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Aiding economic freedom: Exploring the role of political institutions

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ABSTRACT

Can foreign aid promote economic freedom? The existing literature does not provide a conclusive answer. Using a panel of 108 countries from 1971 to 2010, we provide insight to this discussion by examining aid's impact on economic freedom conditional on the quality of political institutions. We find some evidence suggesting that aid can improve economic freedom when given to democracies, but it may decrease it in autocracies. Also, aid given to entrenched regimes may reduce economic freedom. We illustrate that the results are sensitive to model selection, choice of controls, time period sample, and measurement of aid. Our results have important policy implications. Most countries that 'need' aid do not have healthy political institutions. As such, aid is less likely to have a positive impact on economic freedom, partially explaining the contradictory findings in the literature. This also highlights the difficulty of finding a top-down solution to institutional improvements.

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1. Introduction

Economic institutions consistent with the principles of economic freedom are linked to growth, human development and overall human flourishing (see [Hall and Lawson, 2014](#), for a review). However, a substantial portion of the world remains in extreme poverty and lacks basic human rights. Despite a considerable amount of literature devoted to institutions and development, understanding *how* to establish such institutions and policies remains a mystery for most of the developing world. Gaining insight into this 'how' has a potentially high payoff as economic institutional change can promote economic and human development.

This paper examines if foreign aid can serve as a tool to positively influence a recipient country's economic institutions. [Dreher and Gehring \(2012\)](#) summarize that aid can influence economic freedom through three main channels: direct monetary transfer, conditionality, and knowledge transfer. We build from previous works to contend that the magnitude of these channels is conditional on the existence of democratic checks as democracies provide monitoring to minimize misappropriation of aid funds. Thus, we explore how the impact of aid varies, if at all, when interacted with the quality and durability of political institutions.

With higher aid inflows, recipient nations benefit not only from financial resources but also from knowledge, expertise and technical assistance provided by the donor staff. This knowledge may include promoting market-oriented economic reforms. This was, after all, the main idea behind the Washington Consensus, which established foreign aid guiding principles including free trade, sound money, and property rights. Moreover, given the skepticism attached to aid's effectiveness, donors often choose to allocate aid conditional on improving the economic policy environment. In addition, aid can compensate politically powerful

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groups in the short run that might otherwise lose out by the adoption of market-oriented policies, improving the likelihood of reform. Thus, aid may positively influence economic transformation toward economic freedom (Heckelman and Knack, 2008).

Yet, on the other hand, by providing an alternate source of revenue, aid can disincentivize governments to create efficient economic institutions (Devarajan et al., 2001, chapter 1). Since aid dollars typically go to the recipient government, political leaders may take up inefficient investment projects and subsidize state-owned enterprises (Heckelman and Knack, 2008). In addition, as pointed out by Collier (1997), foreign aid can have unintended consequences such as increased tax revenues and greater trade taxes based on donor advice. Aid is also linked to increases in rent seeking and centralization of power, leading to a deterioration of institutional quality (Djankov et al., 2008).

Thus, theoretically, aid's impact on economic institutions is ambiguous. Empirical studies also find conflicting evidence. Several studies conclude that aid does not increase economic freedom and may decrease it (for example, Knack, 2001; Young and Sheehan, 2014). Heckelman and Knack (2008) find that aid decreases freedom in the 1980s, but aid does not significantly impact economic freedom in the 1990s. In a follow-up study, Heckelman and Knack (2009) conclude that aid has no significant effect on economic institutions. Dreher and Rupprecht (2007) and Knedlik and Kronthaler (2007) focus on changes in economic freedom and find that IMF involvement reduces economic freedom. However, Bearce and Tirone (2010) show that aid has no effect on economic freedom before the 1990s but has a positive effect after the Cold War. Boockmann and Dreher (2003) document that the number of World Bank projects increases economic freedom.¹

Overall, the conclusions from these studies are ambiguous. This research dilemma is similar to the literature on aid and political institutions (for example, Bräutigam and Knack, 2004; Bueno de Mesquita and Smith, 2009, 2010a, 2010b; Morrison, 2007, 2009). Askarov and Doucouliagos (2015) find that aid positively affects democratization in transition countries. They also find that total aid has no effect on governance, while US aid decreases some dimensions of governance. Others highlight that aid effectiveness is conditional on the recipients' political institutions. As pointed out by Kono and Montinola (2009); Wright (2009), and Dutta et al. (2013), the ability of foreign aid to influence a country's level of democracy is conditional on the existing political institutional infrastructure including the level of democracy and age of the regime.

Our paper attempts to resolve the ambiguity in the economic freedom-aid literature by following the advancements in the political freedom-aid literature making aid's effectiveness conditional on the quality of political institutions. Therefore, we propose that aid's impact on economic freedom is also conditional on political institutional factors. Democratically constrained governments will be more likely to utilize aid in a manner that promotes economic freedom. Democratic checks minimize the ability for recipient governments to misappropriate aid funds and increase the likelihood that conditions are met. As a result, aid may be channeled to beneficial uses including positive economic reforms.

Several studies find that mature democracies function more effectively relative to nascent democracies. Duch (2001) shows that in nascent democracies voters may fail to punish or reward governments as needed. Additionally, Mohtadi and Roe (2003) find that young democracies suffer from inadequately developed checks on government. As a result, mature democratic institutions may provide continuity and stability. On the contrary, regime entrenchment can stifle political competition undermining institutional quality (see, Kono and Montinola, 2009). Thus, we also test aid's effectiveness with regard to age of the regime, or political durability.

To test these conjectures, we measure economic institutions with the Fraser Institute's economic freedom index (Gwartney et al., 2015). We introduce two interaction terms based on the quality and durability of political institutions: aid*democracy and aid*durability. Democracy is measured with polity2 and durability is the number of years since a regime change² (Marshall et al., 2014). The interactive approach, as opposed to split samples, is commonly used when conditioning foreign aid on political institutions (Kono and Montinola, 2009; Wright, 2009; Dutta et al., 2013).

As summarized above, previous findings are often inconclusive and contradictory. Dreher and Gehring (2012) highlight that in order to draw any conclusions from this body of work a common framework should be adopted. This includes how to address endogeneity concerns. Thus, part of our contribution is to present our results with a variety of estimators. We employ five model estimators including ordinary least squares (OLS), instrumental variable (IV) estimation, two-way fixed effects, IV fixed effects, and System GMM estimation. To externally instrument for aid, we utilize two common measures of political affinity, voting affinity with major foreign aid donors in the United Nations General Assembly and temporary membership on the United Nations Security Council. We use a panel of 108 developing countries from 1971 to 2010, with 5-year averages, creating 8 time periods.

Our results find some evidence that aid's impact on economic freedom depends on the recipient nations' quality and durability of political institutions. In democratic countries, aid may improve economic freedom, but it may decrease it in autocracies. In addition, aid given to durable political regimes may degrade economic institutions. These results are sensitive to model selection, choice of controls, time period sample, and measurement of aid.

¹ Others relate aid to specific aspects of economic freedom. Remmer (2004) finds that bilateral aid increases government spending. Coviello and Islam (2006) and Ear (2007) find that ODA reduces property rights and increases regulations, but Kilby (2005) shows that aid decreases regulations. Cali and te Velde (2011) find that aid specific to trade reduces trading costs. Dreher (2005) finds a connection between IMF projects and lower inflation rates. Mukherjee and Singer (2010) report a positive effect of IMF loans on capital account liberalization, while Biglaiser and DeRouen (2011) find that participation in an IMF program increases trade and promotes capital-market reforms.

² Regime refers to a country's political system. A regime change is defined as either a three point change in the polity score during the past three years or less or the end of a transition period. This variable is designed to capture political stability.

Specifically, the results are sensitive to the manner in which endogeneity is addressed.³ The GMM results provide the strongest support for foreign aid's potential positive impact on economic freedom in democracies, but they also suggest that aid given to autocracies decreases economic freedom. When using IV estimations, our results also suggest that aid decreases economic freedom in autocracies, but in most IV regressions aid has no significant association with economic freedom in democracies. If IV provides a better mechanism for addressing endogeneity, our results suggest that aid may not positively influence economic freedom and could reduce it. However, given the political nature of our instruments, we note that the IV results could understate aid's effectiveness.

Collectively, our results suggest that aid responds differently depending on the political institutional context, and these results depend on the identification strategy. Thus, our findings support the lack of robustness across previous studies and highlight the difficulty in drawing strong policy conclusions.

