Fragile States and Foreign Aid:

Political Origins of Economic Development After Civil War

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Does foreign aid facilitate economic rehabilitation after civil war? A significant amount of research is directed at civil war, and an even larger amount of research is directed at foreign aid. But few have analyzed the influence of foreign aid on economic development after civil war. In general, donors disburse aid for development or for geostrategic purposes. The corresponding recipient countries may or may not derive significant government revenue from natural resources. Here I show that aid fosters development between 1960 and 1999 when donors disburse aid to a recipient mainly for development and when the recipient lacks access to natural resources. In this scenario, recipients face strong incentives to use the aid productively. In contrast, when a donor disburses aid to achieve a geostrategic goal, or when the recipient has access to alternative income derived from natural resources, the recipient uses aid poorly and development goals remain unmet. This article, therefore, identifies a political mechanism by which aid triggers development after civil war.

The aftermath of civil war can be as deadly as war itself (Toole and Waldman 1997; Ghobarah, Huth and Russett 2003; Murdoch and Sandler 2004; Li and Wen 2005; Iqbal 2006; Hoddie and Smith 2009). Within three years of the 2001 ceasefire in the Democratic Republic of the Congo (DRC), at least four million people died mostly of starvation and preventable disease, even in areas where fighting did not restart. In the Central African Republic (CAR) thousands of civilians suffered from malnourishment and epidemics after a ceasefire in 1997.

The CAR and the DRC might have prevented these humanitarian disasters if their governments had improved their provision of public services after their ceasefires. Such a decision would have been financially possible since donors offered the CAR and the DRC foreign aid specifically for the improvement of public utilities and health care.[1] Despite the availability of money for projects that were sure to help the citizens of the CAR and the DRC, these countries and many others like them failed to implement the aid agreements that might have blunted the scale of human tragedy following the conflict.

Not all countries, however, experience such postwar catastrophe. Some postwar governments manage to improve living conditions in their countries even after experiencing violence as devastating as that which beset the CAR and the DRC. In Mozambique, for example, over one million people died violently, starved, or succumbed to disease during the sixteen-year civil war from 1976 through 1992, one of Africa's worst in the 1980s. The conflict destroyed hundreds of villages, roads, water and power networks, schools, and health clinics. Yet the

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[1] In 2002, for example, the World Bank approved an Emergency Multisector Rehabilitation and Reconstruction credit for the DRC aiming at rehabilitating infrastructure, agriculture, governance, and health services. In the CAR, the World Bank supported a Policy Support project, which promoted improvements in governance with attention to the health sector, and the Multisectoral HIV/AIDS project, which directly supported the health infrastructure.

postwar government of Mozambique managed to rebuild health centers and roads and oversee economic expansion that raised the standard of living across the country. One key difference in the case of Mozambique is that the government implemented extensive reforms required by donors, from the auditing of public finances to the implementation of vaccination programs. Did Mozambique bring about inclusive economic development because of foreign aid, or despite it?

I argue that variation in economic development after civil war can be explained by differences in leaders' incentives to implement aid agreements. When donors lack geostrategic interests in the recipient and when the recipient lacks access to natural resources, the recipient faces strong incentives to implement aid agreements. By implementing aid agreements, recipient leaders develop strong relationships with donors, secure continued aid flows, and maintain their political position domestically. In contrast, when a donor disburses aid to achieve a geostrategic goal, or when the recipient has access to alternative income derived from natural resources, the recipient uses aid poorly and development goals remain unmet.

Although the literatures on foreign aid and on civil war are vast, few have studied how foreign aid influences development after civil war. Among the few available studies, the findings are consistent: aid is positively correlated with development. Dobbins et al. (2003), for example, qualitatively compare seven cases and find that external actors are more effective at improving state capacity and recovering formal economies in countries ravaged by conflict when the external commitment is larger. In quantitative studies, Collier and Hoeffler (2004), Kang and Meernik (2005), and Elbadawi, Kaltani and Schmidt-Hebbel (2008) also find that increases in foreign aid promote economic growth several years after the civil war has come to an end, but they caution that the effect diminishes over time.

These qualitative and quantitative results are puzzling, however, because they do not explain why and when domestic actors decide that state building is in their interest in the first place. They lack a political mechanism linking aid to economic development after civil war. They also contrast with the broader literature on aid, which finds that, if aid works at all, it works when institutions are strong; not when institutions are weak, as they are in nearly all post-conflict environments (Burnside and Dollar 2000). Where does the political will to reform come from in states that lack the institutions that constrain leaders from siphoning the aid into their own coffers? Why did the DRC and the CAR fail to implement any donor programs while Mozambique, as well as Guatemala and El Salvador succeeded?

To build a theory of postwar development, I bring together important concepts from two literatures in political science. I employ the insight from international political economy that there is variation in the willingness of donors to withdraw aid from recipients who fail to implement policies stipulated in aid agreements, and that this variation explains whether recipients are willing to implement aid agreements. Successful implementation of these agreements is associated with broad-based development. The next section reviews this finding and broadens this line of argument to incorporate an important insight from the "resource-curse" literature: another source of government revenue – natural resource rents – creates disincentives for promoting development. I bring the two insights together by focusing on the choices available to donors and to leaders of countries emerging from civil war. This analysis leads to a testable hypothesis about the role of aid in postwar development. The third section tests the hypothesis with data on ceasefires between 1960 and 1999, and the final section concludes.

International Incentives for Implementing Aid Agreements

The question of whether aid works has been the subject of intense debate since donors began disbursing it, and still remains unresolved.[2] Burnside and Dollar (2000) considered a sample that included all developing countries and found that aid promotes growth in stronger institutional environments – measured by inflation, budget surplus and trade openness. Collier and Hoeffler (2004) came to a similar conclusion regarding post-conflict states: aid works if institutions are strong enough to absorb it. Easterly, Levine, Roodman (2004) added more observations to the Burnside and Dollar dataset, however, and found that the model ceases to explain growth. In addition, a number of scholars increasingly point to an "aid curse," wherein aid reduces a country's chances for development.[3]

The general logic and evidence that Easterly and proponents of the aid curse have presented, however, offer little guidance for explaining the specific cases of broad-based economic development in states with large aid flows. They argue that aid agreements, unlike natural resources, often come with policy demands from donors, known as aid conditionality, but that these conditions have failed to counteract the aid curse.[4] The source of the problem,

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[2] For a review, see Rodrik (2006). Svensson (1999) reports that aid is more likely to promote development in democratic countries. Bueno de Mesquita and Smith (2007) reach a similar conclusion.

