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**Article (Published version)  
(Refereed)**

**Original citation:**

Baccini, Leonardo and Urpelainen, Johannes (2012) *Strategic side payments: preferential trading agreements, economic reform, and foreign aid*. *Journal of Politics*, 74 (4). pp. 932-949. ISSN 1468-2508

DOI: [10.1017/S0022381612000485](https://doi.org/10.1017/S0022381612000485)

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Available in LSE Research Online: June 2015

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# Strategic Side Payments: Preferential Trading Agreements, Economic Reform, and Foreign Aid

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*We propose that major powers give foreign aid to developing countries to facilitate politically costly economic reforms that preferential trading agreements prescribe. Democratic developing countries (1) need adjustment assistance more than autocracies and (2) can credibly commit to using fungible revenue to compensate the domestic losers, so a side payment for deeper reforms should only be available for democracies. A quantitative test lends support to the theory. Fully democratic developing countries that form a preferential trading agreement with the European Union or the United States obtain a large increase in foreign aid in the short run. These results imply that donors have used foreign aid to strengthen the effect of preferential trading agreements on economic reforms.*

International political economists have recently investigated why wealthy countries give foreign aid.<sup>1</sup> Previous research has shown that strategic interests, such as direct support to military allies or important trading partners, dominate over altruistic considerations (Alesina and Dollar 2000). Accordingly, donors use foreign aid either to support loyal regimes or to buy policy concessions from governments that are willing to implement the same in exchange for fungible resources (Bueno de Mesquita and Smith 2009).

We show that donors also use foreign aid to enhance the implementation of preferential trading agreements (PTAs) that induce economic reform in developing countries. Specifically, we propose that major powers can use foreign aid to help developing countries survive the politically and economically costly adjustments that inevitably accompany liberalization (Geddes 1994; Haggard and Webb 1994; Nsouli, Rached, and Funke 2005; Rodrik 1992, 1996). However, we depart from previous research by emphasizing the recipient's need for adjustment assistance and ability to credibly commit to using foreign aid to enhance economic reform. We expect democratic developing countries to receive more adjustment assistance because their need for it is greater and they can better honor their treaty commitments.

Analyzing PTAs between a developing country and the United States or the European Union (EU), we find that only developing countries with democratic institutions obtain an increase in foreign aid upon forming a treaty. For fully democratic countries, a PTA results in a substantial increase in foreign aid in the short run. In contrast, PTA formation has no observable effect on foreign aid flows to nondemocratic developing countries. Foreign aid helps the EU and the United States seal reform deals with democratic developing countries.

These results have several important implications for international cooperation and political economy. First, if foreign aid can facilitate economic reform in the context of PTA formation, interactions between foreign aid and treaty formation warrant further attention. Even if foreign aid has limitations as an instrument of statecraft (Bueno de Mesquita and Smith 2009; Stone 2008), it may be effective in conjunction with a legally binding treaty. Second, our findings contribute to the PTA literature by showing how major powers can use PTAs to promote economic reform. The effectiveness of this strategy depends on the regime type of a developing country. Finally, our analysis offers direct evidence for the importance of credibility in international cooperation (Lipson 2003;

<sup>1</sup>A supplementary online appendix is available at <http://journals.cambridge.org/jop>. A complete replication package with data and code for this article will be made available upon publication at <https://sites.google.com/site/leonardobaccini/>.

Martin 2000). Developing countries do not obtain foreign aid simply because they need it. However, donors offer fungible resources to governments that can credibly commit to economic reforms.

## Foreign Aid and International Cooperation

Recent research on foreign aid has investigated both the *effect* of and the *motivation* for giving foreign aid. These questions are related because the reason why donors give foreign aid influences allocation. If donors were completely altruistic, they would allocate foreign aid to maximize the beneficial effect on development, such as economic growth or democratization. But if donors are motivated by self interest, they could use foreign aid to support repressive dictators or buy policy concessions that are harmful to broad constituencies (Bueno de Mesquita and Smith 2009).

Most political economists argue donors do not give foreign aid for altruistic reasons. Alesina and Dollar (2000) show that donors give bilateral foreign aid to politically or economically important countries. For example, the United States clearly prioritizes strategically central countries, such as Israel and Egypt. Bueno de Mesquita and Smith (2009) show that donors give foreign aid to countries that are willing to offer valuable policy concessions at a low price. According to Dunning (2004) and Thacker (1999), bilateral and multilateral foreign aid during the Cold War was motivated by the conflict between the United States and the Soviet Union. Milner and Tingley (2011) show that material considerations also influence legislative voting on foreign aid in the United States.

But even if donors behave strategically, it is not clear how this influences the effect of foreign aid. On the one hand, Bueno de Mesquita and Smith argue that foreign aid is used to purchase harmful policy concessions: “[w]hen aid is given in return for policy concessions, it is a winning proposition for donor political elites, donor constituents, and recipient political elites but it is often a bane for the citizenry in most recipient countries” (2009, 311). It is not only that foreign aid is being wasted, but the policy concessions that generate inflows of foreign aid reduce the provision of important public goods. On the other hand, Burnside and Dollar (2004) find that although domestic institutions for “good governance” do not influence the allocation of foreign aid, a high quality of domestic institutions generates a positive relationship between foreign aid and economic growth. One reason

why this might be true is that, regardless of the motivation behind giving foreign aid, good domestic institutions ensure that it is not used in wasteful ways. Additionally, good domestic institutions can prevent the government from selling harmful policy concessions to donors.

Regardless of the welfare effects of foreign aid, it may facilitate international cooperation between donors and recipients. If foreign aid can help a developing country continue political and economic reforms that produce rents, both the donor and the recipient could benefit from trading some foreign aid for valued reforms. For example, conditional IMF lending can stabilize and strengthen developing countries, but only if major powers such as the United States do not intervene to prevent the enforcement of conditionality (Stone 2008). Similarly, the promise of future foreign aid might induce dictators to democratize if they can expect to remain in power (Wright 2009).

## Theory

We study the relationship between foreign aid and PTA formation. PTAs are an increasingly important form of treaty cooperation (Mansfield and Milner 1999), as they influence both trade liberalization and economic liberalization more broadly (Büthe and Milner 2008). Foreign aid is an important instrument of statecraft for major powers that deal with developing countries (Baldwin 1986; Milner and Tingley 2011). As fungible revenue, it is an ideal side payment that donors can use to induce policy adjustments in developing countries (Bueno de Mesquita and Smith 2009). Nonetheless, previous research has largely downplayed the relationship between treaty cooperation and foreign aid.

PTAs are also ideal for our specific theoretical purposes because they require economic reform and prompt costly adjustments in recipient countries, so that foreign aid could potentially allow the implementation of reforms that would otherwise be too costly for a developing country’s government. To capture this effect, we identify those developing countries that are able to credibly commit to not squandering the windfall revenue.

**PTA formation.** Why form a PTA? One reason are traditional gains from trade, such as improvements in allocative efficiency from reciprocal market access (Dornbusch 1992; Milner 1999). Yet other rationales also exist. Mansfield and Reinhardt (2008) emphasize the beneficial effect of reducing the volatility of trade

flows. Bütte and Milner (2008) show that PTAs can also increase foreign direct investment because international rules allow governments in developing countries to credibly commit to liberalization. Mansfield and Reinhardt (2003) argue that PTAs are useful as bargaining tactics in multilateral trade negotiations.

As Fernandez and Portes (1998) argue, PTA formation can also allow credible commitment to economic reform. By *economic reform*, we refer to policy changes that pry open markets in a developing country and reduce state intervention. Such economic reforms are not limited to trade liberalization. They include privatization, deregulation, financial liberalization, and services deregulation. Although PTAs are nominally trade agreements, they often contain provisions for economic liberalization more generally, such as national treatment of foreign investors (Bütte and Milner 2008; Manger 2009). The International Trade Administration at the U.S. Department of Commerce explicitly states that “[t]rade agreements are also a tool for promoting fair competition and encouraging foreign governments to adopt open and transparent rulemaking procedures as well as non-discriminatory laws and regulations. Trade agreements can strengthen the business climate by including commitments on issues of concern along with the reduction and elimination of tariffs.”<sup>2</sup> Similarly, the Europe Agreements that the EU formed with future membership candidates were intended to promote democratization and liberalization.