2. Data description and empirical methodology

2.1. Data description

To measure economic institutions, we use an index of economic freedom collected from [Gwartney et al. \(2015\)](#). This index is our primary dependent variable. The economic freedom (EF) index ranges from 0 to 10 with a higher score reflecting greater economic freedom. The index is grouped into five broad components—size of government, monetary policy and price stability, legal structure and security of private property, freedom to trade without regulations, and regulation of credit, labor and business. We use the overall index for all main specifications but analyze the five sub-indices for robustness. As reported in [Table 1](#), the mean for economic freedom is 6.6 with a standard deviation of 1.1. The lowest score is 3.2 with a maximum of 9.2.

Foreign aid is the main independent variable of interest. We use a broad measure of foreign aid, net official development assistance (ODA) as a percentage of gross national income (GNI) ([WDI, 2015](#)). ODA includes concessional loans and grants intended to improve welfare and economic development in recipient countries. ODA includes bilateral and multilateral aid collected by the Organization for Economic Cooperation and Development (OECD). Bilateral aid is reported to OECD from both DAC and non-DAC members. For any given year, the specific donors included will vary as data is self-reported from each agency.⁴

We lag aid by one five-year period as it can take several years for aid to be effective ([Headey, 2008; Clemens et al., 2012](#)). The mean of aid is 7.2 with a large standard deviation of 9.3. Aid ranges from -0.1 (Thailand in 2010) to 59.6 (Mozambique in 1995) indicating that some countries in our sample are repaying previous debts, while others receive large portions of aid. As robustness, we use net disbursed official development assistance received by a country divided by population.

Our main conjecture is that aid's impact on economic freedom is conditional on political institutions. This includes the quality and age of the regime. We first employ a popular measure of the quality of political institutions, the *polity2* variable (Democ) from Polity IV database ([Marshall et al., 2014](#)). The variable ranges from -10 to $+10$ with -10 representing the strongest autocracy and $+10$ the strongest democracy. The mean is 2.7 with a standard deviation of 6.7. We also include a measure of political stability (Durable). This variable calculates the number of years since the most recent regime change, where regime refers to a country's political system and a regime change represents a three point change in the polity score in the past three years or less. Durable ranges from 0 to 194 with a mean of 23.5 and a standard deviation of 29.8. It is also collected from Polity IV ([Marshall et al., 2014](#)).

When choosing control variables, we follow the existing literature and employ variables that capture time varying heterogeneity (for example, [Heckelman and Knack, 2008; Bearce and Tirone, 2010; Biglaiser and DeRouen, 2011](#)). Our benchmark control variables include GDP per capita, GDP growth, population growth, and male labor force participation rate. All controls are collected from [WDI \(2015\)](#).

As suggested by [Boockmann and Dreher \(2003\)](#) economic freedom should be enhanced in the presence of growth and prosperity. As a country gets richer, it might demand more economic freedom. Therefore, we include income measured as log of gross domestic product (GDP) per capita (2005 constant U.S. dollars) and the annual economic growth rate ([Dreher and Rupprecht, 2007; Knedlik and Kronthaler, 2007; Heckelman and Knack, 2008; Biglaiser and DeRouen, 2011](#)). Likewise, a growing population is more likely to demand economic freedom. Thus, we control for population growth ([Young and Sheehan, 2014](#)). In addition, as

³ These results are similar to recent findings on aid and growth as the literature lacks an accepted identification strategy. There is some evidence suggesting that aid relates positively to economic growth; others do not find any evidence of an association; and, finally, some conclude that aid in certain countries can be harmful. In addition, the aid-policy-growth connection is also weak. For the most recent work, see [Rajan and Subramanian \(2008\); Clemens et al. \(2012\); Dreher et al. \(2014\), and Dreher and Langlotz \(2015\)](#).

⁴ The following list includes all potential donors included in our measure of ODA. DAC members as of 2010 include Australia, Austria, Belgium, Canada, Chile, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Korea, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, United Kingdom, United States. Non-DAC members that report to OECD include Bulgaria, Croatia, Cyprus, Estonia, Hungary, Israel, Kazakhstan, Kuwait, Latvia, Liechtenstein, Lithuania, Malta, Romania, Russia, Saudi Arabia, Chinese Taipei, Thailand, Turkey, Timor Leste, United Arab Emirates. Multilateral institutions that report to OECD include Adaptation Fund, African Development Bank, African Development Fund, Arab Fund, Asian Development Bank, AsDB Special Funds, Arab Bank for Economic Development in Africa, Caribbean Development Bank, Climate Investment Funds, Council of Europe Development Bank, European Bank for Reconstruction and Development, EU Institutions, Food and Agriculture Organization, Global Alliance for Vaccines and Immunization, Global Environment Facility, Global Green Growth Institute, Global Fund International Bank for Reconstruction and Development, International Development Association Inter-American Development Bank, IDB Special Fund, IFAD, International Finance Corporation, IMF, Islamic Development Bank, Nordic Development Fund, OPEC Fund for International Development, OSCE, UNAIDS, UNDP, UNECE, UNFPA, UNHCR, UNICEF, UN Peacebuilding Fund, UNRWA, WFP, World Health Organization.

Table 1

Summary Statistics

Economic Freedom is the overall index of Economic Freedom Index from Fraser Institute ranging from 0 to 10 with higher numbers representing greater economic freedom collected from [Gwartney et al. \(2015\)](#). Aid_{t-1} is net disbursements of official development assistance (ODA) received by a country as a fraction of gross domestic national income (WDI, 2015), with $t-1$ representing lagged by one period. $Democ_{t-1}$ is Polity2 from the Polity IV database and the variable ranges from -10 to 10 , with 10 representing a strong democracy (Polity IV, [Marshall et al., 2014](#)). $Aid_{t-1} * Democ_{t-1}$ is an interaction created from Aid_{t-1} multiplied by $Democ_{t-1}$. GDP per capita $_{t-1}$ is log gross domestic product per capita, 2005 constant U.S. dollars. $Pop. growth_{t-1}$ is the annual population growth rate (%), $GDP growth_{t-1}$ is the annual growth rate (%), $LFPR (male)_{t-1}$ is the percentage of male labor force participation, all collected from WDI (2014). *Durable* is the number of years since the most recent regime change (Polity IV, [Marshall et al., 2014](#)). $Aid_{t-1} * Durable_{t-1}$ is the interaction term of Aid_{t-1} times $Durable_{t-1}$, $Aid_{t-1} * Democ_{t-1} * Durable_{t-1}$ is an interaction term of Aid_{t-1} times $Democ_{t-1}$ times $Durable_{t-1}$. *Arms imports pc* $_{t-1}$ is arms imports per capita, *Trade* $_{t-1}$ is the sum of imports plus exports of goods and services as a share of gross domestic product, *Resource rent* $_{t-1}$ is total natural resources rents as a share of GDP, all collected from WDI (2014). *UN votes with US* $_{t-1}$, *UN votes with France* $_{t-1}$, *UN votes with GB* $_{t-1}$, *UN votes with Italy* $_{t-1}$, and *UN votes with Japan* $_{t-1}$ is United Nations voting in line with the United States, France, Great Britain, Italy, and Japan, respectively ([Dreher and Sturm, 2012](#)). $UNSC_{t-2}$ is a dummy variable representing temporary membership on the United Nations Security Council, lagged two periods ([Dreher et al., 2011](#)).

Variable	Obs	Mean	St. Dev	Min	Max
Economic freedom	492	6.6	1.1	3.2	9.2
Aid_{t-1}	437	7.2	9.3	-0.1	59.6
$Democ_{t-1}$	562	2.7	6.7	-10.0	10.0
$Aid_{t-1} * Democ_{t-1}$	407	-1.4	66.7	-475.6	272.8
GDP per capita (log) $_{t-1}$	1198	8503	12,824	123	82,775
$Pop. growth_{t-1}$	620	1.6	1.4	-4.1	7.7
$GDP growth_{t-1}$	586	3.5	3.9	-20.6	30.8
$LFPR (male)_{t-1}$	616	80.5	6.5	59.5	95.2
$Durable_{t-1}$	566	23.5	29.8	0.0	194.0
$Aid_{t-1} * Durable_{t-1}$	411	92.5	208.5	-1.4	2358.1
Arms imports pc $_{t-1}$	1115	22.3	59.4	0	1033.3
$Trade_{t-1}$	600	76.9	46.7	0.6	383.7
$Resource\ rent_{t-1}$	600	9.0	12.1	0.0	63.6
UN votes with US $_{t-1}$	1010	0.2	0.1	0.0	0.9
UN votes with France $_{t-1}$	1010	0.4	0.2	0.0	0.9
UN votes with GB $_{t-1}$	1010	0.4	0.2	0.0	0.9
UN votes with Italy $_{t-1}$	1010	0.5	0.2	0.0	1.0
UN votes with Japan $_{t-1}$	1010	0.5	0.1	0.0	0.9
$UNSC_{t-2}$	914	0.1	0.1	0.0	1.0

more individuals are employed and contribute to economic production, they may prefer additional economic freedoms. Therefore, we control for male labor force participation.

