# Instrumental Philanthropy: Trade and the Allocation of Foreign Aid

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## Introduction

Foreign aid can relax the resource constraints that hamper the economic development of recipient countries. Because determinations about where aid should be directed are made by governments that are both potentially more willing to assume risk and more likely to emphasize equity over efficiency or profitability in comparison to the private actors that offer an alternative source of capital for developing countries, one might expect that donors would primarily direct foreign aid towards countries which are unable to mobilize resources domestically or internationally to undertake economic development. By the same token, one could expect that, as countries increase their ability to mobilize private resources through trade and investment, donors would reduce their aid to these countries.

This article finds that the main distributional logic of aid is quite the opposite. Simply put, donors have tended to privilege commercially

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attractive aid recipients. This is an important finding for two main reasons. First, it suggests that the "trade, not aid" argument (increased trade opportunities justify aid reductions) has not shaped bilateral giving practices. The second and more worrisome implication is that because the poorest countries are also the ones that trade less and receive less foreign direct investment, patterns of bilateral aid disbursement are reinforcing structural inequities in the developing world. The paper contributes to the aid allocation literature by demonstrating the centrality of commercial considerations in aid allocations. Using an exhaustive dataset, this paper evaluates the strength of the trade–aid relationship via a variety of model specifications and estimation techniques. Furthermore, we assess the applicability of the "aid follows trade" argument across regions of the developing world and scrutinize the issue of causality in the trade and aid relationship.

International trade and foreign aid are two main instruments for generating and reallocating wealth in the world economy and represent important ways through which industrialized countries can contribute to the development of poorer nations. These instruments differ substantially in their weight in the international system of economic exchange. While trade between OECD countries and the developing world has increased dramatically since the 1980s, rising in volume from around $730 billion in 1980 to more than $3.4 trillion in 2005 (UNCTAD, 2007), the volume of aid flows has been modest in comparison.[1] Aid from the Organization for Economic Cooperation and Development (OECD) countries grew from $26 billion in 1980 to top $100 billion by 2005, a milestone made possible by exceptional debt relief packages (OECD, 2007, 2009).[2] Given the dominance of commercial flows as vehicles for resource reallocation in the global economy, this article examines how the trading relations linking donors and recipient countries affect the distribution of foreign aid.

The contributions that both trade and aid can make to economic development efforts have been widely studied. In the last few decades economists have expressed widespread support for the argument that international trade is a key pathway for fostering economic growth (Krueger, 1997), a position often associated with the Washington Consensus reform program of the early 1990s that encouraged developing countries to lower trade barriers and limit the role of the government in the economy as a means of attracting investment and spurring growth through exports (Williamson, 1993). In this view, economic liberalization offers advantages to developing countries by facilitating an efficient allocation of resources, building production capacity and promoting the transfer of technology and skills. In recent years, however, shortcomings of Washington Consensus prescriptions have encouraged reflection on the emphasis placed on liberalization as a stimulus for development (Rodrik, 2006), and stud-

**Abstract.** "Trade, not aid" has long been a catchphrase in international development discourse. This paper evaluates whether the "trade, not aid" logic has driven bilateral aid allocations in practice. Using a dataset that covers development assistance from 22 donor countries to 187 aid recipients from 1980 to 2002, we find that donor countries have dispersed bilateral aid in ways that reinforce their extant bilateral commercial ties with recipient countries. Instead of "trade, not aid," bilateral aid disbursement has followed the logic of "aid following trade." The policy implication is that bilateral aid allocation patterns have reinforced the disadvantages of poor countries that have a limited ability to participate in international trade due to a variety of factors such as geography and a lack of tradable resources.

**Résumé.** «Le commerce et non l'aide» est un slogan qui continue d'occuper une place importante dans le débat sur le développement international. L'article qui suit vise à évaluer la mise en pratique de ce principe dans les allocations de l'aide bilatérale. S'appuyant sur une base de données recouvrant l'aide distribuée par 22 pays donateurs à 187 pays récipiendaires entre 1980 et 2002, notre analyse révèle que l'aide a été allouée en fonction des liens commerciaux bilatéraux existants et les a renforcés. C'est donc le principe de «l'aide après le commerce» qui a prévalu. Les allocations d'aide bilatérale ont ainsi aggravé les désavantages des pays pauvres dont la capacité à bénéficier du commerce international est limitée en raison de divers facteurs, dont la situation géographique et le manque de ressources marchandes.

ies exploring how trade openness interacts with factors related to policies and institutions in place in an economy as well as studies scrutinizing the distributional implications of trade increases have cast doubt on an unqualified defence of trade as a stand-alone development instrument (Goldberg and Pavcnik, 2007; Ravaillon, 2006; Winters, 2004, 2006).

At the same time, foreign aid has generated renewed interest in scholarly circles, with the analysis of the effectiveness of aid in promoting economic growth representing the main line of inquiry (Hansen and Tarp, 2001). Recent work in development economics has highlighted how factors at the recipient level can condition aid effectiveness. Guardedly optimistic appraisals of aid efficacy (Burnside and Dollar, 2000; Collier and Dollar, 2004; Dollar and Pritchett, 1998) emphasize that aid can have a positive impact on growth in recipient economies if aid is injected into a good policy environment, while more negative assessments suggest that political regime type trumps aid as a determinant of economic development (Boone, 1996) or that aid agencies themselves have difficulty ensuring the transparent and efficient dispersal of aid resources that could lead to growth (Easterly, 2003, 2006). The notion that aid creates perverse incentives, either by encouraging leaders to delay economic or political reforms or by fostering rent seeking within recipient economies has also lingered in discussions of aid effectiveness (Gibson et al., 2005).

To judge the efficacy of any policy intervention it is necessary to understand its main aim. As many scholars have noted, development assistance objectives have been many and varied (Alesina and Dollar, 2000; McKinlay and Little, 1977; Maizels and Nissanke, 1984; Schraeder et al., 1998). In addition to promoting development goals in recipient countries, donors may use aid to support objectives such as encouraging loy-

alty among allies or expanding commercial opportunities for domestic firms. Because of the mixed nature of objectives behind donor aid allocation choices, assessing the weight of particular motives as determinants of aid allocation decisions serves to background studies of aid effectiveness. Simply put, assessing what aid can accomplish requires an understanding of why aid is allocated the way it is.

This study evaluates the importance of trade between donors and recipients as a determinant of bilateral aid allocations. To test the hypothesis that bilateral trade influences levels of bilateral aid, we analyze bilateral economic relationships between 22 donor countries and 187 recipient countries from 1980 to 2002. Our analysis reveals that donors have employed aid as a complement to trade.[3] While this positive relationship between trade and aid may have some positive payoffs for recipients, it highlights an international development dilemma. If countries which are of limited economic interest to donors also receive less aid, then how might such countries be able to mobilize capital needed for development?

Our findings challenge the claim that putatively altruistic motives for aid disbursement have displaced donors' self-interested motives as the foreign aid regime has matured (Lumsdaine, 1993). The policy implications of our analysis are sobering: foreign aid is not offsetting the disadvantages of developing countries which are unable to acquire resources for economic development via trade. On the contrary, aid allocation patterns have accentuated existing differences among developing nations with respect to possibilities for development, since countries privileged by international market integration have also been privileged as aid recipients.

