European Journal of Political Economy 36 (2014) 195–208

Contents lists available at ScienceDirect

European Journal of Political Economy

journal homepage: www.elsevier.com/locate/ejpe

Foreign aid, institutional quality, and growth

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ARTICLE INFO

Article history:
Received 5 December 2013
Received in revised form 5 July 2014
Accepted 3 August 2014
Available online 10 August 2014

JEL classification:
O17
O11

Keywords:
Foreign aid
Institutional quality
Economic growth
Political institutions
Economic institutions
Economic development

ABSTRACT

Using a panel of up to 116 countries from 1970 to 2010 we estimate the effects of foreign aid flows on a variety of measures of institutional quality. We find that aid flows are associated with the deterioration of both political and economic institutions. Regarding the latter, aid flows are associated with deterioration in a recipient's legal system and property rights, as well as its openness to international trade. Controlling for both political and economic institutions in growth regressions, the latter is robustly, positively associated with growth. After controlling for institutional quality, aid flows are not otherwise significantly related to growth.

1. Introduction

Institutional quality is an essential ingredient for economic growth. As Rodrick et al. (2004) famously proclaimed: *institutions rule*. And while foreign aid is aimed at promoting growth and prosperity in developing nations, some researchers have argued that its effectiveness is a function of institutional quality (e.g., Burnside and Dollar, 2000, 2004). Recent evidence suggesting that aid flows are detrimental to institutions is therefore doubly troubling (Svensson, 2000; Rajan and Subramanian, 2007; Heckelman and Knack, 2008; Djankov et al., 2008). Aid may harm the very institutions under which it can be effective; the same institutions that promote economic growth.

There are plausible reasons why aid flows might be detrimental to a recipient's institutional quality. For example, a government receiving aid is less reliant on the collection of tax revenues. It may therefore be less responsive and accountable to its citizens. Aid flows are also windfalls that are disbursed through specific channels. The rewards to controlling the channels (rent-seeking) may be high relative to the rewards from productive activities (Baumol, 1990). Like the flow of rents from a subterranean natural resource, aid may "curse" a country by exerting a corrupting influence on its institutions (Djankov et al., 2008).[1]

In this paper we investigate the links between foreign aid, institutional quality, and growth. Up until now there have been three fairly distinct literatures on the effects of (i) aid on growth, (ii) institutions on growth, and (iii) aid on institutions. One of our contributions is to explore (i), (ii), and (iii) together with a single panel composed of data from up to 116 countries and covering the years

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[1] Evidence of natural resource curses has been reported in several influential papers including Auty (1990) and Sachs and Warner (1999, 2001). A recent study by Crivelli and Gupta (2014) reported that natural resource revenues significantly crowd out governments' non-resource revenues (with the elasticity being about 0.3).

http://dx.doi.org/10.1016/j.ejpoleco.2014.08.003
0176-2680/

1970 through 2010. Another of our contributions is to tie these separate literatures together, asking which (if any) dimensions of institutional quality are likely channels through which aid affects growth.

Specifically, we ask which dimensions of institutional quality (e.g., economic versus political freedoms) are significantly affected by aid flows. Those affected dimensions are potential channels through which aid affects growth. We then estimate growth regressions including all of the affected dimensions to determine and identify the ones that are likely to be indirect channels through which aid affects growth. In doing so, we control for the direct effect of aid on growth. This last step acknowledges that there are certainly other channels through which aid affects growth (e.g., through increasing the resources available for investments).

Our analysis includes a large number of institutional quality measures, including Polity IV scores, the Economic Freedom of the World (EFW) index from the Fraser Institute, the checks and balances measure from Keefer and Stasavage (2003), and both the political rights and civil liberties measures from Freedom House. Besides including a larger number of institutional variables than previous studies, we also break the EFW into its five constituent components, separating the effects of aid on, e.g., the legal environment and property rights versus the size of government. This gives us a finer picture of which economic institutions are affected by aid flows. Given this large number of measures of political and economic institutions, our study is unique in analyzing the effects of all of them using a uniform identification strategy.

We find that aid flows are associated with decreases in measures of both political and economic institutional quality. Relative to the sample variation in our institutional measures, the effect on economic institutions is larger. Controlling for all of the affected measures, only decreases in economic institutional quality are significantly associated with lower rates of economic growth. Discerning from the data which of the specific dimensions of economic institutional quality matter most is difficult. However, the evidence most strongly suggests that deteriorations in international trade freedoms are a channel through which aid affects growth.

This paper is organized as follows. A review of the relevant literature and an explanation of how our paper contributes are contained in Section 2. Section 3 contains a description of our data and econometric strategy. Our empirical results are presented and discussed in Section 4. Concluding comments constitute Section 5.

2. Existing literature and the present paper

There is a substantial literature addressing the effect of foreign aid on economic growth. The conclusions of individual researchers are varied. Our reading of the literature suggests that a consensus, though by no means a unanimity, exists: at best aid contributes positively to growth only in good policy environments; at worst it is detrimental to a recipient's development. Our reading of the literature, however, will undoubtedly be controversial. As Rajan (2005) concluded: "the debate about aid effectiveness is one where little is settled."[2]

In the 1970s Peter Bauer (1972) was a relatively lone voice among economists in questioning the effectiveness of foreign aid. Inspired by Bauer's work, however, Boone (1996) provided a seminal econometric study reporting that aid is not associated with higher growth or investment in developing countries. This pessimistic view of aid was tempered by the later research of Burnside and Dollar (2000, 2004) who found that, while aid has little impact on growth on average, it does have a positive impact on growth in good policy environments. Subsequent studies by Collier and Dehn (2001a, 2001b), Collier and Dollar (2002, 2004), and Collier and Hoeffler (2004) reported similar results.

The Burnside and Dollar research proved remarkably influential in the development community but not uncontroversial. Easterly (2003) and Easterly et al. (2004) argued that the Burnside and Dollar results are sensitive to small changes in the time period and countries included. Rajan and Subramanian (2008) is another recent study that failed to find a positive effect of aid even in good policy environments. Worse yet, Barro and Lee (2005) actually found the effect of aid on growth to be negative. However, other researchers are more sanguine about the potential for aid to foster growth. Influential papers by Hansen and Tarp (2000, 2001) found that aid increases growth in recipient countries and that this positive effect is not conditional on a good policy environment.[3] Dalgaard et al. (2004) and Karras (2006) reported similar results.[4]

A large literature also addresses the effect of institutions on economic growth. Inspired by the seminal work of North and Thomas (1973) and North (1990), these studies relate differences in growth rates across countries to "the humanly devised constraints that shape human interaction" (North, 1990, p. 3). Such constraints include, but are not limited to, private property rights and regulatory structure (*economic freedoms*) and the structure of elections and systems of checks and balances in a government (*political freedoms*). While Rodrick et al.'s (2004) assertion that *institutions rule* is not uncontroversial, nearly all students of development recognize the critical role of institutional quality in growth outcomes.[5]

Several early cross-country studies found that strong private property rights are associated with higher income per capita levels (Knack and Keefer, 1995; Hall and Jones, 1999; Acemoglu et al., 2001, 2002). Barro (1996) analyzed a broader set of institutions,

[2] Doucouliagos and Paldam (2008, 2009, 2011) conducted meta-analyses of, respectively, 100 and 68 papers examining the effect of aid on growth. In both meta-analyses they conclude that the effect of aid on growth is not statistically significant. Bjørnskov (2013) is a recent and novel attempt to use factor analysis to break aid down into different types according to its intended purposes: (i) economic, (ii) social, (iii) reconstruction, and then (iv) a residual type. He reports that only (iii) has significantly positive effects on growth.

