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A Diamond Curse?

CIVIL WAR AND A LOOTABLE RESOURCE

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While territory, oil, and water are frequently mentioned as resources likely to promote interstate conflict, diamonds have emerged as a prominent factor in explanations of civil war. In this article, the authors report on a new database on diamond deposits and production and analyze the relationship between diamonds and armed conflict incidence. They find a strong bivariate relationship between diamonds (particularly secondary diamonds) and the onset of civil war. Adding diamond dummies to standard models of civil war, the results are more mixed. The production of secondary diamonds increases the risk of onset of ethnic war, but not other types of war. The authors find evidence that secondary diamonds are positively related to the incidence of civil war, especially in countries divided along ethnic lines. Primary diamonds, on the other hand, make ethnic war onset and incidence less likely. The authors also find that the impact of diamonds has been substantially stronger in the post–cold war era.

Keywords: *civil war; conflict; diamonds; natural resources*

Abundance of natural resources has emerged as a significant factor in explaining civil conflict. The idea that rebels would use natural resource riches to finance their activities was discussed by Jean and Rufin (1996) and later in Collier and Hoeffler's (2004) seminal article on "greed and grievance." A number of case studies suggest that

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natural resources have been used by rebel groups to finance warfare and even to enhance rebels' private income (Ross 2004a). A notable case is Sierra Leone with its blood diamonds (Smillie 2002; Smillie, Gberie, and Hazleton 2000). As the country's minister of finance, James Jonah (2000), puts it, "The war in Sierra Leone is simply about diamonds." In Angola the UNITA rebels used revenues from diamonds to finance their long conflict with the government, which in turn relied on offshore petroleum riches to finance its military (Le Billon 2001a). In the Democratic Republic of Congo, various Congolese rebel groups as well as armed groups from neighboring African states joined in a general plunder of natural riches, including diamonds (United Nations Panel of Experts 2001).

Systematic empirical research has so far yielded ambiguous evidence relating natural resource wealth to the propensity for conflict (Ross 2004b; Sambanis 2002). The general argument has been that abundant natural resources provide a pool in which rebels can acquire a stake to finance their warfare. The empirical literature has given less attention to the question of whether the rebels are actually able to exploit this resource. Research on resource conflicts is often motivated by examples of resources that rebels are able to access during a conflict—so-called lootable resources—while the systematic analyses make use of resource variables that lump together lootable and nonlootable resources.[1]

As an alternative, we concentrate on the role of diamonds as one key resource in the conflict literature. Using a new data set on diamond deposits and production, we find that most diamond countries have experienced conflict, especially the ones with lootable diamonds. We then study whether this bivariate relationship holds when we control for other conflict-generating factors. However, when we introduce the diamond variables to standard civil war models, we find much weaker and more ambiguous results. We discuss under what circumstances diamonds may stimulate civil conflict and find that the easily lootable diamonds tend to promote the onset and incidence of ethnic conflict. We also find that after the end of the cold war, lootable diamonds are strongly and positively associated to onset and incidence of all civil wars. Finally, we note that nonlootable diamonds tend to make ethnic conflict *less* likely.

DETERMINANTS OF CIVIL WAR

The incidence of rebellion is decided by *motivation*, *opportunity*, and *identity*. First, the rebels need a motive. This can be negative—a *grievance* against the existing state of affairs—or positive—a desire to get rich, sometimes called *greed* in the civil war literature. Second, potential rebels need to be able to achieve their goal. The realization of their desires may be blocked by geographical factors (if the rebels are thinly spread out) or by the lack of financial means (if they are very poor). Third, a common identity is essential for group formation. Regardless of the motives of the rebels and their

1. Lootable natural resources can be harvested by simple methods by individuals or small groups, do not require investment in expensive equipment, and can easily be smuggled. In a conflict, such resources can provide income for rebels, as well as soldiers and locals. For example, an alluvial diamond field is a lootable resource while a bauxite mine is not.

opportunities, they will not act together unless they see themselves as being in the same boat. We see all the three factors as necessary for the launching of a rebellion sufficiently plausible to start a civil war. All three factors also affect the length of conflict; the rebels need motivation to keep on fighting, and they have to be able to do so financially. Group cohesion is necessary to minimize deterrence and risk that the group splits into two or more competing rebel groups.

Various models of conflict are related to this three-factor model of rebellion, which is largely inspired by Gurr (1970). Ellingsen (2000, 229) identifies the same three factors but labels them *frustration, opportunity*, and *identity*. Collier and Hoeffler (1998, 2004) in their work on civil war that formed the core of the recent World Bank project (Collier et al. 2003) formulated their work around the concepts of *greed* and *grievance* (see also Berdal and Malone 2000). In other writings, Collier and Hoeffler speak more of *opportunity* than of greed. To some extent they identify opportunity with greed, but they also study geographical opportunities for rebels, such as the presence of forest cover and mountains. Collier and Hoeffler recognize that both opportunity and grievance are necessary for the outbreak of civil war, but usually conclude (e.g., Collier and Hoeffler 2004) that "opportunity provides considerably more explanatory power than grievance." Similarly, in the study of interstate war, Most and Starr (1989, 23) posit that decisions to go to war require *opportunity* and *willingness*. Willingness refers to "the choice (and process of choice) that is related to the selection of some behavioral option from a range of alternatives," while opportunity is a shorthand term for "the possibilities that are available within any environment." Identity is not part of their model, probably because for interstate war it is assumed that the group formation is defined by the nation-states.

