

# Foreign Aid as a Signal to Investors: Predicting FDI in Post-Conflict Countries

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## Abstract

Does development aid attract FDI in post-conflict countries? This paper contributes to the growing literature on effects of aid and on determinants of FDI by explaining how development aid in low-information environments is a signal that can attract investment. Before investing abroad, firms seek data on potential host countries. In post-conflict countries, reliable information is poor, in part because governments face unusual incentives to misrepresent information. In these conditions, firms look to signals. One is development aid, because donors tend to give more to countries they trust to properly handle the funds. Our results show that aid seems to draw FDI – however, this is conditional on whether the aid can be considered geostrategically motivated. We also show that this effect decreases as time elapses after the conflict. This suggests that aid’s signaling effect is specific to low-information environments, and helps rule out alternative causal mechanisms linking aid and FDI.

*“Mr. Baker pledged to seek from Congress \$1 billion... to signal private foreign investors that it is safe to commit their own funds to the Philippines” (Friedman 1989).*

Does development aid attract foreign direct investment (FDI) in post-conflict countries? This paper contributes to the growing literature on the determinants of FDI by explaining how aid is a signal that can attract FDI. Post-conflict situations are relatively information-poor because of the effects of conflict. Before investing in these countries, firms look at a variety of signals. We argue that the decision to send aid to a country signals the donors’ trust of local authorities. What matters is the presence of aid, whether or not the aid has achieved its intended purpose. This signaling effect of aid has not yet been addressed. We also argue that this impact of development aid is conditional on whether the aid can be viewed as geostrategic or not. Most aid should signal a better environment for FDI, but aid seen as geostrategic could deter investors. Our results provide support for our argument, suggesting that in post-conflict countries non-strategic aid attracts FDI.

This topic has important implications for the literatures on FDI and aid. Global FDI flows have increased substantially in recent decades, and scholars have attempted to explain why some countries receive more FDI than others (e.g., Blanton and Blanton 2007; Büthe and Milner 2008). At the same time, a separate body of literature attempts to determine the effects of foreign aid (e.g., Burnside and Dollar 2000; Easterly 2001). Our study shows there are important unintended consequences of aid. A few recent studies have shown various relationships between aid and FDI (e.g., Asiedu, Jinc and Nandwa 2009; Kimura and Tod 2010; Selaya and Sunesen 2008), but ours provides a new angle. This study contributes not only to the FDI and aid literatures separately, but in a broader sense by finding connections between them. This research also has substantial normative implications. Our sample, post-conflict countries, is especially deserving of researchers’

attention. Post-conflict countries need to recover from infrastructure damage and other consequences, and are prone to see conflict break out again (Collier 2003) – increasing investors’ concerns about risk (Jensen and Young 2008) – so they are especially worth understanding.

In the next section, we review the literature on determinants of FDI, and the debate about the effects of aid. Then, we discuss the growing literature on the relationship between aid and FDI. In the third section, we present a theory of aid as a signal to investors. We argue that the type of signal should differ depending on whether aid is viewed as geostrategic or not, and that the informational effect of aid should vanish as time elapses since the end of the conflict. In the fourth section, we describe our empirical analysis. The fifth section concludes.

## **Literature review**

### **Determinants of FDI**

Much of the research on the determinants of FDI has explored either economic or political factors. Regarding economic factors, there is some consensus regarding host country’s characteristics that affect the profitability of investment and, therefore, encourage FDI in a given country. Market size, development, economic growth, and trade openness are among the most important economic determinants of FDI (Büthe and Milner 2008; Jensen 2006). Regarding political factors, scholars have explored the effects of political regime, institutions, veto players, and international commitments on the decision to invest in a country. For example, FDI is associated with democracy (Jensen 2003, 2006; Li 2006; Li and Resnick 2003), rule of law (Li 2006, 2009), political stability and regime durability (Li and Resnick 2003), and the signing of preferential trade

agreements (Büthe and Milner 2008; Manger 2009) and bilateral investment treaties (Desbordes and Vicard 2009; Neumayer and Spess 2005).

Less explored is how information availability affects FDI. Hooper and Kim found that higher opacity tends to reduce capital inflows, but opacity regarding accounting and regulations are associated with more FDI (Hooper and Kim 2007:36). However, how do investors make decisions about countries where information is relatively scarce? This paper presents a theory about how foreign aid can provide information to investors when reliable information is limited.

### **Consequences of development aid**

A substantial body of research attempts to determine if foreign aid improves economic growth in developing countries, but the results are mixed. While some single-country studies have shown a positive impact of aid, macro studies have often not offered support (e.g., Boone 1996; Easterly 2001).<sup>1</sup> Some studies have found aid improves growth, but only conditionally upon other factors. For example, Burnside and Dollar (2000) find that aid can lead to growth in countries with good economic policy. However, the results of conditional relationships seem fragile. Roodman (2007) tests the robustness of 14 conditional models of aid and growth, and finds the results very sensitive to model specification and sample size. Overall, the effects of aid on growth are not clear.<sup>2</sup>

The aid efficacy studies have generally examined whether development aid has had its *intended* consequence. A small but growing body of research looks at aid's *unintended* consequences. The most prominent line in this area of inquiry explores how aid affects regime type and related characteristics (Buono de Mesquita and Smith 2010; Knack 2001, 2004; Morrison 2007, 2009).

Other research finds links between aid and the risk of armed conflict (Nielsen et al. 2011) and military spending increases (Collier and Hoeffler 2007).

This paper looks at a different unintended consequence of aid: its impact on FDI. FDI offers potential benefits to recipient countries, so if aid can attract FDI, this would suggest an additional possible mechanism linking aid to growth – though indirectly.<sup>3</sup> A handful of studies have looked at connections between aid and FDI, although much remains unclear.

### ***The impact of development aid on FDI***

In theory, several channels could link foreign aid to increased FDI. Kimura and Tod (2010:482-3) mention three channels with positive effects on FDI (infrastructure, finance and vanguard effects) and two with negative effects (rent-seeking and “Dutch disease” effects).<sup>4</sup> However, the few articles that empirically examine the direct connection between aid and FDI generally find no significant relationship. These studies analyze the impact of aggregate aid (Harms and Lutz 2006; Karakaplan, Neyapti and Sayek 2005), and distinguish between aid for infrastructure or for non-infrastructure (Kimura and Tod 2010). Among the positive results, Karakaplan et al. (2005) find that aid leads to FDI only in cases of good governance and financial market development. Kimura and Tod find that only Japanese aid for infrastructure seems to promote Japanese FDI (in line with Blaise 2005). This appears to be a phenomenon unique to Japan, because they do not find this result for any other donor.

Overall, while there are many channels through which aid might encourage FDI, empirical results have not shown much support for these channels. Virtually no studies have found an unconditional relationship between aid and FDI. In this paper we explore a different channel

through which aid can contribute to increased FDI, signaling. This should be helpful in a particular set of countries: countries that have recently experienced a war in their territory.