[3] Hansen and Tarp reported that the effect of aid in growth regressions disappears when human and physical capital investments are included as controls. However, they also found that aid positively affects investment. According to Hansen and Tarp, then, investment is the likely channel through which aid fosters economic growth.

[4] Bjerg et al. (2011) present evidence from 38 least developed countries (LDCs) that aid does not generally foster growth, but may be beneficial if the country is highly-indebted and uses the aid specifically to alleviate that debt burden.

[5] The chief alternative offered to the primacy of institutions in growth determination is geography. See Gallup et al. (1999) and Sachs (2003). Glaeser et al. (2004) have also argued that, while institutions are important, human capital is a more fundamental source of economic growth.

including economic freedom, rule-of-law, and democracy, and found that the first two are significantly, positively related to growth.[6] Rodrick et al. (2004) reported that measures of the rule of law and property rights contribute to economic growth and, furthermore, once they are controlled for geography variables play an insignificant role in growth determination. Acemoglu and Johnson (2005), using an identification strategy based on exogenous variation in institutional quality from the European colonization period, also reported that changes in the strength of property rights are associated with large changes in a country's rates of investment and economic growth.

The question of whether aid impacts a recipient's institutions has only caught the attention of researchers recently. That this question came to the fore is unsurprising given the positive relationship between institutional quality and growth on the one hand, and the relative paucity of evidence suggesting a positive correlation between aid and growth on the other. Being a relatively new literature it has as of yet produced few widely-accepted conclusions.

In an early and influential paper Svensson (2000) provided a game theoretic model of rent-seeking activities focused on foreign aid flows. In the model, aid is a common-pool resource that can either be allocated towards public goods investment or be appropriated for private consumption. He called attention to how efforts by agents in recipient countries to appropriate aid could both be wasteful (redundant) and costly in terms of the forgone productive activities. Hodler (2007) and Economides et al. (2008) incorporated similar rent-seeking games into Barro (1990)-type endogenous growth models. While aid may have a positive direct effect on growth through providing funds to finance public goods, an offsetting (and perhaps larger) indirect effect is associated with the allocation of resources towards rent-seeking. Moving beyond the models, if foreign aid flows promote rent-seeking, then over time the institutions of recipient countries are likely to become geared towards such unproductive activities.

Svensson (2000) reported evidence that, due to increases in rent seeking activity, foreign aid is associated with higher corruption levels. Using the International Country Risk Guide as a measure of institutional quality, Rajan and Subramanian (2007) found that aid flows reduce the quality of institutions and governance in developing countries. While foreign aid has often been used to promote democracy, Djankov et al. (2008) found that higher levels of foreign aid actually harm a recipient's political institutions.[7] Kalyvitis and Vlachaki (2012) also found that aid recipients are less likely to experience democratic reforms (though they find the effect to be mitigated if economic reforms precede the aid). Heckelman and Knack (2008) considered aid's impact on economic institutions and found that it hinders (rather than encourages) market-oriented reform. Powell and Ryan (2006) reported similar results. However, in a later paper Heckelman and Knack (2009) concluded that aid had no significant effect on economic institutions.

In this paper we employ the empirical framework and dynamic panel data techniques that are employed in Djankov et al. (2008) to estimate the effect of aid flows on institutional quality. However, while Djankov et al. (2008) use (1) the Polity IV democracy score and (2) the Keefer and Stasavage (2002, 2003) checks and balances measure, we expand their analysis to several other measures of institutional quality: (3) the *Economic Freedom of the World* (EFW) score and (4) its five component area scores; as well as the Freedom House measures of (5) political rights and (6) civil liberties. As in Djankov et al. (2008) we address the potential endogeneity of aid using instrumental variables estimation. Since the over-identifying restrictions are not rejected when considering a large number of institutional measures, our identification strategy allows for the comparison of aid's effects on various dimensions of institutional quality, both qualitatively and quantitatively.[8]

Not only can our paper be viewed as an extension of the Djankov et al. (2008) study that includes a considerably larger number of institutional quality measures and covers a longer time period. Our paper is also an improvement upon the existing studies of aid's effect on economic institutions. Our study includes a larger data set than Heckelman and Knack (2008). Rather than 10 or 20 year cross-sections we examine a true panel including eight 5-year periods. We are also able to examine a greater number of countries with EFW scores: 81 rather than 73.

Lastly, the existing literature on aid's effect on institutional quality stops short of formally “connecting the dots” to the literatures on how aid and institutional quality, respectively, affect economic growth. We contribute by bridging this gap. Having identified the dimensions of institutional quality that are affected by aid, we employ the same data and methods to estimate growth regressions including all of those identified institutional variables as controls. The results highlight the institutional channels through which aid likely affects growth. Furthermore, we check the robustness of these channels to including aid independently as a control. In addition to a robustness check, the estimated coefficient on aid indicates whether aid affects growth through channels other than institutional quality, and whether the effect through those channels is positive or negative.

3. Data

We use official development assistance (ODA) data as our measure of the amount of foreign aid a country receives. ODA is constituted by grants and loans given to a recipient country during a given year. ODA data is converted into 2005 dollars using the World Import Unit Value Index from the IMF and then taken as a share of a recipients real GDP. GDP data is gathered from the Penn World Table Version 8.0 (Feenstra et al., 2013).

We relate average aid flows (as a share of GDP) over 5-year periods to the changes in institutional variables over those same 5-year periods. Whether aid flows are aimed successfully at promoting institutional reforms or, alternatively, they create rent-seeking games

[6] Barro found the overall relationship between growth and democracy to be weakly negative. However, he also found some evidence that the relationship is non-linear. In particular, starting from low levels, increases in democracy are good for growth; but the marginal effect becomes negative in more advanced democracies.

[7] Knack (2004) also found that aid did not promote democracy. He did not, however, estimate the effect to be significantly negative.

[8] Validity is the null hypothesis in tests of overidentifying restrictions, so any identification strategy must still be intuitively convincing. We argue for the intuitive plausibility of our identification strategy below.

and insulate corrupt governments from the consequences of their policies, we expect that during the 5-year period of observed aid there will be an effect on institutional quality. The institutional variables that we employ are proxies for various economic and political institutions that are often thought to be correlated with growth experiences. They are (1) the Polity IV democracy scores; (2) the checks and balances measure from Keefer and Stasavage (2003); (3) the Economic Freedom of the World index from the Fraser Institute and (4) its five constituent area scores; and the (5) political freedoms and (6) civil liberty scores provided by Freedom House.[9] As an example of an observation based on our panel, we relate average aid during the 1970–1975 time period to the 1975 Polity IV scores minus the 1970 Polity IV score.

