Effective Allocation Strategies and Distributional Conflict in Foreign Aid*

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The literature on foreign aid indicates that a number of donors, particularly large ones, behave egoistically to allocate aid to gain export markets in recipient countries. In so doing, even large donors face a constraint in influencing policy outcomes in essentially sovereign recipient countries. Missing from the literature are coherent insights into how donors reinvent their aid allocation strategies to overcome the constraint on pursuing their objectives, and what kind of outcomes the strategies generate. We analyzed the experiences of 19 OECD countries for 1980-2013 and generate three major findings. First, to overcome the incentive constraint, effective a donor evaluates ex post policy outcomes as endogenous information linking them to the recipients' institutions and its prior aid. With such information, a donor explicitly uses a higher degree of leverage or sharper conditionality in bilateral aid than previously estimated with exogenous information. Second, a donor allocates aid extensively to democratic recipients to take advantage of their propensities to liberalize trade. Such selectivity and conditionality generate a synergic effect between aid and trade, turning aid policy into a highly effective instrument to secure export markets in recipient countries through a variety of aid types. Third, the extents of recipients' export market concessions derived from aid are positively associated with the degree of aid leverage by a donor. Because its allocation strategy is effective, there emerges a distributional conflict within which the donor augments its share of the recipients' concessions at the cost of rival donors. These findings have an important implication for the literature, suggesting that a donor's strategic behavior is shaped through the distributional struggle within a decentralized system of sovereign states.

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INTRODUCTION

The policy of foreign aid operates in a competitive world of money and influence. Aid donors are generally concerned with how to allocate aid with limited material and informational resources to influence socioeconomic conditions or policy performance outcomes in recipient countries. A plethora of empirical analyses of foreign aid have indicated that a number of donors, particularly large ones, behave egoistically to allocate aid to pursue influence over recipients' policies and benefit exclusively from the politics of aid.

However, in the conduct of aid policy, even a large donor faces a constraint in influencing recipients' behavior externally. That is, recipient countries are essentially sovereign and do have their own preferences. If their preferences differ substantially from the donor's, they resist following its preferences without a reason. In this paper, we refer to this as the *incentive constraint*. If this constraint is onerous, then the donor needs to reinvent its aid allocation strategy, or forgo the pursuit of its egoistic objective. Nonetheless, it can be inferred that because some, if not all, successfully overcome the constraint, the finding of egoistic donor behavior is robust across time and space, constituting an important empirical insight within the literature on the political economy of foreign aid.

However, missing from the literature are coherent analytical and empirical insights into how a donor reinvents its aid allocation strategy to overcome the incentive constraint to pursue its preference, and what kind of outcomes the strategy generates. Therefore, our task in the current paper is to resolve the missing link in the existing literature by connecting preference, strategy and outcome.

To explore this research question, we focus on how donors strategize their aid allocation policies to exert their influence over the recipients. Our analysis generates three major findings. First, to overcome the incentive constraint, a donor evaluates ex post policy outcomes as endogenous information linking them to recipients' institutions and its prior aid. With such endogenous information, a donor uses a higher degree of leverage or sharper conditionality in bilateral aid than previously estimated with exogenous information. Second, while western donors often prioritize democratic recipients over autocratic ones, such selectivity increases the effectiveness of aid through a trade-promoting effect of democracy. Thus, selectivity and conditionality generate a synergy and makes aid policy a highly effective instrument to secure export markets in recipient countries through a variety of aid types.

Third, the extents of recipients' export market concessions derived from aid are

positively associated with the degree of aid leverage by a donor. This turns foreign aid into a policy realm of distributional conflict in which strategic choice matters greatly to determining outcomes, thus motivating donors to act egoistically to maintain their preferences. These findings have an important implication for the literature. That is, a donor's strategic behavior is shaped through the distributional struggle within a decentralized system of sovereign states without a well-functioning coordination mechanism.

LITERATURE REVIEW

According to Morgenthau (1962: 302), until the nineteenth century bribery had been a standard means of conducting foreign policy. "Much of what goes by the name of foreign aid today is in the nature of bribes." His view of aid as a donor's bribery or egoistic means to secure a policy concession from a recipient is buttressed by numerous empirical studies (Kuziemko & Werker, 2006; Younas, 2008).

Analysts have shown that donors pursue economic benefits particularly with respect to gaining access to export markets and infrastructure projects in recipient countries. Suwa-Eisenmann and Verdier (2007: 485) survey the related literature and summarize it: "aid flows may affect trade flows, either because of the general effects they induce in the recipient country, or because aid is directly tied to trade, or because it reinforces bilateral economic and political links (or a combination of all three)." Specifically, exporters in a donor country benefit from the skewed aid flows because the donor government explicitly obligates recipients to import goods and services at their costs from the donor country through tied aid (tying noticeably reduces the benefit of aid for recipients (Jepma 1991; World Bank 1998; Wagner 2003). Even after the Development Assistance Committee (DAC) of the Organization for Economic Cooperation and Development (OECD) tightened rules on tied aid in the late 1980s, the exporters have continued to receive benefits through the recipients' goodwill or other informal channels (Arvin and Baum 1997; Arvin & Choudry 1997). Younas (2008) shows that export-related donor interests have remained as a major determinant of aid allocation in the 1990s and 2000s. This general empirical insight is coalesced by analyses of individual donors. Hoeffler & Outram (2011) find that all top five donors—France, Germany, Japan, the United Kingdom, and the United States—provide more aid to trading partners. Schraeder, Hook, & Taylor (1998) show that even Sweden, widely credited for allocating humanitarian aid, determines its aid allocation based on recipients' trade and

socialist policies.

In addition, the aid-trade relationship seems robust across different estimation techniques. Nilsson (1997), Wagner (2003) and Novak-Lehmann, et al. (2009) employed gravity models often used to analyze trade flows and found evidence supporting the causal link between the two. In a slightly different vein, Arvin et al. (2000), Lloyd et al. (2000), and Osei et al. (2004) applied Granger causality and cointegration tests and obtained results for the causal link, yet suggesting the possibility of a bidirectional relationship between aid and trade. (As explained later in this paper, this bidirectional relationship motivates us to employ a two-stage estimation technique known as an instrumental variable model for our analysis.)