### **Theory: The informational effect of development aid**

Our argument contains several parts. First, investors need information, not only about economic attributes but also the political environment. Second, when information is not available, investors look to signals. Third, post-conflict environments are especially information-poor, so signals should matter more in post-conflict countries. Finally, aid concession indicates a degree of credibility regarding the recipient government. That is why foreign development aid can be a useful signal for investors (or their agents) looking for information.<sup>5</sup> Note that aid is only looked to as a signal when other information is scarce or unreliable, such as immediately after a war. This suggests that in post-conflict countries, investment should follow aid, but only until information from other sources becomes available.

Information is a crucial component in the decision to invest in a country (Mody, Sadka and Razin 2003). However, while the literature has identified a series of determinants of FDI, it assumes that the *ability* of investors to access information about these factors (e.g., market size or potential, institutions that may affect investments), and the reliability of such information are relatively homogeneous across countries.<sup>6</sup> This is problematic for two reasons. First, investors do not always have access to all the relevant information that would be desirable before investing in a particular country. Second, potential recipient governments have incentives to offer enticements for investment, but information about the government's type – its willingness or ability to commit to certain policies – may not be available. How do investors decide whether to take advantage of



opportunities without all the relevant information about the country? Recent work in the field of behavioral finance uses psychology to explain investor behavior that cannot be explained with traditional financial and economic theory (Krishnamurti 2009:628). Furthermore, recent studies show that investors rely on informational shortcuts (Biglaiser, Hicks and Huggins 2008; Gray 2009).

Post-conflict situations are especially information-poor, even compared to other developing countries. Regarding developing countries generally, investors can access information about the economic and political situation from government sources, the press, international governmental and non-governmental organizations (IGOs and NGOs), and private sources (i.e., other companies). In post-conflict countries, however, data from official sources can be unreliable because of the consequences of the conflict on the country's administration (and its ability to gather and report accurate information), or because of possible government's incentives to misrepresent the data (Collier 1999; Murdoch and Sandler 2002). For these reasons, there should be less information coming from post-conflict governments, and this information should be less reliable than information from other states.

Additionally, a significant part of the information distributed by IGOs comes from governmental sources. Depending on the magnitude of the conflict and the government type, the work of the press and NGOs can be limited. Furthermore, the information gathered by these sources does not necessarily provide the data required for investment decisions. Finally, conflicts are usually associated with FDI withdrawal (Busse and Hefeker 2007), potentially limiting the information provided by established foreign companies. Overall, post-conflict developing countries are especially low-information environments.

In brief, before investing, firms look at a variety of data sources. In post-conflict countries, given the heightened need for financing, sources affiliated with the potential recipient government

may not be credible. As a collateral consequence of the conflict, information produced by the private sector about the country or the economic environment is likely to be scarce. Where can investors look for information? We argue that, as in other low-information environments, actors look for signals. A particularly important signal in these countries is *foreign aid*. In post-conflict situations, the decision to send funds to a country signals the donors' relative trust of local authorities. This signal indicates investors which countries are trusted to handle international funds and commit to certain policies.

Foreign aid received by a country after a conflict is a *useful* signal to investors for two reasons. First, foreign aid is an accessible signal. Aid packages are typically announced through the press to a global audience. This makes the signal clear and available to investors independently of the nationality of the donor. Governments not only make public announcements of aid programs (which can regularly be seen in major newspapers),<sup>7</sup> and they also announce aid denial,<sup>8</sup> cuts<sup>9</sup> and suspensions.<sup>10</sup> Furthermore, the very aid announcements are frequently joined by statements about the trust in the recipient country,<sup>11</sup> and sometimes, joined by statements of the intention of giving a signal to other international actors, particularly, investors.<sup>12</sup> The global availability of the signal distinguishes our argument from another informational mechanism: the “vanguard” effect suggests that aid gives private information to investors from the donor country.

Second, aid is a costly signal. Donor states invest resources in determining their aid allocation decisions, and of course aid is expenditure as well. Because aid is costly, it is a better indication of trust in the local authorities than mere declarations. The costliness of the signal, combined with the likely lack of credible alternatives, makes aid an indicator for potential investors.

What is it exactly that aid signals? We argue that aid is a costly signal indicating that the recipient is trusted to handle international funds and to commit to certain policies. Development

aid often has attached conditions regarding the use that the recipient should make of the received funds, or commitments to pursue domestic or international policies.<sup>13</sup> This type of signal is valuable to investors, who seek information about the reliability of the government, yet lack such information in post-conflict environments.

Our assertion thus far is that aid provides a signal that a country is safe to invest in, *compared with other post-conflict countries*. Here we add a substantial caveat: in order for aid to work in the manner that we describe, it should not be seen as a strategic enticement in a geopolitical relationship. Geostrategic aid, seen as primarily intended to provide security benefits to the donor (see below), should not provide such a positive signal. Aid that cannot be considered geostrategic, however, should provide an important signal about trust in local authorities regarding the “acceptable” use of aid. Therefore, in post-conflict countries, non-geostrategic foreign aid should have a positive signaling effect and attract FDI.

*Hypothesis 1: In post-conflict situations, non-geostrategic foreign aid is positively associated with FDI*

It could be argued that international aid fosters investment through channels other than information. For example, it is possible that the connection between aid and FDI is through aid’s contribution to economic and social capital (the “infrastructure effect,” Dollar and Easterly 1999:573). There are two reasons why this is not necessarily the case. First, as the literature discussed above indicates, it is far from clear that aid regularly has a positive effect on the economy (Doucouliagos and Paldam 2008). Additionally, for aid to affect FDI through aid’s intended effects, investors would have to believe in the efficacy of aid. This is not a given, considering the general level of skepticism of aid in business circles and the media (e.g., Dorn 2004; Mills 2009; Stephens 2010). Second, aid’s informational effect on FDI should be relatively fast, but infrastructure takes longer to actually increase the host country’s economic or social capital, and then attract FDI.

According to our argument, in initial years after a conflict, the amount of aid received by the host country should signal some level of confidence in the country. What matters is the presence of aid, whether or not the aid has actually accomplished the goals set forth by donors.

Because the argument emphasizes aid's informational effect, and not its intended development consequences, we focus on specific types of aid. Our argument is about *bilateral* aid in particular. Aid is an important signal because it indicates a characterization the donor country has made about the recipient. Multilateral aid responds to different determinants than bilateral aid (e.g., Neumayer 2003a, 2003b), and allocations processes and criteria are different across international organizations. Additionally, there is evidence suggesting that international organizations make aid allocations disregarding the political character of the recipients (Lebovic and Voeten 2009). Therefore, multilateral aid should provide a noisier and less useful signal to investors.