Cameron provides a detailed discussion of the economic adjustments that NAFTA required in Mexico: “Mexico agreed to national treatment for foreign investors and restrictions on performance that went well beyond the Uruguay Round . . . [f]inancial services, which had been closed to foreign companies since the 1930s, were also liberalized despite serious reservations about the pace of liberalization on part of finance officials . . . Mexico agreed to toughen patent and copyright protection, and improve enforcement of intellectual property laws” (1997, 121–24). Mexico also implemented environmental and labor reforms because the U.S. Congress insisted on them as a condition for market access.

While developing countries may accrue benefits from economic reform, most PTAs are skewed towards the interests of major powers. This does not imply, however, that PTAs should not produce liberalization. If a developing country privatizes, liberalizes foreign direct investment, reduces public regulation,

or opens the service sector for foreign entrants, economic rents are available for large multinational corporations from Europe and the United States (Bütte and Milner 2008; Cameron 1997; Manger 2009). This observation provides a good basis for our theoretical argument, as it provides a rationalist explanation for why major powers would increase foreign aid in view of PTA implementation.<sup>3</sup>

Since we are interested in broader reform, as opposed to narrow trade reforms that are not necessarily difficult to implement (Milner and Kubota 2005), we only investigate EU and U.S. PTAs. Our theory does not apply to shallow or narrow PTAs, commonly formed by South-South pairs, that achieve limited trade liberalization. EU and U.S. PTAs, however, require broad economic reforms, from service and finance to intellectual property rights (World Bank 2005), so we argue that economic reforms are a key benefit thereof.

The institutional design of EU and U.S. PTAs accords with these expectations. We coded the design provisions of 41 EU and U.S. PTAs. We found that on average, these PTAs contain 5.2 legal provisions that specifically refer to intellectual property rights. Every PTA that we coded has at least one such provision. On average, we also found 6.9 legal provisions that focus on foreign direct investment liberalization. By contrast, the median number of provisions on these two issues in the universe of PTAs is zero, with 80% of PTAs having no provisions. As to services liberalization, only 10 out of the 41 did not contain provisions, and 20 of them had an entire chapter on services liberalization. These design features are strongly consistent with our theoretical focus on broader economic reform than trade liberalization.

**Foreign aid.** If a deep PTA enables deeper reforms, why increase foreign aid? Although there is empirical evidence that reforms may produce economic benefits in the long run, they are accompanied by costly adjustments that are harmful to many segments of the society in the short run (Milner and Kubota 2005; Nsouli, Rached, and Funke 2005; Przeworski 1991). As companies and industries lose protection, transitional unemployment and production standstills follow. Those who stand to lose from

<sup>2</sup>“U.S. Free Trade Agreements” <http://www.export.gov/fta> (accessed December 20, 2011).

<sup>3</sup>To be sure, the existence of these benefits does not imply that such PTAs necessarily improve global welfare. Political economists have argued that PTAs may induce trade or investment diversion (Manger 2009) or undermine the multilateral trade regime (Bhagwati 2008). Our empirical analysis is aimed at explaining the relationship between PTA formation and foreign aid. Whether the economic reforms ultimately produce global economic benefits is beyond the scope of this article.

liberalization put pressure on the government, so if the government is not in a position of strength, it may have to reverse the reforms (Geddes 1994; Haggard and Kaufman 1997; Przeworski 1991). These problems are particularly severe in developing countries because they lack the administrative and institutional capabilities that help developed countries adjust to changes (Rauch and Evans 2000).

Examples abound. A volume edited by Haggard and Webb (1994) presents eight case studies of structural adjustment in developing countries. They show that coalition formation for reform is fraught with difficulties and depends both on the right constellation of interests and the design of the reform package. Geddes (1994) reviews reform experiences in 11 developing countries and shows that reversals and failures are ubiquitous. In many developing countries, such as Turkey or Mexico, economic reforms have failed on multiple occasions (Demir 2004; Revenga 1997).

Most importantly, the empirical record of trade liberalization and other economic reforms in developing countries suggests that the problem of costly adjustment is a *political* one. Given that reforms improve the performance of the economy, it is not clear that the economic cost of adjustment is prohibitive even in the short run; yet all reforms have distributional consequences that engender political opposition (Rodrik 1992, 1996). If a government is to succeed in reform, it must form a powerful “winning coalition” in support of the reform. This problem is present in all developing countries that undergo reform, even if the total economic and social cost of adjustment is not prohibitive.

The political problem of costly adjustment is not specific to democracies. While citizens have better access to the government in democracies, the median voter often benefits from many economic reforms because they generate economic growth and reduce consumer prices (Geddes 1994; Milner and Kubota 2005). Thus, the demand for compensation, and thus resistance to reform, may be equally high, or even higher, in autocracies. Thus, the effect of regime type on the demand for compensation is again indeterminate. Brooks and Kurtz concur: “While initial research on this topic suggested that authoritarian governments might be privileged in imposing such painful reforms, subsequent empirical work found such regimes to have no particular advantage” (2007, 704).

Given these problems, we provide the following logic of PTA formation. A wealthy donor expects benefits from economic reform in a developing country, but the government of the developing country faces high political and economic adjustment costs in

the short run (Fernandez and Rodrik 1991). The wealthy donor can deepen the economic reforms that a PTA induces by providing a side payment. Thus, a more ambitious deal can be sealed. The wealthy donor benefits because it gains access to markets. The government of a developing country obtains foreign aid. In the long run, the government of a developing country may also benefit from the efficiency gains of liberalization, though the magnitude of this effect obviously depends on the design of the PTA.

Experiences with trade liberalization and policy reform lend support to this contention. According to Haggard and Webb, compensation to those who stand to lose from liberalization “is crucial to securing support for stabilization and adjustment programs. In the more successful cases—Chile, Mexico, Spain, and Thailand—compensation came in the form of complementary measures that provided effective compensation while enhancing welfare and economic opportunity over the longer term and minimizing rent-seeking opportunities” (1994, 24). Equally important is the problem of administrative capacity. Developing countries can perhaps easily cut spending or reduce tariffs, but privatization or regulatory overhaul require concentrated investment in implementation.

Summarizing the role of international actors in eight cases, Haggard and Webb write that while “conditional external support is unlikely to tip the domestic political balance in favor of reform when opposition is strong . . . its presence (or absence) can bolster (weaken) the standing of reforms within the government” (1994, 25). Similarly, Ancharaz notes that in Sub-Saharan Africa, “virtually all trade reforms . . . have been undertaken as an integral component of structural adjustment programmes under the supervision of the IMF and/or the World Bank. The programmes were . . . supported by foreign assistance . . . conditional on satisfactory progress” (2003, 423).

Major donors recognize the beneficial effect of foreign aid on reform, especially in democratic developing countries. Both the EU and the United States have established broad assistance programs that specifically address PTA formation, and additionally the inclusion of adjustment aid provisions in PTAs is relatively uniform across specific treaties.<sup>4</sup> Major powers use their bargaining advantage to determine the use of foreign aid for economic reform, whereas

<sup>4</sup>For the EU, see “The Western Balkan Countries on the Road to the European Union.” *European Commission*. <http://ec.europa.eu/enlargement> (accessed December 20, 2011). For the United States, see Congressional Research Service (2005, 2007).



the weaker developing countries are generally on the receiving side.

**Regime Type.** If foreign aid facilitates economic reform by mitigating the problem of political resistance, should all developing countries experience an increase in foreign aid if they form a PTA? This reasoning fails because the developing country must (1) need the foreign aid to compensate domestic losers from reform and (2) be able to credibly commit to doing so.

We argue that democratic developing countries are better suited for adjustment assistance than autocratic countries.<sup>5</sup> The first reason is that democratic countries benefit more from using the foreign aid to implement reforms. If the donor gives adjustment assistance to a democratic government, it understands that the democratic government needs to use this revenue to bribe opponents or suppress domestic political resistance. Sweeping economic reforms in foreign direct investment, trading sectors, services, and state enterprises produce adjustment costs that accrue to broad constituencies. The political survival of a democratic government depends on a relatively broad support base, so it has strong incentives to use foreign aid to compensate the losers from reform.