Natural resources are relevant to all the three factors: rents from natural resources provide income for corrupt, incompetent, and repressive governments while at the same time increasing the value of holding the reins of government. Such rents increase the motivation to overthrow the government although revenues accruing to the government make it more able to defend itself. The looting of natural resources (or extortion in connection with extraction activities) provides economic opportunity for rebel movements. And finally, the promise of rent from natural resources may also contribute to strengthening group identities, as when Scottish nationalism was stimulated by the discovery of oil in the North Sea. In the civil war literature, most of the attention has been focused on the economic opportunity provided by abundant natural resources (see, for instance, Collier et al. 2003).[2]

Collier and Hoeffler (1998, 2004) were among the first to suggest that natural resource abundance may increase the risk of civil war onset, arguing that rebels can loot primary product commodities to finance their fighting. Furthermore, Collier and Hoeffler (forthcoming) contend that natural resources provide financing as well as motivation for secessionist conflicts. Collier and Hoeffler provide empirical evidence that their measure of natural resource dependence is strongly associated with the onset

2. In addition to the direct effects of natural resources on the incidence of conflict, there are also indirect effects. An abundance of natural resources tends to be associated with low economic growth, rent-seeking, corruption, and the deterioration of institutions of governance (Auty 2001; Sachs and Warner 1995, 2001), and these in turn may increase the risk of conflict.

of civil war. Their subsequent work has continued to emphasize natural resource dependence over resource endowment as such (Collier and Hoeffler 2002, 2004; Collier, Hoeffler, and Söderbom, 2004).

Addison, Le Billon, and Murshed (2002) assess the possibility that some natural resources may be associated with conflict while others are not. Lootable natural resources are likely to have a negative impact on a peace process since continued conflict might be more profitable for the combatants than an outbreak of peace. Similarly, Le Billon (2001b) divides natural resources according to their geographical *location* in relation to the country's center of (*proximate* vs. *distant* resources) and their *concentration* (*point* vs. *diffuse* resources). He argues that point resources are associated with state control and coups d'état (when they are proximate) and with secession attempts (when distant). Diffuse resources are associated with rebellion and rioting (when they are proximate) and with warlordism (when distant). Ross (2004a) develops several possible mechanisms for how natural resources may affect conflict characteristics and also argues that the lootability of a resource is central in determining the impact on conflict.

The empirical evidence supporting claims that natural resource abundance increases the risk of conflict onset is mixed at best. Fearon and Laitin (2003) use the linear as well as the squared term of the Collier and Hoeffler measure and find neither of them to be significant. More recent work by Fearon (2005 [this issue]) on the Collier and Hoeffler data set concludes that the Collier and Hoeffler finding is an artifact of their model specification, notably their use of five-year periods rather than a country-year format. Elbadawi and Sambanis (2002, 322) conclude that the resource variable "seems fragile" and show that with different model specifications the variable is not significant. Hegre and Sambanis (2004), in a very extensive test of a number of civil war predictors, find that natural resource dependence measured as exports of primary commodities as a percentage of GDP is not very robust to changes in the set of control variables. On the other hand, they find a related measure, manufactured goods as percentage of total merchandise exports, to be consistently significant and negatively associated with the risk of conflict. Reynal-Querol (2002) finds that the natural-resource-exports-to-GDP ratio has no explanatory power for ethnic conflicts but is significant in explaining ideological/revolutionary civil conflicts.

There are fewer quantitative studies on the effect of resource endowment on the duration of conflicts. Fearon (2004) shows that conflicts with rebel groups that have access to contraband goods such as opium or gemstones tend to last significantly longer than other conflicts. Collier, Hoeffler, and Söderbom (2004) conclude that the ratio of primary product exports to GDP does not affect the duration of civil war.

MEASURING NATURAL RESOURCE ENDOWMENT

As noted, Collier and Hoeffler (1998, 2002, 2004, forthcoming) use the ratio of primary commodity exports to GDP as a proxy for the availability of natural resources, a measure originally used by Sachs and Warner (1995, 2001) to study the question of why resource-abundant countries grow more slowly. They reason that the risk of conflict onset increases as the rebels are able to extort the resources and fund their supporters. Sambanis (2002), de Soysa (2002), and others have argued against using this export ratio as a measure of the resource curse.