Given numerous analyses showing donors' egoistic ends, Berthélemy (2006) examined how donors evaluate recipients' export market concessions in deciding aid flows and provided an implied means to achieve the ends. He measured the intensity of trade or the elasticity of aid with respect to bilateral exports of the donor to the recipient country and used this criterion to rank OECD DAC donor countries. Most of the larger donors were rated as "moderately egoistic" with high intensities, while smaller donors were rated as altruistic with lower elasticities. This intensity of trade parameters can be viewed as a means to induce concessions on export markets from recipients, which is equivalent to an incentive or conditionality discussed extensively in the literature on aid (Koeberle, et al. 2005; Stokke 1995).

Although viewing the relationship between donors and recipients as strategic, Berthélemy did not analyze how export market concessions are made, or how effective the estimated degrees of leverage are in inducing the policy outcomes preferred by donors. This is because he viewed the policy outcomes as exogenous and paid limited attention to information used by donors to evaluate policy outcomes, which in our view is key to an effective aid strategy.

Very recently, some analysts (Barthel, et al. 2014; Bueno de Mesquita & Smith 2016; Suzuki, Iida & Doi 2017) have begun to focus on inter-donor competition as another strategic dimension of foreign aid. The competition is referred to by other analysts as donor fragmentation or coordination failure (Gehring, et al. 2017; Bigsten & Tengstam 2015). While they invariably conclude that competitive, fragmented or uncoordinated aid is prevalent and reduces the effectiveness of aid, they employ different analytical scopes to assess competition.

For instance, Barthel, et al. (2014) found that whether competition over export markets intensifies depends on types of aid. Using a spatial lag model, they showed competition over export markets in aid in economic infrastructure and production and

argued that this aid type is a vehicle for export market expansion by helping to build facilities and capacities to accept imports from donor countries. They also found that the five largest donors react to aid allocation by other donors with whom they compete in terms of export to a specific recipient country in aid for economic infrastructure and production sectors. By contrast, export competition is lacking for smaller donors and for aid in social infrastructure. Likewise, Nowak-Lehmann, et al. (2009) found a "crowding-out effect" in recipients for which a donor's effort to acquire export markets is contravened by rival donors' aid. Specifically, using an error correction model, they showed that the link between bilateral aid and trade for Germany is weakened by aid from other EU countries. Although both suggested that competition emerges because of distributional conflict over export markets, neither Novak-Lehmann, et al. nor Barthel, et al. investigated a cause of the conflict, which, in our view, rests on donors' powerful strategies to induce policy concessions from recipients under the incentive constraint.

These existing studies have used sophisticated theories and methodologies to analyze the strategic dimensions of foreign aid with respect to the relationship between donors and recipients and the distributional conflict between donors. Nonetheless, the literature has paid limited analytical attention to aid allocation strategies and information used by donors, reactions to the strategies by recipients, and the outcomes derived from the strategic interactions. In the next section, we develop an analytical framework based on the literature review to fill the analytical gaps.

THEORY AND HYPOTHESIS

Our analytical framework illuminates the following points that are often neglected by the literature on the political economy of aid. First, by focusing on the strategic relationship between donors and recipients, it analyzes donors' strategies to overcome the incentive constraint in pursuit of influence over recipients' policy outcome. Second, it examines how the strategies affect recipients' policies and the outcomes for the donors, which in turn affect the donors' strategies. In so doing, the analytical framework seeks to link the preferences of both recipients and donors to the donors' strategies and the outcomes of strategic interactions.

Central to the analytical framework is the incentive constraint hindering any aid allocation strategies. This point has been explored theoretically and empirically within the literature on foreign aid. The analysts, including Martens, Mummert, Murrell, &

Seabright (2002), Azam & Laffont (2003) and Svensson (2003), firmly recognize the incentive constraint because the preference of an agent (recipient) differs from that of a principal (donor). Yet such agency control often faces an informational obstacle, given that the principal has to sign a contract ex ante with the agent by relying on incomplete information about the agent's character and behavior that influence the agent's performance outcomes the donor cares about. Therefore, the principal needs to control the agent's behavior by offering the right incentive based on appropriate information on its effort.

The analysts prescribe the following strategic design to reduce the incentive constraint. The donor has to write a *formal contract* on an ex ante basis as an incentive to improve the recipient's policy performance and commit herself to executing the contract. Then, the donor determines a contract based on the recipient's policy effort referred to as endogenous information, not on other components of the outcomes unrelated to the recipient's effort referred to as exogenous information. This contingency facilitates the type of policy the donor prefers by promoting the right policy effort. However, the implementation of a contingent contract is extremely difficult in the real political world because the donor cannot commit to executing such a contract on an ex ante basis and because specifying fully rational contracts is simply too complicated (Svensson 2000; Stokke 1995; Crawford 1997; Gibson et al. 2005; Killick 1997).

A second-best approach hinges on the realistic assumptions of bounded rationality and weak commitment and determines rewards not by an ex ante optimal contract, but by *ex post* evaluation with which the donor assesses outcomes in the recipient countries that are influenced by their policies and institutions (Molenaers et al. 2010; Hayman 2011). That is, the donor takes into account the effects of aid and recipients' policies and institutions on the outcomes the donor cares about. While dropping ex ante contingent contract and commitment, this approach relies on *selectivity* and *conditionality* that link aid flows to the recipient's outcomes conditioned endogenously by the donor's aid and the recipients' related policies and institutions.[2] With both measures, the second-best approach can still achieve a level of effectiveness similar to that achieved by the first-best approach (Svensson 2000).

The second-best approach accords broadly with the recent trend in aid research. An

[2] Drazen and Fischer (1997: 11) provided an alternative definitions of conditionality and selectivity in lending by international financial institutions and argue that conditionality makes the aid given to the country a function of its prior policy performance, while selectivity means giving zero aid to a country whose performance falls below a specified level. They noticed that the distinction between the two is not always clear in practice. The definitions in the text are more explicit.

increasing number of analysts have explored new allocation methods of selectivity and conditionality to enhance the effectiveness of aid for poverty reduction and democratic promotion (Burnside & Dollar 2000; Dollar & Levin 2006; Collier & Dollar 2002; Molenaers, et al. 2015). Selectivity uses criteria based on types of recipients' political institutions on the grounds that aid should be given selectively to those countries that are well governed in order to increase aid effectiveness because the impact of aid on growth and poverty reduction is mediated by institutional characteristics (Chauvet & Guillaumont 2003; Kosack 2003; Svensson 1999a, 1999b). Likewise, conditionality does not mean traditional forms of aid conditionality that often failed because disbursements were made based on promised future reforms (ex-ante). Instead, it means a broad perspective of "getting the incentives right," or ex-post conditionality that is results-oriented and is designed to deliver aid strategically to leverage the policy reforms that were meant to be conducive to economic development. While these analyses focus on poverty reduction and democratic promotion, Empirical evidence reviewed earlier permits the speculation that similar strategies of selectivity and conditionality may be used by donors to pursue their egoistic objectives of acquiring export markets, the issue of the current paper.[3]