The Polity IV Project (Marshall and Jaggars, 2010) scores the level of democracy (DEMOC) in a country with a particular emphasis on executive recruitment and constraints and the level of political competition. Polity IV uses a scale of zero to 10, with 10 representing a fully institutionalized democracy. Keefer and Stasavage (2002, 2003) utilize an alternative measure of political institutions based on indicators from the Database of Political Institutions (DPI) (Beck et al., 2010). Their checks and balances (CHECKS) variable is based on the number of "veto players" that exist in a country's political system. Veto players are decision-makers whose agreement is required for policy changes to occur. A higher CHECKS score corresponds to greater restraint on government; to a higher level of consensus necessary for policies to be changed. In our sample there are 135 countries for which we have observations on the change in CHECKS with corresponding ODA data.

The Economic Freedom of the World (FREEDOM) index measures how supportive a country's institutions are to economic freedom (Gwartney et al., 2013). Therefore, it represents a gauge of a country's economic institutions. Numerous studies have documented a positive link between this economic freedom measure and economic growth (e.g., Ayal and Karras, 1998; Dawson, 1998; Gwartney et al., 1999; de Haan and Sturm, 2000; Gwartney et al., 2006; Heckelman and Stroup, 2000).[10] The overall index is the sum of five constituent area scores: size of government (SIZE_GOV), legal structure and property rights (PROP_RIGHTS), access to sound money (MONEY), freedom to trade internationally (TRADE), and regulations of credit, labor, and business (REGULATION). The comprehensive and area scores are all on a scale from zero to 10, with zero being least and 10 being most free.

In addition to our three primary institutional measures (DEMOC, CHECKS, and FREEDOM) we also employ the political rights (POL_RIGHTS) and civil liberties (CIV_LIBS) scores provided by Freedom House. To some extent POL_RIGHTS is a more comprehensive measure of political institutions than either DEMOC or CHECKS. A country's score is based on an evaluation of the characteristics of the electoral process, the functioning of the government, and political participation and pluralism. CIV_LIBS, alternatively, scores the extent to which the government is constrained. It is based on an evaluation of associational and organizational rights, freedom of belief and expression, personal autonomy, and the rule of law. Each score is on the scale of 1 to 7 where 1 is the most free (these are the only institutional measures where a lower number is "better").

As additional controls in institutional change regressions we consider oil production as a share of a recipient country's GDP (OIL) and, separately, positive and negative terms of trade shocks (SHOCKS_POS and SHOCKS_NEG). These are controls suggested by Djankov et al. (2008). Controlling for oil production is motivated by the hypothesis of natural resource curses and their effects on institutional quality. Data on oil production and prices are gathered from BP Statistical Review of World Energy, Historical Data. Oil production is measured in barrels and oil prices are given in 2009 dollars which we put into 2005 dollars using the World Import Unit Value index. We use oil share in our analysis which is calculated by multiplying oil production with oil prices and then dividing by a countries GDP. As terms of trade shock measures, we take mean values of, separately, positive and negative growth rates of the terms of trade over the 5-year periods. Terms of trade are the national accounts exports price index divided by the imports price index, with 2005 equal to 100. Data is gathered from United Nations Conference on Trade and Development, Handbook of Statistics and International Monetary Fund, International Financial Statistics. OIL is recorded as 5-year average shares; SHOCKS_POS and SHOCKS_NEG are both 5-year averages (positive or negative, respectively) of annual growth rates. The 5-year averages are controls for the change in institutional variables over the same 5-year period.

In addition to the variables suggested by Djankov et al. (2008) we also relate changes in institutions to a variety of other variables suggested by the literature. These are:

- linguistic and ethnic fractionalization (LANGUAGE and ETHNIC: Heckelman and Knack (2008), Dreher and Rupprecht (2007) and Coviello and Islam (2006));
- real per capita GDP growth (RPCGROWTH: Biglaiser and DeRouen (2011), Heckelman and Knack (2008), Knedlik and Kronthaler (2007) and Dreher and Rupprecht (2007));
- a dummy variable taking a value of 1 for countries that represent donors' strategic interests (DONORSSI: Ear (2007) and Coviello and Islam (2006)); and
- regional dummy variables (Bearce and Tirone, 2010; Coviello and Islam, 2006).

Measures of ethnic and linguistic fractionalization are from the MacroDataGuide and are based on Alesina et al. (2003). DONORSSI takes the value of 1 for countries in Sub-Saharan Africa, the Franc Zone, Egypt, and Central American Countries.[11] LANGUAGE and

[9] Some studies (e.g., Karras, 2006) focus on aid per capita. Though aid as a percent of GDP is a more common measure, we check the robustness of our main 2SLS results (analogous to those of Table 3) to using aid per capita instead. The point estimates are qualitatively similar but not statistically significant. As it turns out, our instrumental variables are weak for ODA per capita (the first-stage F-statistics are never greater than 1.259).

[10] See de Haan et al. (2006) for a comprehensive survey of the literature. See Doucouliagos and Ulubasoglu (2006) for a meta-analysis of the literature that reports a robust positive relationship between freedom and growth.

[11] We employ 5 regional dummy variables. These dummies are for (i) Sub-Saharan African countries, (ii) Latin American and Caribbean countries, (iii) Middle Eastern and North African countries, (iv) Asian and Pacific countries, and (v) transition (i.e., former Soviet bloc) countries.

ETHNIC are time invariant measures, as is DONORSSI. RPCGROWTH is the growth rate over a 5-year period and controls for changes in institutional variables over the corresponding 5-year period.

Once we have established which of our institutional measures are significantly affected by aid flows, we proceed to estimate growth regressions including the levels of those measures. Specifically, the growth rate over a 5-year period is related to the initial (year of that 5-year period) level of institutions. We include several controls that are standard in growth empirical studies. Based on Penn World Table data, we include the average investment to GDP ratio, the average population growth rate, and the initial (year of a 5-year period) level of real GDP per capita (to control for conditional convergence effects). Additionally, we use World Development Indicator data on primary and secondary school enrollment (to control for human capital effects) as well as the urban population share as controls. These enrollments and populations share enter as initial (year of a 5-year period) values, which is standard in the empirical growth literature. Intuitively, these variables control for the position of a country's balanced growth path at the beginning of a period of observed growth.

Summary statistics for all of the above variables are contained in Table 1. This table also includes, in brief, a description and source for each data series.

4. Results

Our data set is an unbalanced panel of 5-year periods: 1970–1975, 1975–1980, 1980–1985, 1985–1990, 1990–1995, 1995–2000, 2000–2005, and 2005–2010. The baseline set of institutional variables is DEMOC, CHECKS, and FREEDOM. The first results that we report are from regressions of changes in institutional measures over the 5-year periods on the average ODA during the same period (for example, the value of CHECKS in 1985 minus its 1980 value is regressed on the average aid flow as a fraction of GDP during the 1980 to 1985 period). We also include OIL, SHOCKS_NEG, and SHOCKS_POS as controls, as well as LANGUAGE, ETHNIC, RPCGROWTH, DONORSSI, and regional dummies. Lastly, all estimations control for the initial (year of a 5-year period) level of institutions.

Controlling for the initial level of institutions is sensible given that institutions are persistent and also that the potential for institutional change is likely a function of the current level of institutional quality. The latter will be true, for example, if institutional improvements are relatively easy to achieve starting from very poor levels of institutional quality, but are more difficult to achieve once institutional quality reaches a higher level (the dependency of institutional change on the current institutional quality level is also sensible given the bounded-nature of our measures). Furthermore, controlling for the initial level of institutional quality is standard in the literature (e.g., Bearce and Tirone, 2010; Heckelman and Knack, 2008; Dreher and Rupprecht, 2007; Djankov et al., 2008).