First, the measure does not distinguish between different resource types. It is unlikely that primary commodities like staple cereals have the same effect on conflict as easily mined secondary diamonds. For most countries, exports of minerals make up the largest share of primary commodity exports. Very few minerals, however, can be extracted by simple methods and smuggled across the border, making only a fraction of minerals lootable. For the same reason that lootable resources may be valuable to rebels, they may not show up in export statistics at all, or only partially. Even during peacetime some mining is unofficial and smuggling widespread. This is especially true for secondary diamonds (see Smillie 2002). Thus, the primary-commodity-to-GDP ratio includes mainly resources that may have little value for the financing of rebel warfare. Moreover, it is likely to exclude revenues from precisely those resources that are most likely to be financing rebellions.

The Sachs and Warner measure is also likely to suffer from endogeneity. Civil wars are often preceded by low-intensity insurgencies and public disorder that fall below the somewhat arbitrary threshold defining a civil war (typically requiring at least one thousand battle-related casualties). Instability, in turn, is likely to have a negative impact on economic growth. Primary commodity production is less likely to be affected by instability since it is less dependent on the rest of the economy and since the products are typically sold in the international markets. Moreover, natural resource production in most cases cannot relocate and is thus more persistent in the face of deteriorating stability than manufacturing industry. Therefore, a country suffering from low-level violence and political unrest may look more resource-dependent as a *consequence* of instability, rather than the other way around. Political disorder makes countries appear more resource-abundant, even though the output of primary commodity extraction—and more important, the economic opportunities for rebellion—may not have changed at all.

Finally, a country may become more prone to conflict due to exogenous factors (such as famine or conflict in a neighboring country) that simultaneously have an adverse affect on the economy but not on primary product exports. Therefore, the relation between natural resource dependence and conflict may be spurious.

To avoid the problems associated with the Sachs and Warner measure, de Soysa (2002) uses data from the World Bank (1997) on available natural resources per capita. This data set disaggregates natural resources into assets that are renewable and nonrenewable (such as metals and minerals). He finds the square of the mineral assets variable to be statistically significant. However, it has a positive sign, indicating that either very high or very low levels of mineral resources are hazardous. By using the World Bank data, de Soysa avoids some of the problems just mentioned, but he runs into some new ones. The per capita measure for subsoil assets is only available for seventy-seven countries, restricting the sample size significantly. No information is available regarding the criteria by which the seventy-seven countries were selected, raising the possibility of a significant bias in the data set. Besides, the asset estimations do not include all minerals but are limited to eight metals and minerals (bauxite, copper, iron ore, lead, nickel, phosphate rock, tin, and zinc) and three energy source (oil, gas, and coal) (World Bank 1997, 32). None of them can be considered highly lootable.

One way to improve the measurement of the resource curse is to concentrate on individual resources and resource types. In this article we have chosen this approach and draw on a new data set, DIADATA, on diamond deposits and production to study resources' effect on civil conflict. The new data set allows us to test how lootable diamonds (secondary diamonds) affect civil war. Since the data set also includes data for primary diamonds that require skilled labor and high investment in technology, we are able to test separately the effect of a less lootable natural resource on conflict.

HYPOTHESES

The general literature on natural resource abundance and conflict is the starting point for our first hypothesis:

Hypothesis 1: A country that produces diamonds faces a higher risk of civil conflict onset.

We are interested in whether resource *type* affects the risk of civil conflict. We divide diamonds into two groups based on the geological form in which they occur. Primary diamonds—or kimberlite diamonds as they often are called[3]—occur in underground rock formations and are often mined by large (multinational) companies that are able to bear the investment costs and risk involved in underground diamond mining.

By contrast, secondary deposits are easier to find and can be exploited with artisanal tools such as a shovel and a sieve. In addition, the dispersal of diamonds from their primary sources is generally accompanied by an increase in the average value per carat, as the erosion destroys the flawed stones.

The geographical distribution patterns of these two types of diamonds are also different. Primary diamonds are clearly point resources. The concentration makes it easier for the government (or even the mining company) to control the mining site and the revenue flows. Revenues from primary diamonds are more likely to accrue to the government, which may make the government more corrupt and repressive but will also enhance its capacity for defending itself, thus decreasing the likelihood of successful rebellion. Secondary diamonds by contrast are found over larger areas and on the surface. This complicates government control of the mining area and the revenue flow.

Secondary diamonds are more easily lootable by rebels. They may not only motivate the initiation of conflict but also present an opportunity to finance a conflict with other objectives. Primary diamonds are less accessible to rebel forces during a conflict and cannot be used as a means to finance an ongoing war effort, although they may increase the value of state capture. Therefore, we postulate that while secondary diamonds increase the risk of conflict onset, primary diamonds do not. This leads to the following subhypotheses:

3. In fact, primary diamonds also sometimes occur in lamproite rock formations as well.

Hypothesis 1a: A country that produces secondary diamonds faces a higher risk of conflict onset.

Hypothesis 1b: The production of primary diamonds does not affect the risk of conflict onset.

