leader survivorship. They find that aid improves political survival but that, while accumulated aid helps autocratic leaders remain in power more than it helps democratic ones to do so, current aid helps democratic leaders remain in power more than it helps autocratic ones to do so. Bueno de Mesquita and Smith (2010) also find that aid improves political leader survival.

Wright (2009) considers how aid's democratizing effects in autocratic countries might depend on the likelihood that recipient political leaders expect to retain power post-democratization. He finds that aid does more to promote democracy where that likelihood is higher. Nielsen and Nielson (2010) find that governance aid promotes democracy – but only in countries that are already democratic.

Our paper contributes to this literature by investigating whether, in addition to stabilizing recipient countries' existing political institutions – i.e., making it more likely that democratic countries remain democratic and dictatorial countries remain dictatorial, foreign aid might also amplify recipient countries' existing political institutions – i.e., make democratic countries *more* democratic and dictatorial countries *more* dictatorial.

## II. COMPETING VIEWS OF AID

The optimistic view of foreign aid sees aid as having power to make dictatorships into democracies. Knack (2004) points to several channels through which aid may be able to do this. The first channel is through providing technical assistance and other support to developing countries that strengthens their judiciaries and legislatures. If targeted aid can strengthen opposing branches of government in politically centralized developing countries, it can check the executive's power, diminishing autocratic control. Technical assistance devoted to helping organize democratic elections and supporting election infrastructure, such as providing

2. Frey and Eichenberger (1994) theoretically consider the interaction between aid and institutions. Bermeo (2011) investigates the relationship between aid and recipient countries' democratization and finds that that relationship depends on how democratic aid donors are.

security at voting locations, monitoring election-day activities, and providing external observers who can certify the legitimacy of electoral outcomes, may also improve recipient countries' democracy. Similarly, if targeted aid can strengthen democracy supporting institutions such as the rule of law by improving the criminal justice system, making this system fairer, more efficient, and more transparent, it could also improve recipients' political regimes.

Second, foreign aid may enhance democracy in recipient nations by improving education and income. Research by Lipset (1959), Glaeser et al. (2004), and Glaeser, Ponzetto and Shleifer (2007) suggests that becoming richer and better educated makes countries more democratic. If this is true, and aid has the power to increase education and income among recipients, aid may also be able to promote democracy in currently dictatorial regimes.

Third, foreign aid may promote democracy in recipients through conditionality. Aid conditionality can require increased democratization as a condition of continued assistance, compelling aid recipients to decentralize their political institutions. The actions of at least some members of the donor community suggest that they believe aid can be an important element of democratization in dictatorial developing countries. For instance, the United States Agency for International Development devotes more than \$700 million each year to programs aimed at enhancing recipients' democracy (Knack 2004).

Some empirical work supports the optimistic aid perspective. For example, for a subset of African countries, Goldsmith (2001) finds that more aid is associated with more political freedom, civil liberties, and economic freedom. Similarly, Dunning (2004) finds that aid enhances democracy in recipient nations in the post-Cold War period.

In stark contrast, the pessimistic view of foreign aid sees aid as having power to make democracies into dictatorships. Peter Bauer (2000) was first to advance the theory that aid may make recipient countries more autocratic instead of democratic. According to Bauer, foreign aid suffers from an important asymmetry. In most cases foreign aid is only a small percentage of recipients' national incomes. Thus it has a limited capacity to improve poverty in developing nations. However, aid tends to be a large percentage of developing countries' discretionary government spending. This gives aid substantial power to increase corrupt rulers' control over resources, allowing them to further concentrate political power, which in turn leads to greater dictatorship.

Research by Djankov, Montalvo, and Reynal-Querol (2008) lends support to Bauer's hypothesis. It finds that aid weakens recipients' democracy and does so more than natural resource richness does via the resource curse. Knack (2001, 2004), Bräutigam and Knack (2004), Rajan and Subramanian (2007), Smith (2008), Kalyvitis and Vlachaki (2008), and Bueno de Mesquita and Smith (2009) provide additional support for the idea that aid may have a corrosive effect on recipients' political institutions.

Our paper offers a third view of foreign aid that sees aid as having a more modest ability to influence political institutions. Our view is consistent with Morrison (2007, 2009), Kono and Montinola (2009), Wright (2009), Bueno de Mesquita and Smith (2010), and Nielsen and Nielson (2010), who point to aid's institutionally stabilizing effects, but takes their insight a step further. According to our hypothesis, aid does not alter recipient countries' institutional orientations, nor does it merely stabilize their existing ones. Aid amplifies recipients' existing institutional orientations: it makes dictatorships more dictatorial and democracies more democratic. We call this hypothesis the "amplification effect."

The amplification-effect view of aid is intuitively appealing. It seems naïve and overly optimistic to think that supplying more, even well-targeted, aid to brutal dictatorships, such as those in some parts of sub-Saharan Africa, will enhance democracy in these countries. Political regimes in these countries tend to be highly corrupt. Aid resources intended for democratization or other purposes are likely to be appropriated by corrupt officials who will use them to strengthen their control rather than making their way to their intended ends. Thus we expect aid to contribute to stronger dictatorship, not democracy, in dictatorial recipient countries.

By the same token, it does not seem reasonable to think that additional aid in *any* recipient government's hands will have this effect. More democratic recipient countries have stronger separations of power and more effective checks on executive power. Stronger constraints on these governments' behavior helps ensure that aid resources are deployed more closely along the lines donors envisage. Democratic governments can use additional foreign aid productively, which, through the mechanisms discussed above that Knack (2004) identifies, may make them more democratic. Thus we expect aid to contribute to stronger democracy, not dictatorship, in democratic recipient countries.