Consider the following relationship in levels:

$$INST_t = \beta_0 + \beta_1 ODA_{t-1;t} + \beta_2 INST_{t-1} + \beta_3 X_{t-1}, \quad (1)$$

where *INST* is an institutional measure, the dual subscript on *ODA* indicates the average from $(t-1)$ to t, and X is a vector of controls.

Table 1
Summary variables included in regression analyses.

Variable	Description	Source	Mean	Stand. dev
DEMOC	Polity IV democracy ranking	Polity IV	3.217	3.697
FREEDOM	Economic Freedom of the World index	Gwartney et al. (2013)	5.739	1.262
CHECKS	Index for number of checks and balances	Keefer and Stasavage (2003)	2.022	1.517
ODA	Official development assistance to GDP ratio	DAC	0.016	0.025
POL_RIGHTS	Index of political rights	Freedom House	4.357	2.015
CIV_LIBS	Index of civil liberties	Freedom House	4.282	1.643
SIZE_GOV	EFW area 1: size of government	Gwartney et al. (2013)	6.029	1.613
PROP_RIGHTS	EFW area 2: legal structure & property rights	Gwartney et al. (2013)	4.872	1.691
MONEY	EFW area 3: access to sound money	Gwartney et al. (2013)	6.396	2.252
TRADE	EFW area 4: freedom to trade internationally	Gwartney et al. (2013)	5.351	2.201
REGULATION	EFW area 5: regulations of credit, labor, & business	Gwartney et al. (2013)	5.855	1.196
OIL	Oil production as a share of GDP	British Petroleum (2011)	0.000	0.001
(OIL when > 0)			0.001	0.001
SHOCKS_POS	Mean value of positive terms of trade growth rates	UN & IMF	0.066	0.118
SHOCKS_NEG	Mean value of negative terms of trade growth rates	UN & IMF	−0.045	0.086
AG_SHARE	Agricultural share of GDP expressed as a percentage	World Develop. Indicators	21.560	15.658
LIFE_EXPECT	Life expectancy at birth	World Develop. Indicators	61.211	10.992
RGDP_PC	Real per capita GDP, 2005 US$	Penn World Tables 8.0	8114.560	27,446.530
LANGUAGE	Linguistic fractionalization	MacroDataGuide	0.450	0.289
ETHNIC	Ethnic fractionalization	MacroDataGuide	0.501	0.245
Investment/GDP	Gross capital formation as a share of GDP	Penn World Tables 8.0	0.198	0.118
Pop. growth	Population growth rate (over 5-year periods)	Penn World Tables 8.0	0.105	0.073
Urb. pop. share	Urban population share expressed as a percentage	World Develop. Indicators	45.227	23.424
Prim. enroll.	Primary school enrollment rate expressed as a percentage	World Develop. Indicators	94.409	25.668
Second enroll.	Secondary school enrollment rate expressed as a percentage	World Develop. Indicators	50.075	30.243

We can subtract $INST_{t-1}$ from both sides of the above equation to arrive at our dynamic panel data model,

$$INST_t - INST_{t-1} = \beta_0 + \beta_1 ODA_{t-1;t} + (\beta_2 - 1) INST_{t-1} + \beta_3 X_{t-1}. \quad (2)$$

The model, (2), provides us with the prediction that the coefficient on initial institutional quality should be negative.

From estimations of Eq. (2) we determine, based on the information in our sample, what measures of institutional quality are significantly affected by aid flows. Following that determination, we then explore (per capita real GDP) growth regressions that include these affected measures. The aim is to understand through which institutional channels aid flows may affect economic growth.

4.1. Aid's effect on institutional quality

Table 2 reports OLS regressions based on Eq. (2) and using the baseline institutional variables and controls. In all of the regressions period fixed effects are included. Including period effects makes sense because the general level of aid flows may change over time, and not necessarily in a linear or even monotonic fashion. For example, the Millennium Development Goals (MDGs) introduced in 2000 were associated with increased aid giving by many countries. Alternatively, Dang et al. (2013) report evidence suggesting that periods during which donors experience banking crises are associated with substantial decreases in aid. The inclusion of period fixed effects can help to control for these sorts of events and their effects on the variation in aid flows over time.

In the case of DEMOC, the coefficient on ODA is positive and statistically significant at the 5% level. Based on the point estimate, a standard deviation increase in ODA (0.025) is associated with about a 0.213 point increase in DEMOC. This is a small effect (the sample standard deviation of DEMOC is 3.697). The coefficient estimates in the CHECKS and FREEDOM estimations are both smaller and statistically insignificant, though they are also both positive. The F-statistics reported in Table 2 suggest that including period fixed effects is appropriate, always rejecting their joint insignificance at the 1% level.

OLS results are likely to be biased because aid flows are almost certainly endogenous. Decisions concerning whether or not to give aid – as well as how much aid to give – are made by donors who may take into account the institutional quality of potential recipients. For example, Brück and Xu (2012) reported that positive regime changes (measured by the Polity IV index) are associated with increases in foreign aid. Furthermore, the influential research of Burnside and Dollar (2000, 2004) can be interpreted as recommending that donors pay attention to institutional quality as a matter of policy. Omitted variables are also a concern. To account for this endogeneity, we report the results of two-stage least squares (2SLS) estimations that employ initial values of a country's agricultural share of GDP (AG_SHARE) and the life expectancy of its citizens (LIFE_EXPECT) as instruments (when the dependent variable is the change in FREEDOM from 1980 to 1985, for example, 1980 values of AG_SHARE and LIFE_EXPECT are instruments). Both are drawn from the World Bank's World Development Indicators.

We believe that this identification strategy is plausible. These are variables that are likely to be correlated with subsequent aid flows. For example, a lower life expectancy is likely to evoke a higher rate of giving from donors. While these variables are also likely

Table 2
OLS period fixed effects regressions of baseline institutional variables on foreign aid.

	(1) Dependent variable	(2)	(3)
	DEMOC–DEMOC(−1)	CHECKS–CHECKS(−1)	FREEDOM–FREEDOM(−1)
ODA	8.507**	2.851	0.131
	(3.865)	(2.101)	(2.468)
OIL	−20.225	−26.949	9.249
	(61.478)	(37.283)	(85.099)
SHOCKS_NEG	3.442***	0.484	−0.780
	(1.109)	(0.796)	(0.481)
SHOCKS_POS	2.748***	−0.013	−0.650
	(1.053)	(0.517)	(0.441)
LANGUAGE	0.447	0.573*	0.014
	(0.398)	(0.311)	(0.100)
ETHNIC	−0.738*	−0.292	−0.090
	(0.420)	(0.300)	(0.129)
RPCGROWTH	−0.008	0.069	0.542***
	(0.278)	(0.148)	(0.133)
DONORSSI	−0.074	−0.251	0.103*
	(0.202)	(0.173)	(0.056)
INST(−1)	−0.231***	−0.535***	−0.203***
	(0.039)	(0.054)	(0.028)
Redundant fixed effects	5.989***	4.303***	13.513***
R^2	0.165	0.305	0.296
Countries	111	116	81
Observations	802	732	545

Notes: *, **, and *** denote statistical significance at the 10, 5, and 1% levels, respectively. Standard errors are clustered by country and are reported in parentheses. Constants and regional dummy variables are included in all regressions (though not reported). "Redundant fixed effects" refer to F-tests are for the null hypothesis that the period fixed effects are jointly insignificant. The panel consists of 5-year periods and the notation "(−1)" denotes a 5-year lag.