[3] The argument is that aid is similar to natural resources, which hurt development via the "resource curse". See, for example, Moore (1998), Bates (2001), Knack (2001), van de Walle (2001), Remmer (2004), Moss, Pettersson and van de Walle (2008), and Morrison (2009). On the resource curse, see, for example, Karl (1997), Ross (1999), Auty (2001), and Jensen and Wantchekon (2004).

[4] If the aid comes as "program aid," conditions constitute reform targets stipulated in the agreement. If the aid comes as "project aid," conditions include "prior actions" the recipient must meet before approving the project. There is also conditionality when donors evaluate the

according to Easterly, is that donors fail to enforce policy conditions in the first place (Easterly 2003). One possible explanation is that aid can work in specific environments, and that an aid curse does, in fact, emerge, but only when donors give aid with *unenforceable* policy conditions (Stone 2002; Dunning 2004; Bearce and Tirone 2008).

Donors are likely to disburse aid with unenforceable policy conditions when they have geostrategic priorities in the recipient state.[5] States important to the U.S. Global War on Terror, for example, like Afghanistan, Ethiopia, and the Philippines have received large amounts of development assistance from the United States, which, in exchange, obtains access to their territories or their support in identifying terrorist networks. While the United States may genuinely want to encourage economic development in these countries, it likely cares more about the political survival of their leaders. The risk that enemies of a donor state will capture a government – for example, the risk that the Taliban will capture Afghanistan if the United States ends support for Hamid Karzai – may effectively forbid the withdrawal of bilateral assistance even when a recipient fails to comply with the donor's development agenda. The United States is not the only donor that disburses geostrategic aid with unenforceable development conditions. Along with the United States, the Soviet Union offered aid in exchange for ideological compliance during the Cold War. Also, European powers give disproportionately to former colonies with which they maintain political interests (Alesina and Dollar 2001).

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implementation of the project or program before approving a new one. For a critical view of conditionality, see, for example, Collier, et al. (1997), Killick (1997), White and Morrissey (1997), Svensson (2003), and Vreeland (2003).

[5] Studies demonstrate that donors sometimes prioritize development in the recipient and sometimes prioritize the recipient's geostrategic importance. See, for example, Maizels and Nissanke (1984), Alesina and Dollar (2001), and Neumayer (2003).

When donor countries disburse geostrategic aid, aid to bolster the chances of survival of the recipient government or to seek friendlier relations with it, the recipient can contravene donors' development goals without any risk of losing the aid.[6] Development demands from donors offering geostrategic aid are therefore effectively unaccountable. In contrast, when donor countries disburse aid for the sole purpose of encouraging development, development demands are accountable: recipients know that donors will eliminate the aid if development policies are not implemented. Indeed, donors held recipients accountable after the Cold War, when the strategic motivations behind aid disbursement declined (Dunning 2004; Bearce and Tirone 2008; Bermeo 2008). The International Monetary Fund is also stricter on recipient nations that lack strategic importance to one of its powerful board members (Stone 2002).

This distinction between development and geostrategic aid may explain broad-based economic development in postwar states with high aid flows. Success may depend on whether the recipient is accountable to donors that prioritize economic development. The distinction, however, may not be the sole determinant of postwar development since some states also have access to natural resources and can therefore forgo aid tied to donor demands. To understand what conditions prompt postwar leaders to comply with aid agreements in cases where donors are willing to enforce development-policy demands, I expand the discussion of incentives

[6] There is one instance in which geostrategically-important states can be expected to use aid for development: when they have strong domestic institutions that pressure their leaders to invest in citizens (Bueno de Mesquita and Smith 2007). But these sorts of states are rare after civil war (Israel is one example); most states that experience civil war have weak institutions (Fearon and Laitin 2003).

created by foreign aid to account for the influence of domestic factors on leaders' decision making.[7]

Domestic Incentives for Implementing Aid Agreements

My analysis takes as given that leaders are rational actors seeking to maximize their income in order to protect their personal and political positions. This supposition is useful because it brings to light a critical question facing postwar leaders: how to secure resources in order to protect themselves from threats emerging after a ceasefire.

It is natural to assume that the fear of losing office motivates the political behavior of any incumbent (Mayhew 1974; Bueno de Mesquita, et al. 2003), but leaders of governments emerging from war probably worry about political survival even more acutely than leaders in general, because they rule over weak states that are prone to coups.[8] In a coup, a group of people — even a small one — removes the head of state, and the country and the rest of the government accept the new leaders' authority (Luttwak 1968). Coups are likely in postwar environments because such environments are poor (Johnson, Slater and McGowan 1984; Londregan and Poole 1990; O'Kane 1993), lack democratic institutions (Belkin and Schofer 2003), and have a history of coups (O'Kane 1993; Belkin and Schofer 2003).

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[7] On the challenges facing external intervention related to domestic politics in war-torn states, see, for example, Paris (2004) and Howard (2008).

[8] Leaders of weak states, such as most postwar states, also about personal enrichment (Bratton and van de Walle 1997). The logic of the theory proposed here is the same whether one emphasizes leaders interest in political survival or personal enrichment because the theory explains leaders' strategy to maximize income.

How can postwar leaders protect themselves from a coup? Quinlivan (1999) details coup-proofing practices in the Middle East, some of which are generally applicable, including strategies that strengthen regime supporters, that create alternative paramilitary infrastructures to balance against official military power, and that maintain several intelligence structures to monitor potential rivals and those close to the leader.

These strategies for coup proofing – buying support and strengthening defense – require financing. Postwar leaders, therefore, urgently need access to funds and are likely to pursue the easiest sources of income. A leader with access to natural resources, especially highly profitable resources that require either little labor (like oil) or little technology (like alluvial diamonds) to extract, is likely to exploit those resources immediately. The government can obtain wealth by selling exploration and production rights to foreign companies and then taxing their activities and profits.