In what follows we empirically test the amplification-effect hypothesis by exploring the relationship between aid flows and the degree of democracy and dictatorship in already democratic or dictatorial countries. We ask: Do increases in foreign aid to democratic recipients make those recipients more democratic or more dictatorial? Similarly, we ask: Do increases in foreign aid to dictatorial recipients make those recipients more dictatorial or more democratic?

### III. DATA AND EMPIRICAL STRATEGY

#### *1. Data*

To investigate foreign aid's effect on recipients' political institutions we estimate a panel that uses data covering 124 countries from 1960 to 2009.<sup>3</sup> Data for our

3. Appendix 1 contains a list of our sample countries.

variables of interest are from two sources.<sup>4</sup> We measure how much foreign aid a country receives in each year by the net official development assistance (ODA) plus official aid it receives as a percentage of its gross national income (GNI). This includes grants and loans made on concessional terms to promote economic development and welfare (net of repayments of principle), excluding assistance for military purposes, by multilateral institutions and official donor agencies. This ratio is computed using values in U.S. dollars converted at official exchange rates. We get our data for this variable from *World Development Indicators* (2010).

To measure how democratic or dictatorial aid recipients' political institutions are we use data from the Polity IV project (2010). This measure ranges from -10, complete political centralization or "total dictatorship," to +10, complete political decentralization or "total democracy." We call countries with scores greater than zero "democracies" and those with scores equal to or less than zero "dictatorships" (Persson and Tabellini 2006). Democracies and dictatorships come in different degrees or "strengths." Our +10 to -10 scale captures this.

To measure the extent of democracy/dictatorship across countries, the Polity IV data consider the presence of political institutions and procedures through which citizens can express effective preferences about alternative policies and leaders, the existence of institutionalized constraints on the exercise of power by the executive, and the guarantee of civil liberties to all citizens in their daily lives and in acts of political participation. The resulting measure of democracy/dictatorship captures the competitiveness of political participation, openness and competitiveness of executive recruitment, and constraints on the chief executive in each country. Polity IV constructs a variable to measure these factors specifically for the purpose of time-series analysis, which makes each country's Polity score comparable over time. We use this measure, called "Polity 2," but which we simply call "Polity," for our examination. It covers the same years as our aid data: 1960–2009.

The likely persistence of our dependent variable, Polity, and the use of annual data suggest that it is appropriate to average our values over some period. Thus we average our data over five-year periods.<sup>5</sup> This shrinks our panel, but is important in light of the serial correlation of Polity and possible measurement error. The resulting panel contains ten time periods covering the years 1960 to 2009.

Previous research identifies several other variables that may be important in determining countries' political institutions. We use these variables as controls to isolate foreign aid's effect on recipients' political regimes. We include the value

4. Appendix 2 contains a list of all our variables and their sources.

5. We reran our models using annual data and found no important differences in the results.

of Polity lagged one period to capture any regression-to-mean effects and higher-scoring recipients' limited opportunity to improve their scores.

Also like previous studies, we control for (log of) gross domestic product (GDP) per capita (PPP, constant 2005 international dollars) lagged one period, the growth rate of GDP per capita, and three different population measures: log population, population density, and percent of urban population. Because political leaders can use natural resource rents to strengthen their grip on power, natural resources are also a potentially important contributor to the degree of democracy/dictatorship in nations' political institutions (see, for instance, Morrison 2007, 2009; Djankov, Montalvo, and Reynal-Querol 2008; and Kono and Montinola 2009). To account for this we control for total natural resource rents as a percentage of GDP. Data for these controls are from *World Development Indicators* (2010).

Finally, like previous analyses, we control for regime stability and age using data from the *Database of Political Institutions*. For the former we use that database's "Tensys" variable, which measures how long the country has been autocratic or democratic.<sup>6</sup> For the latter we use that database's "Yrsoffc" variable, which measures how many years the chief executive has been in office.

Table 1 reports summary statistics for all our variables. Average aid in our sample is approximately 6 percent of GNI and has a standard deviation of 9 percent. The average Polity score in our sample is -0.77 and has a standard deviation of 6.62. Average per capita income in our sample is \$3,884 and has an average growth rate of 4 percent.

## 2. Empirical Strategy

Our empirical strategy for estimating foreign aid's effect on recipient countries' political institutions is straightforward. We want to examine how the foreign aid that a country receives interacts with that country's political institutions – namely whether the recipient is a democracy or a dictatorship – to affect the degree of democracy or dictatorship in those countries. To do this we construct an interaction term that multiplies the amount of aid a country receives with a binary variable that measures whether that country is a democracy or a dictatorship to predict our dependent variable, the degree of democracy or dictatorship in the country (i.e., its Polity score).

We confront a problem, however. That problem is the same one confronted by all studies that seek to investigate foreign aid's effect on political and economic factors in developing countries: foreign aid is endogenous. If donor agencies' and countries' stated intent, which includes democratizing developing countries, can be taken at face value, more aid will flow to countries with more dictatorial