We also hypothesize that the two types of diamond reserves have different impact on the *incidence* (or prevalence) of conflict, where we measure the presence of conflict in every year as long as it is active. Since secondary diamonds are lootable, they can be used to finance warfare during the conflict. That is, the revenues from the resource may accrue during the conflict and help to sustain the conflict effort. Wartime looting may be so profitable that the rebels prefer the conflict to peace. In peacetime they may not be able to exploit the reserves to the same extent. According to Addison, Le Billon, and Murshed (2002), armed forces may also engage in looting, even in collaboration with rebels, and soldiers may as well prefer to continue low-intensity warfare to peace. Thus,

Hypothesis 2a: A country with secondary diamonds tends to have a higher incidence of conflict.

Revenue from primary deposits accrues to the government and puts it in a stronger position to buy support, defend the state, and crush possible uprisings. The rebels, on the other hand, will not be able to collect war loot from primary diamond deposits and are forced to finance the fighting with other means. Even if the prospect of capturing primary diamonds motivates the rebels, they have to overthrow the government to exploit the diamond riches. An enduring conflict would be an obstacle to the rebels: the longer the conflict, the longer they would have to wait to get the diamonds under their control. Moreover, the primary diamonds cannot as easily be used to finance the warfare, and thus the rebels may not be able to engage in a longer conflict. The government, on the other hand, depends on providing a secure environment to the foreign diamond companies to ensure their presence in the country. This gives an incentive to the government to squash possible rebel movements fast and effectively. Therefore, rebels have an incentive to overthrow the government as quickly as possible, while the government has an incentive to pacify the country to avoid scaring foreign investors away. We hypothesize,

Hypothesis 2b: A country with primary diamonds tends to have a lower incidence of conflict.

Several other factors influence the risk of conflict, and these are captured in our multivariate analysis below. Some of these factors are also likely to influence the relationship between natural resources and conflict. In countries that face increased risk because of economic or cultural factors, the presence of diamond deposits is likely to exacerbate the situation. By contrast, in countries with good prospects for a peaceful future, diamonds are more likely to contribute favorably. For example, ethnic tension is a prominent factor in grievance theories of civil war, although the empirical evidence is mixed (see, for example, Collier and Hoeffler 2004; Ellingsen 2000; Fearon and Laitin 2003; Sambanis 2001). In line with our general argument that rebellion is more likely when there is both grievance and opportunity, we argue that presence of secondary diamonds may strengthen the opportunity element in a conflict motivated by ethnic grievances. Therefore we hypothesize,

> *Hypothesis 3:* The presence of secondary diamonds is positively associated with the onset and incidence of civil war in countries with a high level of ethnic fractionalization.

Similarly, several empirical studies have shown that less developed countries are more likely to experience civil war (see, for example, Fearon and Laitin 2003; Collier and Hoeffler 2004). In countries with low per capita income revenues, rebel groups may use revenues from secondary diamond mining to hire or attract potential rebel soldiers that have very low opportunity cost on joining rebel movement. However, rebel groups are rarely able to mine primary diamonds, and therefore we do not expect the effect of nonlootable diamonds to vary between poor and rich countries. Therefore we argue,

> *Hypothesis 4:* The effect of secondary diamond mining on the risk of civil war is stronger in poor countries.

Finally, the impact of natural resources may have changed over time. Klare (2001) and others have argued that the role of natural resources in conflict has increased in the post–cold war period. The bipolar situation of the cold war no longer dominates the global pattern of conflict, and new conflict lines are emerging.[4] Diminishing tension between the two superpowers has reduced external financing for many rebel groups as well as governments. This has made rebels and militaries more dependent on alternative financing, including financing from natural resource exploitation. Therefore we hypothesize,

> *Hypothesis 5:* The significance of diamonds for conflict has been greater after the end of cold war.

THE DIAMOND DATA

To test the hypotheses, we use the new DIADATA data set (Gilmore et al. 2005). The data set includes all known instances of diamonds throughout the world and was compiled for the purpose of investigating the relationship between conflict and resources. The data set consists of a comprehensive list of diamond occurrences accompanied by geographic coordinates. Besides reporting the location of diamond deposits, the data set provides the deposit's year of discovery as well as the first year of production.[5] This allows us to compose six different dummy variables from the data

4. A similar assumption is made in the "water wars" literature. In an attempt to test this, Toset, Gleditsch, and Hegre (2000) hypothesized that shared rivers are more likely to be associated with militarized conflict after the end of the East-West conflict, but they found little empirical support for it.

5. The discovery and production dates were found in references pertaining to the specific diamond occurrence. For some countries it was not possible to assign the earliest known discovery and production year to a specific diamond occurrence, but this information was included in the associated country profile.

set: the diamond deposit dummy is set to 1 for the first year diamonds were discovered in a given country and every subsequent year. This dummy thus indicates the presence of diamond deposits in a country, regardless of the status of mining. The diamond production dummy is 1 from the first year a country has produced diamonds. The four remaining dummies are for the deposit and production for primary and secondary diamonds.