We further test our results to the inclusion of additional variables. These variables include arms imports per capita ([Kilby, 2005](#)), trade as a share of GDP ([Coviello and Islam, 2006](#); [Knedlik and Kronthaler, 2007](#)), and resource rents as a share of GDP ([Knedlik and Kronthaler, 2007](#); [Young and Sheehan, 2014](#)). All variables are collected from WDI (2015). We lag all explanatory variables by one period.

2.2. Empirical methodology

Building on the previous literature, we first check the direct impact of foreign aid on economic freedom. We then proceed to test our main question – can aid's impact on economic freedom be enhanced by political institutions? We conjecture that aid's impact is conditional on the recipients' quality and durability of political institutional framework.

The foremost challenge we face is endogeneity with respect to foreign aid ([Clemens et al., 2012](#); [Dreher et al., 2014](#); [Dreher and Langlotz, 2015](#)). A country's level of economic freedom can be a determinant of aid inflows as donors often give aid to improve recipients' institutional quality. Thus, aid is likely to be endogenous arising out of reverse causality. Furthermore, endogeneity can also be present due to omitted variable bias. To help address identification, we employ five estimators including ordinary least squares (OLS), instrumental variable (IV) estimation, two-way fixed effects, IV fixed effects, and System GMM. We treat aid and the interaction terms as endogenous, instrumenting with external instruments and generated instruments via moment conditions for the dynamic panel estimators. All variables are lagged by one period and each specification includes period dummies and the benchmark controls.

In order to find valid external instruments for foreign aid, we turn to recent findings in the aid-growth literature ([Dreher et al., 2014](#); [Dreher and Langlotz, 2015](#)). A subset of studies employ instruments based on geopolitical importance of the recipient country. [Dreher and Gehring \(2012\)](#) suggests that 'properly controlling for the potential endogeneity of aid to freedom provides an important avenue for additional research...and political variables like temporary membership in the United Nations Security Council ([Kuziemko and Werker, 2006](#); [Dreher et al., 2009a, 2009b](#)) or voting in line with donors in the United Nations General Assembly ([Carter and Stone, 2010](#)) might also prove useful' (237).

Therefore, we use both variables as instruments, voting alignment with major donors in the United Nations General Assembly (UNGA) ([Bjørnskov, 2013](#); [Midtgaard et al., 2014](#); [Creasey et al., 2015](#)) and temporary membership in the United Nations Security Council (UNSC) ([Christensen et al., 2011](#); [Breitwieser and Wick, 2016](#)).

Our first set of instruments, voting coincidence with major aid donors in the UNGA, captures bilateral political alignment as similar voting behavior with a major aid donor could warrant additional aid inflows to the recipient country. Previous works support this conjecture arguing that voting with major donors signals that the potential recipient country is like-minded. As a result, that country is more likely to receive aid (Bjørnskov, 2013; Midtgaard et al., 2014; Creasey et al., 2015). Thus, we use the share of key votes in the UNGA that are in line with the voting patterns of the United States, Great Britain, Japan, Italy, or France as instruments for foreign aid.⁵ All variables are lagged one period and data are collected from Dreher and Sturm (2012).

Our second instrument is a dummy variable that represents temporary membership on the UNSC, lagged two periods (Dreher et al., 2011). Prior literature shows that temporary members receive substantial additional aid dollars while serving on the UNSC (Kuziemko and Werker, 2006; Dreher et al., 2009a, 2009b). This result is similar to UNGA voting behavior if temporary members are viewed as aligning with potential aid donors.

Our instruments are arguably excludable; however, due to political favoritism these variables may influence aid effectiveness (Kilby and Dreher, 2010). Aid allocated based on political partiality may lead to donors approving lower quality projects and requiring fewer conditions in favor of economic reform. If so, aid may deteriorate the quality of institutions (Bueno de Mesquita and Smith, 2010a, 2010b; Nooruddin and Vreeland, 2010; Biglaiser and DeRouen, 2011; Dreher et al., 2014). Therefore, political biases can reduce the effectiveness of aid decreasing the likelihood that aid will enhance economic freedom. As such, politically based instruments generalize the Local Average Treatment Effect (LATE) to represent all aid, not just politically driven aid. If so, our estimates represent a lower bound and may understate the effects of overall aid. We believe this could at least partially explain why our results using IV estimation is less positive than the findings using GMM estimation.

We instrument aid with UN voting in line with major donors and a UNSC membership dummy variable. When we include an interaction term in our model, we create additional instruments by multiplying the interaction term times each instrument.⁶ Thus, our specifications are always over-identified. First stage results from Tables 2 and 3 are reported in Appendix A1. The adjusted R-squares are consistently above the 0.20 suggested threshold in all specifications. For the majority of specifications, the F-statistic is above its suggested threshold of 10. However, it falls below 10 (F-statistic = 5 in Table 2 and F-statistic = 9 in Table 3) in the two fixed effects specifications. This possibly indicates that our instruments are weak. The Hansen J-statistics, reported at the bottom of each table, suggest that over identification restrictions for the instruments are met.

Finally, we employ System Generalized Method of Moments (GMM) estimators. As pointed out by Murray (2006) and Baum (2008), the finite-sample properties of IV estimates are problematic. Furthermore, as argued by Clemens et al. (2012), IV estimators may not be an improvement over OLS estimators since our instruments could be weak. Persson and Tabellini (2006) note the difficulty in finding efficient, time varying instruments that are strictly exogenous. Thus, an alternative to IV estimation is GMM estimators (see, Bergh and Nilsson, 2010, for example).

By generating instruments via moment conditions, GMM estimation takes into account endogeneity concerns. Treating aid and the interaction terms as endogenous, we employ System GMM estimators using the levels of the equation to obtain a system of two equations – one differenced and one in levels.⁷ We use System GMM over Difference GMM since the former exploits additional moment conditions (see, Mishra and Newhouse, 2009). In addition, System GMM avoids inconsistent estimators as these instruments are not correlated with the error term (Arellano and Bond, 1991; Arellano and Bover, 1995). However, Bazzi and Clemens (2013) argue that GMM estimators should be interpreted with caution since excludability is unlikely.

Thus, we use multiple estimation techniques in an attempt to not skew the findings since each model contains potential biases. In addition, part of our contribution to the literature is presenting the results with a variety of estimators in order to provide comparable findings. By using OLS, fixed effects, IV estimations, and System GMM, we provide insight into previous findings as well as attempt to provide soundness to our results.

As mentioned above, we first test aid's direct impact on economic freedom. Next, we test aid's impact conditional on political institutions. To do so, we introduce two different interaction terms into the model. We prefer this methodology over splitting our dataset into somewhat arbitrary sub-samples in order to more easily interpret the coefficients. Therefore, we test the following reduced form equation:

$$EF_{it} = \alpha_0 + \alpha_1 EF_{it-1} + \alpha_2 Aid_{it-1} + \alpha_3 Pol\ Inst_{it-1} + \alpha_4 (Aid * Pol.Inst.)_{it-1} + X_{it-1}\beta + \gamma\theta_t + \varepsilon_{it}$$

All variables represent country i in period t . EF_{it} stands for economic freedom and EF_{it-1} represents economic freedom in period $t-1$. α_1 captures the persistence of the dependent variable. Aid_{it-1} represents net official development assistance inflows lagged one period. $Pol.Inst_{it-1}$ represents political institutions, either democracy or durable, lagged one period. $Aid_{it-1} * Pol.Inst_{it-1}$ denotes one of the two interaction terms, lagged one period: Aid times democracy $Aid_{it-1} * Democracy_{it-1}$ and aid times durable $Aid_{it-1} * Durable_{it-1}$. X_{it-1} represents the vector of control variables, lagged one period. θ_t is the vector for period dummies and ε_{it} is the random error term. To provide interpretation, we calculate the marginal impact of aid by $\frac{\partial EF_{it}}{\partial Aid_{it}} = \alpha_2 + \alpha_4 Pol.Inst_{it-1}$.