Suppose now the donor forms a PTA with an autocracy. We argue the benefits of providing foreign aid are limited. On the one hand, an autocratic leader's winning coalition is smaller than a democratic leader's, so the former can more easily target the reforms required to implement a PTA in such a fashion that key elite constituencies do not suffer.<sup>6</sup> In this case, foreign aid is simply not needed: even though the autocracy would prefer more foreign aid, the donor understands that the autocracy can implement economic reforms even *without* additional adjustment assistance. Therefore, the autocratic ruler's threat to not reform without a large aid package is non-credible. Conversely, a democratic ruler can credibly threaten not to implement economic reforms without adjustment assistance.

In addition to greater need for foreign aid, democracies benefit from their superior ability to credibly commit to using the foreign aid to facilitate economic reform. As Lipson (2003) argues, democracies are "reliable partners." Similarly, Martin (2000) emphasizes the ability of the legislature to constrain the executive while Svobik (2006) argues that transparency is the most important advantage of being democratic.

<sup>5</sup>Notably, this argument does *not* require that autocracies and democracies ascribe a different value to economic reform.

<sup>6</sup>For the sectoral politics of trade in autocratic countries, see Pepinsky (2008).

Applied to the dilemma of costly adjustment, domestic institutional constraints and transparent decision making should help democracies credibly commit to using foreign aid to comply with the contractual obligations enshrined in a PTA. Institutional constraints mean that democratic rulers cannot easily divert foreign aid from economic reform to other programs. Transparency means that if they do so, they are easily caught. In contrast, autocratic rulers can more easily divert funds and expect to get away with this diversion.

**Empirical implications.** Democratic developing countries should receive more adjustment assistance than autocracies because the former need it more and can credibly commit to using it to promote economic reform than the latter.

*Hypothesis:* If a democratic (autocratic) developing country forms a PTA, it likely receives (does not receive) additional foreign aid to implement economic reforms.

We are not arguing that donors necessarily reduce foreign aid to autocratic developing countries with whom they form a PTA. Instead, PTA formation may not have any effect on foreign aid to autocracies. Even if they were to potentially benefit from adjustment assistance, dictators cannot credibly commit to using it to promote economic reform. Similarly, while some democracies may not obtain adjustment assistance, on average they should obtain adjustment assistance more frequently than autocracies.

Our primary focus is on bilateral aid, but we recognize that major powers such as the EU and the United States could also leverage multilateral funding institutions to promote economic reform in their partner countries (Stone 2011). For example, Vreeland (2003) has argued that governments in developing countries have used IMF loan arrangements to force unpopular reforms on reluctant domestic actors, such as the legislature. One plausible hypothesis is that PTA formation has a positive but smaller effect on multilateral than bilateral aid. Below, we find some empirical evidence in support of this contention.

We are also agnostic as to the exact features of democratic governance that are most important. Consequently, we do not disaggregate our hypothesis into the effect of such factors as veto players, winning coalitions, and the judicial system. We are aware of the fact that democracy has many dimensions, and for many theoretical and empirical questions it is important to specify exactly how democracy should influence behavior (Buono de Mesquita et al. 2003; Cheibub, Gandhi, and Vreeland 2010; Przeworski 1991). However, for our purposes, it is the total

effect of democratic institutions, from constraints on the executive to free elections and civil rights, that is relevant. To be sure, we verify that our findings are fully robust to alternative operationalizations of democracy and examine the effect of credible commitment structures among democratic developing countries. Similarly, we verify that our findings are driven by democracy, as opposed to democratization.

To understand our hypothesis, contrast it with Bueno de Mesquita and Smith (2009) who argue that donors purchase costly policy concessions from recipients. They argue that while countries with large winning coalitions (democracies) should receive foreign aid less often than countries with small winning coalitions (autocracies), the former should obtain more than the latter, conditional on obtaining any. This is because a large winning coalition increases the cost of policy concessions to major powers. Our hypothesis differs in three ways. First, our policy concessions need not be costly in the long run, as long as they impose immediate costs on relevant constituencies in democratic regimes. Second, we do not expect that democracies form PTAs with major powers less often. Given that the foreign aid allows mutually profitable trade cooperation, as opposed to an “aid for policy” deal, this expectation does not follow. Finally, we emphasize the importance of credible commitment and provide evidence for this contention. In Bueno de Mesquita and Smith (2009), credible commitment does not play a role.

Our main hypothesis has two other notable features. First, economic indicators of demand, such as growth or unemployment, should be largely irrelevant or at the very least dominated by the supply side. Even if a developing country urgently needs adjustment assistance, it should not obtain any unless it is sufficiently democratic to establish a credible commitment (Lipson 2003; Martin 2000; Svulik 2006). Second, the effect is temporary. Once a democratic developing country has undergone the costly reform, on average it should not obtain additional foreign aid from wealthy industrialized countries. Successful reform weakens protectionist special interests, so the demand for fungible resources decreases (Hathaway 1998).

## Research Design

Our dataset covers 125 developing countries and spans the years from 1990 to 2007. We include as many countries as possible given data limitations. The time frame reflects the fact that PTA proliferation is a post-Cold War phenomenon (Mansfield

and Milner 1999). Our main statistical model can be written as follows:

$$\begin{aligned} \ln(\text{Aid}_{ij,t}) = & \alpha + \beta_1 \text{PTA}_{ij,t} + \beta_2 \text{Regime}_{j,t-1} \\ & + \beta_3 \text{PTA}_{ij,t} \times \text{Regime}_{j,t-1} \\ & + \beta_4 X_{ij,t-1} + \beta_5 Z_{j,t-1} + \gamma_j + \varepsilon_{ij,t}. \end{aligned} \quad (1)$$

The dependent variable  $\ln(\text{Aid}_{ij,t})$  is the natural logarithm of foreign aid from donor  $i$  to developing country  $j$  at time  $t$ .<sup>7</sup> The data are in constant U.S. dollars, 2007 prices. The data are from the 2008 World Development Indicators (WDI) of the World Bank. While the WDI provides aggregate foreign aid data for each recipient, it also provides the data for each donor-recipient-year. An alternative would be to use the comprehensive AidData series on foreign aid at the project level.<sup>8</sup> Unfortunately, AidData is missing some data for aid given by the European Commission for the first couple of years in our dataset. For example, according to AidData, total aid given to Poland by the European Commission before 1995 was 442 dollars (one project in 1992). By contrast, the WDI data indicate millions of dollars on an annual basis.

Since we focus on PTA formation, the only donors that we consider are the United States and the EU. These two economic and political giants are by far the most important donors that strategically allocate foreign aid to developing countries (Bueno de Mesquita and Smith 2009; Dunning 2004; Lancaster 2007; Thacker 1999). As discussed above, PTAs with these two major powers are also far more demanding than others, so they are ideal for investigating the importance of foreign aid towards economic reform (World Bank 2005). We do not include Japanese PTAs in the main model because many of them have been formed very recently, and we do not have data for all of the required independent variables, but as a robustness check we also included them. All results continue to hold.

We treat the EU as a single actor because it has a common external trade policy. To obtain a figure for the total foreign aid given by the EU to developing country  $j$  at time  $t$ , we sum over bilateral foreign aid given by member states and add this to the total aid given by the European Commission. In regard to the European Commission, we use WDI data that captures the official development aid. Today, this aid is primarily given through the European Development

<sup>7</sup>The EU is treated as a single donor. See below for aggregating the EU foreign aid data.

<sup>8</sup>See <http://www.aiddata.org>.

Fund and the Development Co-operation Instrument, and these programs are in turn implemented by EuropeAid.

The main independent variables are  $PTA_{ij,t}$  and  $Regime_{j,t-1}$ . The variable  $PTA_{ij,t}$  is an indicator that equals 1 if recipient  $i$  and donor  $j$  have signed a PTA between years  $t - 4$  and  $t$ . This formulation captures the short-term effect that we are investigating. We do not lag this variable because the donors often demand reforms at the time of signature (Whalley 1996). A lagged variable would not capture the instant effect of PTA formation on foreign aid. Nonetheless, our results do not change if we lag the variable  $PTA$ .