## Theoretical Perspectives

A productive body of scholarship addresses the determinants of the geographical disbursement of foreign aid.[4] A common reference point in this literature is the "donor interest versus recipient need" model presented by McKinlay and Little (1977) and subsequently adapted in numerous studies of aid disbursement (Berthélemy, 2006; Fleck and Kilby, 2006; Gounder, 1994; Lewis, 2003; Maizels and Nissanke, 1984; Neumayer, 2003; Schraeder et al., 1998). This model has been applied to identify whether donors tend to allow political and economic goals to influence their aid allocation decisions or whether they instead select recipients on the basis of their objective development needs. While existing work suggests that the motives underlying aid decisions are mixed, these studies point to a range of donor interests, such as the maintenance of colonial ties, military alliances, the protection of spheres of influence, and trade and investment ties, as central determinants of patterns of aid flows (Maizels and Nissanke, 1984; Schraeder et al., 1998).

Recent studies by Alesina and Dollar (2000) and Alesina and Weder (2002) reinforce the point that the characteristics of recipient countries themselves (in these examples, the level of democratization, the character of economic policies and good governance practices) are less significant predictors of aid allocations than donor interests. In short, these studies conclude that donors in general select aid recipients to serve their diplomatic or strategic aims rather than to address the development needs of poor countries.

However, as Alesina and Dollar (2000) and Neumayer (2003) note, it is difficult to compare results across studies in part because what constitutes donor national interest is often defined inconsistently, which is not surprising, given that this concept can cover a variety of objectives in a state's foreign policy portfolio. While variables such as formal alliances between donors and recipients (Schraeder et al., 1998) or correlations of UN voting patterns (Alesina and Dollar, 2000) may provide good proxies for the strategic interests of large donor countries, for instance, it is unlikely that these variables provide much information about the importance of potential aid recipients on the security agenda of the more numerous small donors. By contrast, the commercial dimension of national interest, reflected in trade ties of the donors with the developing world, represents a consistent benchmark to evaluate the self-interested attributes of aid allocations because the meaning of the concept itself does not vary across donors or over time.

This study advances recent work on the determinants of geographical patterns of aid disbursement in important respects. Most notably, it places central emphasis on the bilateral trade linkages between donors and recipients as expressions of donor interest. Alesina and Dollar (2000) and Alesina and Weder (2002) focus on testing whether aid disbursements are influenced by the recipients' policy and institutional environments. In addition to the many recipient-specific measures in theses analyses, the authors use UN voting patterns and colonial linkages as proxies for donor interest.[5] Surprisingly, the authors do not employ any specific measure of bilateral economic flows to test the role of donors' economic interests in aid disbursements.

The relevance of commercial interests as a determinant of aid flows has not been neglected entirely by aid researchers. Schraeder and colleagues (1998) investigate the influence of commercial interests over aid decisions in their study of aid allocations from four donor countries to African recipients from 1980 to 1989, for instance, while Neumayer (2003) includes trade ties as a covariate in his recent analysis of patterns of aid flows between donor–recipient pairs in the post-Cold War period. McGillivray and Morrissey (1998) place the link between trade and aid at the centre of their analysis of aid allocation patterns but restrict their focus to East Asia. This study advances this work by assessing the weight

of the relationship between trade and aid across world regions and through time. This study is more comprehensive than existing works in terms of the countries and time period studied, and importantly spans both the Cold War and the post-Cold War eras.

Why should donors disburse foreign aid to their trading partners? We identify three main motives in this regard: strengthening export markets, supporting the implantation of donor firms in recipient economies and maintaining access to essential imports. First, donors may use aid for export promotion purposes. Suppose an importing country is unable to secure foreign exchange to continue its trade with a given exporting country. In this case, the exporting country might offer aid to ensure that ongoing trading relationships are not disturbed. Such assistance can come in various forms. General budgetary support can, for example, increase available foreign reserves in the recipient country and hence the recipient's overall capacity to import, while export credits might be extended to allow recipients to purchase particular capital goods from donor firms. In some ways, the importing country can opportunistically exploit the exporting country, especially if it serves as an important market for products from the donor country. In this way, aid can serve as a vehicle to prop up ongoing commercial relationships that domestic firms in donor countries have with importing countries.

A second reason why aid disbursements may mirror trade patterns between donors and recipients is that aid can be used to support the entry of donor firms in the recipient economy and to enhance their competitive edge once they are established. After all, intra-firm trade represents an increasing share of global commerce (McKeown, 1991; Milner, 1988), and bilateral trade flows partly reflect transfers of goods and services between multinational corporations and their subsidiaries in recipient countries. Aid can be directed towards physical infrastructure such as roads, ports and power plants that can help to strengthen the capacity of donor firms to operate efficiently in the recipient economy and improve their ability to export back to the donor country, while investments in social infrastructure can support the development of a more productive local labour force. In his study of the aid regime from its creation to the early 1980s, for example, Wood (1986) notes that donors historically avoided providing aid funding for heavy industrial projects and preferred instead to support private investment indirectly via spending in the areas of economic and social infrastructure. More recently, the World Bank has estimated that around one-quarter of the aid donors provide is directed toward improving the investment climate in recipient countries, funding infrastructure as well as technical assistance contributing to policy reforms (World Bank, 2005b). In sum, aid can support improvements in the business climate for donor countries' investors and serve to protect their existing investments in the recipient economy.

Third, in addition to solidifying the position of donor country exporters in recipient markets, aid may also aim to assure the supply of crucial raw materials to donor firms that are produced, extracted or mined in the recipient country. As an example, sparsely populated Gabon has traditionally been a privileged recipient of French foreign aid, thanks to its large reserves of petroleum, uranium and other minerals critical to the energy and defence industries in its former metropole (Martin, 1989; Reed, 1987). Maintaining good relations with suppliers of a wide variety of natural resources, including oil, copper, platinum, timber and iron ore has similarly been identified as a key driver of China's burgeoning international aid program.[6] As a provider of development assistance, however, China is by no means alone in pursuing closer economic co-operation with resource-rich African economies.

National foreign economic policy decisions are potentially driven by a combination of domestic interests and international pressures. The above discussion suggests that because domestic economic actors obtain benefits from strengthened official ties to promising markets, donor governments may find that focusing foreign aid on countries with which their economy has good trade linkages allows them to satisfy domestic business constituencies while at the same time demonstrating their country's commitment to development to an international audience. In the analysis below, we investigate whether trading ties between donors and recipients serve as a consistent driver of aid disbursement across countries and over time.

## Data

To test the relationship between bilateral trade and foreign aid allocations, we examine the volume of official development assistance (ODA) provided by 22 donors to 187 recipient countries from 1980 to 2002. Statistics on ODA are compiled by the OECD's Development Assistance Committee (DAC), which also acts as a guardian of the standard definition of what types of resource transfers donors are allowed to report as development aid. ODA refers to grants or loans to recipient countries "undertaken by the official sector; with promotion of economic development and welfare as the main objective; [and] given at concessional financial terms" (OECD, 2002). Military aid is excluded from this definition. Our dependent variable, Aid, reflects the net official resource transfer from donors to recipients in a given year (OECD, 2004a; 2004b). Following the convention in the literature, the ODA variable has been logged in order to attenuate the skewness in its distribution and to facilitate inference.[7] Appendix 2 describes the main variables that are included in the analysis.