Within bilateral aid, aid from the United States is more likely to be motivated by geostrategic reasons, and therefore we expect it to have different effects than aid provided by other states. The preceding hypothesis applies to non-U.S. aid, and the discussion below explains why we expect U.S. aid to have a different signaling effect to foreign investors.

### ***The peculiarity of U.S. aid flows and the information they provide***

The U.S. is seen as a unique aid donor for two primary reasons: First, it donates more than any other country.<sup>14</sup> Second, and more importantly for signaling implications, U.S. aid is seen as especially geostrategic. By geostrategic we mean motivated by global security concerns. This is different from – and often inconsistent with – economic or other concerns. The goal of U.S. aid in many cases is to get a recipient country to participate in a wartime coalition,<sup>15</sup> allow U.S. troops to use local

military facilities,<sup>16</sup> or to help keep a domestically unpopular regime in place – because this regime supports U.S. security policies.<sup>17</sup> These geostrategic goals are relatively unique to the United States, with its hegemonic status and troops deployed to all regions of the world.

A number of studies suggest that U.S. aid during the Cold War was based more on geopolitics than development (Boschini and Olofsgard 2007; Meernik, Krueger and Poe 1998). Security goals continued to shape U.S. aid commitments through the 1990s (Boschini and Olofsgard 2007; Lai 2003). More recently, the “War on Terrorism” has seemed to influence aid provision in ways comparable to those of the Cold War (Buzan 2006; Fleck and Kilby 2010). While there are multiple mechanisms for how U.S. aid is specifically used for geopolitical ends, several studies suggest vote-buying at the United Nations.<sup>18</sup> Kuziemko and Werker (2006) argue that U.S. aid is used for “bribery” at the Security Council and find that, between 1946 and 2001, countries rotating into non-permanent Council seats received, on average, a 59 percent increase in U.S. aid. Regarding the U.N. General Assembly, Dreher and colleagues (Dreher, Nunnenkamp and Thiele 2008) find that U.S. development aid “buys voting compliance” in the body. Interestingly, when the authors test the influence of other major donors on voting patterns, they find no comparable results. The prominence of U.S. aid, and its consistent status as a geopolitical instrument, means that investors can look to this aid as a signal regarding investment potential.

The assumption that U.S. aid is generally more geostrategic than aid from other countries does not imply that non-U.S. aid is altruistic. Some development aid might be motivated by humanitarian concerns (Lumsdaine 1993), but research shows that a great deal of aid is motivated by donors’ interests (e.g., Alesina and Dollar 2000; Berthélemy 2006; Bueno de Mesquita and Smith 2007, 2009).<sup>19</sup> However, geostrategic interest is different from simple economic interest in that aid given for the former reason is designed to ensure that the regime follows certain security policies,

and possibly also to ensure that the regime can stay in power – because of shared security interests. These goals, as opposed to the goals associated with economically-motivated aid, are less likely to be in line with the interests of investors.

We argue that the signaling effect of U.S. aid, because of its geostrategic nature, should have the opposite impact of the non-geostrategic aid. Because U.S. aid is based on factors other than potential for economic development or simply need, investors might disregard U.S. aid, or even avoid countries receiving higher levels of U.S. aid. U.S. aid might not only indicate a lack of promise of development, but instead a greater likelihood of instability. The very presence of U.S. interest in a country might suggest a concern about volatility. This is illustrated by the frequent U.S. practice of supporting leaders who are unpopular in their own countries, such as the Somozas in Nicaragua, the Shah in Iran, and Musharraf in Pakistan. Aid in these cases might offer some stability, but does not address the underlying issues that provoked U.S. concern in the first place. Therefore, investors might see U.S. aid as a warning sign, and avoid countries that receive higher levels of U.S. aid.

*Hypothesis 2: In post-conflict situations, U.S. foreign aid is negatively associated with FDI*

***Corollary: The effect of time on the signaling effect***

There is an interesting implication of aid's informational role in post-conflict situations. We argue that because of the particular characteristics of a post-conflict country, access to information is more problematic right after the end of the conflict. Lacking relevant information, particularly about the government's credibility, investors will look at aid as a signal of international actors' trust or support of the country. This informational effect of aid, however, should fade as time elapses after the conflict. This is consistent with our main argument because we do not posit that aid has a

permanent informational role, but that aid assumes that role in a particular context: after a conflict. Therefore, the impact of aid on FDI is the most potent in the years immediately after the war, and diminishes with time.

*Hypothesis 3: In post-conflict situations, the impact of aid on FDI decreases over time.*

## **Empirical analysis**

The dependent variable is *FDI*. This variable measures the country's net inflows of foreign direct investment for the year, as a percentage of its GDP. Dividing FDI by GDP is fairly standard in the literature, to scale the amount of FDI by the size of the market (e.g., Blanton and Blanton 2007; Bütthe and Milner 2008; Jensen 2004; Jensen and McGillivray 2005). We use aggregate FDI flows because our theory does not suggest different effects for different kinds of FDI. All of the economic variables come from the World Bank (2010), except where indicated otherwise.

One primary independent variable is *Total aid*. This variable measures the net inflows of OECD Development Assistance Committee (DAC) aid received by the country that year, as a percentage of the host country's GDP. Results are largely unchanged if we use data from AidData (Tierney et al. 2011).<sup>20</sup> We use the same data source and scaling method to create a variable measuring the amount of aid the country gets from the U.S. (*U.S. aid*), and another variable that measures the amount it gets from countries other than the U.S. (*Non-U.S. aid*).

A number of factors have been shown to be associated with FDI levels. The literature shows a series of economic factors capture aspects of the developing country that might make it

more or less attractive to foreign investors. We measure *Market size* as the natural logarithm of the country's population (e.g., Büthe and Milner 2008; Neumayer and Spess 2005).

*Economic development* is measured using GDP per capita in thousands of 2000 U.S. dollars. Countries with more wealthy citizens should be seen as better markets with better infrastructure (e.g., Jensen 2004; Tsai 1994). *GDP growth* is the percentage of change in the country's GDP in the previous year (Blanton and Blanton 2007; Li and Resnick 2003). *Trade openness* is a country's exports plus imports over GDP (e.g., Asiedu 2002; Büthe and Milner 2008; Jensen 2004). Finally, we include a control for pre-war FDI, measured as FDI/GDP the year before the conflict initiated.

We include the following political determinants. *Political instability* is a count of the number of disturbances such as riots, strikes, anti-government demonstrations or assassinations in a country in a given year (Banks 2011). Instability should make foreign firms less likely to invest in a country, although evidence of this is mixed (Asiedu 2006; Büthe and Milner 2008; Feng 2001). *Democracy* is the 1-7 scale from Freedom House (2009), reversed so that 0 indicates the least-free category, and 6 indicates the most-free category. Empirical results have been mixed for regime type (Jensen 2006; Li and Resnick 2003).