6. The database uses its own measure of autocracy and democracy to determine regime stability.

Table 1

Summary Statistics

Variable	Observ.	Mean	Std. dev.	Min	Max
Aid	878	6.56	9.19	-0.12	100.24
Aid*Democracy dummy	878	2.64	7.10	-0.12	100.24
Polity	878	-0.77	6.62	-10.00	10.00
Polity <sub>t-1</sub>	746	-1.20	6.56	-10.00	10.00
Change in Polity	789	0.63	3.30	-12.20	16.20
Democracy dummy	878	0.42	0.49	0.00	1.00
GDP per capita	847	3,884	4,475	155	52,043
Log GDP per capita	847	7.76	1.02	5.05	10.86
Log GDP per capita <sub>t-1</sub>	717	7.70	0.97	5.20	10.16
GDP growth	796	4.23	3.90	-11.48	35.89
Log pop	877	15.87	1.55	12.16	21.00
Pop density	829	107.56	341.88	1.02	4819.49
Urban pop	878	41.08	22.54	2.28	100.00
Regime age	681	8.41	7.72	1.20	44.00
Regime stability	681	10.77	8.80	1.20	59.00
Natural resource rents	762	10.95	16.17	0.00	159.85
Aid allocable	323	7.45	8.97	0.00	77.53
Aid allocable*Democracy dummy	323	4.80	8.82	0.00	77.53
Government aid	260	4.65	6.51	0.00	5.11
Government aid*Democracy dummy	260	2.41	5.35	0.00	5.11
Social aid	323	4.09	5.64	0.00	52.60
Social aid*Democracy dummy	323	2.73	5.62	0.00	52.60
Arms per capita	349	31.99	67.11	0.07	551.40
Infant mortality	830	76.01	45.27	5.08	243.30
Conflict	878	0.33	0.47	0.00	1.00
Literacy <sub>t-1</sub>	204	66.80	24.74	8.69	99.65

political institutions. Thus, while foreign aid can affect recipients’ political institutions, recipients’ political institutions can affect the amount of foreign aid a country receives.

To address endogeneity we use a variety of estimators designed for this purpose.<sup>7</sup> To establish baseline results, we first estimate our basic equation using ordinary least squares (OLS) with two-way fixed effects. Next we present our results using two different generalized method of moments (GMM) estimators: difference and system. Finally, we try an instrumental variables (IV) approach using two-stage least squares (2SLS). We describe how these various estimators address endogeneity and the results of tests of their instruments’ validity below. It turns out to be largely unimportant which of these methods we use to address

7. Most of the studies that consider aid’s relationship to institutional stability or political survivorship discussed above do not address endogeneity (Bermeo 2011; Kono and Montinola 2009; Bueno de Mesquita and Smith 2009). Morrison (2009) attempts to address endogeneity using lagged values of the dependent variable as instruments. However, as others have pointed out, this approach is problematic if the error term or omitted variables are serially correlated (see, for instance, Yaffee 2003; Angrist and Krueger 2001). This is surely the case for political institutions.

endogeneity. As we discuss below, our instruments are valid in each case and we find similar results regardless of the approach we take.

## IV. RESULTS

### 1. OLS

To provide baseline results we first present an OLS model with two-way fixed effects and robust standard errors clustered by country. We estimate the following equation:

$$\text{Polity}_{i,t} = \beta_0 + \beta_1 \text{Aid} * \text{Democracy dummy}_{i,t} + \beta_2 \text{Aid}_{i,t} + \beta_3 \text{Polity}_{i,t-1} + \mathbf{X}_{i,t} \beta_4 + \phi_t + \gamma_i + \varepsilon_{i,t} \quad (1)$$

Aid and Aid\*Democracy dummy estimate aid's effect on recipient countries' political institutions. Aid<sub>*i,t*</sub> measures country *i*'s ODA/GNI in period *t*. Aid\*Democracy dummy<sub>*i,t*</sub> is our interaction term, which multiplies how much aid country *i* receives in period *t* by a binary variable equal to one when country *i* is a democracy (i.e., Polity > 0) in period *t* and is zero otherwise (i.e., Polity ≤ 0). Polity<sub>*i,t*</sub> is our regressand, which measures the degree of democracy or dictatorship in country *i* in period *t*.

Polity<sub>*i,t-1*</sub> measures country *i*'s political institutions lagged one period.  $\mathbf{X}_{i,t}$  a matrix of covariates that also affect countries' degree of democracy or dictatorship, each of which is described above.  $\phi_t$  controls for period-specific effects.  $\gamma_i$  controls for country specific effects.  $\varepsilon_{i,t}$  is a random error term.

Interpreting this model's coefficients in light of the amplification effect hypothesis is straightforward. If, per the amplification effect, aid makes democracies more democratic and dictatorships more dictatorial, the coefficient on the interaction term Aid\*Democracy dummy,  $\beta_1$ , should be positive, the coefficient on Aid,  $\beta_2$ , should be negative, and  $\beta_1$  should be larger than the absolute value of  $\beta_2$ .

Table 2 presents the results of our OLS estimation. Column 1 contains our most stripped-down specification. Column 2 adds further controls. And column 3 includes our full battery of covariates.

The results in each column support the amplification-effect hypothesis. Aid's coefficient is negative and significant in each case: dictatorships become more dictatorial with additional aid. And the coefficient on Aid\*Democracy dummy is positive, significant, and larger than the absolute value of Aid's coefficient: democracies become more democratic with additional aid. According to these results, foreign aid does not alter countries' institutional orientations. It amplifies their existing ones.