Our central explanatory variable gauges the importance of trade between donors and recipients. We expect that the levels of exports from

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donors to recipients as well as the levels of imports in donors from recipient countries are likely to encourage donors to disburse aid to specific beneficiaries. Donor exporters will benefit from official aid simply because it is likely to help recipient countries serve as outlets for their goods and services. Given that most international trade takes place within the value chains of multinational firms (UNCTAD, 1998), exports of the aid recipients to the donors are likely to reflect the exports of donor multinationals based in recipient countries to their home (donor) country. In addition to boosting the profits of donor multinationals, these exports may constitute a low cost and reliable supply of resources important for the donor economy. To evaluate how the strength of trade relationships between donors and recipients influences aid allocations, we include the log of bilateral trade, Trade, in our model as reported in the IMF's *Direction of Trade Statistics Database* (IMF, 2003).[8] Importantly, our results hold when we include exports and imports as separate covariates in our model. Thus, our key hypothesis is that bilateral aid is positively associated with bilateral trade. This is in contrast to the trade, not aid argument which implies that bilateral aid would be negatively associated with bilateral trade.

Our model includes a variety of control variables that serve as a proxy for other drivers of bilateral aid disbursement. These variables control for two sets of variables: recipient characteristics and the dyadic linkages between the donor and the recipient. First, the nature of a recipient's political regime has interested scholars evaluating the utility of aid in promoting political reforms (Dunning, 2004; Goldsmith, 2001) and scholars attempting to identify whether donors reward recipients that have already made strides toward democratic reforms (Alesina and Dollar, 2000; Alesina and Weder, 2002; Neumayer, 2003). The qualities of political regimes and the nature of human rights protections in recipient countries should influence aid allocation decisions if donors do not want their money to support autocracy and repression. Our baseline model includes a measure of political regime type from the Polity IV project (Marshall and Jaggers, 2002) to assess the importance of democratic governance as a criterion for the selection of aid recipients (Political Regime) and a measure of the level of protection of individual liberties (Civil Liberties) in recipient countries as reported by Freedom House (2005) to account for the human rights concerns that may influence patterns of giving.

The "recipient need" hypothesis posits that the overriding purpose of foreign aid is to address the development needs of recipient countries with an objective of improving the quality of life of the world's poor (Lumsdaine, 1993). The most widely employed indicator of need is a recipient's (logged) income level (Per Capita Income), which reflects the material well-being of a country's population. To account for the quality of life of individuals living in recipient countries and to identify their access to basic services such as health care and education, it is also use-

ful to examine indicators of the level of human development in recipient countries (Kosack, 2003). The literacy rate of the recipient country (Literacy), taken from *World Development Indicators* (World Bank 2005a), provides a second indicator of recipient need.[9] The overall size of a recipient country's population may also figure into donor determinations on how aid resources should be spent. While there are potentially more people in need of aid in more populous countries, a number of studies of aid allocation have noted a bias in giving toward small states (Dowling and Hiemenz, 1985; Isenman, 1976; Neumayer, 2003). We included the (logged) Population size in order to tests these opposing rationales.

Donors and recipients are linked through a variety of networks which could lead donors to privilege specific countries as aid beneficiaries. Embeddedness in these networks makes the recipient more likely to receive some aid from a given donor, without necessarily influencing the overall volume of aid the donor will provide them. Donors may be predisposed to provide aid to their former colonies in order to sustain their political and economic influence in the region or out of a sense of obligation to territories formerly under their control. France's development co-operation policy has often been presented as the archetypal example of a colonial power which has maintained a prominent presence in its former colonies through its foreign aid program (Petiteville, 1996). Many donor countries have, at one time or another, exercised political control over countries in the developing world, and the variable Colony examines the relevance of these historical ties in their aid disbursements. It reflects whether a recipient country was under the political control of the donor country at any time from 1750 to the present.[10]

Although linguistic similarity between donors and recipients is partly a reflection of colonial legacies, donors can also be expected to focus more attention on aid recipients with whom they share an official language. Having a common administrative language can make the recipient country's political and legal system more transparent to the donor and reduce transaction costs associated with aid delivery. We employ the variable Language because commonalities in language are likely to influence aid decisions. The language data comes from the *CIA World Fact Book* (CIA, 2005).

A final variable that fits within the donor interest category is the distance between the capital cities of the donor and recipient (Distance). Distance between countries has been identified as a key factor in explaining a variety of bilateral economic relationships (Anderson, 1979; Bergstrand, 1985), and we expect that donors would have more interest in sending aid to countries in their near-abroad than to more distant locales, since demographic, political, and economic developments in recipients that are closer to the donor country are likely to be more consequential for the donor. The data are from USDA (2004). As we discuss below,

Colony, Language and Distance are employed as instrumental variables in the selection equation of our two-stage Heckman model.

Undoubtedly, several other recipient characteristics might be included in a model of aid giving. Among the potential alternatives, we checked for the impacts of natural disasters, age dependency, economic openness, political rights, rule of law (for example, the International Country Risk Guide rating), agricultural exports and external debt on aid allocation decisions. For all of these variables, data are only available for a fraction of our observations. Nevertheless, when included, they do not change our results. Therefore, we decided to concentrate on the core variables discussed below.

## Methods

Most donors provide aid to only a subset of all the potential recipients: about 43 per cent of all potential donor–recipient dyads in the given sample have no aid flows. Consequently, the inferential analysis of dyadic aid patterns is challenging. Because "zeros" may be generated by a different causal process than "non-zeros," predicting all aid disbursements in a single equation is problematic. To account for this potential bias (stemming from selection on unobservables), we rely on a two-stage Heckman selection model (Heckman, 1976, 1979).[11] This model allows estimation in two stages: first, to evaluate the likelihood of whether aid flows will occur at all (selection equation) and, second, to examine how much aid is allocated across countries that receive aid (outcome equation). Consequently, the first stage is estimated via probability unit (probit) and the second by ordinary least squares (OLS). A number of studies adopting a two-stage approach (Cingranelli and Pasquarello, 1985; Dudley and Montmarquette, 1976; Meernik et al., 1998; Poe and Meernik, 1995) suggest that the aid decision-making process itself follows a two-stage logic, where donors decide, first, whether or not to grant aid to specific recipients and, second, how much aid they should provide to these recipients. While dividing the decision-making process into two discrete phases is clearly a simplification, the two-stage approach is useful in separating those countries that are likely recipients for a given donor from countries that are less plausible candidates for assistance at the outset.