In addition to economic and political attributes of the recipient country, we take other factors into consideration. It is possible that the intensity of the conflict affects the decision of investing in a post-conflict country. Therefore, we include *Conflict intensity*, which indicates the number of deaths in the conflict. We use the conflict duration in months as an alternative measure.<sup>21</sup> We also include a series of temporal controls. *Cold war* is coded 1 for years before 1990. We also include decade dummies and *Year count*, a variable counting the years that have elapsed since the conflict ended. All independent variables except the temporal controls are lagged one year to avoid reverse causality.



Models are run on a sample of post-conflict developing countries between 1973-2008. Developing countries are defined as countries that are not OECD members. Post-conflict countries are defined as countries that have experienced a civil conflict or inter-state war on their own territory<sup>22</sup> within the previous five years. Civil conflict is defined as an incompatibility between a state and a sub-state group over territory or the government that results in at least 25 battle-related deaths in a single year.<sup>23</sup> Civil conflict data come from the Armed Conflict Dataset (Gleditsch et al. 2002). Inter-state war is conflict between two or more states that results in 1,000 or more battle deaths, according to Correlates of War data (Sarkees 2000). The Appendix lists the country-years included in the sample. Descriptive statistics are shown in the online appendix.

The estimation technique is an ordinary least squares regression (OLS). Wooldridge Tests show first-degree serial autocorrelation not to be a problem in the 5-year post-conflict sample, but to appear in larger samples, so we include the autoregression factor when using larger samples (Baltagi 2005:84-5). We estimate the model using fixed effects because there are important country-specific FDI determinants (such as factor endowment or business opportunities) that may not be captured by the baseline model. Furthermore, a series of Hausman tests show there is a systematic difference between the results of the two types of models, and that random effects are inconsistent.

## **Findings**

In order to examine whether FDI responds to a particular set of determinants in post-conflict countries, we first run a baseline model on the full sample of developing countries (see Table 1).<sup>24</sup> Model 1 includes economic and political determinants common in the literature. As expected, FDI

is positively associated with *Market size*, *Economic development*, *GDP growth*, *Trade openness* and *Democracy*. *Instability* does not achieve statistical significance.

[Table 1]

We run the same model on the subsample of interest, i.e. post-conflict developing countries (Model 2). Except for *GDP growth*, none of the determinants of FDI in all developing countries achieves statistical significance in a sample of post-conflict countries. This suggests that investors may not pay attention to the same indicators in post-conflict countries, and that FDI may respond to a different set of determinants of in post-conflict countries. In Model 3, we replace  $FDI_{t-1}$  with the level of FDI the countries received before the conflict started, for theoretical and methodological reasons. Given that both GDP and FDI flows are affected by conflicts, *Pre-war FDI* better captures both the country's potential for investment in "normal times," and return-to-the-mean processes. Furthermore, the inclusion of this variable improves model fit. Using  $FDI_{t-1}$  instead does not change the results presented in the following sections.

Two notes regarding Models 1 through 3: first, these models intend to show that the variables included behave as the literature would expect on a conventional sample, in order to address potential concerns over operationalization in the models run on the post-conflict sample. These models also show the explanatory power of the conventional specification ( $R^2$ ) in both samples. Second, it is not our purpose to explain the effect of aid on the general sample because our theory is specific to post-conflict contexts.

Table 2 shows models that include aid variables. Model 4 includes a measure of total bilateral development aid. The coefficient associated with *Total aid* is positive but does not achieve

statistical significance. Overall, the statistical insignificance of *Total aid* suggests that aid – when not separated by whether it is geostrategically motivated or not – is not related to FDI.<sup>25</sup>

[Table 2]

In models 5 to 9, we divide aid into non-U.S. and U.S. aid. Holding other variables constant, and as expected by the theory, whereas *Non-U.S. aid* is positively associated with *FDI*, *U.S. aid* is negative. A one percentage point increase in aid/GDP is associated with a 22 to 26 percentage point *increase* in FDI/GDP – when the aid is provided by OECD members other than the U.S.<sup>26</sup> However, a one percentage point increase in U.S. aid/GDP is associated with a 37 to 39 percentage point *decrease* in FDI/GDP. Aid from the United States and aid from other donors have opposite effects on FDI. These results provide support for hypotheses 1 and 2.

[Table 3]

The substantive impact of the aid variables is considerable. Table 3 shows the effect of a one standard deviation increase in the statistically significant independent variables on FDI. A one standard deviation increase in *Non-U.S. aid* is associated with a 1.88 percentage point-FDI/GDP increase (*FDI's* unconditional sample mean is 2.90, and its standard deviation is 8.61). One standard deviation increase in *U.S. aid* is associated with a 1.20 percentage point FDI/GDP decrease. These effects are important when compared with the impact of the other significant variables: a one standard deviation-increase in *GDP growth* is associated with 1.38 percentage point increase in FDI/GDP, and one standard deviation-increase in *pre-war FDI* is associated with a 1.95 percentage point increase in FDI/GDP.

The coefficients associated with the variables of interest change very little with the inclusion of additional controls. Model 6 controls for the intensity of the conflict. Neither the number of

deaths during the conflict nor the duration of the conflict<sup>27</sup> has a significant effect on FDI. Models 7 to 9 include different temporal controls, which generally do not affect the independent variables of interest. *Cold war* has a negative effect, indicating that FDI/GDP was lower between 1970 and 1989 than after 1990 (see Model 7).<sup>28</sup> Model 8 includes decade dummies. Regressions with different omitted decade variables show similar effects as the Cold War variable: the important differences are between the 1970s and 1980s on the one hand, and the 1990s and 2000s on the other.<sup>29</sup> Finally, *Year count* is positive (although it only achieves .1 level of statistical significance). This coefficient indicates a positive trend in the years after the conflict: additional years elapsed since the end of the conflict are associated with increasing FDI. This result may not seem surprising because of the recovery that countries experience after a conflict, but note that the dependent variable is FDI normalized over GDP. Therefore, this coefficient indicates that FDI grows faster than GDP in the years after the conflict. However, as discussed below, our theory posits a positive indirect impact of the time elapsed after the conflict.

The last models go beyond exploring the direct impact of time, and look at how time conditions the impact of aid on FDI. They provide a test of hypothesis 3. According to this hypothesis, the informational effect of aid in post-conflict countries should decrease as time elapses. Models 10 and 11 include interactions between the aid variables and *Year count* to test this hypothesis. For these models, we use a broader sample, including ten years after the conflict, for theoretical and methodological reasons. First, a larger time span after the conflict allows us to better test aid's signaling effect as time elapses since the end of the conflict. Second, models including all the variables and the interaction terms run on the 5-year sample risk of being over-specified. However, the magnitude and significance of the linear combination of the aid variables and *Year count* in the smaller sample are similar to the results plotted in Figure 1.