Regarding conditionality, our analytical framework based on the abovementioned second-best approach predicts that a donor evaluates policy outcomes in recipients' country based on its prior aid as well as their policies and political institutions and then uses this endogenous information for aid decision. By contrast, the conventional model predicts that a donor simply assesses the observed policy outcomes in recipient countries and uses the exogenous information for aid decision. The two opposing perspectives on conditionality are translated into the following hypotheses.

H1A (endogenous information): Donor i allocates aid to recipient j conditional on the policy outcomes evaluated with respect to its prior aid and j's policy and institutions.

H1B (exogenous information): Donor i allocates aid to recipient j conditional on the observed policy outcomes in j

[3] The endogenous information model is different from the one often examined in the literature. For example, Berthélemy (2006) views the observed outcomes as exogenous without linking them to recipients' policies or even to the donor's aid. Failing to assess how export market concessions are made in relation to the recipients' policies and institutions, this exogenous approach may not serve the donor's policy objective. Because the outcomes contain elements irrelevant to the recipient's policy and institution (e.g., external war), evaluating the outcomes as a whole may not encourage the recipient to improve policy or institutions, which leads to export market concessions.

As for selectivity, a prominent criterion relevant to trade relies on types of recipients' political institutions. It is a well-established wisdom in the literature on the political economy of trade that democracies are more willing and able to expand trade than autocracies (Milner & Mukherjee 2009 for review). This is because a democratic polity determines its trade policy based on the preference of a median voter who is usually a consumer and is interested in purchasing high quality goods at reasonable prices through open trade. This thesis of trade liberalization urges a trade-seeking donor to employ selective aid allocation based on the democratic criterion, which makes it easy to overcome the incentive constraint.[4] This line of argument suggests the following falsifiable hypothesis.

H2 (selectivity): Donor i allocates more aid to recipient j if j is democratic than otherwise.

In sum, selectivity and conditionality provide donors with a vector of strategic choices to overcome the incentive constraint that hinders their aid policies. By exploiting appropriate degrees of selectivity and conditionality, donors can enhance the effectiveness of their aid policies not just in poverty reduction for the sake of recipients, but also in the trade promotion for their own.

If a donor successfully overcomes the incentive constraint with selectivity and conditionality, then it will promote its egoistic policy effectively and thus produce a side-effect—the intensification of distributional conflict with rival donors. As argued above, the endogenous approach predicts that by excluding the unrelated factors from the policy outcomes, the donor will use higher selectivity and a sharper conditionality (a higher degree of aid leverage) than assumed by the conventional exogenous model. If so, then a large reward by this donor for market concessions will put upward pressure on aid by other donors who allocate to the same recipient for export markets. These rival donors feel that their influence over the recipient will be curtailed unless they increase their aid. This means the intensification of distributional conflict. As noted in the earlier section, distributional conflicts between donors are documented by Bueno de Mesquita & Smith (2016) on foreign policy as well as by Novak-Lehmann, et al. (2009) and Barthel, et al. (2014) on trade policy.

[4] Alesina & Dollar (2000) and Alesina & Weder (2002) found that western donors often allocate more aid to democratic than autocratic countries but did not connect the finding to democracies' trade liberalization propensities.

The above distributional conflict intensifies because egoistic donors can pursue private or excludable benefits inaccessible to other donors. The reason is as follows. Suppose that a recipient earmarks a policy concession for a particular donor. Then the concession becomes private and excludable among donors. That is, the benefit of the concession to the donor may not pass onto other donors or non-donors. For instance, a recipient allocates a share of the export markets or infrastructure building projects in its country exclusively to a particular donor. Because the entire markets or projects are limited in size or number and are typically regulated by the government of the recipient country, the expansion of a market share or projects for one donor means reduction for another. This is a zero-sum or distributional problem of excludable private benefits, motivating donors to become egoistic or willing to use their limited resources to obtain them.

By contrast, such distributional conflict may not intensify even in the presence of multiple donors, if donors pursue non-excludable collective benefits that can be shared by the donor and non-donors alike. For instance, humanitarian aid serves the well-being of displaced persons suffering from war, epidemics, and natural disaster in a recipient country, or environmental aid improves the quality of the regional or global environment. Accordingly, Barthel, et al. (2014) attributed their finding of the absence of egoistic behavior in these aid types to the collective nature. However, if donors exploit humanitarian or environmental aid to pursue private benefits (e.g., export markets) through a creative allocation strategy, then distributional conflict will resurrect for the reason suggested above. Thus, the controversy on aid types is summarized into the following hypotheses.

H3A: Selective and conditional aid emerges, depending on the excludability of benefits associated with types of aid.
H3B: Selective and conditional aid is ubiquitous across types of aid.

Under distributional conflict, donors should allocate an equal amount to recipient j to obtain private benefits, holding the intensity of their preference equal (Bueno de Mesquita & Smith 2016; Suzuki, et al. 2017). However, this assumption is unrealistic. In reality, donors allocate different volumes of aid under different intensities of preference. Having received aid from various donors, recipients distribute policy concessions across them in proportion to their degrees of aid leverage. This recipient's response turns the aid policy realm into a highly competitive one in which donors are motivated to become egoistic and strategic to promote their preferences. This line of

argument can be stated in the following falsifiable hypothesis.

H4 (strategic outcomes and recipient's concessions): Given inter-donor distributional conflict, the size of policy concessions obtained by donor i through aid from recipient j is positively associated with the degree of aid leverage by i.

EMPIRICAL ANALYSIS

Model and estimation technique

To test the above hypotheses, we develop an empirical model. Consistent with the analytical framework, our model is designed to analyze informational endogeneity, selectivity and conditionality in aid allocation by modifying the conventional model widely used in the empirical research on foreign aid.