The key challenge in employing a two-stage model is to identify variables that affect aid eligibility (selection equation) but not the amount of allocated aid (outcome equation). In other words, we need to employ theoretically defensible instruments that strongly affect the endogenous variable (binary: aid, no aid) in the selection equation but not the outcome equation's dependent variable (Sartori, 2003; Wooldridge, 2002). For both theoretical and econometric reasons, we consider three variables to be suitable instruments: Colony, Language, and Distance.[12] Theo-

retically, these variables reflect long-lasting donor commitments to a given country and should explain whether or not a recipient will receive any aid from a particular donor but at the same time not directly predict variations in the volume of aid they receive.[13] In other words, the instrumental variables influence the volumes of aid disbursements to recipients only indirectly via their effect on whether donors will provide any aid to these recipients in the first place. To illustrate, a developing country's membership in the francophone club is likely to strongly influence whether France provides any aid to this country. However, this membership is not likely to be a direct (and significant) predictor of how much aid it will receive from France. Our instruments are strongly correlated with the endogenous variable and weakly correlated with aid disbursement, the outcome variable of the second stage. A Wald test for the independence of the selection and outcome equations is clearly rejected (thus making a simple OLS regression an inappropriate method of inference) and $\lambda$ (the coefficient of the inverse Mill's ratio) is statistically significant ($p < .001$) in all presented models. Finally, we offer several model specifications below in order to illustrate the resilience of the selection model.

We lag all time-varying explanatory variables by one year in order to account for the aid decision-making sequence. We also examined the model with different lag structures of Trade ranging from two years to five years to assess the long-term effects of trade relations on aid disbursements. Because the results remained substantively the same and long lags (for example five years) shrink the number of observations used for estimation, we have not reported them in this study.

Panel data are beset with serial correlation problems. Further, given that budget decisions are often sticky, we have theoretical reasons to expect that previous aid disbursements are likely to influence future ones. Both Wooldridge (2002: 282–83) and Arellano-Bond tests (Arellano and Bond, 1991) indicate first-order autocorrelation in our data. We respond to this issue by including a lagged dependent variable (Beck and Katz, 1995). While sensitivity analyses did not show clear evidence for heteroskedasticity in the Heckman selection model, we nevertheless provide specification checks with robust standard errors, clustered standard errors (by dyad), and bootstrapping. Our model is robust across these varying econometric specifications.

As a summary of the data and methods section, we present the main estimation equation. The regression equation of interest can be written as:

$$\begin{aligned} ln(Aid_{it}) = {} & \beta_0 + \beta_1\, ln(Aid_{it-1}) + \beta_2\, ln(Trade_{it-1}) \\ & + \beta_3\, ln(Population\ Size_{it-1}) \\ & + \beta_4\, ln(Per\ Capita\ Income_{it-1}) + \beta_5\, Literacy\ Rate_{it-1} \\ & + \beta_6\, Political\ Regime_{it-1} + \beta_7\, Civil\ Liberties_{it-1} + \varepsilon \end{aligned}$$

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where $i$ indicates the dyad and $t$ is the time period. The selection equation, which determines whether $ln(Aid_{it})$ is observed, additionally uses three instruments: Language, Distance, and Colony, which are excluded from the outcome equation.

## Results

Our analyses provide strong support for the argument that the volumes of bilateral aid disbursements are significantly influenced by bilateral trade between the donors and the recipients. Regarding the control variables, we find mixed evidence that political characteristics of recipient countries and their need for assistance influence the volume of bilateral aid they receive. Table 1 presents the results of our main model. For the following interpretation, we concentrate on the outcome equation.

The regression estimates favour the hypothesis that trade drives aid over the trade replaces aid logic. Substantively, for a given dyadic relationship, a one standard deviation increase in bilateral Trade (2.65 per cent) leads to a 0.66 per cent increase in bilateral Aid allocations in the following year. This suggests that at the bilateral level donors distribute aid to the recipient countries with whom they have trading relationships.

The political characteristics of recipient countries have an uneven influence on aid disbursements. Although our measure of individual freedom, Civil Liberty, is statistically significant and negative, suggesting that aid is directed to countries where the protection of individual rights is stronger, the statistical significance of our measure of democracy, Political Regime, indicates that autocratic regimes are able to secure more foreign aid than their democratic counterparts. This finding is puzzling, especially because of the high correlation between the two variables, and the potential reasons driving this finding should be explored further before making any more conclusive statements. One speculation might be that donors prioritize political and economic stability over regime type as a criterion for aid disbursement.

We also find mixed evidence in support of the hypothesis that aid decisions are motivated by perceptions of recipient countries' development needs. Per Capita Income is a statistically significant predictor of aid disbursements in a manner consistent with the recipient need hypothesis. In simple terms, as the Per Capita Income of a recipient country increases by one standard deviation, aid declines by almost 0.6 per cent in the following year. Thus, trade and per capita income have the strongest substantive effects on aid. While the income level of the recipient is negatively associated with aid disbursements, the Literacy of the recipient is positively associated with aid outlays. Donors, it seems, provide more aid to countries whose populations are more literate. In contrast to

TABLE 1
Regression Results for a Heckman Selection Model of Aid Disbursement

| | Outcome Equation | Selection Equation | Estimated Change in Aid in the Outcome Equation |
|---|---|---|---|
| *Log of Trade*$_{t-1}$ | 0.248[c] | 0.036[c] | 0.658 |
| | (0.013) | (0.004) | |
| *Log of Population Size*$_{t-1}$ | −0.026 | −0.158[c] | −0.039 |
| | (0.028) | (0.006) | |
| *Log of Per Capita Income*$_{t-1}$ | −0.613[c] | 0.175[c] | −0.587 |
| | (0.043) | (0.012) | |
| *Literacy Rate*$_{t-1}$ | 0.012[c] | −0.006[c] | 0.278 |
| | (0.001) | (0.000) | |
| *Political Regime*$_{t-1}$ | −0.021[c] | 0.015[c] | −.150 |
| | (0.006) | (0.002) | |
| *Civil Liberties*$_{t-1}$ | −0.126[c] | 0.111[c] | −0.180 |
| | (0.029) | (0.008) | |
| *Language* | | 0.193[c] | |
| | | (0.025) | |
| *Distance* | | −0.033[c] | |
| | | (0.002) | |
| *Colony* | | 0.387[c] | |
| | | (0.033) | |
| *Log of Aid*$_{t-1}$ | −0.030[b] | 0.063[c] | −0.120 |
| | (0.011) | (0.002) | |
| *Intercept* | 10.228[c] | 0.476[c] | |
| | (0.388) | (0.119) | |
| $\lambda$ | | −3.213[c] | |
| | | (0.210) | |
| $\rho$ | | −0.94 | |
| Wald $\chi^2$ | | 2717.62[c] | |
| Observations | | 34856 | |

Note: The estimated changes are based on a counterfactual change of the regressor by its standard deviation. Point estimates are on top and standard errors in parentheses below.
Levels of significance: [c]$p < .001$, [b]$p < .01$, [a]$p < .05$.

all other variables in the model, Population Size is not statistically significant in the outcome equation, but the selection equation suggests that smaller countries are more likely to be selected to receive aid.

We examined different specifications of our model and find that our key findings hold across specifications. Trade is a statistically significant predictor of aid across specifications. This robustness provides additional evidence that aid disbursements are significantly influenced by the bilateral trading relations between donors and the recipients.