Table 3
2SLS period fixed effects regressions of baseline institutional variables on foreign aid.

	(1) Dependent variable	(2)	(3)
	DEMOC–DEMOC(−1)	CHECKS–CHECKS(−1)	FREEDOM–FREEDOM(−1)
ODA	−13.461	−15.028*	−19.111***
	(12.599)	(8.921)	(7.014)
OIL	−137.515	−137.331**	−97.015
	(101.222)	(69.548)	(115.057)
SHOCKS_NEG	2.818**	0.051	−0.716
	(1.179)	(0.939)	(0.610)
SHOCKS_POS	2.529**	−0.133	−0.636
	(1.257)	(0.608)	(0.617)
LANGUAGE	0.019	0.427	0.003
	(0.371)	(0.333)	(0.150)
ETHNIC	−0.419	−0.083	0.062
	(0.442)	(0.349)	(0.210)
RPCGROWTH	−0.147	0.047	0.436***
	(0.362)	(0.185)	(0.167)
DONORSSI	0.085	−0.115	0.221***
	(0.216)	(0.156)	(0.066)
INST(−1)	−0.257***	−0.575***	−0.284***
	(0.042)	(0.058)	(0.039)
F-stat (first stage)	8.924***	9.278***	13.465***
J-stat	0.165	1.505	0.731
J-stat p-value	0.684	0.220	0.392
Countries	107	112	79
Observations	676	629	481

Notes: *, **, and *** denote statistical significance at the 10, 5, and 1% levels, respectively. Standard errors are clustered by country and are reported in parentheses. Constants and regional dummy variables are included in all regressions (though not reported). "ODA per capita" enters as the natural log of the dollar value plus 5. J-stats are associated with Sargan tests of overidentifying restrictions. F-statistics are associated with tests that the instruments are jointly insignificant in the first-stage regression. Lagged values of AG_SHARE and LIFE_EXPECT are employed as instruments. ODA is treated as endogenous. The panel consists of 5-year periods and the notation "(−1)" denotes a 5-year lag.

to be correlated with the *level* of institutions, we do not immediately suspect them of being determinants of the *change* in institutional quality. This combined with the fact that we use initial values suggests that these instruments are likely to be valid (since we have two instruments and will be treating only ODA as endogenous, we have one testable overidentifying restriction). These instruments are both used in previous work by Heckelman and Knack (2008) to instrument aid. Also when ODA is regressed on a constant and these two instruments, each of the instruments enters the regression significantly at the 10% level or better. The R^2 from the regression is 0.179 and the F-statistic from a test of the instruments' joint insignificance is 18.972 (significant at the 1% level).

These regression results are an informal but perhaps helpful way of demonstrating that the instruments are relevant to the endogenous variable, ODA. More formally, we report the first-stage F-statistics for the 2SLS estimations that follow.

The results in Table 3 correspond to 2SLS estimations based on specifications analogous to those reported in Table 2. The coefficient estimates on ODA are always negative and, in the case of CHECKS and FREEDOM, statistically significant (10% level for the former; 1% level for the latter). Using the point estimates, a standard deviation increase in ODA is associated with about a 0.376 point decrease in CHECKS, and about a 0.478 point decrease in FREEDOM. The estimated effect is larger for economic institutions. In the case of FREEDOM, 0.478 amounts to almost 38% of a standard deviation (1.262). To put the estimated effect of FREEDOM in perspective, 0.478 of a point is roughly the difference between the 2005 scores of the US (8.03) and countries like Cyprus (7.55), Jamaica (7.62), and Panama (7.44).[12]

Regarding the plausibility of the identification strategy that is employed, the first-stage F-statistics are reported for all three of the Table 3 estimations. In each case they reject joint insignificance of the instruments at the 1% level. Also, the J-statistics associated with Sargan tests never provide evidence to reject the overidentifying restriction at conventional significance levels.

Moving from the baseline set of institutional quality measures, Table 4 reports 2SLS estimations based on changes in the Freedom House political rights and civil liberties scores (POL_RIGHTS and CIV_LIBS) and the various component areas of the Economic Freedom of the World index (SIZE_GOV, PROP_RIGHTS, MONEY, TRADE, and REGULATION). All of these estimations include period fixed effects. For compactness, only coefficient estimates on ODA are reported along with the first-stage F-statistics and Sargan test J-statistics and p-values. The estimated effects of ODA on both POL_RIGHTS and CIV_LIBS are both positive but only statistically significant for CIV_LIBS. In that case, a standard deviation increase in ODA is associated with about 24% of a standard deviation increase in CIV_LIBS (note that both Freedom House measures are constructed so that a *higher* score corresponds to *fewer* political rights or civil liberties). However, this is the one case where the J-statistic indicates rejection of the over-identifying restriction (5% level), causing us to doubt that we have identified a meaningful effect.

[12] One concern about our results may be that they are based on an unbalanced panel. Balancing the panels for the full 1970–2010 time period leaves us with only a handful of countries. However, in the appendix we report results analogous to Table 3 based on a balanced panel of 48 countries for 5-year periods beginning with 1980–1985 and ending with 2005–2010 (Table A2) (the countries in this subsample are contained in Table A1). The ODA point estimates for DEMOC, CHECKS, and FREEDOM remain negative, but the estimate for CHECKS is no longer significant (p-value = 0.194). However, ODA still enters significantly (5% level) in the FREEDOM estimation and the point estimate is roughly the same size (−20.690 compared to −19.111 in Table 3) (note that in these estimations we do not include the transition economy dummy variable. No former Soviet-bloc countries received ODA before the breakup of the Soviet Union).

Table 4
2SLS period fixed effects regressions of additional institutional variables on foreign aid.

Dependent variable (INST–INST(−1))	(1) Coefficient on ODA	(2) J-stat	(3) J-stat p-value	(4) F stat (first stage)
POL_RIGHTS	11.122 (7.559)	1.290	0.256	8.742***
CIV_LIBS	15.962** (6.436)	4.151**	0.042	9.776***
SIZE_GOV	1.764 (8.034)	1.274	0.259	17.409***
PROP_RIGHTS	−55.024*** (19.582)	0.379	0.538	11.307***
MONEY	−12.475 (12.864)	1.061	0.303	15.462***
TRADE	−38.713*** (13.358)	0.421	0.517	13.762***
REGULATION	−8.535 (5.476)	0.017	0.896	13.741***

Notes: *, **, and *** denote statistical significance at the 10, 5, and 1% levels, respectively. Standard errors are clustered by country and are reported in parentheses. Constants and regional dummy variables are included in all regressions (though not reported). Lagged values of AG_SHARE and LIFE_EXPECT are employed as instruments. The panel consists of 5-year periods and the notation "(−1)" denotes a 5-year lag.

Next, we consider the component areas of FREEDOM. Economic freedom is a multifaceted concept. If aid flows lead to decreases in economic freedom then along which dimensions of freedom do those decreases occur? The two areas where the estimated effects of ODA are statistically significant are PROP_RIGHTS and TRADE. Both estimated effects are negative and statistically significant at the 1% level. A standard deviation increase in aid flows is associated with about a 1.38 point decrease in PROP_RIGHTS and a 0.978 point decrease in TRADE. These estimated decreases amount to, respectively, about 82% of a standard deviation and 44% of standard deviation. The estimated effect of aid on the legal system and security of property rights is particularly large. Based on 2005 values this is roughly comparable to the difference between Japan (7.85) and countries such as Namibia (6.46) and Tanzania (6.44) in our sample.