DIADATA records diamond discoveries in fifty-three countries, with production in thirty-one of them. We have excluded countries that have only sporadic diamond occurrences (such as Nigeria, where only three diamonds have been found) and countries where the diamond finds are unconfirmed. This leaves forty countries with confirmed diamond discoveries and thirty-one producers. Primary diamonds have been found in twenty-five countries and are produced in seventeen, secondary diamonds in thirty-two countries and twenty-six countries, respectively. We regard the available data on diamond prices, production volume, mine closures, and trade as much less reliable, and DIADATA does not include such information.

Using the diamond dummies, we avoid several of the pitfalls outlined earlier. We do not aggregate different types of resources but choose one that is highly relevant. We look specifically at the most highly lootable type, secondary diamonds, and another that is regarded as nonlootable (primary diamonds). Our variables do not vary with level of economic development and political stability and are exogenous to most control variables such as ethnic and religious fractionalization. We can also exclude the possibility that an unknown factor *X* drives the results by influencing the risk of conflict as well as the resource variable. In short, our diamond dummies are relatively exogenous to the model to be estimated.

RESEARCH DESIGN

Rather than build a model from scratch, we take as our starting point a prominently published and frequently cited study of civil war that includes an analysis of the role of natural resources. Fearon and Laitin (2003) studied the onset of civil war for the period 1945 to 1999. Their data set includes 127 wars, including 13 anticolonial conflicts, with more than one thousand battle deaths overall and with an annual average of at least one hundred. In addition, they require at least one hundred killed on each side.[6] In addition to the primary commodity export share and an oil export dummy, their study included economic development, economic inequality, ethnic and religious diversity, regime type, rough terrain, and other variables.

The model we use to analyze the panel data is given by

$$y^* = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \varepsilon,$$

6. They describe their criteria as "broadly similar" (Fearon and Laitin 2003: 76) to those used by the Correlates of War (COW) project. Collier and Hoeffler also use a data set that is very similar to the COW data.

where y^* is unobservable. We only know the outcome: whether there was a war ($y = 1$) or not ($y = 0$). The term y^* has to be understood as the threshold for civil war incidence. If the factors contributing to civil war incidence cause y^* to exceed the threshold, the country experiences a war but we are not able to assess by how much the threshold was exceeded. The same logic applies when a country is below the civil war threshold: we know that there is no conflict in the country but we do not know by what margin war was avoided. Thus, the outcome of y^* is defined by

$$y = 1 \text{ if } y^* > 0$$
$$y = 0 \text{ if } y^* < 0.$$

The model contains three sets of variables. The β_1 includes our diamond dummies, the β_2 various control variables, and β_3 a set of variables to correct for time dependence. We also study several interaction terms between the diamond dummies and other variables. ε is the error term. We use a logit model in the analysis.

We have compared our findings using the Fearon and Latin (2003) model with another frequently cited study by de Soysa's (2002). For space reasons we do not report these results in table form, but this data set is posted with our replication data. de Soysa studies just the post–cold war years (1989-1999). He uses the Uppsala/PRIO conflict data, which has a lower threshold, twenty-five battle deaths in a single year.[7] Soysa's study includes sixty-five conflicts, although he loses some of them in some of his analyses, because of missing data on other variables. As already noted, de Soysa uses a different measure for natural resource dependence, but his other explanatory variables are broadly similar to those used by Collier and Hoeffler (2004), Fearon and Laitin (2003), Hegre et al. (2001), and others.

INDEPENDENT VARIABLES AND CONTROLS

We include all the variables that Fearon and Laitin (2003) use in their standard model. The income per capita come from Penn World Tables and World Bank data that Fearon and Laitin have supplemented with per capita energy consumption to fill missing data. The logged population size is based on World Bank data. The "rough terrain" variable is approximated by measuring the logged share of the country's area covered by mountains. Fearon and Laitin also include a dummy variable for countries with noncontiguous territory (extended island countries, enclaves, etc.). To control for petroleum abundance, they use a dummy for countries that receive more than one-third of their export revenues from oil exports. To control for recent independence, Fearon and Laitin assign a value of 1 to countries during the two first years of independence. The level of democracy is measured by a lagged Polity IV value that varies from –10 to +10. An instability dummy is coded 1 if a country has experienced a change in Polity IV of three points or more in the previous three-year period. Ethnicity is measured by

7. For a description of the data set, see Gleditsch et al. (2002). The data and the codebook are found on www.prio.no/cwp/ArmedConflict. de Soysa (2002) used an early version of the data set, which ended in 1999. The most recent update (to 2003) is Eriksson and Wallensteen (2004).