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TABLE 2
Alternative Specifications

| Outcome Equations | Nordic Donors | Israel and Egypt Dropped | Cold War Only | Existing States Only |
|---|---|---|---|---|
| *Log of Trade*$_{t-1}$ | 0.196[c] | 0.240[c] | 0.285[c] | 0.263[c] |
| | (0.031) | (0.013) | (0.028) | (0.015) |
| *Log of Population Size*$_{t-1}$ | −0.004 | −0.015 | −0.044 | −0.139[c] |
| | (0.045) | (0.028) | (0.057) | (0.031) |
| *Log of Per Capita Income*$_{t-1}$ | −0.435[c] | −0.602[c] | −0.627[c] | −0.392[c] |
| | (0.083) | (0.045) | (0.096) | (0.034) |
| *Literacy Rate*$_{t-1}$ | 0.005 | 0.012[c] | 0.026[c] | 0.006[c] |
| | (0.003) | (0.001) | (0.004) | (0.001) |
| *Political Regime*$_{t-1}$ | −0.007 | −0.022[c] | −0.027[a] | 0.002 |
| | (0.011) | (0.006) | (0.011) | (0.005) |
| *Civil Liberties*$_{t-1}$ | −0.135[a] | −0.123[c] | −0.191[c] | 0.017 |
| | (0.055) | (0.030) | (0.056) | (0.024) |
| *Log of Aid*$_{t-1}$ | −0.076[c] | −0.033[b] | −0.090[c] | 0.029[b] |
| | (0.018) | (0.011) | (0.024) | (0.009) |
| *Intercept* | 9.419[c] | 10.124[c] | 10.330[c] | 8.487[c] |
| | (0.948) | (0.395) | (0.838) | (0.342) |
| Observations | 5588 | 34438 | 12460 | 28044 |

| Outcome Equations | Robust SE | Robust SE by Dyads | Bootstrapping | Bootstrapping by Dyads |
|---|---|---|---|---|
| *Log of Trade*$_{t-1}$ | 0.265[c] | 0.265[c] | 0.248[c] | 0.248[c] |
| | (0.011) | (0.029) | (0.014) | (0.031) |
| *Log of Population Size*$_{t-1}$ | −0.081[c] | −0.081 | −0.026 | −0.026 |
| | (0.020) | (0.059) | (0.032) | (0.090) |
| *Log of Per Capita Income*$_{t-1}$ | −0.552[c] | −0.552[c] | −0.613[c] | −0.613[c] |
| | (0.035) | (0.098) | (0.044) | (0.113) |
| *Literacy Rate*$_{t-1}$ | 0.011[c] | 0.011[b] | 0.012[c] | 0.012[c] |
| | (0.001) | (0.003) | (0.001) | (0.004) |
| *Political Regime*$_{t-1}$ | −0.013[b] | −0.013 | −0.021[c] | −0.021 |
| | (0.005) | (0.011) | (0.006) | (0.011) |
| *Civil Liberties*$_{t-1}$ | −0.079[c] | −0.079 | −0.126[c] | −0.126 |
| | (0.024) | (0.052) | (0.032) | (0.075) |
| *Log of Aid*$_{t-1}$ | −0.008 | −0.008 | −0.030[b] | −0.030 |
| | (0.007) | (0.018) | (0.011) | (0.030) |
| *Intercept* | 9.593[c] | 9.593[c] | 10.228[c] | 10.228[c] |
| | (0.336) | (0.943) | (0.382) | (1.078) |
| Observations | 34856 | 34856 | 34856 | 34856 |

The commercial interest argument may apply more to certain donor countries than others. Previous studies of donors' aid policies suggest that in disbursing aid, Nordic countries place greater emphasis on the humanitarian needs of recipient countries than on pursuing their own eco-

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nomic objectives (Pratt, 1989; Stokke, 1989).[14] As a consequence, these countries have directed more aid to the lowest income recipients (Lumsdaine, 1993). In limiting our analysis to Nordic donors only, we find that these countries do indeed represent a slight departure from the global norm; Trade and Per Capita Income are statistically significant predictors of aid disbursements by the Nordic donors. Per Capita Income is clearly an important predictor here. In contrast to the full model, the only other statistically significant predictor is Civil Liberties, indicating that recipient countries that value freedom of expression receive more aid monies from Nordic countries. This finding underlines that Nordic donors appear to provide foreign aid not only to poorer countries but also to recipients that value citizen rights. More importantly, the aid following trade logic outlined in this paper also applies to Nordic donors.

The apparent motives of donors in providing aid may also vary depending on which recipient countries are included in an analysis of aid flows. Although Israel and Egypt became leading recipients of US development assistance as a result of the 1978 Camp David Accords, their particular historical relationships with individual countries and geopolitical positions in the Middle East have made these countries significant beneficiaries of aid from multiple sources (Alesina and Dollar, 2000). Because these special cases could potentially bias our results, we excluded them from our model and re-ran the model. Dropping Israel and Egypt from our sample does not substantively alter our overall findings, however. Bilateral trade continues to be statistically significant predictor of bilateral aid disbursements.

Arguably, the strong relationship between bilateral trade and bilateral aid may not apply equally in all regions of the developing world. Given that many of the world's poorest countries, which are marginal players in global trade are located in Sub-Saharan Africa, we would expect that commercial interests would be less likely to be strong predictors of aid flows toward these countries. On the other hand, recent initiatives to use aid to stimulate trade ties with a select group of African partners such as the African Growth and Opportunity Act in the United States or the Economic Partnership Agreements concluded with the European Union provide an indication that donor aid disbursements might support commercial aims in sub-Saharan Africa as well. To examine this issue, we tested a model that included only Sub-Saharan African countries as aid recipients. Our central explanatory variable of interest, Trade, along with recipient need indicators (Per capital Income,) are statistically significant predictors of aid dispersal in this specification between 1980–2002, which includes the time periods prior to the enactment of initiatives by the European Union and the United States referenced above. We also find evidence of a bias in aid distribution towards smaller and more literate countries in this region.

Table 3 presents results based on analyses that investigate how aid-giving patterns vary across regions in the developing world. The relationship between bilateral trade and bilateral aid that we observe in our main model displays a consistently strong effect on aid provision across regions. In contrast, there are notable regional differences with respect to other variables that are included as controls in our analysis. For example, while donors appear to provide more aid to countries with fewer protections of individual freedoms in East Asia, the Civil Liberties measure is significant and negative when only countries in North Africa and the Middle East are examined, suggesting that donors are potentially more attentive to human rights considerations in that part of the world.[15] Yet again, we find that trade is a key source for aid disbursement regardless of regional focus. This finding reinforces the global applicability of our hypothesis.

The time period under consideration spans a period of fundamental transformation in the structure of the international system. Because donor motivations for aid disbursement may have been driven by the dynamics of great power politics during the Cold War (Dunning, 2004), we examine whether bilateral aid allocations followed a different (that is, a potentially non-commercial) logic during the Cold War period. In restricting our analysis to the period 1980–1990, we find that Trade is still a statistically significant predictor of aid disbursements for the time when security concerns were supposed to be paramount.

In addition to exploring how the relationship between trade flows and aid allocations holds across regions and over time, we have also examined the robustness of our findings through the use of alternative estimation techniques. To control for heteroskedasticity, we use two inferential techniques to confirm the two-stage selection model. First, we employed a Heckman model using maximum likelihood estimation (MLE) with Huber/White robust standard errors and using dyadic clustering in order to compute the standard errors (that is, assuming independence across groups). Second, we bootstrapped the original two-stage Heckman model. Both these estimation techniques are consistent with the results reported in the main model: Trade is a statistically significant predictor of bilateral aid disbursements.