4.2. Growth regressions including affected institutional measures

We have established that both political and economic institutions are likely affected by aid flows. Furthermore, the evidence suggests that aid's effect is deleterious. We now return to our baseline set of institutional measures (DEMOC, CHECKS, and FREEDOM) and ask whether any of these variables significantly enter a growth regression when all three are controlled for. In other words, given that different measures of institutional quality are negatively affected by aid is one or more of them a channel through which aid negatively affects economic growth?

In the case of DEMOC, aid did not enter as a statistically significant determinant (Table 3). However, we are still interested to know whether it is a robust correlate with growth. Furthermore, in considering CHECKS and FREEDOM as potential channels through which aid affects growth, DEMOC is potentially a source of bias if omitted (the correlations of DEMOC with CHECKS and FREEDOM in our sample are, respectively, 0.634 and 0.354).

The dependent variable is per capita real GDP growth over a 5-year period. The initial level of DEMOC, CHECKS, and FREEDOM are all included regressors. We also include additional controls that are common in the empirical growth literature and suggested by the standard neoclassical growth model, from which growth regressions are derived (e.g., Barro and Sala-i-Martin, 1992). These controls are a country's investment share if GDP, its population growth rate, and its initial level of real GDP per capita. We also control for the urban population share and the primary and secondary enrollments rates. Finally, ODA is itself included as a control variable.

Table 5 reports the growth regression results. The first column contains OLS results when period fixed effects are included in the estimation, and the second column contains results when country fixed effects are included. In either case, neither DEMOC nor CHECKS enters significantly. Alternatively, FREEDOM enters positively and significantly in both cases. The point estimates are essentially the same in columns 1 and 2 (each about 0.039) and represent a sizable effect. A standard deviation increase in FREEDOM (about 1.262) is associated with about a 4.9% increase in the 5-year growth rate. We also note that all of the standard neoclassical growth model variables enter with the expected signs: the investment rate enters positively; initial income per capita and the population growth rate enter negatively. The former of these does not enter significantly. We view this as consistent with the observation that, across developing countries, there is not a strong relationship between investment rates and economic development (e.g., Parente and Prescott, 2002). This is not to deny that capital accumulation is a necessary condition for growth. More likely, for developing countries the *types* of investments and *how they are employed* in the production of goods and services are more critical, and these are functions of institutional quality. Once the quality of economic institutions is controlled for, the simple investment share is not by itself a statistically significant correlate.[13] ODA itself enters negatively and significantly and the estimated effect is large. A standard deviation increase in ODA is associated with about an 11% decrease in the 5-year growth rate.

[13] Another possibility would be that physical and human capital investment rates are highly correlated, and hence the presence of the investment ratio along with school enrollment rates is inflating standard errors (primary and secondary enrolment rates do not enter significantly as well). However, in our sample the correlations of the investment share with primary and secondary enrollment rates are, respectively, 0.099 and 0.130.

Table 5
Regressions of real GDP per capita growth on institutional variables, initial income, and other controls.

	(1) Dependent variable (per cap. real GDP growth)	(2)	(3)	(4)	(5)
	Fixed period effects	Fixed country effects	Fixed country effects	Fixed country effects; 2SLS	Fixed country effects; 2SLS (just identified)
DEMOC	0.003	0.005	0.003	0.009	−0.005
	(0.004)	(0.007)	(0.006)	(0.044)	(0.038)
CHECKS	0.005	0.011	0.018	−0.006	0.031
	(0.008)	(0.016)	(0.013)	(0.130)	(0.141)
FREEDOM	0.039**	0.039*		0.079**	0.090***
	(0.017)	(0.023)		(0.040)	(0.030)
SIZE_GOV			0.011		
			(0.015)		
PROP_RIGHTS			0.012		
			(0.016)		
MONEY			0.003		
			(0.009)		
TRADE			0.017		
			(0.014)		
REGULATION(−1)			−0.009		
			(0.023)		
Investment/GDP	0.165	0.110	0.309	−0.058	−0.173
	(0.194)	(0.188)	(0.408)	(0.447)	(0.443)
Population growth	−0.894***	−0.641	−0.910***	−0.496	−0.428
	(0.336)	(0.458)	(0.212)	(0.545)	(0.582)
Init. real GDP per cap.	−0.139***	−0.518***	−0.411***	−0.409***	−0.417***
	(0.031)	(0.072)	(0.061)	(0.058)	(0.057)
Urban pop. share	0.003***	0.004	0.009*		
	(0.001)	(0.004)	(0.005)		
Primary enrollment	−0.000	−0.000	−0.001		
	(0.000)	(0.000)	(0.001)		
Secondary enrollment	0.001	0.001	−0.002		
	(0.001)	(0.002)	(0.002)		
ODA	−4.594***	−4.823*	−3.569	1.423	0.971
	(1.074)	(2.893)	(3.772)	(2.675)	(1.943)
F-stat (red. fix. effects)	1.158	2.068***	1.985***		
J-stat				0.055	
J-stat p-value				0.815	
R^2	0.177	0.451	0.492		
Countries	76	76	73	78	78
Observations	366	366	300	437	437

Notes: *, **, and *** denote statistical significance at the 10, 5, and 1% levels, respectively. Standard errors are clustered by country and are reported in parentheses. Constants are included in all regressions (though not reported). Initial real GDP per capita enters in natural log form. The F-statistic is associated with a test of the joint insignificance of the fixed effects (period or country). In column 5 the instruments are lagged values of ODA, ODA^2, ODA * POLITICAL_RIGHTS, ODA * population, and ODA * (real GDP). In column 6 the instruments are ODA, ODA^2, ODA * POLITICAL_RIGHTS, and ODA * population. In 2SLS estimations DEMOC, CHECKS, FREEDOM, and ODA are treated as endogenous. The panel consists of 5-year periods and the notation "(−1)" denotes a 5-year lag.

Despite the similarities between most of the column 1 and column 2 results, the reported F-statistics suggest that the country fixed effects specification is more appropriate (the unbalanced nature of our panel data does not allow for the inclusion of two-way fixed effects). As well, the R^2 in the case of country fixed effects is about 2.5 times larger (0.451 versus 0.177). Therefore, unless stated otherwise all subsequent growth regressions that are reported include country fixed effects.

Having seen that FREEDOM is a statistically significant correlate when DEMOC and CHECKS are included (but not the other way around) column 3 of Table 5 reports results based on including the 5 constituent freedom areas individually (rather than the comprehensive FREEDOM index). None of them enter significantly (the point estimate on REGULATION is actually negative, though insignificant and very small). Much of the important information is likely contained in the levels of these freedom measures. If this is true, the inclusion of country fixed effects is likely resulting in collinearity and inflated standard errors. Adding to this problem is the fact that the constituent freedom areas are all positively correlated with one another (while the correlation between PROP_RIGHTS and SIZE_GOV is only 0.061, all other pairwise correlations between the 5 areas are 0.303 or greater).