Table 2  
OLS Results

	(1)	(2)	(3)
Aid	-0.098** (0.032)	-0.127** (0.038)	-0.106** (0.039)
Aid*Democracy dummy	0.243*** (0.035)	0.264*** (0.040)	0.251*** (0.038)
Polity <sub><i>t-1</i></sub>	0.481*** (0.038)	0.486*** (0.037)	0.462*** (0.042)
Log GDP per capita <sub><i>t-1</i></sub>		-0.360 (0.536)	0.707 (0.618)
GDP growth		-0.062 (0.038)	-0.038 (0.041)
Log pop		-1.562 (1.787)	-0.612 (2.177)
Urban pop		0.022 (0.037)	-0.019 (0.042)
Regime stability			-0.014 (0.028)
Regime age			-0.066** (0.032)
Natural resource rents			-0.002 (0.019)
Pop density			-0.002 (0.002)
Constant	1.184*** (0.286)	29.051 (30.592)	8.083 (36.961)
Observations	789	740	634
No. countries	121	116	116
Adj. R-squared	0.657	0.669	0.680

Notes: Robust standard errors, clustered by country, in parentheses. \*\*\*  $p < 0.01$ ; \*\*  $p < 0.05$ ; \*  $p < 0.1$ . All regressions include country and period fixed effects. Dependent variable is Polity<sub>*it*</sub>. Aid measures country *i*'s ODA/GNI in period *t*. Aid\*Democracy dummy<sub>*it*</sub> multiplies how much aid country *i* receives in period *t* by a binary variable equal to one when country *i* is a democracy (i.e., Polity > 0) in period *t* and zero otherwise (i.e., Polity ≤ 0).

The amplification effect is economically significant. For the average democracy in our sample, the results in Table 2 suggest that a one standard deviation increase in aid increases democracy (i.e., increases its Polity score) by slightly less than one standard deviation. For the average dictatorship in our sample, these results suggest that a one standard deviation increase in aid increases dictatorship (i.e., decreases its Polity score) by approximately one-third of a standard deviation.

## 2. GMM

The OLS model in equation (1) presents two problems. First, since the lagged dependent variable and error term may be correlated, including the lagged

dependent variable in fixed effects regressions can lead to biased and inconsistent estimates. Second, for reasons described above, equation (1) likely suffers from endogeneity. We try an IV approach using 2SLS below. But in regressions with country fixed effects, such as ours, it is difficult to find strong, time-varying instruments that satisfy the exclusion restriction for both aid and its interaction with political institutions (see, for instance, Persson and Tabellini 2006).

GMM estimators allow us to address endogeneity while avoiding this difficulty (see, for instance, Gehlbach and Malesky 2010; Roodman 2008; Djankov et al. 2008; Acemoglu et al. 2008; Rajan and Subramanian 2008; McGillivray and Feeny 2008; Arellano and Bond 1991; Arellano and Bover 1995; Blundell and Bond 1998). A difference GMM estimator uses lagged levels of the regressors as instruments for the first-differenced endogenous variables.<sup>8</sup> Our reduced-form equation takes the following form:

$$\text{Polity}_{i,t} = \alpha_0 + \alpha_1 \text{Aid} * \text{Democracy dummy}_{i,t} + \alpha_2 \text{Aid}_{i,t} + \alpha_3 \text{Polity}_{i,t-1} + \alpha_4 \text{Polity}_{i,t-2} + \mathbf{X}_{i,t} \alpha_5 + \phi_t + \gamma_i + \varepsilon_{i,t} \quad (2.0)$$

Equation (2.0) is the same as equation (1) except that it also includes  $\text{Polity}_{i,t-2}$ , which measures political institutions lagged two periods, to ensure that we avoid serial correlation and to supply additional instruments for the GMM estimation. Since the difference GMM estimator considers the estimation in first-difference form, we can write this model as:

$$\begin{aligned} \text{Polity}_{i,t} - \text{Polity}_{i,t-1} = & \alpha_0 + \alpha_1 [\text{Aid} * \text{Democracy dummy}_{i,t} - \text{Aid} * \\ & \text{Democracy dummy}_{i,t-1}] + \alpha_2 [\text{Aid}_{i,t} - \text{Aid}_{i,t-1}] + \\ & \alpha_3 [\text{Polity}_{i,t-1} - \text{Polity}_{i,t-2}] + \alpha_4 [\text{Polity}_{i,t-2} - \text{Polity}_{i,t-3}] + \\ & [\mathbf{X}_{i,t} - \mathbf{X}_{i,t-1}] \alpha_5 + \varepsilon_{i,t} - \varepsilon_{i,t-1} \end{aligned} \quad (2.1)$$

where country fixed effects are eliminated by time differencing.

If the endogenous regressors' lagged levels are not highly correlated with their first differences, the difference GMM approach will be inefficient (Blundell and Bond 1998; Bun and Windmeijer 2010). In this case a system GMM estimator may be preferable.

A system GMM estimator uses additional moment conditions that correspond to the levels of the equation, and uses lagged differences of the endogenous regressors as instruments. By exploiting additional moment conditions the system GMM estimator can improve efficiency over the difference GMM esti-

8. According to Roodman (2008), GMM dynamic panel estimators are particularly suited for i) small "T" (fewer time periods) and large "N" (many individual or country) panels, (ii) a linear functional relationship, (iii) a single dependent variable that is dynamic, depending on its own past realizations, (iv) independent variables that are not strictly exogenous and are correlated with present as well as past realizations of the error, (v) country fixed effects, and (vi) heteroskedasticity and autocorrelation within countries. GMM estimators are therefore appropriate for our data.