TABLE 1
Bivariate Analysis of Civil War Onset by Presence of Diamonds and Production, 1945-1999

	Coefficient	p-*Value*
Diamonds present in country	**.453** (.208)	**.030**
Diamond production in country	**.461** (.218)	**.035**
Primary diamonds present	.279 (.266)	.294
Primary diamond production	.293 (.321)	.362
Secondary diamonds present	**.574** (0.208)	**.006**
Secondary diamond production	**.581** (0.219)	**.008**

SOURCE: Conflict data from Fearon and Laitin (2003), diamond data from Gilmore et al. (2005).
NOTE: Standard errors in parentheses. $p < .05$, indicated in bolded type.

ethnolinguistic fractionalization (ELF), that is, the probability that two randomly selected persons belong to same ethnolinguistic group. This measure varies from 0 (a totally homogeneous society) to 1 (maximum heterogeneity). Religious fractionalization is measured in the same way.

Fearon and Laitin (2003) control for time dependence by including a dummy variable to indicate whether a country had a conflict in the preceding year. We use in addition the Beck, Katz, and Tucker (1998) correction and include a variable that counts the number of peace-years before the onset of conflict.

ANALYSIS

BIVARIATE ANALYSIS

We first conduct a simple bivariate test of the relationship between diamond production and the onset of civil war 1945 to 1999 for the Fearon and Laitin (2003) data set (Table 1). We use separate dummies for primary and secondary diamond production. An aggregated production dummy combines the two types of diamonds to one variable. Another set of dummies is used to indicate the presence of diamond deposits in a country regardless of whether there is production from the deposits. Combining deposits and production with three kinds of diamonds (primary, secondary, and all), we thus get a total of six dummy variables.[8] Table 1 shows that countries with diamond

8. If diamonds were found or mined before 1946 the discovery/production year is set to 1946 in the DIADATA. For the reanalysis of the Fearon and Laitin (2003) data, it is assumed that if diamonds had been discovered or produced by 1946, this was the case also in 1945.

TABLE 2
Diamond Production and the Onset of Internal Armed Conflict, 1946-2002

	Diamond Production			
	No	*Yes*	*Secondary*	*Primary*
Conflict	78	23	22—Angola, Burma, Central African Republic, China, Congo, Congo/ Zaire, Côte d'Ivoire, Gabon, Ghana, Guinea, India, Indonesia, Lesotho, Liberia, Mali, Namibia (South Africa), Russia (Soviet Union),Sierra Leone, South Africa, Surinam,Thailand, Venezuela	10—Congo/Zaire, Côte d'Ivoire, Guinea, India, Lesotho, Namibia (South Africa), Russia (Soviet Union), Sierra Leone, South Africa, United States
No conflict	102	8	4—Australia, Brazil, Guyana, Tanzania	7—Australia, Botswana, Canada, China, Swazi-l and, Tanzania, Zimbabwe
	43 percent[a]	74 percent[b]	85 percent[b]	59 percent[b]

SOURCE: For the conflict data, see Gleditsch et al. (2002); Eriksson, Wallensteen, and Sollenberg (2003); and www.prio.no/ArmedConflict. The list of independent states follows Gleditsch and Ward (1999), and the diamond data are from Gilmore et al. (2005).

a. Percentage of countries that have experienced conflict during the period 1946 to 2002.

b. Percentage of countries that have experienced conflict during the period 1946 to 2002 after they started to produce diamonds.

deposits or production are indeed more prone to outbreak of civil war. All the coefficients are positive. When subdividing the diamond data, the two variables for primary diamonds turn out to be insignificant, while the secondary diamond variables are highly significant. Again, this is as expected. At this stage we find no difference between dummies for production and deposits.

Next we look at the bivariate relationship between diamonds and conflict with the Uppsala conflict data 1946 to 2002 (Table 2). This is the same measure of armed conflict that is used by de Soysa (2002). Generally, about half the independent states have experienced a conflict since World War II. The risk increases significantly for countries with production of diamonds (.74) and particularly for countries with secondary diamonds (.85) in contrast to countries that produce primary diamonds (.59). This is entirely as expected.

We have also run the dummy diamond variables against the Uppsala conflict data for the post–cold war period used by de Soysa (1989-1999). We use the same six dummies, except that the diamond deposits or production had to appear prior to 1989. We find that while primary diamond deposits and production are not significantly related to conflict during the 1989 to 1999 period, countries that produced secondary diamonds tended to experience civil conflicts more often.[9]

9. The *p*-values are generally larger when we estimate diamond dummies for the 1990s. This is probably due to the shorter time period: despite the lower threshold on the violence, there are fewer armed conflict onsets in de Soysa's (2002) data set (65) than in Fearon and Laitin's (2003) (111).

MULTIVARIATE ANALYSIS

Next we test whether the strong bivariate relationship between diamonds holds when we control for other factors that promote conflict. We first conduct a multivariate analysis including all civil wars that occurred during the period 1945 to 1999. We then proceed to study whether the diamonds contribute differently under special circumstances. We run the model separately for ethnic wars. Finally, we study whether the impact of diamonds has increased after the end of the cold war. For all models we separately study the effect of production and the presence of diamond deposits.