⁵ Following Kilby (2009), key votes are United Nations votes that appear on the U.S. State Department's list, *Voting Practices in the United Nations*, which are designated as important votes to the United States.

⁶ Several recent and innovative papers provide support for the excludability of these instruments (see, Werker et al., 2009; Ahmed, 2013; Nunn and Qian, 2014; Dreher and Langlotz, 2015). They create alternative identification strategies using interactions between an excludable instrument and a potentially endogenous variable. Although we are multiplying the endogenous aid variable and a political institutions variable by the exogenous instrument (UN votes or UNSC membership), the newly constructed instruments for the interaction terms should remain excludable since they include the original excludable instruments.

⁷ We use the STATA command *xtdpdsys* with a two-step estimator for the Windmeijer correction.

Table 2

Impact of aid on economic freedom.

Dependent variable is economic freedom (EF). Period dummies are included in all specifications. Robust standard errors clustered by country are reported in parentheses. ***, ** and * denote significance at 1%, 5%, and 10%, respectively.

	(1)	(2)	(3)	(4)	(5)
	OLS	IV	FE	FE IV	GMM
EF _{t-1}	0.706*** (0.05)	0.718*** (0.06)	0.240*** (0.06)	0.204** (0.09)	0.583*** (0.04)
Aid _{t-1}	0.008 (0.01)	0.016 (0.02)	0.010 (0.01)	-0.033 (0.04)	-0.003 (0.003)
GDP per cap.(log) _{t-1}	0.079 (0.05)	0.111 (0.08)	-0.511** (0.19)	-0.810** (0.25)	-0.034 (0.05)
Democ _{t-1}	0.019** (0.01)	0.019** (0.01)	0.044*** (0.01)	0.046*** (0.01)	0.045*** (0.01)
Pop. Growth _{t-1}	-0.020 (0.03)	-0.019 (0.03)	0.003 (0.03)	-0.047 (0.07)	-0.086*** (0.01)
GDP Growth _{t-1}	0.014 (0.001)	0.014 (0.01)	0.013 (0.01)	0.022 (0.02)	0.00001 (0.01)
LFPR (male) _{t-1}	-0.002 (0.00)	-0.001 (0.01)	-0.022 (0.01)	-0.025 (0.02)	-0.022*** (0.01)
Constant	2.412 (1.47)	1.241 (1.08)	9.954*** (1.70)	-	4.900*** (0.82)
Period dummies	Yes	Yes	Yes	Yes	Yes
Country dummies	No	No	Yes	Yes	No
Observations	303	294	303	290	304
Adj. R ²	0.72	0.71	0.51	0.21	-
Number of countries	81	80	81	76	82
Number of instruments	-	6	-	6	50
Hansen J/Sargan p-value	-	0.23	-	0.36	0.39
Auto-correlation p-value	-	-	-	-	0.20
$r = \frac{\beta}{\alpha}$	-	-	-	-	1.64

Our dataset includes a panel of up to 108 developing countries spanning from 1971 to 2010. We construct the panel using 5-year averages creating 8 time periods. For example, time period 1 is averaged from 1971 to 1975, time period 2 is averaged from 1976 to 1980, and so on.⁸ All data are constructed in this manner except economic freedom. Economic freedom is only available every 5 years from 1970 to 2000. Accordingly, the 1975 value of the economic freedom index is assigned to period 1, 1980 is assigned to period 2, and so on through period 6. From 2000 onwards, economic freedom is available annually. Thus, period 7 averages economic freedom from 2001 to 2005 and period 8 averages economic freedom from 2006 to 2010. Economic freedom, lagged one period, is included in all specifications. Table 1 describes all variables and data sources.

3. Main empirical results

3.1. Baseline results

Recall, that we use five different model estimations. Columns (1) to (5) report the estimates for ordinary least squares (OLS), instrumental variable (IV), fixed effects (FE), fixed effects with instrumental variable (FE IV), and System GMM (GMM), respectively. Period dummies are included in all specifications. We also include democracy and the benchmark control variables. We use robust standard errors clustered by country.

Our baseline specification tests the direct impact of aid on economic freedom. The results are presented in Table 2. We find that the coefficient of aid is not significant irrespective of what estimation model is employed. The sign of aid changes depending on model selection. This provides support that aid does not directly impact economic freedom. This non-result finding is similar to previous works where aid does not significantly impact economic freedom (see, Knedlik and Kronthaler, 2007; Bearce and Tirone, 2010).

In terms of the controls, democracy has a strong positive impact on economic freedom across all five models. This suggests that a more democratic country tends to have higher levels of economic freedom. Most of the other control variables are insignificant with a few exceptions. GDP per capita is negative and significant when controlling for country dummies (columns 3 and 4) and population growth and male labor force are both negative and significant in the GMM specification.

The adjusted R-squareds range from 0.21 (FE IV) to 0.72 (OLS). Hansen J p-values for IV estimations and Sargan test p-values for System GMM show that the null cannot be rejected and, thus, indicate that the exclusion restrictions for the instruments have been met. We report the corresponding p-values signifying the validity of the exclusion restrictions in all tables. Additionally, in the case of System GMM, the p-values testing for second order autocorrelation suggest that our model is not susceptible to second

⁸ The 8 time periods are 1971–1975, 1976–1980, 1981–1985, 1986–1990, 1991–1995, 1996–2000, 2001–2005 and 2006–2010.

Table 3

Economic freedom, foreign aid and democracy interactions.

Dependent variable is economic freedom (EF). Period dummies are included in all specifications. Robust standard errors clustered by country are reported in parentheses. ***, ** and * denote significance at 1%, 5%, and 10%, respectively.

	(1)	(2)	(3)	(4)	(5)
	OLS	IV	FE	FE IV	GMM
EF _{t-1}	0.706*** (0.04)	0.683*** (0.05)	0.237*** (0.06)	0.219** (0.07)	0.541*** (0.02)
Aid _{t-1}	0.009 (0.01)	-0.008 (0.01)	0.013 (0.01)	-0.012 (0.01)	0.0003 (0.002)
Aid _{t-1} * Democ _{t-1}	0.002*** (0.001)	0.002*** (0.00)	0.002*** (0.001)	0.001** (0.00)	0.003*** (0.0003)
GDP per cap.(log) _{t-1}	0.09* (0.05)	0.018 (0.06)	-0.395** (0.19)	-0.641** (0.20)	0.066*** (0.02)
Democ _{t-1}	0.007 (0.01)	0.005 (0.01)	0.024* (0.01)	0.029** (0.01)	0.016*** (0.01)
Pop. Growth _{t-1}	-0.037 (0.03)	-0.049 (0.04)	-0.014 (0.03)	-0.042 (0.03)	-0.105*** (0.01)
GDP Growth _{t-1}	0.015 (0.01)	0.017 (0.01)	0.014 (0.01)	0.020 (0.01)	0.008* (0.004)
LFPR (male) _{t-1}	-0.002 (0.00)	-0.003 (0.01)	-0.027** (0.01)	-0.028** (0.01)	-0.017*** (0.004)
Constant	1.719*** (0.56)	2.324** (0.74)	9.611*** (1.65)	-	3.989*** (0.41)
Period dummies	Yes	Yes	Yes	Yes	Yes
Country dummies	No	No	Yes	Yes	No
Observations	303	294	303	290	304
Adj. R ²	0.73	0.71	0.53	0.32	-
Number of countries	81	80	81	76	82
Number of instruments	-	12	-	12	69
Hansen J/Sargan p-value	-	0.35	-	0.14	0.33
Auto-correlation p-value	-	-	-	-	0.12
$r = \frac{n}{T}$	-	-	-	-	1.19
Marginal effects					
10th percentile of Democ	-0.01 (0.01)	-0.03*** (0.01)	-0.001 (0.01)	-0.02** (0.01)	-0.02*** (0.002)
90th percentile of Democ	0.03*** (0.01)	0.02 (0.01)	0.03*** (0.01)	0.002 (0.01)	0.03*** (0.004)
Mean of Democ	0.02** (0.01)	-0.002 (0.01)	0.02* (0.01)	-0.008 (0.01)	0.004*** (0.002)

order autocorrelation (Roodman, 2009a). We report the number of instruments as well as the 'r', the ratio of countries to instruments. The ratio is greater than one indicating that the assumptions for second order autocorrelation and overidentifying restrictions tests are not violated. In addition, the ratio also suggests that our estimates are not prone to Type I error, generating significant correlations even if there is no underlying association (Roodman, 2009b; Asiedu and Lien, 2011).