Table 3  
GMM Results

	System GMM			Difference GMM		
	(1)	(2)	(3)	(4)	(5)	(6)
Aid	-0.129*** (0.0206)	-0.146*** (0.0207)	-0.159*** (0.0225)	-0.118*** (0.0242)	-0.162*** (0.0240)	-0.180*** (0.0255)
Aid*Democracy dummy	0.240*** (0.0202)	0.282*** (0.0236)	0.275*** (0.0221)	0.268*** (0.0240)	0.300*** (0.0245)	0.294*** (0.0236)
Polity <sub><i>t-1</i></sub>	0.729*** (0.0306)	0.719*** (0.0307)	0.682*** (0.0361)	0.608*** (0.0420)	0.676*** (0.0456)	0.653*** (0.0419)
Polity <sub><i>t-2</i></sub>	-0.182*** (0.0204)	-0.175*** (0.0201)	-0.160*** (0.0198)	-0.167*** (0.0239)	-0.168*** (0.0258)	-0.150*** (0.0254)
Log GDP per capita <sub><i>t-1</i></sub>		-0.482 (0.356)	-0.345 (0.419)		-0.900* (0.484)	-0.965* (0.572)
GDP growth		-0.0937*** (0.0250)	-0.113*** (0.0238)		-0.108*** (0.0275)	-0.143*** (0.0312)
Log pop		-0.843*** (0.321)	-0.587 (0.462)		-1.977 (1.573)	-2.791* (1.665)
Urban pop		0.0741*** (0.0179)	0.0523*** (0.0197)		0.0939*** (0.0321)	0.0673* (0.0346)
Regime stability			0.00851 (0.0170)			-0.00838 (0.0191)
Regime age			-0.0874*** (0.0191)			-0.0666*** (0.0221)
Natural resource rents			0.0262* (0.0158)			0.0296* (0.0173)
Pop density			-0.00167** (0.000814)			-0.000978 (0.000813)
Constant	0.571** (0.242)	15.27*** (5.433)	11.93* (6.995)	0.513** (0.262)	36.41 (27.55)	52.41* (29.47)
Observations	693	664	611	567	544	491
No. countries	121	116	116	105	100	100
No. instruments	53	57	57	45	49	50
Autocorrelation test <sup>1</sup>	p = 0.79	p = 0.61	p = 0.75	p = 0.68	p = 0.60	p = 0.60
Sargan test <sup>2</sup>	p = 0.10	p = 0.27	p = 0.12	p = 0.10	p = 0.10	p = 0.10

Notes: Robust standard errors, clustered by country, in parentheses. \*\*\* p < 0.01; \*\* p < 0.05; \* p < 0.1. All regressions include period fixed effects (country fixed effects eliminated by time differencing). Dependent variable is Polity<sub>*it*</sub>. Aid measures country *i*'s ODA/GNI in period *t*. Aid\*Democracy dummy<sub>*it*</sub> multiplies how much aid country *i* receives in period *t* by a binary variable equal to one when country *i* is a democracy (i.e., Polity > 0) in period *t* and zero otherwise (i.e., Polity ≤ 0).

<sup>1</sup>The null hypothesis is that the error term exhibits no second-order serial correlation. <sup>2</sup>The null hypothesis is that the instruments are not correlated with the residuals.

mator (Blundell and Bond 1998). However, to do so, the instruments for the level equation must be uncorrelated with the fixed effects, which is a strong assumption (Hahn and Hausman 2002). Because of this, we use and report results for both difference and system GMM estimators.

Both GMM estimations support the results in Table 3. Columns 1–3 present the results of our system GMM estimations. Columns 4–6 present the results of our difference GMM estimations.

The amplification effect is present and statistically and economically significant in all six specifications. Compared to the results in Table 2, the coefficients

on our variables of interest are larger, suggesting downward bias in the OLS estimates. Here, for the average democracy in our sample, a one standard deviation increase in aid increases democracy by approximately one standard deviation. For the average dictatorship in our sample, a one standard deviation increase in aid increases dictatorship by approximately half a standard deviation.

Many more control variables are significant in the GMM estimations compared to the OLS estimations. The p-values in Table 3 show no sign of second-order autocorrelation.<sup>9</sup> And the Hansen J tests of overidentification, also reported in Table 3, indicate that our instruments are valid. These results suggest that our GMM estimates are superior to our OLS results.

## V. ROBUSTNESS CHECKS

We take several steps to ensure the robustness of our findings. First, as an alternative method of addressing endogeneity, we try using an IV approach with 2SLS. Here our control variables include income growth, urban population, regime age, regime stability, natural resource rents, and population density. We follow the existing literature in our choice of instruments (see, Burnside and Dollar 2000, 2004; Easterly et al. 2004; Djankov, Montalvo, and Reynal-Querol 2008). We instrument aid and our interaction term with the logarithm of countries' average incomes lagged one period, the logarithm of countries' population multiplied by their Polity scores lagged two periods, and a group of variables that capture donors' strategic interests in giving aid. These include binary variables equal to one if a country is located in Sub-Saharan Africa or the Franc Zone, or is a Central American country or Egypt, and zero otherwise.

Table 4 presents the result of this estimation. The results are similar to those in Tables 2 and 3 in each specification. Aid makes already democratic countries more democratic and already dictatorial countries more dictatorial.

The first-stage results of our 2SLS estimation, reported in Appendix 3, suggest that our instruments are valid. Sargan's test and Hansen's J test indicate that the overidentification restrictions cannot be rejected at well above conventional levels for both Aid and Aid\*Democracy dummy. The F test for excluded instruments is large and above the conventional threshold for both variables. And the R-squared for our excluded instruments is reasonable for both variables.

As a second test of robustness we try including several new control variables in the regressions from Table 3 (our GMM estimations). We excluded these controls from our previous estimations because they are either unavailable for many observations or highly correlated with the other variables we use. Our new controls include countries' lagged literacy rates, a dummy variable for internal

9. As Roodman (2006) points out, difference and system GMM estimates are biased in the presence of second-order autocorrelation.