Originally, the conventional model investigates the two dimensions of aid flows, determinants of recipient selection for aid and the magnitude of aid committed, depending on the nature of aid data where the unit of analysis is recipient-year. With regard to model specification, the principal issue is that the dependent variable is a corner solution outcome (Wooldridge, 2002). That is, because donors tend to allocate aid to a limited number of recipient countries, there are a large number of zero values present in the data. To deal with the bounded nature of the dependent variable and avoid a selection bias, analysts employ a two-part estimation technique: logit estimation determines the probability of whether or not a recipient receives aid (selection equation), and ordinary least squared estimation on strictly positive observations explains how much aid the selected countries will receive (allocation equation).

As an allocation equation, we replace a conventional OLS model with an instrumental variable (IV) model to address a bidirectional relationship between aid by a donor and export market concessions by a recipient (Arvin et al. 2000; Lloyd et al. 2000: Osei et al. 2004). As argued earlier, an endogeneity problem may arise due to bidirectional causality between aid and export suggested earlier, leading to omitted-variable bias. Indeed, there is a potential reverse causality between export and aid. That is, donor i rewards recipient j for providing export market concessions, while j with more aid become able and willing to import more from i. To control for this potential problem, we develop the IV model as follows. Another virtue of the IV model is that it can estimate three key coefficients, including the leverage coefficient γ, the selectivity

coefficient σ, and the influence coefficient θ. The IV model is written,[5]

$$p_{jt}^{i} = \alpha + \rho p_{jt-1}^{i} + \theta a_{jt-1}^{i} + \sigma d_{jt-1} + X_{jt-1}\beta + e_{jt} \quad (1)$$

$$a_{jt}^{i} = \alpha' + \rho' a_{jt-1}^{i} + \gamma p_{jt}^{i} + \sigma' d_{jt-1} + X_{jt-1}\beta' + u_{jt} \quad (2)$$

The two equations take a log specification because it allows us to take into account cross-country variation, and to interpret the coefficients that will be estimated empirically as elasticities. We explain the two equations in the reverse order below.

In equation (2), the dependent variable a_{jt}^{i} is the logarithm of bilateral aid in a given type committed by donor i to recipient j in year t (constant US dollars in millions).[6] Equation (2) explains how donor i determines the amount of aid, a_{jt}^{i}, to recipient j based on the policy outcomes in recipient j denoted by p_{jt}^{i} predicted from equation (1) as well as on j's level of democracy, d_{jt-1}, i's bureaucratic inertia denoted by the lagged dependent variable, a_{jt-1}^{i}, and a vector of instrumental variables, X_{jt-1}, defined below. The level of democracy in recipient j, d_{jt-1}, is measured as the polity2 index of the POLITY IV project.[7]

In equation (1), the endogenous export variable, p_{jt}^{i}, the logarithm of the volume of export[8] by donor i (constant US dollars in millions) to recipient j is predicted from i's prior aid a_{jt-1}^{i} and j's level of democracy d_{jt-1} as well as from j's bureaucratic trade policy inertia, p_{jt-1}^{i}, and a vector of other instrumental variables X_{jt-1}. The coefficient θ for i's prior aid a_{jt-1}^{i} indicates the influence of aid in promoting export for donor i. In our model, the variable a_{jt-1}^{i} is exogenous for analytical tractability.

Both equations (1) and (2) contain the lagged dependent variable for bureaucratic inertia which deems substantial in reducing policy efficiency in both donor and recipient countries (Easterly 2003). The vector of instrumental variable, X_{jt-1}, is constructed in

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[5] See Savoy & Green (2011) for application of IV models in political science. Vijil & Wagner (2012) use an IV model to analyze the aid for trade (AfT) program promoted by the World Trade Organization (WTO) that is different from the issue of our paper.

[6] The data are retrieved from AidData (2017). The data covers 96 donors' development finance activities from 1947 through 2013. From the data, we extracted 19 donor countries: United States, United Kingdom, Japan, Germany, France, Australia, Canada, Italy, Netherland, Norway, Spain, Sweden, Switzerland, Austria, Belgium, Denmark, Finland, Ireland, and New Zealand.

[7] We use the polity2 score to model the level of democracy for recipient countries. The data are retrieved from the *Polity IV Project: Political Regime Characteristics and Transitions, 1800-2013* (https://www.systemicpeace.org/polity/polity4.htm, accessed in August 2018).

[8] The bilateral trade data were obtained from the *Correlates of War Projects* (Barbieri et al. 2016).

light of previous empirical analyses of aid conducted from a variety of perspectives. First, the vector includes a variable for political terror which is known to reduce the efficiency of aid and trade by threatening not only aid operations, but also trade activities (Hoeffler & Outram 2011; Neumayer 2003).[9] Second, the vector includes the logarithm of GDP per capita (constant U.S. dollars) of donor i, which represents the extent of voter satisfaction with i's economic performance, which is crucial for its democratic aid decision accounted for by (2) (Chong & Gradstein 2008). It also measures i's economic capability to export goods to j for equation (1). Third, the logarithm of GDP per capita of recipient j is included in X_{jt-1} to capture i's general poverty reduction goal for the equation (2) and to represent j's purchasing power for the equation (1) (Bethélemy 2006; Bethélemy & Tichit 2004; Dollar & Levine 2006; Hoeffler & Outram). Fourth, GDP growth in recipient j is entered into X_{jt-1} to model j's policy efficiency which facilitates i's aid allocation by signaling aid effectiveness for equation (2) and trade promotion for the equation (1) (Bethélemy & Tichit 2004; Hoeffler & Outram 2011).[10] In addition, both equations contain error terms, e_{jt} and u_{jt}, each of which consist of the unobservable individual effect, the unobservable time effect, and the remainder stochastic disturbance term.

To test H1A and H1B, we also estimate equation (2) without (1) via ordinary least squares (OLS), assuming that a potential endogeneity is insignificant. Then we empirically test the relative appropriateness of the two hypotheses. If the endogenous H2A is appropriate, then the coefficients θ and σ for a^{i}_{jt-1} and d_{jt-1} in equation (1) as well as the leverage coefficient γ in equation (2) will be positive and significant due to a bidirectional relationship between aid and trade. By contrast, if H2B is more appropriate, the coefficients θ and σ will be insignificant, invalidating the endogeneity assumption.