All Conflicts

Model 1 in Table 3 replicates the Fearon and Laitin (2003) base model for the onset of civil war.[10] We find exactly the same results: higher income level decreases the likelihood of conflict onset while larger population size, mountainous terrain, dependence on oil exports, and political instability increase the risk of conflict. States that recently have gained independence also face a higher risk of conflict. Contiguity, ethnic and religious fractionalization, and regime type have no effect on the risk of conflict onset. To better control for time dependence and to study the effect of duration of peace prior to the conflict, we introduce peace-years and cubic splines to all subsequent analyses (Beck, Katz, and Tucker 1998).[11]

We first test the aggregated diamond production dummy that does not differentiate between the primary and secondary diamonds. Although the dummy has a positive coefficient, it is far from significant. In model 2 (Table 3), we divide the aggregated production dummy into secondary and primary diamonds. We find no evidence that production of primary or secondary diamonds is systematically related to civil war onset. To exclude the possibility that diamonds only affect war onset in countries with high ethnic fractionalization and/or low income level, we test the interaction between the three diamond production dummies and income level and ethnicity. None of the variables or interaction terms are significant.[12]

We next reanalyze the de Soysa (2002) model, which includes the World Bank (1997) data on estimated mineral wealth. The only significant finding for diamonds is that primary diamond production was negatively associated with civil conflict in the 1990s. However, when we run de Soysa's model without the World Bank's resource estimates, the effect of primary diamond production evaporates completely.

Based on these analyses, we conclude that the production of diamonds has no effect on risk of civil war onset overall. This is also true for secondary diamonds, often referred to as the "ultimate loot" for the rebels. The results are in contrast to case study

10. Onset is coded 1 for every country-year a conflict starts.

11. The peace-years variable counts the number of years in peace preceding the year in question. The splines fit the baseline hazard function of conflict onset during the peace period. For example, the probability of conflict may decrease fast during the first five-year period of peace. Whether a country has been in peace for twenty or twenty-five years may have little effect on risk of conflict. The introduction of peace years and splines does not change the Fearon and Laitin (2003) results substantially, as they themselves note (p. 83). The standard errors are generally higher and the variables for noncontiguous state and instability lose some significance, while mountainous terrain becomes slightly more significant.

12. These results are not reported here but can be obtained from the authors.

TABLE 3
Onset and Incidence of Civil War, 1945-1999

	Onset of Civil War		*Incidence of Civil War*		
	Model 1[a]	*Model 2*	*Model 3*	*Model 4*	*Model 5*
Prior war	–0.954***	–1.484***	5.626***	5.634***	5.624***
	(0.314)	(0.454)	(0.465)	(0.467)	(0.468)
Per capita income	–0.344***	–0.334***	–0.159***	–0.157***	–0.155***
	(0.072)	(0.075)	(0.060)	(0.059)	(0.060)
Population (log)	0.263***	0.249***	0.293***	0.317***	0.362***
	(0.073)	(0.061)	(0.067)	(0.069)	(0.072)
Mountainous terrain (log)	0.219**	0.237***	0.147**	0.151**	0.170**
	(0.085)	(0.088)	(0.073)	(0.078)	(0.079)
Noncontiguous state	0.443	0.417*	0.417	0.403	0.296
	(0.273)	(0.252)	(0.273)	(0.276)	(0.273)
Oil exporter	0.858***	0.807***	0.163	0.135	0.131
	(0.279)	(0.263)	(0.259)	(0.268)	(0.273)
New state	1.709***	1.239**	1.130**	1.144**	1.157**
	(0.339)	(0.489)	(0.498)	(0.502)	(0.505)
Instability	0.618***	0.593***	–0.085	–0.090	–0.107
	(0.235)	(0.215)	(0.270)	(0.270)	(0.272)
Democracy	0.021	0.021	0.018	0.018	0.019
	(0.017)	(0.018)	(0.017)	(0.017)	(0.017)
Ethnic fractionalization	0.166	0.158	0.640**	0.709**	0.450
	(0.373)	(0.343)	(0.327)	(0.337)	(0.390)
Religious fractionalization	0.285	0.310	0.160	0.229	0.331
	(0.509)	(0.530)	(0.460)	(0.467)	(0.468)
Production primary diamonds	—	–0.185	—	–0.526	–0.742*
	—	(0.409)	—	(0.382)	(0.407)
Production secondary diamonds	—	0.219	—	0.067	–0.851
	—	(0.246)	—	(0.327)	(0.621)
Production Secondary Diamonds × Ethnic Fractionalization	—	—	—	—	1.591*
	—	—	—	—	(0.886)
N	6,327	6,327	6,327	6,327	6,327
Wald test	116.31***	134.89***	1,175.43***	1,272.14***	1,333.89***

SOURCE: All variables except the diamond data are from Fearon and Laitin (2003). Diamond data are from Gilmore et al. (2005).
NOTE: Coefficients for peace years, cubic splines, and constant term are not shown. Robust standard errors, adjusted over countries, in parentheses.
a. Standard errors not adjusted, peace-years and splines not included.
*$p < .10$. **$p < .05$. ***$p < .01$.

evidence and bivariate analysis that indicated that such a link may exists. These results highlight the danger of generalizing on the basis of case study evidence. As in the literature on resource scarcity and conflict (Gleditsch 1998), the literature on resource abundance and conflict has probably fallen prey to the problem of selection on the dependent variable.