3.2. Main results

From Table 3 onward, we explore our main conjecture exploring aid's impact conditional on political institutions. First, we explore aid's impact conditional on democracy. Similar to Table (2), we employ all estimation strategies. The results are presented in Table 3. We find the coefficient of the interaction term, Aid * Democ, is positive and significant in all five specifications.

To calculate economic significance, we estimate the marginal impacts reported at the bottom of the table. We estimate $\frac{\delta EF_t}{\delta Aid_t}$ at the 10th percentile, 90th percentile and the mean of democracy for our sample of countries. As suspected, aid's impact depends on the strength of democratic institutions. In autocratic countries at the 10th percentile of polity2 with a score of about -8.2 (for example, Morocco), the marginal impact of aid is negative in all specifications and significant in the IV, fixed effect IV, and GMM specification. For example, a 10 percentage point increase in aid, almost one standard deviation, can reduce economic freedom by 0.2 or 0.3 units, depending on the specification. This is roughly between a 1/5th to 1/4th standard deviation decrease. Although the size of the effect is relatively small, aid given to countries without democratic checks can potentially decrease economic freedom.

For countries at the 90th percentile, or a score of 10 (Mauritius in 2000), $\frac{\delta EF_t}{\delta Aid_t}$ is positive in all five models and significant in three. Using the GMM specification as an example, a 10 percentage point increase in foreign aid enhances economic freedom by about 0.3 units. This suggests that aid is channeled toward enhancing economic freedom under democratic checks. Countries at the mean of democracy, a 2.7 polity2 score, have mixed results. The OLS, fixed effects, and GMM specifications follow a similar pattern as those at the 90th percentile, but with smaller size coefficients. The marginal effects from the IV estimations are negative but insignificant.

Table 4

Economic Freedom, Foreign Aid and Durable Interactions

Dependent variable is Economic Freedom (EF). Period dummies are included in all specifications. Robust standard errors clustered by country are reported in parentheses. ***, ** and * denote significance at 1%, 5%, and 10%, respectively.

	(1)	(2)	(3)	(4)	(5)
	OLS	IV	FE	FE IV	GMM
EF _{t-1}	0.725*** (0.04)	0.762*** (0.05)	0.255*** (0.06)	0.237** (0.07)	0.567*** (0.02)
Aid _{t-1}	0.020** (0.01)	0.055** (0.02)	0.018* (0.01)	-0.007 (0.02)	0.009*** (0.002)
Aid _{t-1} * Durable _{t-1}	-0.001** (0.0004)	-0.003** (0.00)	-0.001** (0.00)	-0.0002 (0.001)	-0.001*** (0.0001)
GDP per cap.(log) _{t-1}	0.073 (0.05)	0.136* (0.08)	-0.333 (0.23)	-0.579** (0.21)	0.104*** (0.02)
Democ _{t-1}	0.014** (0.01)	0.008 (0.01)	0.030** (0.01)	0.035** (0.01)	0.024*** (0.004)
Pop. Growth _{t-1}	-0.042 (0.04)	-0.067* (0.04)	-0.016 (0.03)	-0.026 (0.03)	-0.120*** (0.01)
GDP Growth _{t-1}	0.012 (0.01)	0.014 (0.01)	0.011 (0.01)	0.016 (0.01)	-0.003 (0.004)
LFPR (male) _{t-1}	-0.002 (0.00)	-0.001 (0.01)	-0.022 (0.01)	-0.024* (0.01)	-0.020*** (0.004)
Durable _{t-1}	0.002 (0.00)	0.008** (0.00)	-0.004 (0.01)	-0.006 (0.01)	-0.009*** (0.002)
Constant	1.791*** (0.59)	0.532 (0.83)	8.727*** (1.83)	-	4.049*** (0.404)
Period dummies	Yes	Yes	Yes	Yes	Yes
Country dummies	No	No	Yes	Yes	No
Observations	303	294	303	290	304
Adj. R ²	0.73	0.69	0.52	0.32	-
Number of countries	81	80	81	76	82
Number of instruments	-	12	-	4	70
Hansen J/Sargan p-value	-	0.40	-	0.57	0.32
Auto-correlation p-value	-	-	-	-	0.15
$r = \frac{\sigma}{\sigma}$	-	-	-	-	1.11
Marginal effects					
10th percentile of durable	0.02** (0.01)	0.05** (0.02)	0.02 (0.01)	-0.01 (0.02)	0.004*** (0.002)
90th percentile of durable	-0.05 (0.02)	-0.10*** (0.04)	-0.02 (0.02)	-0.02 (0.02)	-0.05*** (0.004)
Mean of durable	-0.01 (0.01)	-0.01 (0.01)	0.001 (0.01)	-0.01 (0.01)	-0.02*** (0.002)

Next, we examine our second channel, regime age or durability. As mentioned, mature political institutions can be beneficial for development of a country providing continuity and stability. However, regime entrenchment can also stifle political competition undermining development and institutional quality (see, [Kono and Montinola, 2009](#)). Thus, we check aid's effectiveness with regard to political durability. To do so, we use the interaction term between aid times durable.

The results are presented in [Table 4](#). For OLS, IV, fixed effects, and System GMM, the sign of the interaction term is negative and significant. This suggests that political durability may follow an entrenchment story where aid possibly decreases the quality of economic institutions in older regimes.

For the OLS, IV, and GMM specifications, the marginal effect is positive and significant at low levels of durability (the 10th percentile or approximately 2 years). This suggests that aid can potentially improve economic freedom in younger regimes; however, the size of the impact is relatively small. In addition, according to the IV and GMM specifications, as durability rises, the impact of aid on economic freedom becomes negative and significant. This occurs at the mean level of durability, about 23 years, in the GMM specification, or at 90th percentile, 54 years, in the IV regression. Both fixed effects estimations do not report any significant marginal effects of aid conditional on durability.

Collectively, our results provide some indication that democracy can channel aid into increasing economic freedom, but aid given to durable political regimes may be used in a manner that decreases economic freedom.

4. Robustness analysis

To provide robustness to our analysis, we provide several sensitivity checks to our main findings. Aid's strongest impact is from the Aid * democracy interaction specifications from [Table 3](#). Therefore, we test the robustness of these specifications in order to provide the most generous opportunity for the impact of foreign aid. Our robustness checks include additional control variables, changes in economic freedom, and post-Cold War estimations.

We include additional variables to the standard controls that might impact economic freedom. These include arms imports per capita (Kilby, 2005), trade as a share of GDP (Coviello and Islam, 2006; Knedlik and Kronthaler, 2007), and resource rents as a share of GDP (Knedlik and Kronthaler, 2007; Djankov et al., 2008). Arms imports and natural resource rents are linked to poor institutional quality while trade is shown to increase institutional quality.

The results, presented in Table 5, are mixed. The OLS, IV and GMM specifications remain robust to the inclusion of the additional variables as the interaction term between aid and democracy is positive and significant. The interaction term's coefficient loses significance in both fixed effects estimations.

Turning to the marginal effects, the findings are similar to the results in Table 3 with a few exceptions. As before, the marginal impact is positive and significant at the mean level of democracy in the OLS and fixed effects estimations, losing significance in the GMM regression. At the 90th percentile, the results are robust where the marginal impact is positive and significant in the same three regressions (OLS, fixed effects, and GMM). At the 10th percentile, the marginal impact remains negative and significant in the IV estimation and GMM specification but loses significance in the fixed effects IV regression.

This robustness check provides support that aid can significantly increase economic freedom when given to democratic countries; however, the results also highlight that the findings are contingent on model specification as well as choice of control variables.

Table 5

Economic Freedom, Foreign Aid and Democracy Interactions–Additional Controls.

Dependent variable is Economic Freedom (EF). Period dummies are included in all specifications. Robust standard errors clustered by country are reported in parentheses. ***, ** and * denote significance at 1%, 5%, and 10%, respectively, and ^a indicates significance at 11%.