To test H2, the selectivity coefficient σ' in equation (2) is estimated for j's level of democracy d_{jt-1}. The coefficient σ' is expected to indicate the extent to which donor i prioritizes a democratic country in aid allocation over an autocratic country on the grounds that democracy promotes trade openness. Correspondingly, the coefficient σ for d_{jt-1} in equation (1) represents the extent of democratic propensity to liberalize trade.

Furthermore, to test H3A and H3B, we estimate the IV model in different aid types by

[9] The political terror scale, which represents state-sanctioned killings, torture, disappearances and political imprisonment, was retrieved from the *Political Terror Scale project* (Gibney, Cornett, Wood, & Haschke 2013).

[10] The data on GDP per capita and GDP growth were retrieved from the *World Bank Open Data*.

classifying aid into five types, including all aid, economic and productive aid, social aid, environmental aid and humanitarian aid in accordance with the Creditor Reporting System (CRS) of the OECD.[11] Finally, to test H4, we estimate the IV model using disaggregated data on 19 individual donors for the same period. With the estimates of the θ coefficients for the 19 donors, we calculate the value of accumulated export market concessions from recipient j received by donor i by multiplying the volume of i's aid by the estimated θ coefficient over the estimation period. The value is then compared with the size of the leverage coefficient γ across the 19 donors

Results

To test the hypotheses, we estimated both the OLS and the IV model with a fixed-effect version of two-stage least squares against pooled cross-national and time-series data on 19 OECD DAC donors for the period between 1980 and 2013.

Generalized aid allocation strategy Tables 1-3 summarize the regression results of the aggregated data for the 19 donors in the five types of aid. The results include those of the allocation models of both OLS and IV. Each model deduces a generalized aid allocation pattern from the experiences of 19 donors.

As for the conditionality hypotheses of H1A and H1B, the results for all types of aid in Tables 1-3 indicate that a donor generally has a significant export promotion intent in its aid policy and employs a certain degree of aid leverage to reward recipients for export market expansion. Donors' export promotion intents are demonstrated across the five developing regions of the world in Appendix 1 as well as during the Cold War and after in Appendix 2.

More specifically, the leverage coefficient γ in equation (2) is positive and significant at usual statistical standards. The sizes of the coefficient estimates are broadly consistent with those reported by Berthélemy (2006), buttressing confidence in our estimates. The results on specific types indicate that bilateral aid in various types embodies donors' general concern with export market promotion, supporting H3B. The size of the leverage coefficient in the noneconomic types is generally smaller than that for aid in economic infrastructure and production. This makes sense on the grounds that, a Barthel et al. (2014) argue, economic aid is compatible with export promotion by disbursing aid money into the construction of economic infrastructure (ports, airports, railways, roads, etc.) that is amenable to receiving imports from donor countries.

[11] The five aid types are defined based on the CRS codes as follows. Social aid includes all items in the 10000s of the CRS, aid in economic infrastructure and production the 20000s and 30000s, humanitarian aid the 70000s, environmental aid the 41000s, and all aid the entire CRS items.

However, our IV results are different from those of previous studies reporting the absence of egoistic intents in aid types other than economic infrastructure and production. Contrary to the result reported by Barthel, et al., the leverage coefficient γ for social infrastructure aid, humanitarian aid, and environmental aid in the IV model is positive and significant. This result derives not only from our data sets larger than those used by Barthel et al., but also from the IV model. The size of the coefficient γ estimated by the IV model is larger than that by the OLS model by approximately 40-50 percent in the types except for all aid.

A substantial part of the trade-promoting effect can be attributed to the endogenous effects of donors' prior aid and recipients' democratic regimes captured by the IV model. Such effects are reported in Table 4 and 5 showing that the coefficients θ and σ for a^i_{jt-1} and d_{jt-1} in equation (1) are positive and significant, meaning that both donors' prior aid and recipients' democratic regimes have positive effects on export markets for donors. It is also ascribed to a synergic effect between aid and trade, which we will elaborate shortly.

The preceding results suggest the significance of the bidirectional relationship between aid and trade via donors' allocation strategies. The causality is bidirectional in the sense that expanded export markets lead to more aid (as in equation (2) of the IV model), while aid initially aims at export market expansion (as in equation (1)). This bidirectional relationship is a result of donors' allocation strategies with aid leverages characterized as the coefficient γ that exploit endogenous information on their prior aid and recipients' political regimes. Moreover, this bidirectional relationship or endogeneity is confirmed by the F-test reported at the bottom of Table 4 and 5 that consistently rejects the null hypothesis (H1B) that the coefficients θ and σ for a^i_{jt-1} and d_{jt-1} in equation (1) are jointly zero, indicating the relative appropriateness of the IV model (H1A) over the OLS model (H1B).[12]

As for the selectivity hypothesis of H2, the related coefficient σ' in equation (2) and the democracy coefficient σ in equation (1) are positive and significant (except for σ' in humanitarian aid). Substantively, the significant coefficient σ' suggests donors' selective aid allocation prioritizing democratic recipients on the one hand (except for

[12] To assess the appropriateness of the IV model further, we conducted a Hausman test by changing the fixed-effect IV model with robust standard errors into the one with conventional standard errors. The test results (not shown) indicated that the exogeneity assumption for the OLS model fails in all models because its regressors are found to be correlated with the error term. This means that OLS estimates are biased and inconsistent, implying the unbiasedness of IV estimates. As for an over/under-identification problem that often plagues an IV model, our IV model is just identified and is free from an identification problem because it has one endogenous variable and one excluded exogenous variable (i.e., one instrumental variable).

humanitarian aid), while the significant coefficient σ indicates the extent of democratic trade openness on the other.[13] This result buttresses the bidirectional relationship between aid and trade, which provides donors with a powerful impetus for the pursuit of export markets in recipient countries.

Individual aid allocation strategies and outcomes To test H4, we use the estimates of the aid leverage γ coefficient and the influence coefficient θ for the 19 donors derived from analysis of the disaggregated data. The estimates of the aid leverage γ coefficient are shown in Figure 1 and are significant and more substantial for large donors than for small ones. Furthermore, as shown in the aid-type specific results earlier, the IV estimates are generally larger than the OLS estimates. The F-test (not shown) rejected the null hypothesis of the coefficients in the first equation are jointly zero, confirming the appropriateness of the IV model for the disaggregated data as well.