Two additional issues are worth discussing. First, one might argue that the causality between trade and aid is reversed. One potential way to deal with this issue is via a series of Granger causality tests. However, Granger tests require long time series in order to identify the direction of causality. Since we only have 22 years of data, we are forced to deal with this issue indirectly. In this paper we provided strong empirical and theoretical reasons why trade should affect aid and also lagged the trade variable by a year. In addition, there is some support in the literature that bilateral trade might be driving bilateral aid, and not vice versa. In particular, Osei and colleagues (2004) were able to conduct a series of

TABLE 3
Regional Specifications

| Outcome Equations | Sub-Saharan Africa | East Asia | Latin America and Caribbean | Former Soviet Union and Eastern Europe | North Africa and Middle East | Asia |
|---|---|---|---|---|---|---|
| *Log of Trade*$_{t-1}$ | 0.334[c] | 0.439[c] | 0.274[c] | 0.285[c] | 0.355[c] | 0.391[c] |
| | (0.019) | (0.044) | (0.025) | (0.026) | (0.033) | (0.026) |
| *Log of Population Size*$_{t-1}$ | −0.227[c] | 0.173[b] | −1.004[c] | −0.629[c] | −0.261[c] | 0.004 |
| | (0.035) | (0.065) | (0.058) | (0.050) | (0.063) | (0.050) |
| *Log of Per Capita Income*$_{t-1}$ | −0.560[c] | 0.157 | −1.351[c] | −0.881[c] | −0.479[c] | −0.102 |
| | (0.055) | (0.135) | (0.109) | (0.110) | (0.114) | (0.084) |
| *Literacy Rate*$_{t-1}$ | 0.014[c] | 0.012[a] | 0.032[c] | −0.007 | −0.006 | 0.007 |
| | (0.002) | (0.005) | (0.003) | (0.005) | (0.006) | (0.005) |
| *Political Regime*$_{t-1}$ | −0.053[c] | 0.022 | 0.028[a] | 0.162[c] | 0.008 | −0.060[c] |
| | (0.008) | (0.017) | (0.011) | (0.017) | (0.014) | (0.012) |
| *Civil Liberties*$_{t-1}$ | −0.029 | 0.332[c] | 0.179[b] | 0.497[c] | −0.238[c] | −0.113[a] |
| | (0.036) | (0.084) | (0.056) | (0.077) | (0.072) | (0.047) |
| *Log of Aid*$_{t-1}$ | 0.041[c] | −0.043 | 0.179[c] | 0.186[c] | 0.046[b] | 0.001 |
| | (0.012) | (0.031) | (0.018) | (0.029) | (0.017) | (0.022) |
| *Intercept* | 9.079[c] | −4.088[c] | 25.945[c] | 16.134[c] | 11.204[c] | 2.730[c] |
| | (0.520) | (1.211) | (1.145) | (1.444) | (0.937) | (0.741) |
| Observations | 7625 | 4714 | 4948 | 6975 | 4459 | 8530 |

Note: The outcome equations for each regional regression are presented.

Granger tests on a variety of trade and aid data from European donors to African recipients and concluded that tied aid in particular does not impact trade levels. However, their results also emphasize that causal inferences can change when the sub-samples used in a given analysis are modified. This suggests that the aid allocation literature might benefit from producing more bounded generalizations about the nature of the relationships between aid allocation decisions and variables thought to influence giving patterns.

Empirically, one potential way to respond to the issue of reverse causality with our data is the following approach. We first predict bilateral trade with bilateral aid as a covariate and thereby obtain the portion of trade that is correlated with aid. The residual trade is the difference between the predicted trade and the actual trade. In our initial Heckman model, we now replace the actual trade with the residual trade. As Table 4 shows, the residual trade is also positive and statistically significant and thus provides additional support for our hypothesis.

The second caveat concerns our estimation technique. There is substantial literature on how to deal with the identification problem and using a Heckman selection model as a solution. In this paper, we provided several alternative specifications in order to gauge the sensitivity and fragility of our model. Since the connection among the outcome and selection equation equations can be viewed as a powerful tool as well as a major drawback (Ward, 2007: 103), we use a zero-inflated Poisson maximum likelihood estimation of the model as final check for our findings.[16] Table 5 presents the findings of this estimation. With the exception of Political Regime and Civil Liberties, which reverse the direction of the relations, the remaining results follow the presented Heckman models. Once more we find that the Trade variable is statistically significant and positive as our aid follows trade theory expects.

## Conclusion

The central policy problem that this article highlights is that while trade and aid have often been presented as foreign policy substitutes (Kosack and Tobin, 2006), in practice aid flows are strongly related to patterns of trade flows between donors and recipients. Employing a two-stage Heckman model to analyze bilateral aid disbursements from 22 donors to 187 developing countries from 1980 to 2002, we find strong support for trade drives aid policies instead of the trade, not aid approaches. By relying on more comprehensive data on economic flows between donors and recipients and examining the robustness of our results using a variety of model specifications and estimation techniques, this study builds on an already rich literature on aid allocation and underlines the importance of com-

TABLE 4
Regression Results for a Heckman Selection Model of Aid Disbursement with Residual Trade

| | Outcome Equation | Selection Equation |
|---|---|---|
| *Log of Residual Trade*$_{t-1}$ | 0.248[c] | 0.036[c] |
| | (0.013) | (0.004) |
| *Log of Population Size*$_{t-1}$ | −0.026 | −0.158[c] |
| | (0.028) | (0.006) |
| *Log of Per Capita Income*$_{t-1}$ | −0.613[c] | 0.175[c] |
| | (0.043) | (0.012) |
| *Literacy Rate*$_{t-1}$ | 0.012[c] | −0.006[c] |
| | (0.001) | (0.000) |
| *Political Rights*$_{t-1}$ | −0.021[c] | 0.015[c] |
| | (0.006) | (0.002) |
| *Civil Liberties*$_{t-1}$ | −0.126[c] | 0.111[c] |
| | (0.029) | (0.008) |
| *Language* | | 0.193[c] |
| | | (0.025) |
| *Distance* | | −0.033[c] |
| | | (0.002) |
| *Colony* | | 0.387[c] |
| | | (0.033) |
| *Log of Aid*$_{t-1}$ | 0.037[c] | 0.072[c] |
| | (0.011) | (0.002) |
| *Intercept* | 14.063[c] | 1.033[c] |
| | (0.462) | (0.147) |
| $\lambda$ | | −3.213[c] |
| | | (0.210) |
| P | | −0.947 |
| Wald $\chi^2$ | | 2717[c] |
| Observations | | 34856 |

Note: Point estimates are on top and standard errors in parentheses below.
Levels of significance: [c]$p < .001$, [b]$p < .01$, [a]$p < .05$.

mercial considerations in influencing which countries tend to have the best access to official development finance.