Table 4  
IV Results with 2SLS

	(1)	(2)	(3)
Aid	-0.229** (0.084)	-0.255** (0.094)	-0.164** (0.068)
Aid*Democracy dummy	0.428** (0.143)	0.428** (0.138)	0.247** (0.097)
Polity <sub>t-1</sub>	0.725*** (0.060)	0.722*** (0.056)	0.697*** (0.054)
GDP growth		-0.090** (0.036)	-0.058 (0.036)
Urban pop		-0.008 (0.009)	0.002 (0.008)
Regime stability			0.020 (0.016)
Regime age			-0.104*** (0.021)
Natural resource rents			-0.026** (0.009)
Pop density			-0.0004* (0.000)
Constant	0.616* (0.332)	1.622** (0.681)	2.361*** (0.674)
Observations	673	664	611
No. countries	116	116	110
Adj. R-squared	0.79	0.78	0.83
Sargan test	p = 0.35	p = 0.60	p = 0.19
Hansen J test	p = 0.65	p = 0.38	p = 0.23

Notes: Robust standard errors, clustered by country, in parentheses. \*\*\* p < 0.01; \*\* p < 0.05; \* p < 0.1. All regressions include country and period fixed effects. Dependent variable is Polity<sub>t,i</sub>. Aid measures country *i*'s ODA/GNI in period *t*. Aid\*Democracy dummy<sub>t,i</sub> multiplies how much aid country *i* receives in period *t* by a binary variable equal to one when country *i* is a democracy (i.e., Polity > 0) in period *t* and zero otherwise (i.e., Polity ≤ 0). Instruments: Log pop; Log GDP per capita<sub>t-1</sub>; Strategic interests dummies; Log pop\*Polity<sub>t-2</sub>.

conflict, infant mortality, and arms per capita.<sup>10</sup> We consider our new controls one at a time, adding them to our GMM specifications that control for lagged Polity, lagged (log) average income, income growth, log population, and urban population.

We do not report the results of these estimations separately because they are qualitatively and quantitatively similar to those in Table 3. The amplification effect is strong and significant in all eight specifications.

10. Literacy is measured as the total adult population literacy rate (% of people age 15 and over); infant mortality is measured as infant deaths per 1,000 live births, and arms per capita is measured as arms imports divided by total population. Data for each of these variables are from *World Development Indicators* (2010). Conflict is dummy variable equal to one when a country experiences internal conflict, where conflict is defined as at least 25 battle related deaths, and zero otherwise. The data for this variable are from the UCDP/PRIOD dataset developed by Gleditsch et al. (2002) and extended in Harbom and Wallensteen (2007).

As a third robustness check we try replacing our aid variable, official development assistance divided by GNI, with three different measures of sector-specific foreign aid. Aid can have the unintended consequence of affecting political institutions. But some aid is intended for that purpose. Perhaps this aid has a different effect on recipients' political institutions than aid in general.

To see if this is the case we first consider total allocable aid as a percentage of GDP, which includes aid that is distributed to social infrastructure and services, economic infrastructure and services, production sectors, and other multi-sectors. It excludes humanitarian aid, debt forgiveness, and aid connected to administrative costs. Next we consider a subset of total allocable aid that includes only aid given to the social sector as a percentage of GDP. We get data for both of these variables from OECD's DAC Database. Our third and most important sector-specific aid measure considers aid intended for government and civil society as a percentage of GDP. This includes aid designed specifically to affect political institutions through activities such as institution building, legal and judicial development, and strengthening civil society. We get our data for this variable from AidData.org (Findley et al. 2009). Sector-specific aid data are only available from 1995 onward. Thus our panel in this case contains fifteen years (three time periods).

Table 5 presents the results our GMM estimations replacing total aid with the three sector-specific measures describe above. To save space we report only the results using our GMM specifications that control for lagged Polity, lagged (log) average income, income growth, log population, and urban population. These results support the amplification-effect hypothesis across the board. Consistent with the reasoning described in Section 2, aid's amplifying effect on recipients' political institutions is strongest when it is intended for government and civil society – i.e., aimed at affecting political institutions. For the average democracy in our sample, a one standard deviation increase in aid intended for government and civil society increases democracy by approximately three-quarters of a standard deviation. For the average dictatorship in our sample, a one standard deviation increase in aid intended for that purpose increases dictatorship by just over half a standard deviation.

As a fourth robustness check we replicate our basic regression using cross-sectional data and a specification similar to the one Knack (2004) uses. This allows us to include non-time varying controls, such as the log of the total area of the country, ethnolinguistic fractionalization, legal origin, geography, and a dummy for OPEC membership. We restrict our panel to the years 1990–2009 to eliminate any Cold War effect. We also try using the change in Polity over this period for this specification as an alternative dependent variable.

We do not report these results separately, as they are similar to those presented above. Aid makes democratic countries more democratic and dictatorial coun-