The choice of five years is motivated in view of adjustments. While many difficult trade sectors are liberalized with a delay of as many as 15 years, broader reforms in services and finance generally begin immediately. Thus, the five-year window is appropriate given our interest in economic reform, broadly defined, as opposed to contentious trade liberalization in a narrow range of specific sectors.

We also implement two additional models. One follows the “event specification” in Kuziemko and Werker (2006).<sup>9</sup> We interact *Regime* with three different time dummies: one for a three-year period prior to PTA signature (placebo), another for a three-year period immediately after PTA signature (short-term effect), and a third one for all the remaining years. We expect the second interaction to be positive and statistically significant. By including these different year dummies, we can reject the possibility that *Regime* and *PTA* have independent effects but the interaction term is spurious. We use a three-year instead of a five-year time period because the dataset spans only 18 years.<sup>10</sup> In another model, we replace the logarithm of foreign aid with the logarithmized first difference.<sup>11</sup>

We consider 39 PTAs notified in the WTO, the Tuck Trade Agreements Database, and the McGill Faculty of Law Preferential Trade Agreements Database. We use the year of signature as a proxy for formation, as opposed to the year of ratification (Mansfield, Milner, and Rosendorff 2002). However, this distinction is practically irrelevant because the time from signature to ratification averages only one year.

<sup>9</sup>In the supplementary appendix, we consider a dynamic model (De Boef and Keele 2008).

<sup>10</sup>Results are similar if we use five-year time periods.

<sup>11</sup>For negative values of foreign aid, we logarithmize the absolute value of the decrease and then multiply it by  $-1$ . All results hold if we exclude the negative values.

Additionally, signature is a reliable predictor of ratification in our dataset.

Table 1 provides a list and the Polity IV score for each country at the time of PTA signature. Note in particular that our dataset includes PTAs between the United States and major foreign aid recipients, such as Egypt and Jordan, that are also stable autocracies. This stacks the deck against our theory, for these autocratic countries receive substantial amounts of foreign aid for security reasons (Alesina and Dollar 2000). The table also indicates whether these PTAs are notified to the WTO. Many nonnotified agreements require economic reforms comparable to those PTAs notified to the WTO.<sup>12</sup>

In general, democracy may predict PTA formation (Mansfield, Milner, and Rosendorff 2002). This presents a challenge to statistical inference, as it may be that the PTA is simply a medium for the fundamental effects of democracy. Fortunately, in our case, this problem is of limited concern: democracy is not a predictor of PTA formation with the EU or the United States. We demonstrate this in the supplementary appendix by instrumenting for PTA formation and noting that the coefficient for democracy is not statistically significant.

The variable  $Regime_{j,t-1}$  is the democracy score of the recipient  $j$  at time  $t - 1$  from Polity IV. It combines the competitiveness and openness of executive selection, institutional constraints on executive authority, the competitiveness of political participation, and the rules that regulate political participation. We rescale the index so that 0 denotes full autocracy and 20 denotes full democracy. The interaction term between  $PTA_{ij,t}$  and  $Regime_{j,t-1}$  allows us to test our main hypothesis.

As a robustness check, we also use alternative measures of democracy. These include the Freedom House index, the Przeworski binary measure (Cheibub, Gandhi, and Vreeland 2010), the newly introduced Unified Democracy Score from Pemstein, Meserve, and Melton (2010), and executive and legislative competition from the Database of Political Institutions.

As control variables, we include *per capita* GDP and the logarithm of aggregate GDP. They measure the poverty and salience of a developing country, respectively, as emphasized in the aid literature (Alesina and Dollar 2000; Bueno de Mesquita and Smith 2009).

<sup>12</sup>To be sure, we also verified that our results hold even if drop all PTAs that were not notified. The statistical significance levels decline somewhat due to a loss of positive observations, but the sign remains unchanged and the expected effect for democracies remains substantial.



TABLE 1 Preferential Trading Agreement Summary

Major Power	Developing Country	Negotiation	Signature	WTO	Regime
EU	Albania	2002	2006	Yes	19
EU	Algeria	1996	2001	Yes	7
EU	Bulgaria	1992	1993	NA	18
EU	Chile	2000	2002	Yes	19
EU	Croatia	2000	2001	Yes	18
EU	Czech Rep.	1990	1992	NA	18
EU	Egypt	1995	2001	Yes	4
EU	Estonia	1994	1995	NA	16
EU	Hungary	1990	1992	NA	20
EU	Jordan	1995	1997	Yes	8
EU	Latvia	1994	1995	NA	18
EU	Lebanon	1995	2002	Yes	NA
EU	Lithuania	1994	1995	NA	20
EU	Macedonia	2000	2001	Yes	16
EU	Mexico	1995	2000	Yes	16
EU	Morocco	1992	1995	Yes	3
EU	Poland	1990	1992	NA	18
EU	Romania	1992	1993	NA	15
EU	Slovakia	1990	1992	NA	18
EU	Slovenia	1993	1997	No	20
EU	South Africa	1995	1999	Yes	19
EU	Syria	1997	2004	Yes	3
EU	Tunisia	1994	1995	Yes	7
EU	Turkey	1994	1995	Yes	18
US	Bahrain	2004	2004	Yes	3
US	CAFTA-DR	2002	2004	Yes	18
US	Chile	2000	2003	Yes	19
US	Colombia	2004	2006	No	17
US	Jordan	1999	2001	Yes	8
US	Mexico	1990	1992	Yes	10
US	Morocco	2003	2004	Yes	4
US	Panama	2004	2007	No	19
US	Peru	2004	2006	Yes	19
US	Singapore	2000	2002	Yes	8
Japan	ASEAN	2005	2008	Yes	16
Japan	Brunei	2005	2007	Yes	NA
Japan	Chile	2005	2007	Yes	20
Japan	Indonesia	2005	2007	Yes	18
Japan	Malaysia	2004	2005	Yes	13
Japan	Mexico	2002	2004	Yes	18
Japan	Philippines	2004	2006	Yes	18
Japan	Singapore	2001	2002	Yes	8
Japan	Thailand	2004	2007	Yes	5
Japan	Vietnam	2007	2008	Yes	3

Note: Central America Free Trade Agreement - Dominican Republic (CAFTA-DR) and Association of South East Asian Countries (ASEAN) are multilateral agreements. In the column on WTO notification, "NA" indicates that one of the countries was *not* a World Trade Organization member at that point, so that notification was not required. In the column on regime type, the Polity IV data range from 0 to 20 and "NA" indicates missing data.

These data are collected by the IMF (2008). As in Bueno de Mesquita and Smith (2009), we also include the logarithm of the imports and exports between each donor and recipient, *Trade*, as well as government

expenditures as a proportion of GDP to capture the amount of resources available to the government, *GovShare*. The trade variables capture donor-recipient interdependence, whereas public spending may increase

the need for foreign aid. Data for these two variables are from the WDI (2008) and the IMF (2008).

We also control for *Democratization* (Gleditsch and Ward 2000). Donors may have an interest in promoting democratization, as Wright (2009) has argued. It scores  $-1$  if the total change in the level of democracy in developing country  $j$  in the past five years is negative. It scores  $1$  if the total change in the level of democracy in developing country  $j$  in the past five years is positive. It scores  $0$  if there has been no change in the past five years. Importantly, the correlation between *Regime* and *Democratization* in our data is only  $.12$ , so these two variables are not collinear.

We also add *Political Stability* and *Conflict* because donors may reduce foreign aid to unstable countries with a lot of violence. Such conditions may reduce the effectiveness of aid or put aid workers at risk. The former variable is derived from the 2008 Quality of Governance Dataset (Kaufmann, Kraay, and Mastruzzi 2008). It combines several indicators of the probability that the government is overthrown by constitutional or violent means. The latter variable is from the 2009 Armed Conflict Dataset built by the UNDP and the International Peace Research Institute. It scores  $1$  if there is an ongoing conflict in the a developing country and  $0$  otherwise. To capture strategic interests, we include *Alliance* and *Colony* from the Correlates of War Dataset. Both Alesina and Dollar (2000) and Bueno de Mesquita and Smith (2009), as well as Thacker (1999), have argued that donors give more aid to allies and colonies. Each variables scores  $1$  if the donor and recipient are allies or colonies, respectively.