Then we calculated the value of accumulated export market concessions from recipient j received by donor i based on the estimated influence coefficient θ times the amount of i's aid over the estimation period. Finally, the value is plotted against the size of the leverage coefficient γ across the 19 donors in Figure 2. The figure indicates a positive correlation between the two on the order of 0.669, meaning that, on average, donors with higher degrees of leverage obtain larger export market concessions from recipients than those with lower degrees. This implies the presence of an intense distributional struggle among donors within which they could lose export markets unless they reward recipients with generous aid for export market concessions. Such distributional struggle constitutes a structural condition for the widely observed egoistic behavior by donors, particularly large ones who are better positioned than smaller ones to capture export markets with greater material resources.

CONCLUSION

The existing literature on the political economy of foreign aid have analyzed egoistic donor behavior in pursuit of export markets and recipient countries. Despite sophisticated theories and methodologies, the literature has not firmly established a causal argument linking preferences, strategies, and outcomes. To identify the missing

[13] We do not deny a possibility that donors allocating humanitarian aid might not intend to acquire export markets in the recipient countries. However, democratic recipients among them are merely prone to trade liberalization for the institutional reason cited earlier in the text. Thus, the outcomes favorable to the donors might be obtained without explicit trade promotion intents.

link, we have analyzed the experiences of 19 OECD countries for 1980-2013. In this final section, we conclude our paper by suggesting the contribution of our findings to the literature, the prospects for foreign aid, and the problems with our analysis as well as tasks for future research.

First, our analysis revealed that a donor evaluates endogenous information on recipients' policies and institutions and use the information to determine its aid allocation strategy to induce export market concessions from recipients. While setting forth aid leverage or conditionality, a donor engages in selective allocation to take advantage of democracy's trade promotion effect. This endogenous information model performs empirically better than the conventional one with exogenous information, both at the aggregate level and at the disaggregate level for a majority of donors.

Our analysis generates three major findings. First, to overcome the incentive constraint, donors evaluate ex post policy outcomes as endogenous information linking them to recipients' policy and institutions. With such endogenous information, they use higher degrees of leverage or sharper conditionality in bilateral aid than previously estimated with exogenous information. Second, while aid allocation by western donors prioritizes democratic recipients over autocratic ones, such selectivity increases the effectiveness of aid through a trade-promoting effect of democracy. Such selectivity and conditionality generate a synergic effect between aid and trade and makes aid policy a highly effective instrument to secure export markets in recipient countries through a variety of aid types.

Third, the extents of recipients' export market concessions derived from aid are positively associated with the degrees of aid leverage by donors. Few previous studies examine the outcomes of donors' strategies. It can be inferred from these results that donors can expand their market shares at the expense of rival donors, by exploiting selectivity and conditionality in their allocation strategies. Consequently, distributional conflict over recipients' export markets becomes intense, compelling donors to act strategically to maintain their preferences.

These insights underscore donors' strategic calculus vis-à-vis recipients and rival donors. For now at least, such a calculus constitutes donors' rational motive to maintain aid allocation vigorously against a backdrop of the pressure for free riding and popular resistance to external assistance under economic stress. However, this trend of aid allocation strategies may change in the near future. First, recent emphasis on humanitarian and environmental aid in conjunction with the United Nations-led development projects will dampen egoistic donor behavior (Claessens, et al. 2009). These aid types will definitely enrich the quality of life in the developing world but will

also reduce donors' self-centered motives to allocate aid, by virtue of being victimized by free riding. Third, this reducing trend may be reversed by the emergence of new donors, which rekindles inter-donor competition with large incumbent donors, but only in the realm of economic and production aid because of their suspected policy preferences (Dreher, et al. 2013).

The above points have not been examined in the current paper, which focused primarily on sovereign OECD donors with relatively homogeneous preferences. In addition, we considered the strategic relationship between donors and recipients within a distributional conflict between donors and did not explicitly combine both into an integrated system. Nor did we analyze multilateral or regional aid organizations as more altruistic actors with reducing effects on sovereign egoism. The analysis also employed fixed parameters that could not capture the donors' changing influence across time and space to analyze geopolitical effects crucial for foreign aid. Analyses of these issues must be relegated to future research.

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Table 1. Generalized Aid Allocation Strategy for 19 OECD Donors, 1980-2013: All Aid

Variable (key coefficient)	All Aid OLS	All Aid IV	All Aid GMM
Export *t* (γ)	0.231***	0.220***	0.220***
	(0.0262)	(0.0353)	(0.0299)
Democracy *j t-1* (σ')	0.0170***	0.0168***	0.0168***
	(0.00634)	(0.00640)	(0.00519)
Aid *t-1*	0.449***	0.450***	0.450***
	(0.00806)	(0.00809)	(0.00553)
GDP per capita *j t-1*	-1.637***	-1.657***	-1.657***
	(0.0584)	(0.0614)	(0.0512)
Terror *j t-1*	0.0225	0.0224	0.0224
	(0.0300)	(0.0302)	(0.0261)
GDP growth *j t-1*	1.706***	1.717***	1.717***
	(0.112)	(0.112)	(0.115)
GDP per capita *i t-1*	1.546***	1.560***	1.560***
	(0.0756)	(0.0774)	(0.0589)
Constant	-0.818	-0.774	
	(0.591)	(0.624)	
Observations	62,327	61,778	61,777
R-squared	0.548	0.546	----
Country FE	YES	YES	YES

Notes: Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

Table 2. Generalized Aid Allocation Strategy for 19 OECD Donors, 1980-2013: Economic and Social Aid

Variable (key coefficient)	Economic Aid OLS	Economic Aid IV	Social Aid OLS	Social Aid IV
Export *t* (γ)	0.179***	0.247***	0.112***	0.170***
	(0.0233)	(0.0327)	(0.0225)	(0.0325)
Democracy *j t-1* (σ')	0.0131**	0.0197***	0.0251***	0.0349***
	(0.00627)	(0.00669)	(0.00574)	(0.00635)
Aid *t-1*	0.361***	0.319***	0.494***	0.440***
	(0.00773)	(0.00818)	(0.00700)	(0.00782)
GDP per capita *j t-1*	-1.063***	-0.927***	-1.330***	-1.167***
	(0.0580)	(0.0634)	(0.0513)	(0.0561)
Political terror *j t-1*	-0.160***	-0.180***	0.0435	0.0368
	(0.0298)	(0.0314)	(0.0275)	(0.0293)
GDP growth *j t-1*	1.504***	1.211***	1.694***	1.348***
	(0.109)	(0.111)	(0.109)	(0.111)
GDP per capita *i t-1*	0.598***	0.616***	1.595***	1.790***
	(0.0698)	(0.0763)	(0.0617)	(0.0696)
Constant	3.888***	2.787***	-4.623***	-7.603***
	(0.541)	(0.610)	(0.461)	(0.561)
Observations	64,366	61,778	64,366	61,778
R-squared	0.445	0.455	0.504	0.507
Country FE	YES	YES	YES	YES