Table 5  
Sector Aid

	System GMM			Difference GMM		
	(1) Allocable aid	(2) Social aid	(3) Gov't aid	(4) Allocable aid	(5) Social aid	(6) Gov't aid
Aid	-0.464*** (9.836)	-0.696*** (0.146)	-0.098** (0.311)	-0.412*** (10.434)	-0.653*** (0.162)	-0.135*** (0.301)
Aid*Democracy dummy	0.519*** (9.793)	0.801*** (0.154)	0.291*** (0.354)	0.487*** (10.519)	0.740*** (0.171)	0.323*** (0.306)
Polity <sub>t-1</sub>	0.615*** (0.099)	0.730*** (0.106)	0.553*** (0.012)	0.560*** (0.103)	0.640*** (0.116)	0.514*** (0.049)
Polity <sub>t-2</sub>	-0.070* (0.037)	-0.087** (0.040)	-0.260*** (0.031)	-0.082* (0.042)	-0.100** (0.045)	-0.313*** (0.030)
Log GDP per capita <sub>t-1</sub>	-0.210 (0.470)	-0.050 (0.527)	2.743*** (0.728)	0.239 (0.606)	0.327 (0.713)	-0.332 (1.219)
GDP growth	-0.015 (0.040)	0.002 (0.053)	-0.005 (0.021)	0.003 (0.044)	0.021 (0.056)	0.017 (0.024)
Log pop	-0.478 (1.164)	-0.617 (1.245)	0.302 (0.231)	1.522 (3.314)	2.312 (3.438)	-12.397** (4.223)
Urban pop	0.052 (0.043)	0.056 (0.048)	-0.033 (0.026)	0.120* (0.071)	0.113* (0.068)	-0.139** (0.044)
Constant	9.038 (19.357)	9.622 (20.706)	-33.878*** (6.286)	-29.516 (53.234)	-42.941 (55.608)	215.739** (75.420)
Observations	299	299	243	186	186	132
No. countries	113	113	89	96	96	62
No. instruments	27	27	49	24	24	27
Sargan test	p = 0.56	p = 0.58	p = 0.32	p = 0.32	p = 0.37	p = 0.32

Notes: Robust standard errors, clustered by country, in parentheses. \*\*\* p < 0.01; \*\* p < 0.05; \* p < 0.1. All regressions include period fixed effects (country fixed effects eliminated by time differencing). Dependent variable is Polity<sub>t,i</sub>. Aid measures country *i*'s sector specific aid/GDP in period *t*. Aid\*Democracy dummy<sub>t,i</sub> multiplies how much sector-specific aid country *i* receives in period *t* by a binary variable equal to one when country *i* is a democracy (i.e., Polity > 0) in period *t* and zero otherwise (i.e., Polity ≤ 0).

tries more dictatorial in cross-section whether one uses the level of, or change in, political institutions as the dependent variable. Aid amplifies existing institutions' types rather than reversing them.

As a final robustness check, we try replacing our dependent variable with the change in Polity using our GMM estimators. Additionally, we try using annual data instead of using five-year periods. Again, because of their similarity to the results already presented, we do not report these results separately. But in both cases they, too, support the amplification-effect hypothesis.

## VI. CONCLUDING REMARKS

Our analysis leads to several conclusions. First, both the optimistic and pessimistic views of aid's impact on recipient countries' political institutions may overstate the power of aid. Our findings suggest that aid does not have the ability

to make dictatorships democracies or to make democracies dictatorships as the optimistic and pessimistic views suggest respectively.

Instead we find evidence for a more modest impact of aid on recipients' political institutions that strengthens institutional orientations they already have. Previous research suggests that aid may make recipient countries' political institutions more durable (Morrison 2007, 2009; Kono and Montinola (2009; Wright 2009; Bueno de Mesquita and Smith 2010; and Nielsen and Nielson 2010). Our results take this finding a step further. They suggest that aid may not only help to ensure that democratic countries remain democratic and that dictatorial countries remain dictatorship. Aid may contribute to making already democratic countries *more* democratic and already dictatorial countries *more* dictatorial.

Second, our results suggest that a reorientation of current views about aid's ability to help or harm developing countries' political institutions may be required. Although it is true that giving additional aid to already democratic nations will not, it seems, lead to greater autocracy, as the critics of aid sometimes suggest, more important, it appears that aid for the purposes of democratizing the dictatorial developing world may not only fail, but may actually cause harm. On the other hand, our results suggest that there may be room for using aid to strengthen democracy in weakly democratic countries. Aid may not be able to reverse the institutional regimes of recipients that are already autocratic. However, it may be able to strengthen democracy in countries that have embarked on establishing democratic regimes but are struggling to consolidate them.

Finally, our results suggest a possible mechanism at work that helps explain earlier findings, such as Svensson's (1999) and Burnside and Dollar's (2000), that aid promotes growth in countries that pursue good policies, but fails to do so in countries that do not. To the extent that because of their stronger constraints on executive power, democracies tend to pursue better economic policies than dictatorships, when democracies receive foreign aid they become more democratic, leading to the adoption of better policies, which in turn leads to higher economic growth. Conversely, when dictatorships receive aid they become more dictatorial, preventing the adoption of better policies, which in turn prevents increases in economic growth.

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APPENDIX 1. SAMPLE COUNTRIES

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Afghanistan	Congo, Dem. Rep.	India	Moldova	Somalia
Albania	Congo, Rep.	Indonesia	Mongolia	South Africa
Algeria	Costa Rica	Iran	Morocco	Sri Lanka
Angola	Cote d'Ivoire	Iraq	Mozambique	Sudan
Argentina	Croatia	Israel	Namibia	Swaziland
Armenia	Cuba	Jamaica	Nepal	Syria
Azerbaijan	Cyprus	Jordan	Nicaragua	Tajikistan
Bahrain	Djibouti	Kazakhstan	Niger	Tanzania
Bangladesh	Dominican Republic	Kenya	Nigeria	Thailand
Belarus	Ecuador	Korea	Oman	Togo
Benin	Egypt	Kuwait	Pakistan	Trinidad and Tobago
Bhutan	El Salvador	Kyrgyz Republic	Panama	Tunisia
Bolivia	Equatorial Guinea	Laos	Papua New Guinea	Turkey
Botswana	Eritrea	Lebanon	Paraguay	Turkmenistan
Brazil	Ethiopia	Lesotho	Peru	Uganda
Burkina Faso	Fiji	Liberia	Philippines	Ukraine
Burundi	Gabon	Libya	Qatar	United Arab Emirates
Cambodia	Gambia	Macedonia, FYR	Rwanda	Uruguay
Cameroon	Georgia	Madagascar	Saudi Arabia	Uzbekistan
Central African Rep.	Ghana	Malawi	Senegal	Venezuela
Chad	Guatemala	Malaysia	Serbia	Viet Nam
Chile	Guinea	Mali	Sierra Leone	Yemen
China	Guinea-Bissau	Mauritania	Singapore	Zambia
Colombia	Guyana	Mauritius	Slovenia	Zimbabwe
Comoros	Honduras	Mexico	Solomon Islands	