The next concern to be addressed is endogeneity. Despite the statistical significance of FREEDOM in the column 1 and 2 results, institutions are almost certainly endogenous. In addition to omitted variables, a country's economic growth rate is a likely determinant of institutional quality. For example, if incomes are rising then the opportunity costs associated with activities aimed at reforms (e.g., attending city council meetings or protests) are falling.

We pursue an identification strategy along lines similar to that of Dalgaard et al. (2004). Specifically, we employ as instruments the lags of ODA, ODA squared, ODA multiplied by a policy measure (we use Freedom House's POL_RIGHTS), ODA multiplied by population, and ODA multiplied by real GDP. Dalgaard et al. are particularly interested in instrumenting for aid flows. However, we treat ODA and the institutional measures (DEMOC, CHECKS, and FREEDOM) all as endogenous. Therefore we begin by reporting first-stage regressions for

all of these variables in Table 6. Since the inclusion of country fixed effects makes degrees of freedom particularly dear, we focus on only the standard neoclassical controls (the investment and population growth rates; initial income) as predetermined variables.

The F-statistics associated with tests of instrument joint insignificance all imply rejection of the null at the 1% level. They are not particularly large (except for ODA: 170.276). However, we are employing 1 set of instruments for 4 different endogenous variables. Furthermore, at least 2 instruments (3 in the case of FREEDOM) enter significantly in any of the first-stage regressions. We note that one of the instruments (the lag of ODA multiplied by real GDP) does not enter significantly in any case (even for ODA itself). In column 4 of Table 5 we begin by reporting 2SLS results based on the full instrument set. This provides us with an overidentifying restriction to test. Then, in column 5, we report results based on excluding the ostensibly weak instrument and see whether, for the just-identified case, any results of interest are changed (the first-stage F-statistics for DEMOC, CHECKS, and FREEDOM when this instrument is excluded are, respectively, 7.462, 3.917, and 7.675).

In either of the Table 5 2SLS results (column 4 or column 5) neither DEMOC nor CHECKS enters significantly. However, in both cases FREEDOM enters positively and significantly (at the 5% level or better) and the point estimate is more than twice as large as that reported based on OLS (columns 1 and 2). A standard deviation increase in FREEDOM is associated with more than a 10 percentage point increase in the 5-year growth rate. That is about 2% annually, or what is widely considered to roughly be the long-run balanced growth rate of developed economies. Furthermore, ODA no longer enters significantly into the estimation when institutional quality is controlled for. In column 5 (the overidentified case) the J-statistic provides no evidence against the validity of the identification strategy.

Based on the results from Sections 4.1 to 4.2, we can provide a back-of-the-envelope calculation of the indirect effect of aid flows on economic growth through its negative effects on economic freedom. A standard deviation in ODA is associated with about a 0.478 point drop in FREEDOM (Table 3; column 3). In turn, a 0.478 point drop in freedom is associated with about a 3.8 percentage point drop in the 5-year economic growth rate (Table 5; column 4).

Finally, in Table 7 we report some growth regression results based on exploring the role of individual freedom areas in economic growth. Columns 1 and 2 report, respectively, period and country fixed effects OLS results where, instead of FREEDOM, the 5 constituent areas (SIZE_GOV, PROP_RIGHTS, MONEY, TRADE, and REGULATION) are included individually. Only in the period effects regression does an individual freedom area (PROP_RIGHTS) enter significantly. However, once again the F-statistics indicate that the inclusion of country fixed effects is more appropriate. Columns 3–7 then report 2SLS results. Instrumenting for all 5 freedom areas simultaneously is not feasible given the availability of instruments. Alternatively, each of the estimations includes a single freedom area that is treated as endogenous. Treating DEMOC, CHECKS, and ODA merely as control variables now, we instrument for the freedom areas using lags of ODA, ODA^2, ODA ∗ POLITICAL_RIGHTS, and ODA ∗ population.

SIZE_GOV enters positively and significantly but the first-stage F-statistic is very small (0.874) (column 4). PROP_RIGHTS does not enter significantly and the F-statistics are also very small in its case (column 5). REGULATION also does not enter significantly (column 7).

In the column 5 and 6 estimations, respectively, MONEY and TRADE enter positively and significantly (10% level or better). In both cases the first-stage F-statistics reject the joint insignificance null at the 1% significance level; the J-statistics offer no evidence to reject instrument validity. In particular, TRADE was found above to be negatively affected by aid flows (Table 4). Providing another back-of-the-envelope calculation, a standard deviation increase in ODA is associated with about a 0.978 point decrease in TRADE; this is, in turn, associated with about a 6.4 percentage point decrease in the 5-year growth rate. We note, however, that if all 5 individual areas are included together in an estimation that includes country fixed effects, statistically significant results are not achieved. Therefore the individual freedom area results must be handled with care; more so than those associated with the comprehensive FREEDOM measure.

Table 6
First stage regressions from 2SLS growth regressions.

	(1) DEMOC	(2) CHECKS	(3) FREEDOM	(4) ODA
ODA (lag)	116.304***	31.800***	40.687*	0.793***
	(28.335)	(10.334)	(22.161)	(0.081)
ODA^2 (lag)	−161.2655	−51.821	−164.004*	−0.288
	(155.163)	(65.429)	(93.952)	(0.446)
ODA ∗ POLITICAL_RIGHTS (lag)	−11.592***	−2.881**	−5.280***	0.010
	(3.167)	(1.287)	(1.404)	(0.011)
ODA ∗ population (lag)	0.140	0.064	0.893***	−0.007***
	(0.360)	(0.222)	(0.242)	(0.002)
ODA ∗ (real GDP) (lag)	0.000	0.000	−0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Investment/GDP	5.808***	2.024**	3.563***	0.067***
	(2.248)	(0.809)	(1.036)	(0.014)
Population growth	−3.738**	−1.822***	−3.599**	0.006
	(1.528)	(0.670)	(1.505)	(0.009)
Initial real GDP per cap.	1.599***	0.459**	1.283***	−0.004***
	(0.503)	(0.223)	(0.284)	(0.001)
F-stat (Instruments)	6.068***	3.204***	5.950***	170.276***
R^2	0.710	0.544	0.621	0.698

Notes: *, **, and *** denote statistical significance at the 10, 5, and 1% levels, respectively. Standard errors are clustered by country and are reported in parentheses. Constants are included in all regressions (though not reported). Country fixed effects are also included in all regressions. The F-statistic is associated with the test of joint insignificance of ODA^2, ODA ∗ POLITICAL_RIGHTS, ODA ∗ population, and ODA ∗ (real GDP). The panel consists of 5-year periods and the notation "(−1)" denotes a 5-year lag.

Table 7
Regressions of real GDP per capita growth on separate areas of economic freedom and other controls.