The coefficients associated with the aid variables indicate the effect of both sources of aid when *Year count* equals zero (that is, the last year of the conflict). The interaction terms have the opposite direction of the aid variables (the interaction is negative for *Non-U.S. aid*, and positive for *U.S. aid*). This indicates that the effect of both types of aid decreases as time elapses since the end of the conflict. Figure 1 plots the linear combination of *Non-U.S. aid* and *U.S. aid* with their interaction terms, according to Model 10. The positive association between *Non-U.S. aid* and *FDI* decreases in the years following a conflict. This positive association is statistically significant at the .01 level until the third year after the conflict, and at the .05 level in the fourth year. Similarly, the magnitude of the negative association between *U.S. aid* and *FDI* decreases in the years following a conflict. This negative association becomes statistically insignificant in the third post-conflict year.<sup>30</sup>

[Figure 1]

Table 4 shows the substantive impact of a standard deviation increase in aid on FDI, at different years since the end of the conflict. A one standard deviation increase of *Non-U.S. aid* is associated with a 1.4 percentage point increase in FDI/GDP in the first year after the end of the conflict. However, this effect diminishes to 1.11; 0.81 and 0.51 percentage point increases in the second, third and fourth year after the conflict, respectively. Similarly, the magnitude of the negative impact of one standard deviation increase in *Non-U.S. aid* on *FDI* is reduced from 1.03 to 0.67 and 0.31 in the following years. These effects are smaller than the impact of *pre-war FDI*, but are sizable once compared with the substantive impact of *GDP growth*. These findings provide support for hypothesis 3.

[Table 4]

## **Robustness tests**

These results are robust to different model specifications, data sources and estimation techniques. They are robust to the substitution of pre-war FDI by lagged values of FDI, the use of Polity instead of Freedom House, or of GDP instead of population as a measure for market size. They are also robust to the inclusion of other controls, such as  $FDI_{t-1}$  (statistically insignificant), capital openness, total level of U.S. aid (to proxy for changes in American aid policy), squared and cubic splines, and a trend variable. In addition to these standard alternate model specifications, we include additional models in the online appendix to address other possible concerns. Appendix models show that results are also robust to the inclusion of additional controls for aid, and to the use of AidData instead of DAC data. The appendix also includes models with random effects, to allow the inclusion of regional dummies, and/or the treatment of pre-war FDI as a time invariant variable. As a final check, we present in the appendix a set of models to see if the United States is indeed different from other donors. Models suggest that only the United States has a statistically significant negative impact on FDI in post-conflict countries, and that no single country is driving the positive effect of non-U.S. aid.

## **Note on alternative mechanisms and tests for endogeneity**

The results presented above support the hypotheses derived from our theory. They also suggest the implausibility of alternative mechanisms.

For foreign aid to cause FDI through the “infrastructure effect” (e.g., Dollar and Easterly 1999), aid should boost the host country’s economic and/or social capital and make the host country more attractive for investors. Several factors suggest this is not the mechanism driving our

results. First, our models include a measure of economic development that should reflect this effect. Economic development is consistently insignificant in the post-conflict sample. Second, the formation of capital should take longer than a year, and our models use one-year lags. It seems more likely that it is aid's informational effect what explains such an immediate effect on FDI.<sup>31</sup> Third, some readers might suggest that the very delivery of the aid attracts FDI (i.e., the building of infrastructure to host the aid agency personnel). It is not clear, however, why only non-U.S. aid would have this effect, and it seems unlikely that aid-supporting infrastructure would have a substantial impact on FDI. One may argue that it is not the actual infrastructure building that attracts FDI, but the expectation that aid will increase it in the near future. In that case, the infrastructure effect would require that foreign aid had a positive effect on the host country's economy, and that investors believed that such a positive effect exists. However, as noted in the second section, this effect is contested in the academic literature and is questioned by the media. Fourth, if the causal mechanism linking aid to FDI is actual or expected infrastructure building, it is hard to explain the differential effect of U.S and non-U.S. development aid in post-conflict countries. Finally, it is not clear why aid's infrastructure effect would decrease over time and become insignificant after the fourth year in post-conflict developing countries.

Regarding the "financing effect," we find no literature or qualitative evidence suggesting that foreign aid is used to fund FDI profit repatriations. Furthermore, and as with other mechanisms, it is unclear why the financing effect would work for non-U.S. aid, but not U.S. aid. Finally, we do not find evidence of a statistically significant effect of U.S. aid on U.S. FDI. Models that exclude U.S. FDI from total FDI inflows produce similar results to the reported here. As Kimura and Tod (2010) found, the "vanguard effect" does not seem to link U.S. aid and U.S. FDI.

We also test for the possibility of endogeneity or reverse causality. Models in the paper use independent variables lagged one year to address reverse causality issues, and Appendix models conduct further tests, primarily looking at Model 5, our baseline. First, we use two-year lags instead of and in addition to one-year lags, and our results hold. Second, we run Arellano-Bond dynamic panel estimation, where aid variables are treated as endogenous. We also reverse the equation, testing whether FDI determines development aid. FDI is consistently statistically insignificant in regressions predicting U.S. aid. FDI is significant in regressions predicting non-U.S. aid. However, the sign on this coefficient is negative, reversed from when FDI is the dependent variable. Overall, these robustness checks suggest that there is not a problem of endogeneity between aid and FDI.

Finally, we test models that include additional determinants of aid as independent variables, in order to see if any of these variables offer a better explanation of FDI than our aid measures.<sup>32</sup> Models are shown in Appendix, and are also run with random effects to include time-invariant variables.<sup>33</sup> Results for hypothesized relationships are robust to the inclusion of these additional aid variables.

## **Conclusions**

This article has examined how foreign aid provides an important signal to investors, affecting FDI flows into post-conflict developing countries. We argued that post-conflict situations are uniquely low-information environments, and therefore investors look for signals to indicate the potential return on their investment. Aid functions as a signal because it suggests some level of trust of the recipient government, on the part of the donor government. However, we also argued that U.S. aid,



due to its especially geostrategic nature, could function in a different way than aid from other countries.

Our empirical results, analyzing developing countries and post-conflict developing countries between 1973 and 2008, provided support for our argument. First, FDI in post-conflict situations does not respond to the same determinants as FDI in all developing countries. Whereas a series of economic factors (such as market size, economic development, and trade openness) are associated with FDI in developing countries generally, they do not seem to drive investors' decisions in post-conflict countries.

Second, we showed that development aid affects FDI in post-conflict countries, but that the direction of the effect is conditional upon whether the aid came from the United States or from other countries. Aid from countries outside the United States appears to be a positive signal in post-conflict countries, as our argument suggests. This finding is robust to different model specifications, and it is substantively important. The positive association between aid and FDI is almost immediate, suggesting that aid's signaling effect takes place before and independently from whether development aid has accomplished its intended purpose. In other words, aid can bring unintended benefits in post-conflict countries.