Given the importance of EU accession, we include a dummy variable *EU Applicant* that scores  $1$  if a developing country has sought accession. The prospect of future accession could influence the allocation of EU foreign aid. As a further check, in the robustness appendix we presents results from a model of EU PTA formation including a placebo variable for a five-year period prior to a country's formation of an EU PTA. This estimation allows us to account for other forms of transition aid and reject the competing hypothesis that they are driving our empirical results.

We include *Distance* and *Population* to measure other dimensions of the salience of recipient  $i$  to donor  $j$ . The data for *EU Applicant* and *Distance* are from the 2005 CEPII Dataset while the data for population are from 2008 WDI.

Finally, variable *WTO* scores  $1$  if a developing country is a GATT/WTO member and  $0$  otherwise. We include it to separate the effect of a specific PTA

from membership in the multilateral trade regime. As the aid-for-trade literature indicates, multilateral trade liberalization may also be accompanied by trade capacity building (Suwa-Eisenmann and Verdier 2007). Variable *Regulatory Quality* is from the 2008 Quality of Governance dataset (Kaufmann, Kraay, and Mastruzzi 2008). Since poor regulatory quality could reduce the effectiveness of foreign aid (Burnside and Dollar 2004; Easterly 2002), we include it in the main model. Table A5 in the supplementary appendix provides descriptive statistics.

A Breusch-Pagan test indicates cross-panel heteroskedasticity. Although this does not bias the results, it influences the standard errors and thus complicates hypothesis testing. In line with most panel studies, we use the Huber-White sandwich method for robust standard errors to obtain a consistent estimate of the variance-covariance matrix. A Hausman test confirms that we need to use fixed effects instead of random effects to account for heterogeneity across countries in our longitudinal data, so our main statistical model has fixed effects for each developing country.

A Wooldridge test for autocorrelation rejects the null hypothesis that there is no first-order serial correlation. Thus, we need a statistical model that can account for an AR(1) process while including recipient fixed effects. In the main text, we therefore compute Driscoll and Kraay (1998) standard errors. This technique is appropriate when the number of countries large relative to the number of years in the dataset. In other words, Driscoll and Kraay's approach eliminates the deficiencies of other large  $T$ -consistent covariance matrix estimators, such as the PCSE, which are usually inappropriate when the cross-sectional dimension  $N$  of an econometric panel is large. In addition to serial correlation, it allows for cross-sectional dependence. In the robustness section, we verify that our results hold for alternate methods to address serial correlation.

## Results

Table 2 shows the estimation results for six specifications of our model. The first column summarizes the baseline model that includes only the most basic control variables. The second column summarizes the expanded model with all control variables introduced above. Models (3) and (4) present the results using the first-differenced dependent variable and the Kuziemko and Werker (2006) event specification.

TABLE 2 Explaining Aid Allocation in the Short Term

Variables	(1)	(2)	(3)	(4)	(5)	(6)
	lnAid	lnAid	lnAid(fd)	lnAid	lnAid	lnAid
	Basic	Main	F.D.	K-W (2006)	With Japan	North-South
Regime	0.05*** (0.02)	0.03 (0.02)	0.09* (0.05)	0.03 (0.02)	0.01 (0.02)	0.03** (0.01)
PTA (5 year)	-0.74 (0.94)	-0.82 (0.90)	-8.27 (5.00)		-1.32 (0.94)	-2.78*** (0.84)
PTA × Regime (5 year)	0.11** (0.04)	0.11*** (0.04)	0.66** (0.33)		0.13** (0.06)	0.10 (0.06)
PTA (3 years)				-0.59 (0.69)		
PTA × Regime (3 years)				0.08 (0.05)		
PrePTA (3 years)				0.16 (0.78)		
PrePTA × Regime (3 years)				0.05 (0.05)		
PTA (long term)				0.73 (1.18)		
PTA × Regime (long term)				-0.07 (0.10)		
Constant	0.00 (0.00)	0.00 (0.00)	-14.54** (7.09)	0.00 (0.00)	17.87** (9.01)	54.74*** (7.81)
Baseline control variables	√	√	√	√	√	√
Baseline + Extra control variables		√	√	√	√	√
Recipient fixed effects	√	√			√	√
Dyad fixed effects				√		
Observations	3,389	3,183	3,343	3,183	4,364	10,964
R <sup>2</sup>	0.46	0.48	0.01	0.68	0.44	0.46
Number of dyads	250	246	248	246	360	851

Note: Ordinary Least Squares estimation with fixed effects by recipient and Driscoll-Kraay standard errors (AR1). Standard errors in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

Models (5) and (6) present the results with Japanese PTAs included and for *all* North-South PTAs.<sup>13</sup>

Consider the first column. Our main hypothesis pertains to the conditional effect of forming a PTA as a function of regime type. Inserting  $PTA_{ij,t} = 1$  and  $PTA_{ij,t} = 0$  in our main model, the conditional effect is given by

$$\frac{\Delta \ln(Aid)}{\Delta PTA} = \beta_1 + \beta_3 Regime. \quad (2)$$

For completely autocratic countries,  $Regime = 0$ , so the expected effect of a PTA on aid is  $\beta_1 < 0$ . For completely democratic countries,  $Regime = 20$ , so the expected effect of a PTA on aid is  $\beta_1 + 20\beta_3 > 0$ . The

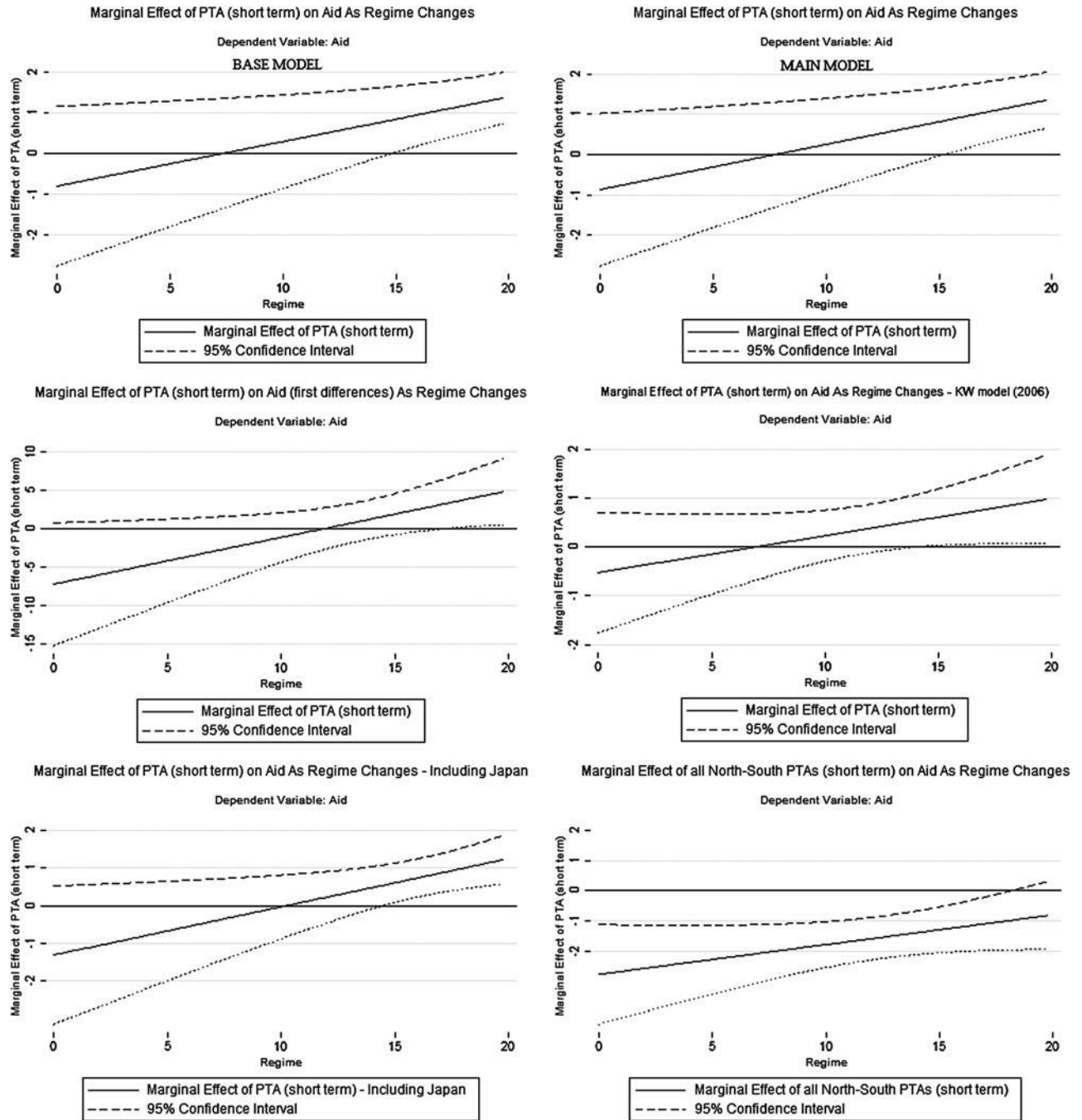
<sup>13</sup>Examples of non-EU/U.S. North-South PTAs are Australia-Thailand (2004), Canada-Costa Rica (2002), EFTA-Korea (2005), and New Zealand-Singapore (2001).

threshold for a positive expected effect is approximately  $Regime = 6.5$ .