From a leader's perspective, the next best option to exploiting natural resources is receiving aid based on geostrategic importance because such aid comes with unenforceable development-policy demands. When leaders receive such unaccountable aid, aid can operate like natural resources, generating a source of revenue for the government free of any obligation to transfer it to its citizens in the form of public services.

Some states lack access to both natural-resource rents and aid based on geostrategic importance. These states could develop their own tax infrastructures, but doing so quickly is virtually impossible with institutions left weakened by civil war. The leaders of such states face a third-best alternative source of income: assistance from donors interested only in development. The recipient of this type of aid must spend it as directed by the donor in order to maintain the aid flow. Because monetary resources are fungible, however, aid increases total revenues of the

state, and the recipient can also spend on defense and maintain patronage networks (Pack and Pack 1993; Feyzioglu, Swaroop and Zhu 1998; Moore 1998). This allows leaders to secure physical and political protection – their top priority – and after doing so, to implement reforms.[9] Such spending is not ideal from the point of view of donors who advocate cutting defense expenditures, but an infraction of this type by the recipient is usually insufficient to terminate programs, or even interrupt aid flows.[10] Donors can accept that recipients need to reestablish security, which requires strengthening defense, while these recipients otherwise excel at implementing aid agreements. Postwar development effectively occurs as an unintended consequence of leaders trying to secure their own survival.[11] Thus, countries without natural resources and without geostrategic importance, that is, countries without endowments, should reform the most and benefit the most in response to development assistance. This conclusion is summarized in the following hypothesis.

Hypothesis: Aid is more likely to bring about economic development after civil war in states without endowments than in endowed states.

Thus far, I have assumed that donor-required reforms, if implemented, promote development. This view is not beyond dispute. In addition to debating whether donors enforce

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[9] Some argue that states comply with international agreements to advance their legitimacy (Finnemore 1996). Others argue that compliance requires coercion (Hafner-Burton 2005). My argument suggests the two views are complementary: postwar leaders' concern with legitimacy within the international community is an expression of an underlying fear to lose aid.

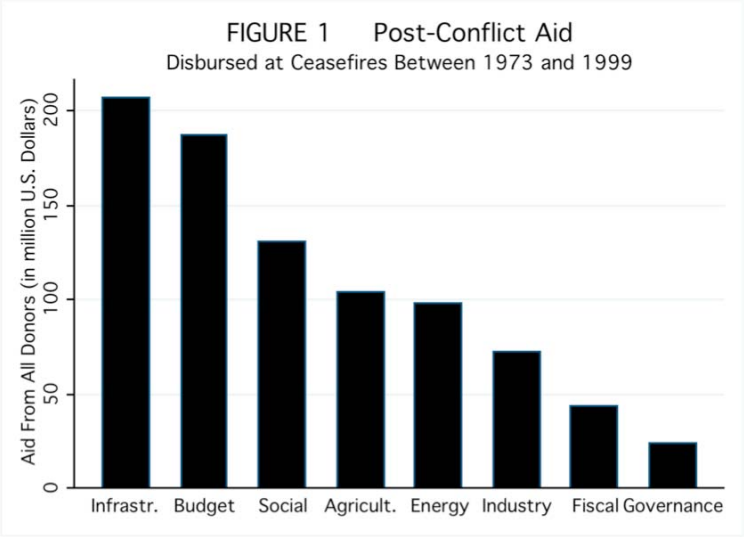
[10] For example, in Uganda, after the ceasefire of 1988, the president increased defense spending while succeeding in implementing the rest of the reform program, and donors viewed this infraction sympathetically because of the security threats within the country (1991).

[11] This intuition is similar to that in Bueno de Mesquita and Smith (2007) regarding all developing countries.

policy conditions, scholars and policy makers have also debated whether donor-required reforms actually bring about positive changes in developing countries. The debate has focused on donors' call for developing countries to "stabilize, privatize, and liberalize" (Rodrik 2006). During the 1980s and 1990s, aid workers – especially from non-governmental organizations – policy makers, and academics argued that the fiscal austerity required of recipient governments in fact exacerbated poverty. Their view prompted campaigns for donors to end structural adjustment and offer debt relief, or at least to modify structural adjustment into "adjustment with a human face," with more emphasis on social sectors (Cornia, Jolly and Stewart 1987). Indeed, projects aimed at basic services and at rehabilitating infrastructure appear to stimulate broad-based development.[12] In post-conflict environments, where a large proportion of aid projects have focused on infrastructure rehabilitation and basic service provision (figure 1), projects aimed at the social sectors appear to have had a more positive impact on economic growth than fiscal and monetary reforms (Collier and Hoeffler 2004).[13]

[12] On the positive influence of social spending on broad-based development, see, for example, Lake and Baum (2001) and Ghobarah, Huth and Russett (2004). On the positive influence of infrastructure rehabilitation on broad-based development, see, for example, Huttly, Morris and Pisani (1997) and Ingram and Fay (2008). Increasing service provision also reduces violence – see Berman, Shapiro and Felter (2009).

[13] The amounts in figure 1 and all subsequent amounts in the article are in 2000 constant U.S. Dollars. The data come from the Projects database maintained by the Organization for Economic Co-operation and Development (OECD) Development Assistance Committee.



Although certain types of reform catalyze economic development, leaders of endowed states choose not to implement these reforms because investing any of their wealth to benefit the poor occurs at the expense of coup proofing. These leaders benefit more from disbursing the wealth immediately to serve their needs and interests instead of disbursing widely for future development gains (Bueno de Mesquita, et al. 2003; Robinson, Torvik and Verdier 2006; Wright 2008).[14] One might expect that, eventually, enough money would meet the security requirements to prevent a coup. However, this does not seem to be the case across postwar states with natural endowments. The marginal benefit of spending more to protect the regime seems to outweigh helping the population. For example, the former president of the DRC, Mobutu Sese Seko, received income from the DRC's mineral wealth as well as from his support for the United States during the Cold War. He feared that by building effective governmental bureaucracies to offer

[14] Not all resource-rich states are doomed to the resource curse. States that seem to avoid this resource curse—including Norway, Canada, and Botswana—boasted strong institutions when they discovered their natural-resource wealth (Mehlum, Moene and Torvik 2006). This dynamic is similar among geostrategically-important states, which, as described above, avoid the aid curse when they have strong institutions.

public services, he would empower elites needed to run them (Reno 1998). In turn, elites might have opportunity to develop their own patronage networks around those bureaucracies, which could facilitate their coordination against the regime. Mobutu therefore spent on the presidency at the expense of public services, including health and education, even after being in power for 27 years. Between 1972 and 1992, social expenditures declined from 17.5 percent to zero while expenditures on the presidency increased from 28 percent to 95 percent (Reno 1998: 154). Similarly, after the 2002 ceasefire in Angola, defense expenditures increased while expenditures in health and education remained abysmal at 1.9 and 2.4 percent of GDP, respectively, despite the influx of oil revenues (International Monetary Fund 2007: 65). The strategy works: resource rich regimes last for a very long time (Smith 2004; Morrison 2009).