	(1) Dependent variable (Per cap. real GDP growth)	(2)	(3)	(4)	(5)	(6)	(7)
	Fixed period effects	Fixed country effects	Fixed country effects; 2SLS	Fixed country effects; 2SLS	Fixed country effects; 2SLS	Fixed country effects; 2SLS	Fixed country effects; 2SLS
DEMOC	−0.004	0.003	0.000	−0.000	0.007*	0.002	0.010*
	(0.004)	(0.006)	(0.009)	(0.013)	(0.004)	(0.007)	(0.005)
CHECKS	0.007	0.018	−0.007	0.002	0.010	−0.003	0.009
	(0.008)	(0.013)	(0.017)	(0.022)	(0.012)	(0.018)	(0.012)
SIZE_GOV	0.005	0.011	0.139**				
	(0.010)	(0.015)	(0.067)				
PROP_RIGHTS	0.024**	0.012		0.240			
	(0.011)	(0.016)		(0.296)			
MONEY	0.006	0.003			0.033**		
	(0.008)	(0.009)			(0.014)		
TRADE	0.010	0.017				0.065*	
	(0.012)	(0.014)				(0.037)	
REGULATION	−0.011	−0.009					0.039
	(0.016)	(0.023)					(0.080)
Investment/GDP	0.106	0.309	−0.211	−0.210	0.075	−0.230	0.119
	(0.179)	(0.408)	(0.336)	(0.830)	(0.174)	(0.429)	(0.295)
Population growth	−0.920***	−0.910***	−0.358	−0.692	−0.634	−0.560	−0.670
	(0.269)	(0.212)	(0.679)	(1.123)	(0.420)	(0.375)	(0.411)
Init. real GDP per cap.	−0.098***	−0.411***	−0.400***	−0.505***	−0.426***	−0.425***	−0.404***
	(0.026)	(0.061)	(0.057)	(0.178)	(0.057)	(0.066)	(0.065)
Urban pop. share	0.002***	0.009*					
	(0.008)	(0.005)					
Primary enrollment	−0.001**	−0.001					
	(0.006)	(0.001)					
Secondary enrollment	0.001	−0.002					
	(0.001)	(0.002)					
ODA	−3.564***	−3.569	−2.291	1.912	−2.042	−0.801	−2.276
	(1.226)	(3.772)	(1.636)	(4.224)	(1.499)	(1.571)	(1.658)
F-stat (red. fix. effects)	1.542	1.985***					
F-stat (first stage)			0.874	0.460	10.132***	4.224***	4.081***
J-stat			0.016	0.336	0.606	0.138	2.512
J-stat p-values			0.899	0.562	0.436	0.711	0.473
R^2	0.179	0.492					
Countries	73	73	78	78	78	77	78
Observations	300	300	440	417	445	406	436

Notes: *, **, and *** denote statistical significance at the 10, 5, and 1% levels, respectively. Standard errors are clustered by country and are reported in parentheses. Constants are included in all regressions (though not reported). Initial real GDP per capita enters in natural log form. The F-statistic is associated with a test of the joint insignificance of the fixed effects (period or country). In 2SLS estimations the instruments are ODA, ODA^2, ODA * POLITICAL_RIGHTS, and ODA * population; the freedom area is treated as endogenous.

5. Conclusions

Institutional quality appears to be an essential ingredient to economic growth. Considering that the goal of foreign aid is to help poorer economies, it is therefore doubly troubling that not only is there a paucity of evidence that aid promotes growth but also, recent studies suggest that aid can harm institutional quality.

We contribute in this paper by tying together three largely disparate empirical literatures exploring the effects of (1) aid on growth, (2) institutions on growth, and (3) aid on institutions. Institutional quality is one channel through which aid flows may affect economic growth. We analyze a large panel of countries (for 5-year periods; 1970 through 2010) receiving official development assistance. We relate aid flows to changes in a large number of institutional quality variables representing both political and economic institutions. Those dimensions of institutional quality that are significantly affected are then subsequently included in growth regressions. Using a common data set and identification strategies, we aim to "connect the dots" and provide evidence on which dimensions of institutional quality are likely channels through which aid affects growth.

The evidence suggests that aid flows are, all else equal, detrimental to both political and economic institutions. However, in growth regressions including both types of institutions, only economic institutions are positively and significantly correlated with growth. Specifically, aid flows are associated with deterioration in the legal system and property rights of a recipient country and its international trade freedoms. The results of growth regressions suggest that, in turn, such deterioration can be associated with large, negative effects on growth. Using our point estimates, a standard deviation increase in aid, economic freedom, is associated with lower per capita GDP growth of about 2 percentage points annually. Aid is also itself included as an additional control in growth regressions. In our preferred specifications, the estimated effect of foreign aid is statistically insignificant. Once the negative effects on institutional quality are controlled for, aid is not robustly associated with more or less growth.

Acknowledgements

We would like to thank the Editor Arye Hillman and an anonymous referee for thoughtful comments that helped us to produce a much improved paper. We also thank participants of the 2012 Southern Economic Association meetings in New Orleans and the College of Charleston economics department seminar series for helpful comments and stimulating discussion.

Appendix A

Table A1
48 countries included for in balanced subsample: periods 1980–1985, 1985–1990, 1990–1995, 1995–2000, 2000–2005, and 2005–2010.

Argentina	Kenya
Bangladesh	Korea (South)
Bolivia	Malawi
Botswana	Malaysia
Brazil	Mauritius
Burundi	Mexico
Cameroon	Morocco
Chile	Nepal
China	Pakistan
Colombia	Panama
Congo (Democratic Republic of)	Paraguay
Congo (Republic of the)	Philippines
Costa Rica	Senegal
Dominican Republic	Sierra Leone
Egypt	South Africa
Fiji	Sri Lanka
Gabon	Thailand
Ghana	Togo
Guatemala	Tunisia
Honduras	Turkey
India	Uganda
Indonesia	Zambia
Iran	Zimbabwe
Jordan	

Table A2
2SLS period fixed effects regressions of baseline institutional variables on foreign aid: balanced subsample.

	(1) Dependent variable	(2)	(3)
	DEMOC–DEMOC(−1)	CHECKS–CHECKS(−1)	FREEDOM–FREEDOM(−1)
ODA	−42.339	−23.361	−20.690**
	(29.400)	(17.833)	(9.631)
OIL	−915.109***	−196.764	−234.323**
	(284.816)	(174.198)	(122.459)
SHOCKS_NEG	3.578**	1.906	−0.594
	(1.391)	(1.355)	(0.781)
SHOCKS_POS	2.374	0.979	−0.480
	(2.227)	(0.872)	(1.065)
LANGUAGE	0.167	0.114	−0.067
	(0.838)	(0.646)	(0.249)
ETHNIC	−0.353	0.475	0.257
	(0.805)	(0.490)	(0.313)
RPCGROWTH	0.502	0.631	0.572**
	(0.780)	(0.577)	(0.259)
DONORSSI	−0.069	−0.142	0.211**
	(0.268)	(0.234)	(0.104)
INST(−1)	−0.389***	−0.721***	−0.317***
	(0.065)	(0.079)	(0.047)
J-stat	2.613	0.587	1.038
J-stat p-value	0.106	0.443	0.309
Countries	47	47	47
Observations	282	282	282

Notes: *, **, and *** denote statistical significance at the 10, 5, and 1% levels, respectively. Standard errors are clustered by country and are reported in parentheses. Constants and regional dummy variables are included in all regressions (though not reported). "ODA per capita" enters as the natural log of the dollar value plus 5. J-stats are associated with Sargan tests of overidentifying restrictions Lagged values of AG_SHARE and LIFE_EXPECT are employed as instruments. Subsamples are outlined in Table A1. Sample periods are 1980–1985, 1985–1990, 1990–1995, 1995–2000, 2000–2005, and 2005–2010. The panel consists of 5-year periods and the notation "(−1)" denotes a 5-year lag.

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