The statistical significance of the estimated interaction effect cannot be evaluated using the  $t$ -statistic, so we graph the marginal effect in the upper panel of Figure 1. For the baseline model, it shows that for  $Regime = 14$  and higher, the positive effect is statistically significant at the conventional  $p = .05$  level. These results show that developing countries forming a PTA experience an increase in the inflow of foreign aid in the short term. The second column introduces the full model. The coefficients are similar to those in the first column. This suggests that our finding is robust. We graph the marginal effect on the right of the upper row of Figure 1.

The substantive magnitude of these effects is large, as shown in Table A6 in the supplementary appendix. Since our measure of foreign aid is logarithmized, the

FIGURE 1 Impact of Preferential Trading Agreements Formation on Aid at Different Values of Variable Regime



Note: Upper row: base (left) and main (right) models. Middle row: first differences (left) and Kuziemko-Werker (right). Lower row: Japan included (left) and North-South (right).

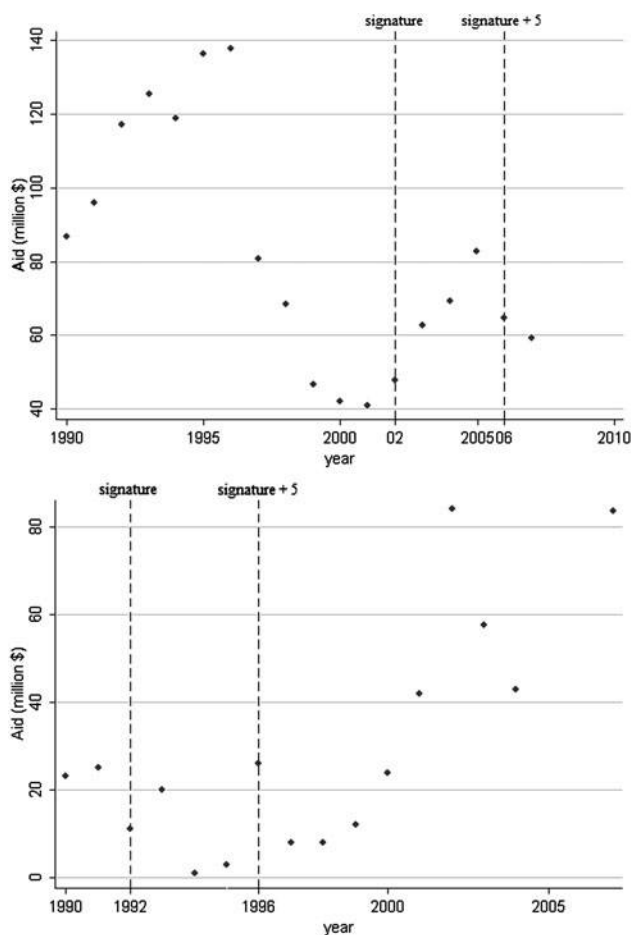
graph gives the proportional effect of PTA formation on foreign aid. Concretely, if a fully democratic developing country received  $exp(X)$  dollars of foreign aid before forming a PTA, the increase in aid is approximately  $\frac{exp(X+1)}{exp(X)} = exp(1) \approx 2.71$ .

Figure 2 shows the impact of the EU-Chile PTA (2002) on total foreign aid from the EU to Chile and

the impact of the North American Free Trade Agreement (1992) on total U.S. foreign aid to Mexico. These examples accord with our predictions. Chile was a highly democratic country in 2002, with a rescaled Polity score of 19, and it enjoyed a large increase in foreign aid. Specifically, the PTA reversed a steady decline in EU foreign aid to Chile: aid



**FIGURE 2 The Observed Effect of Preferential Trading Agreements Formation on Aid to Chile (Upper) and Mexico (Lower)**



receipts increased from less than 50 million dollars in 2002 to more than 80 million dollars in 2005 and remained at 65 million also in 2006.<sup>14</sup> In those five years, the average annual increase was more than 6 million dollars. Conversely, Mexico had a rescaled Polity score of 10 and did not obtain an increase in the following years. It received 24.9 million dollars in 1991, but the sum decreased to 11 million dollars in 1992. In 1994 and 1995, it only received one and three million dollars, respectively. In 1996, foreign aid increased to 1991 levels.<sup>15</sup>

<sup>14</sup>In the early 1990s, Chile obtained even more foreign aid due to recent democratization.

<sup>15</sup>In 1994, Mexico fell into a severe economic crisis that threatened the interests of several U.S. commercial banks. Since the multibillion loans given by the United States and the IMF came with strings attached and accumulated interest, they do not present commitment problems to the degree that foreign aid does.

The results for alternative specifications are stable. If we rely on first differences or include multiple time dummies (Kuziemko and Werker 2006), the results remain unchanged. The results also hold if we include Japanese PTAs. But the effect disappears if we use all North-South PTAs instead of those formed by major powers. This is consistent with our theoretical argument, and it helps reject the competing explanation that aid increases associated with PTA formation would reflect trade cooperation alone. Interestingly, the estimated effect of North-South PTAs on foreign aid is *negative*. This may reflect the fact that trade concessions are substitutes for foreign aid or the fact that most PTAs are formed by relatively wealthy and growing developing countries.

Coefficients for the control variables are reported in Table A1 in the supplementary appendix. The results do not contain any surprises. The predicted effects are largely in line with previous literature. Colonial relationships and distance to a donor remain consistent predictors of foreign aid, as do population and the status of an EU applicant. It is therefore improbable that our statistical model suffers from omitted-variable biases that are also not present in previous models, further strengthening the plausibility of our findings. Finally, democratization appears not to have a consistent effect on foreign aid. This is important because it alleviates concerns regarding endogeneity between foreign aid and regime type.

## Additional Evidence

In this section, we provide additional evidence to reject alternative explanations and address other possible concerns. We analyze the role of trade cooperation, economic demand in foreign aid, democracy versus democratization, effects of PTA formation on foreign in the short and long term, commitment capacity among democratic developing countries, reform as a rational for foreign aid, and the association between PTA formation and economic reform. We also disaggregate the analysis by donor, consider the role of EU transition aid, examine multilateral and military aid, and explore treaty design. Finally, we summarize our other robustness tests and address endogeneity concerns.

### Trade Cooperation as an Alternative Explanation

Model (6) in Table 2 shows that the PTA effect on foreign aid does not apply in the set of all North-South PTAs. This allows us to reject a competing

hypothesis: perhaps the foreign aid increase simply reflects trade cooperation. This hypothesis is not only inconsistent with the strong interaction effects between regime type and PTA formation, but also with the lack of a positive PTA effect, regardless of regime type, in the extended North-South sample.