One can argue that the complementarity of aid and trade flows may be mutually advantageous to donors and recipients. Donors can use aid to expand outlets for their firms' products and secure regular access to strategic materials while for recipients, trade and aid together might serve as a healthy cocktail to stimulate economic and human development. There is a cautionary note to add, however. It is plausible that more commercially oriented aid programs may privilege investments in economic infrastructure where less commercially oriented aid programs may invest more in providing social services to recipient country populations. It is not

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TABLE 5
Zero Inflated Poisson Maximum Likelihood for Aid Giving

| Count model | Estimate | Std. Error | z value | Pr(>\|z\|) |
|---|---|---|---|---|
| *Log of Trade*$_{t-1}$ | 0.045[c] | 0.002 | 28.465 | 0.000 |
| *Log of Population Size*$_{t-1}$ | −0.048[c] | 0.002 | −20.793 | 0.000 |
| *Log of Per Capita Income*$_{t-1}$ | −0.040[c] | 0.005 | −8.531 | 0.000 |
| *Literacy Rate*$_{t-1}$ | 0.000[b] | 0.000 | 2.959 | 0.003 |
| *Political Regime*$_{t-1}$ | 0.002[a] | 0.001 | 2.483 | 0.013 |
| *Civil Liberties*$_{t-1}$ | 0.015[c] | 0.003 | 4.787 | 0.000 |
| *Log of Aid*$_{t-1}$ | 0.013[c] | 0.001 | 15.202 | 0.000 |
| *Intercept* | 2.107[c] | 0.046 | 46.219 | 0.000 |
| **Zero-inflation model** | **Estimate** | **Std. Error** | **z value** | **Pr(>\|z\|)** |
| *Log of Trade*$_{t-1}$ | −0.060[c] | 0.006 | −9.589 | 0.000 |
| *Log of Population Size*$_{t-1}$ | 0.258[c] | 0.010 | 26.720 | 0.000 |
| *Log of Per Capita Income*$_{t-1}$ | −0.279[c] | 0.020 | −13.906 | 0.000 |
| *Literacy Rate*$_{t-1}$ | 0.009[c] | 0.001 | 12.734 | 0.000 |
| *Political Regime*$_{t-1}$ | −0.024[c] | 0.003 | −8.484 | 0.000 |
| *Civil Liberties*$_{t-1}$ | −0.179[c] | 0.013 | −13.737 | 0.000 |
| *Language* | −0.313[c] | 0.041 | −7.552 | 0.000 |
| *Distance* | 0.054[c] | 0.003 | 20.352 | 0.000 |
| *Colony* | −0.649[c] | 0.057 | −11.481 | 0.000 |
| *Log of Aid*$_{t-1}$ | −0.101[c] | 0.003 | −28.912 | 0.000 |
| *Intercept* | −0.837[c] | 0.193 | −4.338 | 0.000 |
| Log likelihood | −68030 | | | |
| N | 34856 | | | |

Note: The dependent variable is the Log of Aid.
Levels of significance: [c]$p < .001$, [b]$p < .01$, [a]$p < .05$.

clear which might have a higher development payoff for recipient countries. Future research should therefore carefully examine whether the commercial orientation of aid policies is beneficial or detrimental for recipients. This work should also examine how the sectoral composition of aid influences economic growth and the quality of life of recipient populations. In sum, future work can benefit by paying increased attention to how the varied motivations behind aid allocations and the variety of forms aid takes might influence development outcomes in recipient countries.

This article suggests that researchers and policy makers fond of the trade, not aid argument should recognize that the developing countries that have been most integrated into global trading networks have also been privileged aid recipients over time. Consequently, commercially unattractive recipients face difficulties in attracting aid as well as the commercial attention of industrialized countries. The policy implications which follow from this finding are sobering. If an external infusion of

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capital is necessary for development, then the world's poorest countries face a double disadvantage. Poor countries bypassed by the forces of economic globalization are likely to be passed over to some degree by financial instruments that might compensate for economic marginalization as well. While concerns about efficiency have occupied a prominent place on the aid agenda in recent years, this analysis of the distributional logic of aid suggests that the donor community should also ensure that equity features more prominently in debates on how to allocate aid in the future. The structural disadvantages facing many developing countries in the globalizing world have not been offset by aid. We hope this paper will motivate both policy makers and development researchers to think of innovative ways of mobilizing capital for development that are not conditioned by extant structural patterns to support the objective of jump-starting economic development in the marginalized regions of the world.

## Notes

1 Figures are in current dollars and reflect the volume of the merchandise trade between members of the OECD's Development Assistance Committee and developing economies.
2 These recent increases followed a period of global stagnation in aid giving: 16 of 21 of the main donors provided less aid as a percentage of their national income at the end of the 1990s than they had at the beginning of the decade.
3 See appendix 1 for the list of donors and recipients included in this analysis.
4 For a more detailed overview of studies on aid disbursement highlighting the main variables identified in existing research, central findings and periods of study, see Neumayer (2003).
5 Because colonial linkages are time invariant, they are less suitable to understanding variations in aid disbursements over time. Countries vote on UN resolutions on a wide variety of political, economic and social issues, hence this variable does not capture a precise dimension of a donor's national interest.
6 See the *Financial Times* (2006), Kahn (2006) and Tull (2006) on the importance of commercial considerations in China's growing ties to the African continent.
7 Because development assistance can come in the form of both grants and loans, in years where development loan repayments exceed fresh resource infusion, the net ODA figure may have a negative value for some donor–recipient pairings. We treat the negative ODA values as zeros in this analysis because they indicate that there has been no net inflow of aid to the recipient country. ODA to recipient countries has been distributed overwhelmingly in grant form. Across the DAC community grant aid accounted for 87 per cent of aid outlays on average from 1980 to 2002 (OECD, 2009).
8 Donors' commercial interest can also be influenced by the stock of donor foreign direct investment in the recipient economy. To investigate this speculation, we included donor FDI stock as a covariate and it was statistically significant. However, the limited availability of the dyadic FDI data (either from the OECD or the UNCTAD) leads to a drop in the number of observations (dyad years) from 27,001 to 2,716. Hence, we decided not to include foreign direct investment as a covariate in our final model.
9 Life Expectancy is another variable that can be used as a quality-of-life indicator, as this measure should reflect factors such as the infant mortality rate, access to health

care and the quality of the physical infrastructure for clean water delivery and sanitation. Because the literacy rate measure is highly correlated with the life expectancy measure available from the *World Development Indicators* database, we have opted to use literacy in our baseline model, given that this choice allows us to increase the number of available observations significantly. Replacing the literacy rate measure with life expectancy did not substantively alter our results.

10 A list of sources consulted to compile the Colony variable is available from the authors on request.

11 We considered several alternatives to the Heckman model. Unfortunately, some of the assumptions for panel GMM did not hold (Arellano, 2003). We also avoided reducing variables to binary outcomes in order to employ Sartori's estimator (2003). Instead, we tested a variety of count and hurdle models using Wald and Voung tests and identified a zero-inflated Poisson as a suitable alternative. The results of this estimation are presented below.

12 An additional candidate is membership in a military alliance (Gibler and Sarkees, 2004). Because only 1.5 percent of dyads are indicated as allies, this variable is unsuitable as an instrument.

13 As Sartori (2003) demonstrates, one should not use the same variables in both stages in order to ensure that covariates (and not the distribution) determine the estimation.

14 We also restricted the analysis to other subsets of the donors. For example, because there is a substantial amount of missing data for key variables of interest for Belgium, Luxembourg and Greece, their inclusion might introduce a bias into our analysis. When we excluded these countries, the results are still consistent with our main model.