	(1)	(2)	(3)	(4)	(5)
	OLS	IV	FE	FE IV	GMM
EF _{t-1}	0.667*** (0.05)	0.638*** (0.06)	0.178** (0.08)	0.185** (0.08)	0.495*** (0.025)
Aid _{t-1}	0.009 (0.01)	-0.013 (0.01)	0.024 ^a (0.01)	0.024 (0.03)	-0.004 (0.003)
Aid _{t-1} * Democ _{t-1}	0.003*** (0.001)	0.002** (0.00)	0.001 (0.001)	0.001 (0.001)	0.003*** (0.0005)
GDP per cap.(log) _{t-1}	0.076 (0.05)	-0.020 (0.07)	-0.009 (0.24)	-0.112 (0.34)	0.086*** (0.029)
Democ _{t-1}	0.005 (0.01)	0.007 (0.01)	0.030** (0.01)	0.030** (0.01)	0.015** (0.007)
Pop. Growth _{t-1}	-0.052 (0.04)	-0.064 (0.05)	-0.005 (0.03)	-0.010 (0.05)	-0.085*** (0.012)
GDP Growth _{t-1}	0.010 (0.01)	0.011 (0.02)	0.018 (0.01)	0.019 (0.01)	0.007 (0.005)
LFPR (male) _{t-1}	-0.004 (0.01)	-0.006 (0.01)	-0.037** (0.02)	-0.037** (0.02)	-0.015*** (0.006)
Arms imports pc _{t-1}	0.002* (0.001)	0.002** (0.00)	0.0001 (0.001)	-0.00001 (0.001)	0.001 (0.001)
Resource rent _{t-1}	-0.005 (0.005)	-0.005 (0.00)	0.003 (0.01)	0.003 (0.01)	0.012*** (0.003)
Trade _{t-1}	0.0004 (0.001)	0.001 (0.00)	-0.006* (0.003)	-0.006** (0.003)	-0.005*** (0.001)
Constant	2.252** (0.74)	3.177*** (0.91)	8.235*** (2.15)	-	4.225*** (0.570)
Period dummies	Yes	Yes	Yes	Yes	Yes
Country dummies	No	No	Yes	Yes	No
Observations	258	250	258	245	259
Adj. R ²	0.72	0.70	0.42	0.16	-
Number of countries	79	78	79	73	80
Number of instruments	-	12	-	12	72
Hansen J/Sargan p-value	-	0.28	-	0.27	0.38
Auto-correlation p-value	-	-	-	-	0.10
$r = \frac{\sigma}{\sigma^2}$	-	-	-	-	1.11
Marginal effects					
10th percentile of Democ	-0.01 (0.01)	-0.03*** (0.01)	0.02 (0.02)	0.01 (0.03)	-0.02*** (0.003)
90th percentile of Democ	0.04*** (0.01)	0.01 (0.02)	0.03** (0.02)	0.04 (0.04)	0.03*** (0.007)
Mean of Democ	0.02** (0.01)	-0.01 (0.01)	0.03* (0.01)	0.03 (0.03)	0.001 (0.004)

Table 6

Change in economic freedom, foreign aid and democracy interactions.

Dependent variable is Δ economic freedom. Period dummies are included in all specifications. Robust standard errors clustered by country are reported in parentheses.

***, ** and * denote significance at 1%, 5%, and 10%, respectively.

	(1)	(2)	(3)	(4)	(5)
	OLS	IV	FE	FE IV	GMM
EF _{t-1}	-0.294*** (0.04)	-0.317*** (0.05)	-0.763*** (0.06)	-0.781*** (0.07)	0.051*** (0.02)
Aid _{t-1}	0.009 (0.01)	-0.008 (0.01)	0.013 (0.01)	-0.012 (0.01)	-0.0001 (0.003)
Aid _{t-1} * Democ _{t-1}	0.002*** -0.001	0.002*** (0.00)	0.002*** -0.0004	0.001** (0.00)	0.001*** (0.0004)
GDP per cap.(log) _{t-1}	0.090* (0.05)	0.018 (0.06)	-0.395** (0.19)	-0.641** (0.20)	-0.370*** (0.044)
Democ _{t-1}	0.007 (0.01)	0.005 (0.01)	0.024* (0.01)	0.029** (0.01)	0.032*** (0.006)
Pop. Growth _{t-1}	-0.037 (0.03)	-0.049 (0.04)	-0.014 (0.03)	-0.042 (0.03)	0.017*** (0.003)
GDP Growth _{t-1}	0.015 (0.01)	0.017 (0.01)	0.014 (0.01)	0.020 (0.01)	-0.058*** (0.004)
LFPR (male) _{t-1}	-0.002 (0.00)	-0.003 (0.01)	-0.027** (0.01)	-0.028** (0.01)	-0.024*** (0.005)
Constant	1.719** (0.56)	2.324** (0.74)	9.611*** (1.65)	-	0.619*** (0.035)
Period dummies	Yes	Yes	Yes	Yes	Yes
Countrydummies	No	No	Yes	Yes	No
Observations	303	294	303	290	299
Adj. R ²	0.32	0.28	0.68	0.53	-
Number of countries	81	80	81	76	82
Number of instruments	-	12	-	12	66
Hansen J/Sargan p-value	-	0.35	-	0.14	0.31
Auto-correlation p-value	-	-	-	-	0.33
$r = \frac{\eta}{\tau}$	-	-	-	-	1.24
Marginal effects					
10th percentile of Democ	-0.01 0.01	-0.03*** (0.01)	-0.001 (0.01)	-0.02** (0.01)	-0.02*** (0.002)
90th percentile of Democ	0.03*** (0.01)	0.01 (0.01)	0.03*** (0.01)	0.001 (0.01)	0.03*** (0.004)
Mean of Democ	0.02** (0.01)	-0.002 (0.01)	0.02* (0.01)	-0.01 (0.01)	0.004*** (0.002)

Next, we examine how aid's impact conditional on democratic checks influences changes in economic freedom. We replace current levels of economic freedom as the dependent variable with changes in economic freedom. The results are presented in Table 6. In all specifications, the coefficient of the interaction term, $Aid_{t-1} * Democ_{t-1}$, is positive and significant—the same finding as in Table 3. The marginal impacts are also similar to those from Table 3, in terms of both size and significance. For example, according to the GMM specification, a 10 percentage point increase in foreign aid to autocratic countries leads to a decrease in economic freedom by about 0.2 units. The same increase in aid to highly democratic countries increases economic freedom by 0.3 units.

Dunning (2004) and Bearce and Tirone (2010) point out that foreign aid can be more effective in the post-Cold War period. Thus, as our last robustness check, we test aid's impact conditional on democracy after the Cold War. We re-estimate Table 3 from 1990 to 2010 and present the results in Table 7. The coefficient of the interaction term is positive and insignificant except in the IV regression where it is significant but negative.

Examining the marginal effects suggest that in most specifications aid's marginal impact conditional on democracy is insignificant. Supporting our previous findings, the marginal effect is positive and significant at the mean level and 90th percentile of democracy in the OLS regression. Contrary to Table 3's results, in the IV estimation the marginal effect is positive and significant at the mean level as well as at the 10th percentile of democracy. This finding indicates that in the post-Cold War period aid given to autocratic countries and countries at low levels of democracies can improve economic freedom scores. For example, a 10 percentage point increase in aid can increase economic freedom by 0.5 units, approximately a 1/2 standard deviation increase. This is a larger impact than previously found in countries at the highest level of democracy (see Table 3).

Collectively, our robustness tests do not provide overwhelming evidence that aid, unconditional or conditional on democracy, can increase economic freedom. Our strongest support comes from our initial examination in Table 3. However, adding additional controls or splitting the time period, creates mixed results. Given the lack of consistency across model specifications and

Table 7

Economic freedom, foreign aid and democracy interactions—post cold war.

Dependent variable is economic freedom (EF). Period dummies are included in all specifications. Robust standard errors clustered by country are reported in parentheses. Post-Cold War period includes 1991–2010, five year averages, creating 4 periods. ***, ** and * denote significance at 1%, 5%, and 10%, respectively.