Notes: Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

Table 3. Generalized Aid Allocation Strategy for 19 OECD Donors, 1980-2013: Humanitarian and Environmental Aid

Variable (key coefficient)	Human. Aid OLS	Human. Aid IV	Env. Aid OLS	Env. Aid IV
Export *t* (γ)	0.112***	0.150***	0.0441***	0.0622***
	(0.0233)	(0.0326)	(0.0130)	(0.0190)
Democracy *j t-1* (σ')	0.00585	0.00816	0.0266***	0.0300***
	(0.00562)	(0.00588)	(0.00383)	(0.00418)
Aid *t-1*	0.0347***	0.0184***	0.357***	0.337***
	(0.00509)	(0.00519)	(0.0102)	(0.0103)
GDP per capita *j t-1*	-0.784***	-0.642***	-0.163***	-0.0618*
	(0.0543)	(0.0582)	(0.0307)	(0.0354)
Political terror *j t-1*	0.0123	0.00567	0.0118	0.0111
	(0.0276)	(0.0286)	(0.0183)	(0.0194)
GDP growth *j t-1*	0.868***	0.532***	0.363***	0.179***
	(0.120)	(0.123)	(0.0651)	(0.0669)
GDP per capita *j t-1*	0.866***	0.908***	0.486***	0.503***
	(0.0626)	(0.0665)	(0.0355)	(0.0392)
Constant	-1.500***	-2.966***	-3.221***	-4.133***
	(0.475)	(0.536)	(0.265)	(0.315)
Observations	64,366	61,778	64,366	61,778
R-squared	0.042	0.045	0.315	0.310
Country FE	YES	YES	YES	YES

Notes: Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

Table 4. Export Market in Recipient Countries for Donors, First Equation

Variable (key coefficient)	All Aid IV	Economic Aid IV	Social Aid IV
Aid *t-1* (θ)	0.00421***	0.00297***	0.00250***
	(0.000512)	(0.000496)	(0.000498)
Democracy *j t-1*(σ)	0.00506***	0.00524***	0.00511***
	(0.000752)	(0.000750)	(0.000756)
Export *t-1*	0.774***	0.775***	0.775***
	(0.00581)	(0.00582)	(0.00581)
GDP per capita *j t-1*	0.108***	0.105***	0.105***
	(0.00759)	(0.00760)	(0.00760)
Political terror *j t-1*	-0.0132***	-0.0124***	-0.0133***
	(0.00335)	(0.00334)	(0.00335)
GDP growth *j t-1*	0.136***	0.139***	0.139***
	(0.0170)	(0.0170)	(0.0170)
GDP per capita *i t-1*	0.169***	0.178***	0.173***
	(0.00805)	(0.00802)	(0.00815)
Constant	-1.726***	-1.784***	-1.728***
	(0.0694)	(0.0693)	(0.0701)
Observations	61,778	61,778	61,778
R-squared	0.784	0.784	0.783
Country FE	YES	YES	YES
F test	21139.53***	21239.53***	21290.17***

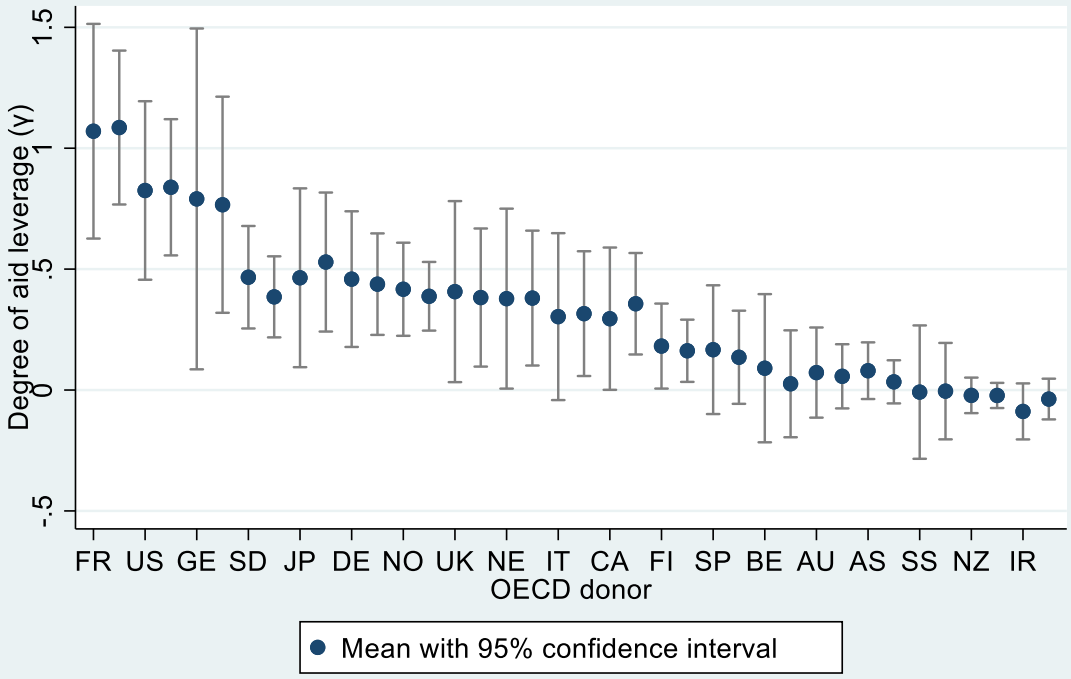
Notes: Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

Table 5. Export Markets in Recipient Countries for Donors, Equation (1)