However, U.S. aid seems to function as a warning sign, and not a security guarantee that safeguards or attracts investments. We describe it as a warning sign because of the U.S. tendency to aid countries not because of their economic potential or need, but instead for geostrategic reasons. We are somewhat cautious when interpreting the U.S. aid finding, however, because this negative effect is sensitive to the time elapsed after the conflict. Regardless, the substantial difference between the effect of U.S. and non-U.S. aid on FDI is consistent with our theory about aid as a signal, and the importance of whether or not it can be seen as geostrategic.

Finally, the effect of aid on FDI exists right after the conflict, but vanishes over time. It is likely that as time elapses since the end of the conflict, more information become available about the economic and political environment, and that investors rely mainly on that information and not on signals. This apparent time effect adds weight to our argument that aid is a signaling mechanism, especially valuable in the low-information post-conflict setting.

This project has implications for several areas of research. Regarding FDI literature, we have shown that post-conflict environments are different from other environments. Are there other sets of countries or periods that have unique determinants of FDI? Our theory suggested the importance of signaling in low-information environments. Researchers should take into consideration the availability of information in the cases they study, and consider the potential for signal effects when information is not as available.

The project also speaks to the aid literature. Several recent studies examine links between aid and FDI (Asiedu, Jinc and Nandwa 2009; Harms and Lutz 2006; Kimura and Tod 2010), but ours is unique for the signaling argument. Aid could function as a signal in other situations, and future research should consider this. Possible avenues of investigation include disaggregating different types of aid, as they could suggest different signals, and/or disaggregating FDI flows to explore the sensitivity of them to the signal provided by development aid. Our research also adds to the literature on the geostrategic nature of U.S. foreign aid (e.g., Lai 2003; Meernik, Krueger and Poe 1998).

Finally, the research is of normative interest to policymakers. Post-conflict developing countries are especially fragile (e.g., Collier 2003). The international community benefits when these countries stabilize and develop, and increased FDI offers a path to these outcomes. Aid is a potential remedy, and our research shows that aid from countries other than the United States can

offer important *unintended* benefits. Aid from the United States, however, seems to concern investors more than draw them. We do not suggest that the United States should curtail aid, but instead reconsider the strategic basis for its aid distribution patterns. Furthermore, the United States could increase its work to encourage FDI in developing countries generally.

**Table 1.** Baseline models: Different samples

	All developing countries	Post-conflict developing countries	
	Model 1 <sup>†</sup>	Model 2	Model 3
<i>Economic determinants</i>			
FDI <sub>t-1</sub>	<b>.389</b> <i>(.016)***</i>	<b>.367</b> <i>(.034)***</i>	
Pre-war FDI			<b>.242</b> <i>(.052)***</i>
Market size <sub>t-1</sub>	<b>2.585</b> <i>(.398)***</i>	1.286 <i>(1.320)</i>	2.014 <i>(1.579)</i>
Economic development <sub>t-1</sub>	<b>.182</b> <i>(.066)***</i>	.174 <i>(.385)</i>	.362 <i>(.422)</i>
GDP growth <sub>t-1</sub>	<b>.045</b> <i>(.013)***</i>	<b>.070</b> <i>(.023)***</i>	<b>.169</b> <i>(.028)***</i>
Trade openness <sub>t-1</sub>	<b>.007</b> <i>(.004)*</i>	.003 <i>(.015)</i>	.004 <i>(.018)</i>
<i>Political determinants</i>			
Instability <sub>t-1</sub>	-.012 <i>(.024)</i>	-.036 <i>(.069)</i>	-.003 <i>(.081)</i>
Democracy <sub>t-1</sub>	<b>.150</b> <i>(.088)*</i>	.005 <i>(.284)</i>	-.450 <i>(.314)</i>
Intercept	<b>-39.717</b> <i>(5.945)***</i>	-20.240 <i>(21.356)</i>	-31.633 <i>(25.554)</i>
N	3748	510	434
Number of groups	150	83	72
R <sup>2</sup> (within)	0.202	0.240	0.157
R <sup>2</sup> (between)	0.017	0.480	0.022
R <sup>2</sup> (overall)	0.012	0.345	0.068

AIC	21845.13	2867.801	2466.228
BIC	21894.96	2901.755	2498.812

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*Notes:* Estimation is by fixed effects regression. Standard errors are in italics. Statistical significance is indicated as follows: \* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ .

† AR(1) disturbances correction.

**Table 2.** Effect of aid on FDI in post-conflict developing countries

	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10 <sup>†</sup>	Model 11 <sup>†</sup>
<b>Total aid<sub>t-1</sub></b>	3.367 (3.893)							
<b>Non-U.S. aid<sub>t-1</sub></b>		25.429 (6.734)***	23.841 (7.318)***	22.461 (6.759)***	22.627 (6.814)***	25.877 (6.717)***	24.161 (8.531)***	22.380 (8.915)**
<b>Non-U.S. aid<sub>t-1</sub>*Year count</b>							-4.238 (1.857)**	-3.916 (1.952)**
<b>U.S. aid<sub>t-1</sub></b>		-38.393 (11.176)***	-37.499 (11.412)***	-38.075 (11.074)***	-37.896 (11.103)***	-39.045 (11.146)***	-55.597 (18.463)***	-45.740 (18.972)**
<b>U.S. aid<sub>t-1</sub>*Year count</b>							14.331 (5.012)***	12.587 (5.161)**
<i>Economic determinants</i>								
Pre-war FDI	.230 (.054)***	.220 (.053)***	.226 (.055)***	.202 (.053)***	.206 (.055)***	.223 (.053)***	.535 (.074)***	.488 (.078)**
Market size <sub>t-1</sub>	1.967 (1.580)	1.555 (1.552)	1.343 (1.758)	-2.989 (2.272)	-4.282 (3.250)	.996 (1.577)	.301 (.154)*	-2.079 (1.615)
Economic development <sub>t-1</sub>	.374 (.422)	.357 (.414)	.348 (.436)	.352 (.410)	.280 (.438)	.303 (.413)	.506 (.441)	.323 (.462)
GDP growth <sub>t-1</sub>	.171 (.028)***	.152 (.028)***	.153 (.028)***	.139 (.028)***	.141 (.028)***	.149 (.028)***	.052 (.021)**	.048 (.022)**

Trade openness <sub>t-1</sub>	.0008 (.018)	-.004 (.018)	-.003 (.019)	-.004 (.018)	-.003 (.018)	-.007 (.018)	-.002 (.014)	-.001 (.015)
<i>Political determinants</i>								
Instability <sub>t-1</sub>	-.005 (.081)	-.022 (.080)	-.023 (.081)	-.036 (.079)	-.031 (.079)	.004 (.080)	-.033 (.043)	-.026 (.044)
Democracy <sub>t-1</sub>	-.455 (.314)	-.270 (.311)	-.300 (.319)	-.154 (.311)	-.144 (.313)	-.331 (.312)	.0009 (.298)	-.200 (.307)
<i>Other controls</i>								
Conflict intensity			.010 (.018)					
Cold war				<b>-3.499</b> <b>(1.271)***</b>				
1980					.922 (1.258)			
1990					<b>4.443</b> <b>(1.833)**</b>			
2000					<b>4.673</b> <b>(2.420)*</b>			
Year count						.302 (.167)*	.612 (.170)***	.510 (.193)**
Year dummies								(omitted)
Intercept	-30.834 (25.580)	-24.596 (25.110)	-21.139 (28.417)	49.832 (36.753)	66.320 (51.352)	-16.083 (25.472)	<b>-8.956</b> <b>(.863)***</b>	<b>-8.642</b> <b>(.950)***</b>