	(1)	(2)	(3)	(4)	(5)
	OLS	IV	FE	FE IV	GMM
EF _{t-1}	0.808*** (0.04)	0.950*** (0.05)	0.170** (0.07)	0.350*** (0.10)	0.586*** (0.120)
Aid _{t-1}	0.017** (0.01)	0.030** (0.01)	0.001 (0.01)	0.005 (0.02)	0.002 (0.008)
Aid _{t-1} * Democ _{t-1}	0.0002 (0.006)	-0.003* (0.00)	0.001 (0.008)	-0.0002 (0.003)	-0.001 (0.002)
GDP per cap.(log) _{t-1}	0.057 (0.04)	0.009 (0.04)	-0.068 (0.33)	-0.026 (0.28)	0.032 (0.094)
Democ _{t-1}	0.002 (0.01)	0.009 (0.01)	0.014 (0.01)	0.024 (0.02)	0.011 (0.023)
Pop. Growth _{t-1}	-0.002 (0.03)	-0.032 (0.04)	0.026 (0.03)	-0.014 (0.07)	0.033 (0.033)
GDP Growth _{t-1}	0.010 (0.01)	0.002 (0.02)	0.012 (0.01)	-0.014 (0.01)	-0.005 (0.014)
LFPR (male) _{t-1}	-0.001 (0.004)	-0.007* (0.00)	-0.002 (0.02)	0.016 (0.02)	-0.009 (0.009)
Constant	1.073** (0.54)	0.954* (0.50)	5.812** (2.39)	-	3.291** (1.300)
Period dummies	Yes	Yes	Yes	Yes	Yes
Country dummies	No	No	Yes	Yes	No
Observations	230	151	230	146	231
Adj. R ²	0.80	0.87	0.34	-0.01	-
Number of countries	81	78	81	73	82
Number of instruments	-	12	-	12	23
Hansen J/Sargan p-value	-	0.86	-	0.29	0.57
Auto-correlation p-value	-	-	-	-	-
$r = \frac{n}{T}$	-	-	-	-	3.56
Marginal effects					
10th percentile of Democ	0.01 (0.01)	0.05** (0.02)	-0.01 (0.01)	-0.004 (0.04)	0.008 (0.013)
90th percentile of Democ	0.02** (0.01)	0.003 (0.01)	0.01 (0.01)	0.01 (0.01)	-0.009 (0.017)
Mean of Democ	0.02*** (0.01)	0.02** (0.01)	0.004 (0.01)	0.01 (0.01)	0.0001 (0.008)

sensitivity checks, our results do not provide strong evidence that aid can enhance economic freedom. In addition, we also find that in autocratic countries aid may decrease economic freedom.

Since our results are inconclusive, we provide two more tests presented in Appendices A2 and A3. In [Appendix A2](#), we replace the overall economic freedom index as the dependent variable with the economic freedom sub-indices: size of government, quality of the legal system, sound money, freedom to trade, and extent of regulations. We continue to use the aid, democracy interaction specification in [Table 3](#) as the benchmark, but we only show the GMM results to save space. We do so as to not over bias the results since our set of political based instruments may underestimate the impact of aid, and the GMM findings provide the strongest support in favor of aid.

As shown, in general, the findings support the results presented in [Table 3](#), column 5 where aid conditional on democracy increases economic freedom. The marginal effects suggest that aid given to mean level democratic countries can significantly increase soundness of money but also increase the size of government and number of regulations. Aid given to countries at the 90th percentile of democracy may significantly increase legal quality, soundness of money, and reduce regulations, but increase the size of government. In autocratic countries at the 10th percentile of democracy, aid significantly increases the size of government, trade barriers, and regulations, and it may significantly reduce legal quality and soundness of money. One interesting result, according to the marginal effects for column 1, is that aid significantly increases the size of government regardless of the quality of political institutions.

In [Appendix A3](#), we replace our main explanatory variable, aid as a share of GNI, with net official development assistance per capita (Aid pc), lagged one period. We retest aid per capita conditional on democracy using all five model specifications. The coefficient on the interaction term across all specifications is insignificant.

According to the marginal effects, aid may significantly increase economic freedom in a country at the mean level of democracy but only according to the OLS and GMM specifications. In addition, aid may increase economic freedom in a country at the 90th percentile according to the OLS, IV, and GMM specifications. Lastly, the GMM results suggest that aid can increase economic

freedom in autocratic countries. Thus, the GMM findings suggest that aid per capita can increase economic freedom at any level of autocracy or democracy. The remaining marginal effects are insignificant.

If we exclude the GMM findings, these results diminish confidence that aid can enhance economic freedom. However, the GMM results provide the strongest support for aid increasing economic freedom.

5. Conclusion

If economically free institutions are necessary for human well-being, understanding what factors can contribute to institutional change is critical. In this paper, we seek to understand if foreign aid can be used as a policy instrument to facilitate economic reform. We find some evidence that aid's impact on economic freedom depends on the recipient nations' quality of political institutions. For democratic countries, aid may improve economic freedom; however, aid given to entrenched regimes may degrade economic institutions.

The results are highly sensitive to model selection, identification strategies, choice of controls, time period sample, and measurement of aid. The GMM results provide the best case scenario for foreign aid's potential positive impact on economic freedom. However, when using IV estimations, most of our results suggest that aid does not have a positive upside.

Collectively, our results cast doubt on using aid to change economic policies and institutions supporting the frustrations after the Washington Consensus. As a result, donors should be cautious when attempting to use aid to influence economic institutions. In addition, most countries that 'need' aid do not have high quality, democratic institutions. Overall, this highlights the sensitive nature of finding a top-down, one size fits all solution to institutional improvements.

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Appendix A

Appendix A1

IV first stage results.

First stage results from Table 2 regressions 2 and 4, where Aid_{t-1} is instrumented with UN votes with US_{t-1} , $France_{t-1}$, $Great Britain_{t-1}$, $Italy_{t-1}$, and $Japan_{t-1}$; and $UNSC_{t-2}$. First stage results from Table 3 regressions 2 and 4, where Aid_{t-1} is instrumented with UN votes with US_{t-1} , $France_{t-1}$, $Great Britain_{t-1}$, $Italy_{t-1}$, and $Japan_{t-1}$; and $UNSC_{t-2}$. $Aid_{t-1} * Democ_{t-1}$ is instrumented with UN votes $US_{t-1} * Aid_{t-1} * Democ_{t-1}$, UN votes $France_{t-1} * Aid_{t-1} * Democ_{t-1}$, UN votes $GB_{t-1} * Aid_{t-1} * Democ_{t-1}$, UN votes $Italy_{t-1} * Aid_{t-1} * Democ_{t-1}$, UN votes $Japan_{t-1} * Aid_{t-1} * Democ_{t-1}$; and $UNSC_{t-2} * Aid_{t-1} * Democ_{t-1}$. Robust standard errors clustered by country are reported in parentheses. ***, ** and * denote significance at 1%, 5%, and 10%, respectively.

	Table 2		Table 3			
	(2)	(4)	(2)	(2)	(4)	(4)
	Aid_{t-1}	Aid_{t-1}	Aid_{t-1}	$Aid_{t-1} * Democ_{t-1}$	Aid_{t-1}	$Aid_{t-1} * Democ_{t-1}$
	IV	FE IV	IV	IV	FE IV	FE IV
UN votes with US_{t-1}	14.405 (11.26)	16.992 (14.29)	1.254 (13.18)	25.727* (14.65)	9.526 (16.53)	2.449 (35.13)
UN votes with $France_{t-1}$	-15.749 (37.59)	4.208 (29.59)	16.668 (43.79)	-4.092 (43.94)	26.748 (35.19)	-12.366 (46.75)
UN votes with GB_{t-1}	-0.830 (68.68)	29.659 (59.74)	-11.360 (66.41)	-150.131 (102.29)	25.769 (51.43)	-138.819 (119.01)
UN votes with $Italy_{t-1}$	43.652 (46.65)	-38.508 (45.75)	9.001 (37.00)	98.696 (84.75)	-59.313* (34.71)	181.361 (120.33)
UN votes with $Japan_{t-1}$	-37.008** (16.11)	15.864 (23.72)	-23.074 (18.26)	17.908 (31.64)	19.109 (24.91)	-67.961* (37.91)
$UNSC_{t-2}$	-4.999* (2.72)	-2.716 (2.82)	-2.955 (2.15)	-1.605 (3.79)	-2.629 (2.50)	-0.922 (3.59)
UN votes $US_{t-1} * Aid_{t-1} * Democ_{t-1}$			0.196 (0.42)	-0.005 (0.60)	0.336 (0.23)	-0.154 (0.50)
UN votes $France_{t-1} * Aid_{t-1} * Democ_{t-1}$			-4.239** (1.73)	7.260* (3.68)	-2.257** (0.91)	5.093** (2.33)
UN votes $GB_{t-1} * Aid_{t-1} * Democ_{t-1}$			2.362** (1.11)	-5.552*** (0.91)	-0.230 (0.60)	-4.268*** (0.88)
UN votes $Italy_{t-1} * Aid_{t-1} * Democ_{t-1}$			3.000** (1.50)	-0.010 (3.22)	3.126** (0.92)	-0.296 (3.11)
UN votes $Japan_{t-1} * Aid_{t-1} * Democ_{t-1}$			-1.232* (0.71)	0.312 (0.99)	-1.089* (0.63)	1.516 (1.33)