All postwar leaders seek funds in the aftermath of civil war and, on average, build equally strong defense infrastructures, but the strategies postwar leaders use to finance their own protection depends on their income sources.[15] Leaders of states with endowments can draw upon resource rents or geostrategic aid to strengthen their political position. Leaders of states without endowments must generally comply with aid agreements in order to maintain aid flows from donors interested primarily in development.

Research Design and Data

To assess the influence of aid on postwar development, I run ordinary-least squares regressions (OLS) on a sample of 137 civil war ceasefires between 1945 and 1999 created by

[15] On average, endowments and military size are not correlated (correlation is 0.001). The measures of endowments are discussed in the research design.

Doyle and Sambanis (2006). I cluster standard errors by country because 28 countries experienced more than one ceasefire. Doyle and Sambanis define civil war as armed conflict involving the government in which at least one thousand people die during the entire war and wherein rebels challenge the sovereignty of the state either by seeking secession or by trying to capture the capital. Combatants reach a ceasefire if (1) they sign a treaty and peace lasts for at least six months, (2) they reach a truce and peace lasts for at least two years, or (3) the government or rebels decisively win and peace lasts for at least six months (Doyle and Sambanis 2006: 135). I narrow the sample to 111 ceasefires starting in 1960 because aid data is unavailable prior to that year. Sub-Saharan Africa experienced the largest number of ceasefires in the sample, at 47. Twenty-six occurred in Asia, 19 in North Africa and the Middle East, 10 in Latin America, and 9 in Eastern Europe.

Dependent Variable

Postwar development has been measured in a variety of ways. Quantitative studies measure economic development after civil war with growth in per capita income (Collier and Hoeffler 2004; Kang and Meernik 2005; Elbadawi, et al. 2008). But growth in per capita income can occur in such a way that only benefits the elite. A measure of economic development that accounts for more than growth in income is needed in order to capture broad-based development. Qualitative studies consider caloric intake, immunization coverage, water quality, school enrollment, literacy, and so on (Kumar 1997; Dobbins, et al. 2003). These metrics are less susceptible to measuring improvement that only affects elites, but they are not suitable for quantitative analysis due to a lack of data. Data on hospital beds, doctors per capita, health

expenditures, clean water, roads, bureaucratic quality and so on, which are available from Bueno de Mesquita, et al. (2003), for example, cover fewer than fifteen ceasefires in the sample.

I measure changes in broad-based economic development after civil war using a more precise metric on development than growth in per capita income that is just recently available annually over time across all post-conflict countries: infant mortality rates. Infant mortality, or the probability that a live-born infant will die before reaching one year of age, is highly correlated with aspects of poverty measured by the qualitative studies of postwar economic rehabilitation (Victora, et al. 2003; Ross 2006b).

I obtained the data on infant mortality from the World Health Organization (WHO), which estimates the data from national civil registries, censuses, and household surveys, and which covers every country and year in the ceasefire sample.[16] The models presented here measure change in infant mortality from three to seven years after the ceasefire.[17] Setting the start year at three years gives me room to measure levels of aid and other potential explanations for the change in infant mortality prior to the change occurring. Setting the end year at seven years allows me to maximize the number of recent observations in the sample. The results, however, do not depend on the time window measuring the change in infant mortality. I

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[16] In addition to the WHO, the United Nations and the World Bank offer infant mortality data using similar methods, but at five-year intervals. Since a ceasefire may occur at any point within a five-year period, their data make it hard to compare infant mortality over the same time periods across ceasefires. In addition to the WHO, two other sources of *annual* **i**nfant mortality data include the U.S. Census Bureau and a dataset compiled by Abouharb and Kimball (2007). These data are less complete than the WHO's, but the WHO data are nevertheless highly correlated with the U.S. Census data and the Abouharb and Kimball data: the correlations are 0.94 and 0.93, respectively.

[17] Lake and Baum (2001) found that policy interventions can reduce infant mortality quickly, after three years.

considered the change in infant mortality between 4 and 7 years after the ceasefire, between 3 and 8 years after the ceasefire, and between the ceasefire and 7 years, 8 years, 9 years, 10 years, and so on.

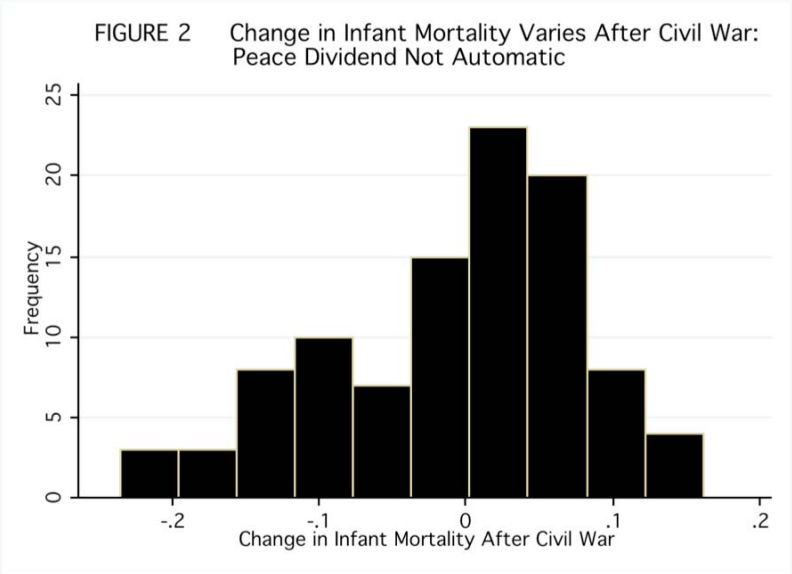
I quantify change in infant mortality in a way that avoids a potential measurement problem: change in infant mortality is not linear. Though it may seem counterintuitive, a reduction in infant mortality from 162 to 152, as occurred in Ethiopia between 1960 and 1965, should require fewer policy interventions than reducing a country's rate from 7 to 6, such as the reduction from Israel's level in 1995 to its level in 2000. This problem arises because the infant mortality rate is bounded: countries cannot improve beyond zero. To address the problem, I follow the common approach in the literature, which is to measure percentage reduction in infant mortality by taking its logarithm (Pritchett and Summers 1996; Gerring, Thacker and Alfaro 2009).