15 We also investigated whether our results were influenced by the presence of recipients in our dataset that were not independent for a portion of the period our data analysis covers or states that still are not politically independent. These recipients include countries such as former Soviet republics that gained independence in the 1990s or territories over which donor countries continue to exercise some degree of political control. French overseas departments and territories, such as French Polynesia and New Caledonia, have traditionally received substantial volumes of ODA, even though they are technically considered an integral part of the French state. To evaluate whether the inclusion of non-existent states and non-states in our list of recipient countries affects our results, we have conducted an additional test by examining aid relationships between donors and existing states only (Correlates of War Project, 2005). Trade is positively correlated with aid flows and statistically significant in this specification.

16 This is an appropriate alternative, since the mean and variance of the dependent variable is similar. This estimation also outperformed other alternatives in a series of Vuong tests. One drawback, of course, is that the dependent variable is transformed into integer values.

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## Appendix 1

The 22 donor countries are Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, Luxembourg, Netherlands, New Zealand, Norway, Portugal, Sweden, Switzerland, the United Kingdom, and the United States.

The recipient countries included cover two categories of economies as identified by the DAC: part I countries, a category that covers the majority of developing countries, and part II countries, a category that comprises more advanced recipient economies, in particular the transition economies of Central and Eastern Europe and the former Soviet Union. These are listed below.

### Recipient List

Afghanistan
Albania
Algeria
Angola
Anguilla
Antigua and Barbuda
Argentina
Armenia
Aruba
Azerbaijan
Bahamas
Bahrain
Bangladesh
Barbados
Belize
Benin
Bermuda
Bhutan
Bolivia
Bosnia and Herzegovina
Botswana
Brazil
Brunei
Burkina Faso
Burundi
Côte d'Ivoire
Cambodia
Cameroon
Cape Verde
Cayman Islands
Central African Republic
Chad
Chile
China
Chinese Taipei
Colombia
Comoros
Dem. Rep. Congo
Rep. Congo
Cook Islands
Costa Rica
Croatia
Cuba
Cyprus
Djibouti
Dominica
Dom. Republic
Timor-Leste
Ecuador
Egypt
El Salvador
Equatorial Guinea
Eritrea
Ethiopia
Falkland Islands
Fiji
French Polynesia
Gabon
Gambia
Georgia
Ghana
Gibraltar
Grenada
Guatemala
Guinea
Guinea-Bissau
Guyana
Haiti
Honduras
Hong Kong
India
Indonesia
Iran
Iraq
Israel
Jamaica
Jordan
Kazakhstan
Kenya
Kiribati
Korea
Korea, Dem. Republic
Kuwait
Kyrgyz Rep.

Laos
Lebanon
Lesotho
Liberia
Libya
Macao
Macedonia (FYROM)
Madagascar
Malawi
Malaysia
Maldives
Mali
Malta
Marshall Is.
Mauritania
Mauritius
Mayotte
Mexico
Micronesia
Mongolia
Montserrat
Morocco
Mozambique
Myanmar
Namibia
Nauru
Nepal
Neth. Antilles
New Caledonia
Nicaragua
Niger
Nigeria
Niue
N. Mariana Is.
Oman
Pakistan
Palau
Palestinian Ter.
Panama
Papua New Guinea
Paraguay
Peru
Philippines
Qatar
Rwanda
Samoa
Sao Tome and Principe
Saudi Arabia
Senegal
Serbia
Seychelles
Sierra Leone
Singapore
Slovenia
Solomon Is.
Somalia
South Africa
Sri Lanka
St. Helena
St. Kitts-Nevis
St. Lucia
St. Vincent
Sudan
Suriname
Swaziland
Syria
Tajikistan
Tanzania
Thailand
Togo
Tokelau
Tonga
Trinidad and Tobago
Tunisia
Turkey
Turkmenistan
Turks and Caicos
Tuvalu
Uganda
UAE
Uruguay
Uzbekistan
Vanuatu
Venezuela
Vietnam
Virgin Islands (UK)
Wallis and Futuna
Yemen
Zambia
Zimbabwe
Bulgaria
Czech Republic
Estonia
Hungary
Latvia
Lithuania
Poland
Romania
Slovak Republic
Belarus
Moldova
Russia
Ukraine

## APPENDIX 2
Descriptions of Main Variables and Data Sources

| Variable | Description and Sources |
|---|---|
| Aid | Net Official Development Assistance Flow from Donor to Recipient, in Thousands US Dollars. *Geographical Distribution of Financial Flows to Part I (Developing Countries)* and *Geographical Distribution of Financial Flows to Part II (Transition Countries)* (OECD, 2004). |
| Trade | Sum of exports from the donor to the recipient country and imports from the recipient country into the donor economy, in US thousands of dollars *Direction of Trade Statistics* [CD-Rom] (IMF, 2003). |
| Population Size | Total Population. *World Development Indicators Online*. |
| Per Capita Income | GDP per capita of recipient country. In purchasing power parities (current international dollars). *World Development Indicators Online* (World Bank, 2005). |
| Literacy | Adult literacy rate: percentage of people aged fifteen and above who are able to read and write a short simple statement about their daily lives. *World Development Indicators Online* (World Bank, 2005). |
| Political Regime | Polity IV score (−10 to 10, −10 = high autocracy, 10 = high democracy). Countries are rated according to a composite measure evaluating the level of political openness as reflected in measures of political competition, patterns of executive recruitment and the nature of executive constraints. *Polity IV Dataset*. |
| Civil Liberties | Ratings are assigned along a seven-point scale, where 1 indicates the highest level of freedom and 7 the lowest level of freedom. This measure focuses particularly in the level of freedom of expression and association as well as economic freedom in a given country. *Freedom in the World Country Ratings: 1972–2004* (Freedom House, 2005). |
| Language | Dummy variable indicating whether a recipient country shares an official language with a given donor country (*CIA World Factbook*, 2005). |
| Distance | Distance in thousands of kilometres between the capital city of the recipient country and the capital city of the donor country (USDA. 2004). |
| Colony | Dummy variable indicating whether a recipient country or part of a recipient country was under the political control of the donor at any time from 1750 onward. Various sources. |

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## APPENDIX 3

Descriptive statistics (N = 34856)

| Variable | Mean | Std. Dev. | Min | Max |
|---|---|---|---|---|
| *Being Recipient* | 0.56 | 0.50 | 0.00 | 1.00 |
| *Log of Trade* | 17.43 | 2.65 | 3.26 | 26.22 |
| *Log of Population Size* | 16.15 | 1.50 | 12.72 | 20.96 |
| *Log of Per Capita Income* | 7.86 | 0.96 | 5.78 | 10.18 |
| *Literacy Rate* | 69.25 | 23.19 | 7.95 | 99.80 |
| *Political Rights* | 0.33 | 6.95 | −10.00 | 10.00 |
| *Civil Liberties* | 4.35 | 1.50 | 1.00 | 7.00 |
| *Language* | 0.10 | 0.29 | 0.00 | 1.00 |
| *Distance* | 7.74 | 4.39 | 0.57 | 19.43 |
| *Colony* | 0.06 | 0.24 | 0.00 | 1.00 |
| *Log of Foreign Aid* | 4.13 | 4.12 | 0.00 | 14.90 |

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