### Economic Need as an Alternative Explanation

So far, we have largely downplayed the possibility that democratic developing countries obtain adjustment assistance simply because they need it for *economic* reasons. Since this prediction is an important element of the conventional wisdom on economic reform and the altruistic view of foreign aid allocation, we now turn to test this ancillary hypothesis. Our theory predicts that economic need should not be an important determinant of the contingent effect of a PTA on foreign aid. According to the economic need story, the EU and the United States should allocate aid to a democratic developing country especially if the latter is under exceptional economic hardship. If economic need drives the increase in foreign aid that follows PTA formation, we would expect the extra inflow of foreign aid to increase with objective measures of economic hardship, because the donor would have an interest in reducing the short-term economic cost of adjustment.

To test this hypothesis, we divide the original sample into two subsamples. The first subsample contains nondemocratic developing countries, *Regime* < 17. The second subsample contains democratic developing countries, *Regime* > 16. For each subsample, we include an interaction term between a recent PTA and economic growth. We also include another interaction term between a PTA and the unemployment rate. The results are reported in Table A7 in the supplementary appendix.

We focus on the four interaction terms. The marginal effects are graphed in Figure 3. Perhaps surprisingly, the interaction term between PTAs and economic growth in the democratic subsample has a positive sign, but it is not statistically significant for any growth rates. The interactive effect is negative for autocracies, but it is not statistically significant except for around zero growth. These findings show that economic need is largely irrelevant for the effect of PTA formation on foreign aid. Similarly, the graph for the interaction between PTAs and unemployment only shows a negative slope for autocracies, but the effect is not statistically significant for either regime type. These findings are largely consistent with the

“revisionist” view on economic reform that downplays the importance of macroeconomic conditions while emphasizing the importance of fundamentally political elements of the puzzle, such as coalition formation (Geddes 1994; Haggard and Webb 1994; Milner and Kubota 2005; Rodrik 1992, 1996).

### Democracy or Democratization?

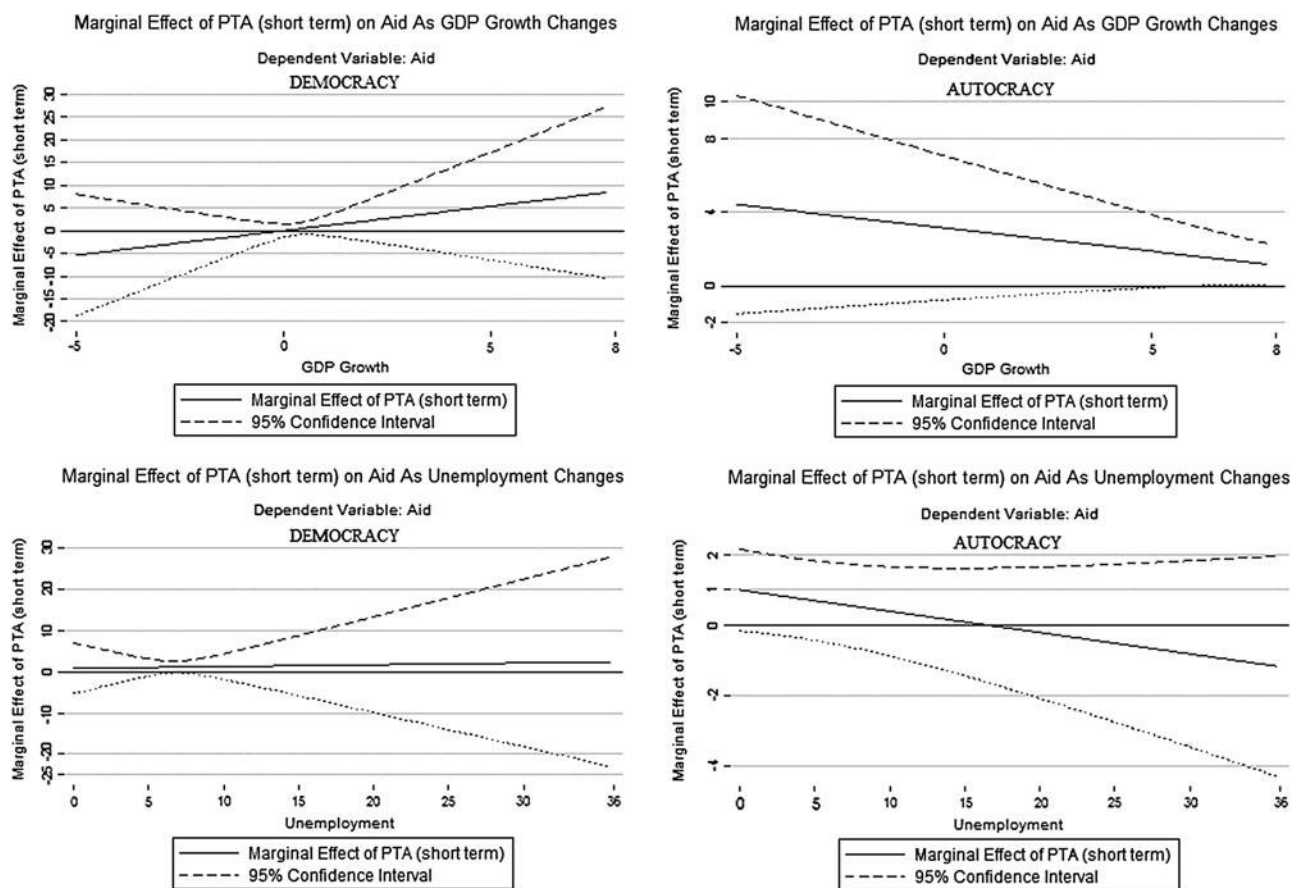
A potential threat to the validity of our results is the relationship between democracy and democratization. To verify that our results are not driven by democratization, we now interact *PTA* with *Democratization* in the last five years for a developing country. If our theory is correct, we should not see a consistent positive effect on foreign aid. This robustness test is particularly important because many political economists have found that young and fragile democracies are not as reliable as established democracies (Clague et al. 1996; Keefer 2007; Przeworski 1991).

The estimation results are shown in Table A8 in the supplementary appendix. Regardless of the specification that we use, democratization does *not* condition the effect of PTA formation on foreign aid. As our theory predicts, if we control for the level of democracy, PTA formation does not increase foreign aid simply because a developing country has recently undergone a democratic transition. This result also contradicts the idea that the effect of PTA formation on foreign aid can be explained with reference to factors on the demand side.<sup>16</sup>

The fact that democratization does not have a clear negative effect on the ability of PTA formation to increase foreign aid is also consistent with our theory. While some autocracies might be capable of credible commitment to economic reform, this reasoning cannot be applied to foreign aid. As our literature review shows, autocrats are particularly prone to using foreign aid to supply elite supporters with private goods. It is thus easy to understand why democratization seems not to condition the marginal effect of PTA formation on foreign aid.

<sup>16</sup>We conducted several robustness tests. We replaced the *Democratization* variable with an indicator for a positive change in the Przeworski binary variable for democracy. As another robustness test, we only consider changes in *Regime* that exceed the threshold 3 often used in Polity IV as a threshold for democratization. For these measures, the marginal effects are actually *negative* and never statistically significant at conventional levels.

**FIGURE 3 Democracy vs. Autocracy: Impact of Preferential Trading Agreements Formation on Aid at Different Levels of Economic Growth and Unemployment**



### Credible Commitment Among Democracies

Even if we can reject economic need as an alternative explanation, democracies may have other features, unrelated to credible commitment, that drive our results. To verify that this is not the case, we conduct an additional test. First, we use the binary Przeworski measure of democracy to obtain a set of formally democratic developing countries, with competitive elections. Within that set of countries, we then investigate the impact of changes in executive constraints from the Polity score on foreign aid. Since the Przeworski score is arguably a minimal indicator of democracy and not that strongly correlated with executive constraints, it allows us to identify the effect of executive constraints on foreign aid. Executive constraints are a key indicator of commitment capacity, so this test allows us to differentiate credible commitment from other features of democracy. The estimation tables and the marginal effect graphs are given in the supplementary appendix. As expected,

increasingly strict constraints on the executive's authority increase the foreign aid effect. For robustness, we also verified that the marginal effects are similar and statistically significant if we use the Polity score and apply the standard threshold 17 for a coherent democracy.<sup>17</sup>

### Foreign Aid and Costly Adjustment

So far, our quantitative tests have focused on the effect of PTA formation on foreign aid in different countries. In this section, we provide additional evidence for the ways major powers use foreign aid. We investigated the effect of PTA formation on

<sup>17</sup>As yet another test, we compared the effect of PTA formation on foreign aid among Przeworski democracies, distinguishing between those that are established and those that had recently democratized. We found that PTA formation has a statistically significant positive effect on foreign aid only among established Przeworski democracies. Tables and figures are available from the authors upon request.

foreign aid in different economic sectors. Some aid sectors, such as privatization or trade adjustment, facilitate economic reform. If our theory is correct, donors increase foreign aid to democratic developing countries especially in these sectors. Others, such as fishing and forestry, should not experience such increases. We use our main statistical model, but we investigate aid allocation sector by sector. Since the WDI data are not given on a sectoral basis, we use AidData (2011) to aggregate annual foreign aid flows in different sectors. We used CRS codes provided by the OECD to find different sectors. The details of the sectoral analyses are given in the supplementary appendix.