Infant mortality globally improves over time as a result of better technologies and advances in our understanding of human health. To compare fairly across ceasefires from different time periods, I normalize all infant mortality rates to the world average that year, such that the measure of infant mortality is the difference in log(infant mortality/global average) between three years and seven years after the ceasefire.[18]

The change in infant mortality across ceasefires is slightly skewed to the right, that is, toward a worsening of infant mortality after the war ends (figure 2). This is consistent with the finding that war negatively influences development even after combatants stop fighting

[18] I transform the dependent variable into differences in the log likelihood ratios to avoid unrealistic predictions from the linear model.

(Ghobarah, et al. 2003). Infant mortality stayed the same or increased in 62 percent of cases (69 out of 111 ceasefires).



Independent Variables

Aid is expected to trigger economic development in postwar states that lack both geostrategic importance and resource wealth. Aid refers to net annual development assistance divided by the population of the recipient state, and the data come from the OECD. I took the logarithm of the aid value in order to reduce the influence of recipients with very large amounts of aid. Aid is averaged over the first three years after the ceasefire in order to avoid aberrations in annual disbursement.

I measure geostrategic importance as whether any of the donor states intervened with their own troops after a ceasefire. Governments tend to use their militaries for intervention to advance their own security interests (Owen 2002; Edelstein 2008). Thus, donors likely send their own troops to support post-conflict stabilization in states where their interests are at stake. Data

on troops are available from Braithwaite (2009) and the *Military Balance*.[19] Another plausible measure of geostrategic importance is military assistance, but most donors do not publish data on their foreign military expenditures. I code a case as 1 if it received at least 1,000 troops from a donor and zero otherwise.[20] Twenty-two out of 111 ceasefires (20 percent) in the sample received at least 1,000 foreign troops from at least one of the donor states.

A state is resource-rich if, at the ceasefire, its leaders believed they could obtain large profits from a resource that takes either little labor or little technology to extract. Hard minerals, such as gold, diamonds, and cobalt, and fuel minerals, such as oil and gas, meet this standard. Profiting from oil, for example, requires little labor, and profiting from hard minerals, such as diamonds, requires little technology. I consider a state to be rich in natural resources if it produced large amounts of oil, gas, or diamonds within 10 years of the ceasefire. These data come from Ross (2006a). Following Ross, substantial oil and gas production refers to production that yields at least $100 per capita.[21] I use a lower threshold for diamonds because actual diamond production is often much higher than official data show. I consider a country to be diamond rich when diamond production is present, regardless of its official amount over the same period. The data on diamonds come from Humphreys (2005). In the sample, the diamond producer with the lowest level of official production is Sierra Leone, a notoriously diamond-rich

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[19] See International Institute for Strategic Studies (various issues).

[20] The results below are similar using different thresholds of troops, such as 500 or 2,000 troops.

[21] The results are similar after moving the threshold up, for example, to $150, or down, for example, to $75.

country, which officially produced 0.04 carats per capita in 1996.[22] I code a case as 1 if it has substantial reserves of oil or diamonds and zero otherwise. By this definition, 47 out of 111 ceasefires (42 percent) in the sample occurred in countries that are resource-rich.

States with endowments, that is, states with access to natural resources or with geostrategic importance, total 60 in the sample (54 percent). The presence of endowments, however, neither attracts nor repels total aid flows: endowed states receive, on average, approximately $70 in aid per capita after civil war, and states without endowments receive approximately $60 per capita. The difference between the values is not statistically significant. Table 1 offers descriptive statistics for the variables under study here.

TABLE 1 Descriptive Statistics

Variable	N	Mean	Std. Dev.	Min	Max
Change in Infant Mortality	101	-0.01	0.09	-0.24	0.16
Logarithm of Aid Per Capita (constant 2000 USD)	109	3.98	0.61	3.09	5.83
Resource Wealth	111	0.42	0.49	0	1
Geostrategic Importance	111	0.19	0.40	0	1

[22] Data on production and rents for fuel and non-fuel minerals are available from the World Bank's Genuine Savings Project, but I opted not to use these data because they are replete with errors. Nevertheless, I test the models using these data, and the results hold. The results also survive when I separate out alluvial from kimberlite diamonds, since the latter are more similar to oil in their extractability and susceptibility to government control. Kimberlite diamonds are capital intensive and require little labor for extraction while alluvial diamonds appear close to the earth's surface, on riverbeds, for example, and require little technology for extraction. On alluvial versus kimberlite diamond production, see Dunning (2008). The results hold whether I consider kimberlite diamonds alone or both types of diamond together. This may be because the state *can* monopolize alluvial diamond production, even if it can more easily monopolize kimberlite diamond production – see Dietrich (2001).

Control Variables

In order to analyze the effects of aid and resources on infant mortality after civil war, it is important to hold constant socioeconomic factors and particular attributes of the ceasefire. Factors that vary annually are measured the same as aid—as the average of the first three years after the ceasefire—to avoid single-year aberrations.