N	434	434	425	434	434	434	631	631
Number of groups	72	72	72	72	72	72	69	69
R <sup>2</sup> (within)	0.158	0.195	0.197	0.211	0.213	0.202	0.133	0.200
R <sup>2</sup> (between)	0.019	0.009	0.012	0.014	0.012	0.011	0.172	0.185
R <sup>2</sup> (overall)	0.068	0.079	0.095	0.066	0.050	0.109	0.173	0.149
AIC	2467.312	2450.306	2409.379	2443.071	2446.405	2448.318	3251.92	3271.242
BIC	2503.969	2491.036	2453.952	2487.874	2499.355	2493.122	3309.735	3484.712

*Notes:* Estimation is by fixed effects (within) regression. Standard errors are in italics. Statistical significance is indicated as follows:

\* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ .

† 10-year post-conflict sample, with AR(1) disturbances correction



**Table 3.** Unconditional effect of aid on FDI in post-conflict developing countries: Substantive impact (according to Model 6)

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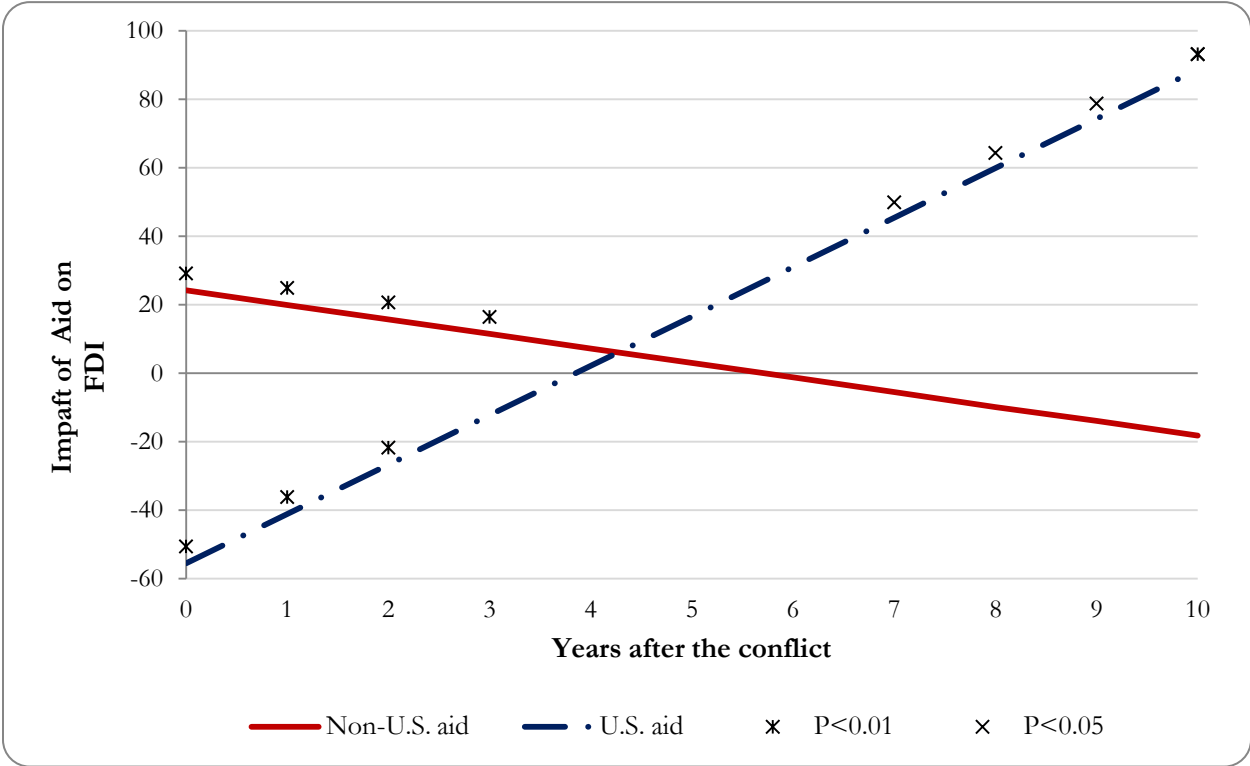
Effect of one standard deviation of the independent variable	
Independent variable	on FDI/GDP
Non-U.S. aid <sub>t-1</sub>	1.874
U.S. aid <sub>t-1</sub>	-1.200
Pre-war FDI	1.946
GDP growth <sub>t-1</sub>	1.382

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**Table 4.** Conditional effect of aid on FDI in post-conflict developing countries: Substantive impact on post-conflict years (according to Model 10)

Independent variable	Effect of one standard deviation of the independent variable on FDI/GDP			
	1 <sup>st</sup> year	2 <sup>nd</sup> year	3 <sup>rd</sup> year	4 <sup>th</sup> year
Non-U.S. aid <sub>t-1</sub>	1.405***	1.106***	0.807***	0.508*
U.S. aid <sub>t-1</sub>	-1.026***	-0.666***	-0.307*	
Pre-war FDI		4.052***		
GDP growth <sub>t-1</sub>		0.426**		

Figure 1. Impact of aid on FDI, conditional on time since the end of the conflict, as of Model 10



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<sup>1</sup> Karras (2006) is one exception, as he finds a positive unconditional relationship between aid and economic growth.

<sup>2</sup> Surveys of the literature reach markedly different conclusions. McGillivray et al. (2006) argue that the majority of studies since the mid-1990s have found that aid increases growth, “one way or another.” However, Doucouliagos and Paldam (2008) argue that the majority of articles do not support the notion that aid encourages growth.

<sup>3</sup> This issue is not addressed by discussions of whether aid and FDI are complementary or substitutes for growth (e.g., Kosack and Tobin 2006; Selaya and Sunesen 2008).

<sup>4</sup> Aid can increase FDI by (1) contributing to the formation of economic and social capital in the host country (“infrastructure effect,” discussed by Harms and Lutz (2006); and Kapfer et al. (2007)); (2) funding FDI profit repatriations (“financing effect”); or (3) promoting FDI from the country giving aid (“vanguard effect”). Aid can negatively affect FDI by (4) encouraging unproductive activities (“rent-seeking effect,” Harms and Lutz (2006); and Svensson (2000)); or (5) shifting resource allocations (FDI) from sectors that do not receive aid to sectors receiving aid, resulting in substantial welfare losses (“Dutch-disease effect,” Arellano et al. (2009); Hodler (2007); and Rajan and Subramanian (2010)). Additionally, some scholars examine whether aid works as a form of insurance by mitigating government appropriation of FDI (Asiedu, Jinc and Nandwa 2009). Asiedu et al. find that aid mitigates but cannot eliminate the adverse effect of expropriation risk on FDI.