Variable (key coefficient)	Human. Aid IV	Env. Aid IV
Aid *t-1* (θ)	0.000761*	0.00267***
	(0.000416)	(0.000582)
Democracy *j t-1* (σ)	0.00535***	0.00523***
	(0.000752)	(0.000754)
Export *t-1*	0.776***	0.776***
	(0.00580)	(0.00581)
GDP per capita *j t-1*	0.104***	0.103***
	(0.00760)	(0.00760)
Political terror *j t-1*	-0.0134***	-0.0134***
	(0.00335)	(0.00335)
GDP growth *j t-1*	0.141***	0.142***
	(0.0170)	(0.0170)
GDP per capita *i t-1*	0.180***	0.179***
	(0.00801)	(0.00802)
Constant	-1.787***	-1.766***
	(0.0693)	(0.0695)
Observations	61,778	61,778
R-squared	0.783	0.783
Country FE	YES	YES
F test	21396.48***	21383.78***

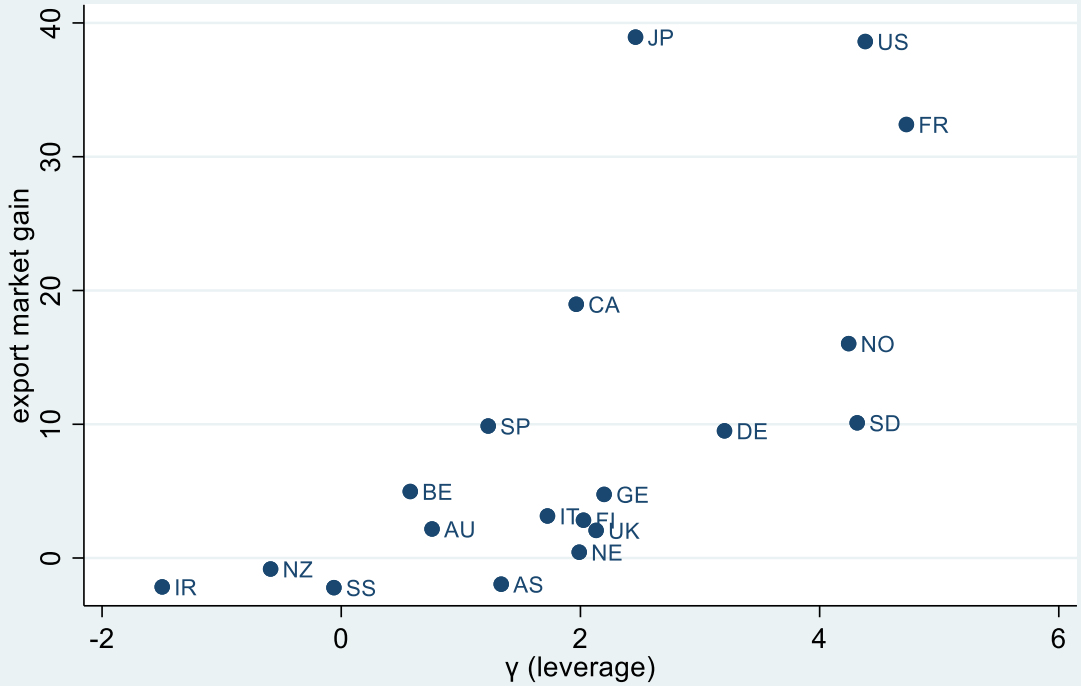
Notes: Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

Figure 1 Estimated Degrees of Aid Leverage for 19 Donors



Notes: For each donor, the left bar indicates the IV estimate and the right bar the OLS esimate.

Figure 2. Aid Leverage and Distributional Conflict



Notes: The export market gain is computed as aid amount multiplied by θ.

Appendix 1. Generalized Aid Allocation for OECD Donors by Region, 1980-2013

Variable (key coefficient)	Sub-Sahara IV	Latin America IV	East Asia IV	South Asia IV	Middle East IV	Europe-Cent. Asia IV
Export *t* (γ)	0.141***	0.200***	0.346***	0.277**	-0.0373	0.547***
	(0.0438)	(0.0715)	(0.110)	(0.139)	(0.0945)	(0.0771)
Democracy *j t-1*	0.0163**	0.0212*	0.0407***	0.0475***	0.0433**	0.0444***
	(0.00809)	(0.0114)	(0.0148)	(0.0172)	(0.0188)	(0.0148)
Aid *t-1*	0.412***	0.467***	0.388***	0.463***	0.423***	0.518***
	(0.00722)	(0.00861)	(0.0129)	(0.0196)	(0.0100)	(0.00920)
GDP per capita	-1.60***	-1.567***	-1.95***	-2.60***	-1.32***	-1.884***
j t-1	(0.0796)	(0.121)	(0.159)	(0.263)	(0.142)	(0.122)
Political terror	0.195***	-0.166***	0.373***	0.120	-.208***	0.108
j t-1	(0.0424)	(0.0595)	(0.0891)	(0.106)	(0.0579)	(0.0742)
GDP growth	1.523***	1.233***	2.023***	7.785***	1.415***	1.885***
j t-1	(0.195)	(0.249)	(0.373)	(0.948)	(0.297)	(0.273)
GDP per capita	1.485***	2.092***	1.620***	2.204***	1.432***	0.888***
i t-1	(0.0962)	(0.132)	(0.170)	(0.300)	(0.130)	(0.196)
Constant	-0.769	-5.59***	-0.254	-2.995	0.0879	5.755***
	(0.866)	(0.996)	(1.328)	(1.937)	(1.184)	(1.463)
Observations	20,409	13,092	6,262	2,815	9,520	9,680
R-squared	0.457	0.450	0.526	0.497	0.562	0.532
Country FE	YES	YES	YES	YES	YES	YES

Notes: Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

Appendix 2. Generalized Aid Allocation by OECD Donors for Cold War and Post-Cold War Era

	Cold War (1980-1990)	Post-Cold War (1991-2013)
Variable (key coefficient)	IV	IV
Export *t* (γ)	0.198*	0.183***
	(0.117)	(0.0364)
Democracy *j t-1*	0.00506	0.00395
	(0.0140)	(0.00697)
Aid *t-1*	0.0413***	0.440***
	(0.00939)	(0.00462)
GDP per capita *j t-1*	0.195	-1.741***
	(0.197)	(0.0599)
Political terror *j t-1*	-0.0844	0.0381
	(0.0643)	(0.0307)
GDP growth *j t-1*	-0.249	2.167***
	(0.257)	(0.126)
GDP per capita *i t-1*	1.689***	1.142***
	(0.145)	(0.0924)
Constant	-12.65***	4.442***
	(1.841)	(0.730)
Observations	12,969	48,809
R-squared	0.168	0.523
Country FE	YES	YES

Notes: Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.