We found robust support to the importance of adjustment, as an in-depth analysis of the following sectors illustrates. The marginal effect of PTA formation on foreign aid increased substantially with democracy for industrial development; trade adjustment; unemployment reduction and social services; and privatization. Each sector is directly relevant for economic reform. Consistent with our theory, the effect was strongest for these sectors. The effect was small or did not exist for fishing and forestry; tourism; and banking. Of these, only banking is directly related to economic reform.

### Reform Effects

We assume PTAs induce painful reforms in developing countries. This is not necessarily true of PTAs that focus on trade liberalization in relatively uncontroversial sectors. We now demonstrate that PTAs with the EU and the United States induce broad and deep reforms beyond trade liberalization: capital account liberalization; intellectual property rights protection; and privatization. In conjunction with the qualitative evidence discussed in the theory section, these observations validate a key assumption of our theoretical argument.

We constructed a time series for all three indicators and every developing country that formed a PTA with the EU or the United States. For capital account liberalization, we used the measure developed by Chinn and Ito (2008). For intellectual property rights, we used data provided by the World Intellectual Property Organization on the number of legislative bills that each country had passed for protection. For privatization, we used the total value of revenue from privatization of state enterprises provided in the World Economic Freedom dataset. The details of the data are provided in the supplementary appendix.

We cannot conduct a full causal investigation of the effect of PTA formation on economic reform within the confines of this article.<sup>18</sup> Since our dataset covers only 18 years, we were also unable to conduct a sophisticated analysis of structural breaks in the data. Instead, we used the following simple procedure. First, for every five-year period in the data beginning at time  $t$  and ending at time  $t + 4$ , we computed the total change in the reform indicator of interest (first differences, three indicators in total). Second, we compared the total five-year change beginning in any year  $t$  during PTA negotiations or in the five years following signature with the the five-year changes beginning in preceding years. Thus, we were able to identify developing countries that implemented deeper economic reforms during and after PTA formation than before that in the dataset. Finally, we replicated this procedure using a one-year window to identify unprecedented jumps in the data.

We found evidence that PTA formation is associated with economic reform in developing countries.<sup>19</sup> For capital account liberalization, we found unusually deep reforms in 12 out of 29 developing countries that formed a PTA in our dataset (subject to data availability). For intellectual property rights, we found evidence of unusually deep reforms for 24 out of 36 countries. For privatization, we found such evidence for 23 out of 36 countries. Only two countries in the dataset, Bahrain and Panama, appear not to have implemented any unusually deep reforms as a result of PTA formation. Five countries—Chile, Egypt, Croatia, Jordan, and Morocco—had implemented all three different reforms.

Finally, we examined the association between foreign aid from the EU and the United States and reform in democratic countries (Polity score of +6 or higher). The results are reported in Table A10 the supplementary appendix, and they demonstrate a strong association between aid and reform for democracies. However, such association does not exist for autocracies.

### Disaggregation by Donor

Do the results hold if we separately analyze EU and U.S. PTAs? We estimated our main model (2)

<sup>18</sup>In another article (Baccini and Urpelainen, 2012), we analyze structural breaks in economic reform data for developing countries.

<sup>19</sup>If a developing country formed a PTA with both the EU and the United States, we included only the former treaty. Thus, we only have 36, not 39, observations.



separately for the two major powers. We find that the direction of the interactive effect remains unchanged for each donor, though the statistical significance decreases somewhat because of the small number of PTAs, as shown in Figure A8 in the supplementary appendix.

### EU Transition Aid

As explained above, we estimated a model for the EU alone with a binary indicator to capture the possibility that foreign aid precedes PTA signature. We found that countries forming a PTA with the EU do not see an increase in the five years prior to PTA formation, yet they do see such an increase afterwards. This is shown in Figure A9 in the supplementary appendix.

### Military Aid

Could the United States offer military aid to PTA partners, especially autocracies? We collected data on U.S. military aid to the countries in our dataset from the *Greenbook* of the United States Agency for International Development.<sup>20</sup> We found that PTA signature has no effect on military aid regardless of regime type, as shown in Figure A10 in the supplementary appendix.

### Multilateral Aid

As explained in the theory section, the EU and the United States could also use multilateral institutions to increase foreign aid to PTA partners. We thus used data on multilateral foreign aid from the OECD.<sup>21</sup> We found that PTA formation does have a weak positive effect on multilateral aid to democracies for some agencies, though the effect is substantively smaller and less robust than the effect on bilateral aid. These results are shown in Figure A11 in the supplementary appendix.

### Treaty Design

If democracies and autocracies have different propensities to use foreign aid to promote economic reform, it is important to ensure that the PTAs they sign are nonetheless sufficiently similar for a comparison. We collected data on the design of EU and U.S. PTAs and found that, with regard to economic

reform demands, they are very similar for autocracies and democracies. This is shown in Figure A12 in the supplementary appendix. As expected, the primary differences pertain to implementation.

### Endogeneity

Democratic developing countries that sign a PTA with the EU or the United States secure substantially larger inflows of foreign aid than autocratic developing countries in that situation. However, reverse causality may bias our results. Perhaps the EU and the United States form PTAs with developing countries that receive foreign aid for other reasons? Similarly, developing countries might democratize because they are given foreign aid. In the supplementary appendix, we discuss the endogeneity problem and offer an empirical strategy that uses instrumental variables. We identify powerful instrumental variables both for PTAs and democracy to capture the possible effect of foreign aid thereupon. Using these instruments, our results continue to hold.

### Conclusion

Donors and recipients can form PTAs to facilitate mutually profitable economic, and foreign aid can facilitate the costly adjustment in developing countries. However, foreign aid can be diverted to other uses unless the recipient government can credibly commit to contractual obligations. Since democracy is a strong predictor of ability to commit to treaty obligations, we have hypothesized that it should be accompanied by a connection between foreign aid and PTA formation. Our empirical analysis support the theory.

The theory is consistent with previous research on donor-recipient bargaining. Developing countries depend on access to large markets in industrialized countries for export revenue much more than developed countries depend on access to the small markets of developing countries, particularly in the case of the least developed countries. Consequently, PTAs are biased towards the interests of wealthy industrialized countries. Our empirical results show that while developing countries enjoy an increase in foreign aid in the short run, the effect in the long run is negative. According to our theory, this is because donors must offer adjustment assistance only until a successful reform is completed, so the bargaining effect identified by Bueno de Mesquita and Smith (2009) grows in importance over time.

<sup>20</sup>See <http://gbk.eads.usaidallnet.gov>. Accessed September 13, 2011.

<sup>21</sup>Specifically, we considered the following multilateral donor agencies: World Bank IDA, IMF, UNDP, UNFPA, UNICEF, and UNTA. The data are from the OECD.

In recent years, a variety of essential international cooperation problems from environmental protection to foreign direct investment have required collaboration between wealthy industrialized countries and poor developing countries. Since our theory does not depend on the idiosyncratic features of PTA formation, it can be applied to investigate a variety of North-South strategic interactions.

## Acknowledgments

We thank the anonymous reviewers, the editors of *The Journal of Politics*, Mark Dinuccio, Julia Gray, Mark Manger, James Melton, Helen Milner, Krzysztof Pelc, Jon Pevehouse, Peter Rosendorff, Dustin Tingley, and seminar audiences at IBEI Barcelona and Princeton University for helpful comments on previous drafts.

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