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THE AMPLIFICATION EFFECT

APPENDIX 2. DATA DESCRIPTION

Variable	Description
Aid	Aid as a percentage of GNI. Aid is defined as official development assistance plus official aid, net of repayments of principal, provided by multilateral institutions and official donor agencies. This assistance includes grants and loans made on concessional terms to promote economic development and welfare in developing countries and territories, but excludes assistance for military purposes. Ratio computed using values in U.S. dollars converted at official exchange rates. Source: WDI (2010).
Polity	An index of political decentralization that ranges from -10 (complete dictatorship) to +10 (complete democracy), which the Polity IV Project calls its "Polity 2" measure. The index is computed by subtracting a country's democracy score (which ranges from 0 to +10) from its autocracy score (which ranges from 0 to -10). Source: Polity IV Project (2010).
Allocable aid	Aid distributed to social infrastructure and services, economic infrastructure and services, production sectors, and other multi-sectors. It excludes such items as humanitarian aid, debt forgiveness, and administrative costs as a percentage of GDP. Source: OECD DAC Database.
Government aid	Aid intended for government and civil society as a percentage of GDP. Source: AidData.org.
Social aid	Aid given to the social sector as a percentage of GDP. Source: OECD DAC Database.
Log GDP per capita	Logarithm of gross domestic product per capita (PPP constant 2005 international dollar). Source: WDI (2010).
GDP growth	Average annual growth rate of GDP. Source: WDI (2010).
Log pop	Logarithm of total population. Source: WDI (2010).
Pop density	Midyear population divided by land area in square kilometers. Source: WDI (2010).
Urban pop	Percentage of population living in urban areas. Source: WDI (2010).
Regime age	Database of Political Institutions' variable "Yrsoffc," which measures how many years the chief executive has been in office. Source: Database of Political Institutions (2010).
Regime stability	Database of Political Institutions' variable "Tensys," which measures how long the country has been either autocratic or democratic. Source: Database of Political Institutions (2010).
Natural resource rents	Total natural resources rents as a percentage of GDP. Source: WDI (2010).
Arms per capita	Arms imports divided by total population. Source: WDI (2010).
Infant mortality	Infant deaths per 1,000 live births. Source: WDI (2010).
Conflict	Dummy variable equal to 1 when a country experiences internal conflict, where internal conflict is defined as at least 25 battle related deaths. Source: UCDP/PRIO dataset developed by Nils Petter Gleditsch et al. (2002) and extended in Harbom and Peter Wallensteen (2007).
Literacy	Percentage of population age 15 and above who are literate. Source: WDI (2010).
Log area	Logarithm of the total area of a country. Source: WDI (2010).
Ethnic fractionalization	An index of ethnolinguistic fractionalization for the year 1985. This index measures the probability that two individuals randomly drawn from a country's population will be from different ethnolinguistic groups. Source: Roeder, "Ethnolinguistic Fractionalization (ELF) Indices, 1961 and 1985" (2001).
English legal origin	Dummy variable equal to 1 if a country has an English legal origin. Source: La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1999).
Geography	Absolute value of the latitude of a country, scaled to values between 0 and 1 (0 is the equator). Source: La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1999).
OPEC member	Dummy variable equal to 1 if a country is an OPEC member. Source: OPEC.org.

APPENDIX 3. FIRST-STAGE RESULTS FOR 2SLS ESTIMATION

	Aid (1)	Aid*Democracy dummy (2)
Polity <sub>t-1</sub>	0.068 (0.085)	0.511*** (0.083)
Log GDP per capita <sub>t-1</sub>	-5.735*** (0.379)	-3.222*** (0.366)
GDP growth	-0.025 (0.078)	-0.001 (0.076)
Log pop	-2.106*** (0.194)	-1.135*** (0.187)
Log pop*Polity <sub>t-2</sub>	-0.007 (0.005)	-0.017*** (0.005)
Central America	0.594 (1.117)	1.077 (1.079)
Sub-Saharan Africa	0.916 (0.853)	-0.567 (0.824)
Egypt	2.553 (2.542)	-0.045 (2.457)
Franc Zone	-2.048** (0.878)	-1.724*** (0.848)
R-squared	0.66	0.34
Observations	664	664
F test for excluded instruments	70.51	21.13
R-squared for excluded instruments	0.43	0.19

SUMMARY

How does foreign aid affect recipient countries' political institutions? Two competing hypotheses offer contradictory predictions. The first sees aid, when delivered correctly, as an important means of making dictatorial recipient countries more democratic. The second sees aid as a corrosive force on recipient countries' political institutions that makes them more dictatorial. This paper offers a third hypothesis about how aid affects recipients' political institutions that we call the "amplification effect." We argue that foreign aid has neither the power to make dictatorships more democratic nor to make democracies more dictatorial. It only amplifies recipients' existing political institutions. We investigate this hypothesis using panel data for 124 countries between 1960 and 2009. Our findings support the amplification effect. Aid strengthens democracy in already democratic countries and dictatorship in already dictatorial regimes.