<sup>5</sup> We use “investors” generally, including the firms they hire to gather information.

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<sup>6</sup> Many scholars highlight the association between democracy and transparency (e.g., Broz 2002; Kono 2006). Our claim goes further: there are situations in which similar regimes may provide different levels of information access.

<sup>7</sup> A few examples are “Upheaval in the East: France; Paris Is Pressing Aid for Rumanians.” *NYT*, 12/26/1989; “Canada Announces \$2M More for Sierra Leone.” *Canadian Press Newswire*, 05/02/2000; “How U.S. Aid to El Salvador Could Miss Out.” *The Washington Post*, 12/08/2006.

<sup>8</sup> I.e., Japan to South Korea (“Japan Foreign Unpolicy.” *NYT*, 08/28/1981) or the U.S. ban on Azerbaijan (“Oil, Politics and a Blacklist.” *NYT*, 03/02/ 2000).

<sup>9</sup> I.e., “France, in a Shift, Reportedly Plans to Reduce Financial Aid to Algeria.” *NYT*, 04/19/1995; “U.S. Suspends \$30 Million to Honduras.” *NYT*, 09/04/2009.

<sup>10</sup> I.e., “Cambodia: Quandary for Diplomats.” *NYT*, 07/12/1997; “Niger: France Suspends Aid.” *NYT*, 04/14/1999.

<sup>11</sup> “Bush, in Warsaw, Unveils Proposal for Aid to Poland.” *NYT*, 07/11/1989; “France, in a Shift, Reportedly Plans to Reduce Financial Aid to Algeria.” *NYT*, 04/19/1995; “Japan Cuts Aid to China Over Nuclear Bomb Test.” *NYT*, 05/23/1995; “Japan Giving Peru \$11 Million for Development.” *NYT*, 04/29/1997; “Donors Consider Larger Increase in Aid to Palestinians.” *NYT*, 12/17/2004.

<sup>12</sup> “Baker Says U.S. Seeks \$1 Billion in Economic Aid to the Philippines.” *NYT*, 07/05/1989; “Upheaval in the East: Japanese Aid; \$1 Billion Plan for Poland and Hungary.” *NYT*, 01/10/1990.

<sup>13</sup> For example, recipient countries commit to increase democracy (“France Ties Africa Aid to Democracy.” *NYT*, 06/22/1990), or peace with neighbors (“Effort to Repair Armenia and Azerbaijan Ties.” *NYT* 12/10/2000; “Donors Consider Larger Increase in Aid to Palestinians.”

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NYT, 12/17/2004). Humanitarian aid usually does not involve conditions or policy concessions, but humanitarian aid is outside the scope of our study; we only look at development aid.

<sup>14</sup> For example, in 2009, the U.S. donated nearly \$29 billion in aid. The second-highest donor was Germany, with approximately \$12 billion. Source: stats.oecd.org, accessed 01/29/2011.

<sup>15</sup> Development aid played a prominent role in U.S. efforts to get countries to contribute to the 2003 Iraq war effort (Vaknin 2003).

<sup>16</sup> Recent examples include Central Asian countries that are transit points to Afghanistan, and Turkey because of its proximity to Iraq (Linzer 2003).

<sup>17</sup> Examples are discussed below.

<sup>18</sup> For example, in 1991, the United States withdrew \$24 million in aid scheduled that year for Yemen after it failed to support the U.N. Iraq war resolution. U.S. diplomats reportedly told the Yemeni representative that he had made the most expensive vote of his life (Linzer 2003).

<sup>19</sup> Berthélemy compares aid patterns of donor states and determines that the United States is among the “egocentric” donors, as opposed to “altruistic” donors. (An earlier paper (Berthélemy and Tichit 2004) suggested the United States was among “altruistic” donors, but Berthélemy argues the models in the latter paper are better specified.) His models do not explicitly compare economic vs. security interests; they mostly model economic factors such as shared trade.

<sup>20</sup> See Appendix, Table A6.

<sup>21</sup> Conflict intensity data come from the Uppsala Conflict Data Program, especially Lacina (2005) and Kreutz (2010).

<sup>22</sup> We only code states as experiencing an inter-state war if some of the conflict occurs on their own territory because states fighting abroad should not experience adverse effects to their infrastructure or civilian population. An example of a country that is *not* considered to be a post-war country is Oman, for its participation in the 1991 Gulf War.

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<sup>23</sup> Some readers might see a threshold of 25 battle deaths as a low bar. However, civil conflicts, because of their domestic nature, are especially damaging to a country's infrastructure, civilian population, and economy generally (e.g., Ghobarah, Huth and Russett 2003; Murdoch and Sandler 2002). Inter-state wars are often more harmful to soldiers than the country generally, when compared to civil conflicts. Most civil conflicts in the dataset experienced far more than the bare-minimum 25 battle deaths, and caused substantial damage to the state in which they occurred.

<sup>24</sup> This sample includes countries that have not experienced conflicts, countries experiencing conflict, and post-conflict countries.

<sup>25</sup> The lack of statistical significance is not surprising because we expect part of that aid to have a positive impact on FDI, and the rest to have a negative effect.

<sup>26</sup> The mean of *Non-U.S. aid* is .048.

<sup>27</sup> Not reported.

<sup>28</sup> This is consistent with Bearce and Tirone (2010).

<sup>29</sup> In other words, when the 1980s is the omitted decade, only the 1990s and 2000s are statistically significant, and so on.

<sup>30</sup> Interestingly, the results suggest that U.S. aid starts having a positive and statistically significant effect on FDI seven years after the end of the conflict. This positive effect may be related to other mechanisms through which aid can affect FDI in developing countries, which are not tested in this paper. We speculate that after seven years have elapsed since the end of the conflict, the post-conflict country may be in the same situation as any other developing country.

<sup>31</sup> The infrastructure effect may explain the longer-term positive effect of U.S. aid on FDI. Still, it is not clear (and beyond this paper's focus) why non-U.S. aid would not have such effect.

<sup>32</sup> Determinants used are those that Alesina and Dollar (2000) found to be statistically significant predictors of aid. Dyadic variables cannot be used due to our unit of analysis, but we



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include measures of British or French colonial past to capture colonial relations. We also include the Cingranelli-Richards physical integrity rights index (Cingranelli and Richards 2010) because some studies find a relationship between human rights and aid.

<sup>33</sup> Tests using fixed effects vector decomposition (Plümer and Troeger 2007) produced similar results.