I control first for the logarithm of per capita income because studies consistently find that "wealthier is healthier" (Pritchett and Summers 1996; Ross 2006b). Higher levels of income allow citizens to improve the quality of their homes, purchase better food, and access public services. It also corresponds with greater state capacity (Fearon and Laitin 2003). The data on per capita income come from the chain series index of the Penn World Tables 6.3. Second, I control for democracy, because governments that are more democratic are more likely to spend on the poor than are less democratic governments (Lake and Baum 2001).[23] Most governments at a ceasefire fail to qualify as democratic; however, some of these governments have institutionalized constraints on the executive. As a result, I measure democracy with the degree of executive constraint on a seven-point ordered scale, where higher values represent higher constraint. The data come from Polity IV. Third, I control for an individual's risk of contracting malaria, a disease that has been associated with increasing infant mortality rates (Snow, et al. 1999). The data come from Sachs (2003).

The literatures in economics, political science, and public health identify several other socioeconomic conditions that influence infant mortality: the baseline infant mortality level,

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[23] For a review of these arguments, see Ross (2006b). Kang and Meernik (2005) and Flores and Nooruddin (2009) find that democracy facilitates economic growth after civil war.

population density, and economic growth. Countries with higher baseline rates of infant mortality may be able to more rapidly lower the rate in the aftermath of the war because they need to implement fewer changes to reduce the rate (Diaz-Cayeros, Estévez and Magaloni forthcoming). Basic reforms can have a greater impact in these states. Second, if citizens are widely dispersed, governments may find it harder to reach those citizens in order to offer health care and other goods (Ross 2006b). The data on population density come from the World Development Indicators. Finally, growth in per capita income reduces infant mortality because such growth represents increases in the means with which households improve their access to healthcare, utilities and housing (Firebaugh and Beck 1994).

The second category of controls includes attributes of the ceasefire, because the degree of hostility among combatants or levels of destruction at the ceasefire could hamper efforts at encouraging economic development. I control for decisive victory, which describes the condition wherein losers are too weak to restart conflict (Wagner 1993; Licklider 1995; Walter 1997). The opposition scatters to return home, leaves the country, is incarcerated, or joins in the normal politics of governance. Fifty-one percent (57 out of 111) of the conflicts ended decisively, of which 33 (58 percent) occurred in states without endowments.

I also control for security guarantees, wherein a third party, such as UN peacekeepers, threatens to punish any combatant that defects from the ceasefire. These guarantees create an environment of trust within which combatants demobilize and share power (Walter 1997; Hartzell, Hoddie and Rothchild 2001; Wantchekon 2004; Fortna 2008). The security-guarantees variable here includes multidimensional operations, in which the United Nations is willing to use military force to promote postwar reconstruction, and enforcement operations, in which the United Nations actively enforces the peace with military force, even if not engaged in broader

reconstruction activities. The United Nations has offered security guarantees in eleven ceasefires, five of them in states without endowments.

I also analyze several attributes that represent greater hostilities at the ceasefire: whether parties agreed to a treaty, the logarithm of dead or displaced during the war, the logarithm of battle deaths within three years of the ceasefire, the number of factions involved in the fighting, the logarithm of the duration of the war (in months), and whether the war was fought over ethnic or religious reasons. The data on residual battle deaths come from Lacina (2006) and the data for the other ceasefire attributes come from Doyle and Sambanis (2006).

Results

Since reductions in infant mortality rates indicate improvement, variables promote infant wellbeing when they are negatively correlated with infant mortality. The first model estimates the effect of aid on infant mortality across all ceasefires between 1960 and 1999 (table 2), and demonstrates that aid fails to correlate with changes in infant mortality. This result contrasts with the research indicating that increases in aid promote development after civil war, and instead supports the body of work that argues for inconclusive effects of aid. The finding is not particularly surprising, however, because the sample includes governments with and without endowments. The question still remains whether aid indeed works better in states that lack endowments.

I therefore consider models 2 through 5 where the effects of aid distinguish between countries with and without endowments. Model 2 estimates the change in infant mortality in states without endowments and model 3 estimates the change in infant mortality in states with

endowments.[24] Models 4 and 5 estimate the change in infant mortality in states lacking one of the two endowments studied here, geostrategic importance and natural resources, respectively.[25]

TABLE 2 Aid Helps Where Donors Have Leverage

Dependent variable: Change in Infant Mortality

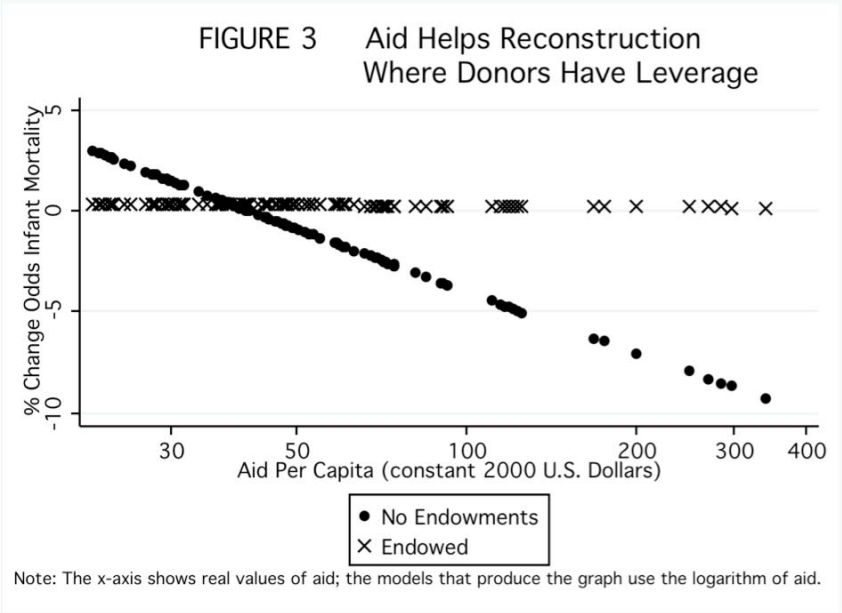
Sample:	**1 All Ceasefires**	**2 No Endowments**	**3 Endowed**	**4 No Troops**	**5 No Resources**
Aid per capita	-0.016	-0.046**	-0.001	-0.022	-0.018
	(0.018)	(0.020)	(0.024)	(0.024)	(0.017)
Constant	0.058	0.173**	0.006	0.082	0.06
	(0.073)	(0.083)	(0.100)	(0.096)	(0.075)
Observations	99	48	51	82	58
R-squared	0.01	0.09	0.0000	0.02	0.02

Note: Robust standard errors clustered by country in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%

As expected, aid only "works" in states where recipients lacked endowments, a statistically significant result at the 95 percent level, but has no effect on infant mortality in endowed states (figure 3). The correlation between aid and infant mortality in endowed states appears negative, even if statistically insignificant, because of two influential observations from the Middle East, Oman and Syria. Both received large amounts of aid from the Arab League after their ceasefires, and both exceeded the sample mean per capita income. When these two observations are excluded from the sample, the correlation between aid and infant mortality becomes positive (aid worsens infant mortality), although it remains statistically insignificant.