(continued on next page)

Appendix A1 (continued)

	Table 2		Table 3			
	(2)	(4)	(2)	(2)	(4)	(4)
	Aid _{t-1}	Aid _{t-1}	Aid _{t-1}	Aid _{t-1} *Democ _{t-1}	Aid _{t-1}	Aid _{t-1} *Democ _{t-1}
	IV	FE IV	IV	IV	FE IV	FE IV
UNSC _{t-2} * Aid _{t-1} * Democ _{t-1}			0.162 (0.10)	0.176 (0.17)	0.022 (0.09)	0.172 (0.15)
EF _{t-1}	-1.115 (1.31)	-1.375* (0.76)	-0.901 (0.94)	0.169 (0.45)	-1.617** (0.72)	1.497 (1.03)
GDP per cap.(log) _{t-1}	-4.134*** (0.65)	-5.946* (3.28)	-3.017*** (0.65)	0.870 (0.55)	-5.116* (2.72)	2.644 (3.94)
Democ _{t-1}	-0.069 (0.10)	0.013 (0.09)	-0.059 (0.13)	0.212 (0.15)	0.168 (0.12)	-0.056 (0.34)
Pop. Growth _{t-1}	-0.410 (0.63)	-0.804 (0.49)	-0.251 (0.54)	0.916 (0.62)	-0.741 (0.46)	0.096 (0.78)
GDP Growth _{t-1}	-0.079 (0.23)	0.197 (0.15)	-0.066 (0.21)	-0.477 (0.29)	0.205 (0.13)	-0.356 (0.30)
LFPR (male) _{t-1}	-0.032 (0.09)	-0.119 (0.13)	-0.037 (0.07)	-0.088 (0.10)	-0.074 (0.11)	0.029 (0.21)
Constant	49.429*** (12.04)	64.638** (23.15)	41.072*** (8.67)	1.188 (10.67)	56.959** (20.68)	-25.399 (30.05)
Observations	294	294	294	294	294	294
Number of countries	80	80	80	80	80	80
Adj. R ²	0.42	0.22	0.55	0.98	0.29	0.99
F-statistic	12.40	5.00	19.09	670.33	9.04	1272

Appendix A2

Economic freedom sub-indices, foreign aid and democracy interactions.

Dependent variables include 1) size of government (Size gov), 2) legal structure and security of property rights (Legal), 3) monetary policy and price stability (Money), 4) freedom to trade without regulations (Trade), and 5) regulation of credit, labor and business (Regulation). All indices range from 0 to 10 with higher numbers representing greater economic freedom and collected from Gwartney et al. (2015). Period dummies are included in all specifications. Robust standard errors clustered by country are reported in parentheses. All specifications are System GMM. ***, ** and * denote significance at 1%, 5%, and 10%, respectively.

	(1)	(2)	(3)	(4)	(5)
	Size gov	Legal	Money	Trade	Regulation
EF _{t-1}	0.552*** (0.035)	0.460*** (0.025)	0.489*** (0.015)	0.391*** (0.012)	0.434*** (0.031)
Aid _{t-1}	-0.033*** (0.005)	-0.001 (0.005)	0.018*** (0.003)	-0.007** (0.003)	-0.010*** (0.002)
Aid _{t-1} *Democ _{t-1}	-0.001*** (0.0005)	0.004*** (0.0005)	0.008*** (0.0003)	0.001** (0.0005)	0.003*** (0.0002)
GDP per cap.(log) _{t-1}	-0.289*** (0.053)	0.312*** (0.070)	0.258*** (0.030)	0.095*** (0.031)	-0.127*** (0.037)
Democ _{t-1}	0.046*** (0.010)	-0.033*** (0.009)	0.011** (0.005)	0.0316*** (0.008)	-0.018*** (0.005)
Pop. Growth _{t-1}	0.017 (0.017)	0.046*** (0.018)	-0.358*** (0.026)	-0.002 (0.020)	-0.073*** (0.012)
GDP Growth _{t-1}	-0.053*** (0.006)	-0.019** (0.009)	0.021** (0.009)	0.034*** (0.005)	0.013*** (0.004)
LFPR (male) _{t-1}	0.001 (0.009)	-0.112*** (0.011)	-0.041*** (0.012)	0.024*** (0.005)	-0.031*** (0.006)
Constant	5.393*** (0.825)	9.746*** (1.001)	5.543*** (0.983)	1.204*** (0.326)	7.461*** (0.639)
Observations	305	297	305	275	304
Number of countries	82	82	82	75	82
Number of instruments	69	69	69	69	69
Hansen J/Sargan p-value	0.28	0.19	0.52	0.44	0.77
Autocorrelation p-value	0.41	0.30	0.97	0.42	0.89
$r = \frac{\sigma}{\sigma + \sigma^2}$	1.19	1.19	1.19	1.19	1.19
Marginal effects					
10th percentile of Democ	-0.02*** (0.01)	-0.03*** (0.004)	-0.003*** (0.004)	-0.01*** (0.04)	-0.02*** (0.003)
90th percentile of Democ	-0.05*** (0.005)	0.04*** (0.008)	0.10*** (0.005)	0.004 (0.005)	0.02*** (0.003)
Mean of Democ	-0.03*** (0.05)	0.004 (0.005)	0.03*** (0.003)	-0.004 (0.003)	-0.005** (0.002)

Appendix A3

Economic freedom, foreign aid per capita and democracy interactions.

Dependent variable is economic freedom (EF). Period dummies are included in all specifications. Robust standard errors clustered by country are reported in parentheses. ***, ** and * denote significance at 1%, 5%, and 10%, respectively.

	(1)	(2)	(3)	(4)	(5)
	OLS	IV	FE	FE IV	GMM
EF _{t-1}	0.695*** (0.05)	0.703*** (0.04)	0.218** (0.07)	0.226*** (0.06)	0.535*** (0.022)
Aid pc _{t-1}	0.002* (0.001)	0.054 (0.04)	0.001 (0.001)	0.001 (0.002)	0.004*** (0.0003)
Aid pc _{t-1} *Democ _{t-1}	0.00002 (0.0001)	-0.0005 (0.002)	0.0001 (0.0001)	0.0001 (0.0001)	-0.0001 (0.00005)
GDP per cap.(log) _{t-1}	0.050 (0.04)	0.0002 (0.0002)	-0.536** (0.20)	-0.700*** (0.17)	0.151*** (0.033)
Democ _{t-1}	0.018** (0.01)	0.011 (0.01)	0.037** (0.01)	0.037*** (0.01)	0.050*** (0.005)
Pop. Growth _{t-1}	-0.028 (0.03)	-0.024 (0.03)	-0.0003 (0.03)	-0.009 (0.03)	-0.049*** (0.008)
GDP Growth _{t-1}	0.014 (0.01)	0.013 (0.01)	0.016 (0.01)	0.018 (0.01)	-0.0006 (0.004)
LFPR (male) _{t-1}	0.0004 (0.004)	-0.001 (0.01)	-0.023 (0.01)	-0.023* (0.01)	-0.030*** (0.005)
Constant	1.799*** (0.43)	1.904*** (0.51)	10.351*** (1.77)	-	4.179*** (0.339)
Period dummies	Yes	Yes	Yes	Yes	Yes
Country dummies	No	No	Yes	Yes	No
Observations	307	298	307	295	308
Adj. R ²	0.72	0.71	0.50	0.32	-
Number of countries	82	81	82	78	83
Number of instruments	-	12	-	12	69
Hansen J/Sargan p-value	-	0.20	-	0.22	0.33
Auto-correlation p-value	-	-	-	-	0.22
r = $\frac{\sigma}{\sigma + \sigma^2}$	-	-	-	-	1.20
Marginal effects					
10th percentile of Democ	0.001 (0.001)	-0.002 (0.003)	0.001 (0.002)	-0.0001 (0.002)	0.005*** (0.0003)
90th percentile of Democ	0.002** (0.001)	0.001* (0.001)	0.002 (0.002)	0.001 (0.002)	0.004*** (0.0005)
Mean of Democ	0.002** (0.001)	-0.0001 (0.00)	0.002 (0.001)	0.001 (0.002)	0.004*** (0.0002)

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