[24] Interaction terms are not used because of the small sample size.

[25] Aid has similar effects on infant mortality in the subset of endowed states that are resource-rich states as it does in endowed states. The sample of ceasefires with foreign troops is too small for regression analysis.



Thus, although governments with and without endowments receive similar amounts of aid, the absence of endowments has an independent effect on infant mortality: on average, each dollar of aid works better in a state without endowments than in its endowed counterpart. Moreover, aid has a negative but insignificant influence on states without geostrategic importance, and a similarly insignificant influence on resource-poor states, consistent with the idea that both international and domestic factors account for leaders' incentive to implement aid agreements. Indeed, nineteen percent (12 out of 64) of resource-poor states are geostrategically important and 42 percent (38 out of 90) of states without geostrategic importance are rich in natural resources.

The results in model 2 hold when I add controls for socioeconomic variables associated with infant mortality (table 3). These include GDP per capita and executive constraint (model 6), malaria risk (model 7), baseline infant mortality (model 8), population density (model 9), and growth in GDP per capita (model 10).

TABLE 3 Controlling for Socioeconomic Conditions

Dependent variable: Change in Infant Mortality
Sample: Ceasefires Without Endowments

	6	**7**	**8**	**9**	**10**
Aid per capita	-0.036***	-0.045***	-0.036***	-0.040***	-0.039***
	(0.012)	(0.015)	(0.013)	(0.013)	(0.012)
GDP per capita	-0.031**	-0.016	-0.037*	-0.025*	-0.030**
	(0.013)	(0.015)	(0.018)	(0.013)	(0.014)
Executive constraint	-0.017***	-0.016**	-0.018***	-0.017***	-0.017***
	(0.005)	(0.006)	(0.006)	(0.005)	(0.006)
Malaria risk	-	0.048	-	-	-
		(0.030)			
Baseline infant mortality	-	-	-0.012	-	-
			(0.027)		
Population density	-	-	-	-0.000***	-
				(0.000)	
GDP per capita growth	-	-	-	-	0.0004
					(0.001)
Constant	0.413***	0.306***	0.378***	0.403***	0.422***
	(0.084)	(0.095)	(0.111)	(0.088)	(0.097)
Observations	43	43	43	43	42
R-squared	0.5	0.53	0.5	0.55	0.5

Note: Robust standard errors clustered by country in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%

The results from model 2 also hold when I control for attributes of the ceasefire (Table 4), including UN security guarantees and decisive victory (model 11), the presence of a treaty and the number of factions involved in the fighting (model 12), the number dead or displaced during the war and the number of battle deaths within three years of the ceasefire (model 13), the duration of the war (model 14), and whether the war was fought over ethnic or religious reasons (model 15).

TABLE 4 Controlling for Ceasefire Attributes

Dependent variable: Change in Infant Mortality
Sample: Ceasefires Without Endowments

	11	**12**	**13**	**14**	**15**
Aid per capita	-0.039**	-0.044***	-0.047***	-0.037***	-0.030**
	(0.015)	(0.015)	(0.014)	(0.012)	(0.012)
GDP per capita	-0.033**	-0.032**	-0.031**	-0.026*	-0.035**
	(0.014)	(0.012)	(0.012)	(0.014)	(0.013)
Executive constraint	-0.018***	-0.016***	-0.017***	-0.018***	-0.014**
	(0.005)	(0.005)	(0.005)	(0.006)	(0.005)
Decisive victory	-0.02	-	-	-	-
	(0.024)				
UN Security Guarantees	-0.035**	-	-	-	-
	(0.014)				
Treaty	-	-0.001	-	-	-
		(0.025)			
Factions	-	0.008	-	-	-
		(0.007)			
War dead and displaced	-	-	0.006	-	-
			(0.006)		
Residual battle deaths	-	-	-0.003	-	-
			(0.002)		
War duration	-	-	-	-0.007	-
				(0.006)	
Ethnoreligious war	-	-	-	-	0.026
					(0.017)
Constant	0.459***	0.429***	0.404***	0.413***	0.396***
	(0.117)	(0.092)	(0.105)	(0.085)	(0.080)
Observations	43	43	43	43	43
R-squared	0.52	0.52	0.53	0.51	0.52

Note: Robust standard errors clustered by country in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%

Robustness Checks

The results survive several robustness checks.[26] Most importantly, I consider three alternative explanations for the results. First, I consider the possibility that the causal arrows are

[26] Removal of outliers using the Hadi method for identifying outliers leaves the results unchanged. The results also survive, as discussed above, when I change the time window

reversed, so that reductions in infant mortality attract aid flows (an endogeneity problem). Second, I consider whether governments with access to natural endowments or geostrategic aid manage to protect their economies during the war more than governments without endowments, such that the latter have more "room" to recover after the war. Third, I consider whether states lacking endowments receive more donor support for projects associated with promoting broad-based development than endowed states.

First, the prospect of a state's successful post-conflict rehabilitation could determine aid flows instead of the other way around. Donors may prefer to disburse aid to governments they deem most likely to succeed in implementing reforms. To address this endogeneity problem, the regressions above measure aid *before* measuring the change in infant mortality. In addition, I used a two-stage least squares model (table 5). In the first stage, instrumental variables produce an estimate of aid separate from donor motivations to fund likely success stories. The predicted values are used to estimate the effect of aid on changes in infant mortality in the second stage. I identified two possible instrumental variables. First, I use the size of the recipient in square kilometers, a variable also used to instrument aid in the literature (Rajan and Subramanian 2008). Area is thought to serve as an instrument for aid because donors disproportionately fund smaller states in order to "show their flag" as much as possible (Neumayer 2003; Knack 2004). I also use the total number of deaths from natural disasters across donor countries on the year prior to the ceasefire. Donor countries should be less willing to disburse foreign aid during the years that follow a natural disaster because they face pressure to rehabilitate their own countries. The

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measured by the dependent variable, and when I change the measure of resource wealth or foreign troops. The results also survive the inclusion of region and decade fixed effects. All of these results are available from the author.

natural disasters data come from the International Disaster Database at the Centre for Research on the Epidemiology of Disasters, and cover disasters from storms, wildfires, and earthquakes. Natural disasters in donor states and recipient land area are not expected to influence development outcomes in recipient states. Model 16 tests the effects of aid on infant mortality in states without endowments using the two-stage least squares regression. Model 17 adds socioeconomic conditions and ceasefire attributes to model 16, and model 18 tests the effects of aid on infant mortality on the sample of endowed states.

The instrumental variables are reliable estimates of aid. First, aid is significantly higher in smaller countries. Second, in ceasefire years where donor governments suffer more casualties from natural disasters, donors disburse less aid. The instruments pass the underidentification test with a value that is statistically significant at least at the 95 percent confidence level (measured by the Kleibergen-Paap Lagrange Multiplier statistic), meaning that the instruments correlate with aid. The instruments are also valid, meaning that the instruments and the error term on the dependent variable are not correlated and therefore the exclusion restriction is appropriate — noted when results fail to reject the null of the overidentification test (measured by the Hansen J Statistic).

The results from the two-stage least squares models are similar to the OLS models. The effect of aid on changing infant mortality in states without endowments is still negative and statistically significant at the 95 percent level. In endowed states, aid's effect on infant mortality is still statistically insignificant.

TABLE 5 Addressing Endogeneity with Two-Stage Least Squares

	16	17	18
	No	**No**	
Sample:	**Endowments**	**Endowments**	**Endowed**
Second Stage			
Aid per capita	-0.091**	-0.076**	0.016
	(0.045)	(0.036)	(0.047)
GDP per capita	-	-0.032**	-
		(0.014)	
Executive constraint	-	-0.020***	-
		(0.005)	
UN Security Guarantees	-	-0.029	-
		(0.024)	
Decisive victory	-	-0.031	-
		(0.025)	
Constant	0.349**	0.611***	-0.061
	(0.174)	(0.162)	(0.187)
Hansen J Test	2.376	0.175	1.074
First Stage			
GDP per capita	-	-0.008	-
		(0.141)	
Executive constraint	-	-0.038	-
		(0.044)	
UN Security Guarantees	-	0.138	-
		(0. .330)	
Decisive victory	-	-0.317	-
		(0.151)	
Area of recipient	-2.748***	-2.238***	-3.627***
	(0.808)	(0.688)	(1.194)
Disasters in donors	-0.102***	-0.103**	-0.125***
	(0.027)	(0.042)	(0.037)
Constant	4.161***	4.538***	4.423***
	(0.096)	(1.089)	(0.178)
R-squared	0.155	0.245	0.213
Kleibergen-Paap rk LM statistic	4.692	5.325	10.032
Observations	47	42	51

Note: Robust standard errors clustered by country in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%

Another alternative explanation for the correlation between aid and infant mortality needs to be considered. One might ask whether governments with access to natural endowments or

geostrategic aid protect their economies during the war more than governments without endowments. Endowed countries would then have less "room" to reduce infant mortality after the war. This seems implausible, however, because both types of state suffer similar increases in infant mortality during their civil wars. On average, infant mortality increases by two percent in endowed states while it increases by one percent in states without endowments.

Finally, as indicated by the literature cited in the previous section, not all reforms are equally beneficial, and social sector and infrastructure reforms are more likely to help bring about economic rehabilitation after civil war than other types of projects. This suggests a mechanical alternative explanation for the results: perhaps states without endowments receive more aid to support social sectors and infrastructure than endowed states. Across ceasefires occurring between 1973 and 1999, states with and without endowments each received foreign aid for approximately 1,000 projects targeting either social sectors or infrastructure rehabilitation at similar cost.[27] On average, states without endowments received $2.84 in aid per capita for social and infrastructure projects, and their endowed counterparts received $2.46. The difference in means is not statistically significant. Thus, holding constant the types of project across both types of states, governments lacking endowments are more likely to use aid toward broad-based development than endowed states.

Conclusion

Economic rehabilitation after civil war is more likely where leaders face incentives to implement aid agreements. Such incentives are generated when the postwar government lacks

[27] The data come from the OECD Development Assistance Committee Projects Database.

access to natural resources and when donors can credibly threaten to withdraw if the recipient fails to implement the agreement. The effects of aid differ in a significant way across post-conflict states when leaders lack endowments. These results are broadly consistent with the idea that an aid curse exists, but the findings add nuance to the "aid-curse" idea by demonstrating that aid nevertheless rehabilitates economies when leaders face incentives to use the aid well.

The results from this article also contribute to the nascent literature on post-conflict reconstruction in two main ways. First, they represent a systematic study of the role of aid in postwar economic development, defined as broad-based improvement in living conditions after civil war. Quantitative studies have focused on post-conflict economic growth, but economic growth can occur in such a way that it only benefits the elite. Qualitative studies have considered whether wellbeing broadly improves after civil war, but such studies focus on one or a few cases and therefore cannot conclude that their findings hold on average across cases and over time.

Second, these findings are relevant to one of the principal debates in the civil-war literature: whether the international community should intervene after a ceasefire emerges. Some scholars argue that it should intervene aggressively (Dobbins, et al. 2003; Doyle and Sambanis 2006). Others argue that the international community should "give war a chance" because the United Nations, other multilaterals, and the world's major powers are bound to fail and will therefore prolong wars that might end decisively and quickly (Luttwak 1999; Weinstein 2005; Brownlee 2007; Englebert and Tull 2008). The analysis presented here argues that the question should not be whether the international community should intervene at all, but instead, *under what conditions* it ought to intervene. The international community can clearly help some states – those with incentives to implement its programs – but unfortunately it can do little for the others.

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