Although we find no indication of diamond production affecting onset of civil war, it is still possible that diamond production contribute to the persistence of conflict by providing the means to finance warfare. In model 3, we analyze the incidence rather than the onset of civil war.[13] Model 3 includes all the Fearon and Laitin (2003) variables and the Beck, Katz, and Tucker (1998) correction to control for the duration of peace. Compared to the onset model (model 1), the dummies for oil exporters and instability are no longer significant. Ethnic fractionalization, on the other hand, is positively related to conflict incidence although it did not have any effect on onset. Poverty, rough terrain, and large population increase the risk of incidence as well onset.

To model 3 we add the aggregate diamond production dummy, which again is insignificant.[14] Likewise, the incidence of conflict is not affected by production of secondary or primary diamonds (model 4). Next we test for the possibility that diamond production may affect the conflict only under special circumstances. In model 5, we add an interaction term that combines secondary diamond production and ethnic fractionalization. We find the variable significant and positive. This suggests that secondary diamond production in ethnically heterogeneous countries tends to lead to more persistent conflicts, while in more homogeneous countries it does not. The results indicate that countries with an ELF index larger than .53 are likely to have a higher incidence of conflict if they produce secondary diamonds. The risk increases linearly the more heterogeneous the country is. Therefore, even though ethnicity and secondary diamond production do not increase the risk of conflict onset, they form a dangerous mix that contributes for prolonged conflicts. In a country where both are present, they may provide both the financial means for fighting, better cohesion for the rebel group, and an ethnic pool from which the rebel organization can draw new recruits. These results support our hypotheses that diamonds have an adverse effect on conflict incidence in countries that are conflict-prone for other reasons. The results also confirm that the presence of lootable resources may enhance group identity. We find no evidence that the impact of diamond production on conflict incidence depends on the income level in country.

Finally, we test whether the presence of diamond deposits affect civil war onset or incidence. The diamond deposit dummy only requires that diamonds were present in a country regardless of their mining status. We have run all the above models with the three deposit dummies (two for secondary and primary deposits and a third that aggregates the two types of deposits). We find that the three dummies are insignificant in all the model specifications discussed above.[15] We also run the deposit dummies with the de Soysa (2002) data. In the models that incorporate his natural resource variable, we find evidence to suggest that the presence of diamonds, especially of secondary diamonds, is negatively associated with conflict. The significant results, however, are most likely a consequence of a selection bias introduced by the World Bank (1997)

13. The incidence of conflict is measured by assigning a dummy for each war year a country experiences conflict, while for onset the dummy is coded 1 only for the first year of the conflict. This implies that the same factors are assumed to explain war onset and war continuation. It is not the same as an analysis of duration.

14. See Table 5, model 14, for the results.

15. For the results, see Table 5 (panel B: Diamond Deposits, models 20-27).

data.[16] When we run the models without the natural resource measure, the effect of deposit dummies evaporates. Thus, we find no evidence that the presence of diamonds is generally related to civil war.

Ethnic Conflict

Although we have concluded that production of diamonds is not generally related to civil war, it is possible that diamonds play an important role in certain types of conflict. Sambanis (2001) argues that ethnic conflicts may have different causes than other civil wars. In model 5, we found that secondary diamonds may contribute to incidence of conflict in ethnically heterogeneous countries. We therefore investigate whether diamonds are related to the incidence of ethnic conflict. Fearon and Laitin (2003) have coded civil wars based on whether the fighters were mobilized along ethnic lines. They find that seventy-eight conflicts can be described as ethnic conflicts in this sense. In Table 4, model 6, we replicate the Fearon and Laitin analysis of ethnic conflict onset, with the same results.[17] In contrast to the model in which all conflicts are included, the rough terrain and instability variables are no longer significant. Religious fractionalization is now significantly and positively related to onset. As before, we include the Beck, Katz, and Tucker (1998) correction in our models.

We first test the aggregated diamond production dummy, which remains insignificant. When we add the diamond production dummies (model 7), the one for secondary diamonds is significant and positive, indicating that countries with secondary diamond production have a higher probability of ethnic conflict onset. The coefficient for the primary production is negative though insignificant.

We then test whether poor countries are more adversely affected by diamond production. We find that poor countries with secondary diamond production have higher risk of conflict, but this effect evaporates when we add the interaction for secondary diamond production and ethnic fractionalization. In model 8, we report the combined effect of secondary diamonds and ethnic fractionalization excluding the insignificant interaction term for income level and fractionalization. The results show that the interaction term is positive and highly significant while secondary diamond variable now is negative and significant. Production of primary diamonds now decreases the risk of ethnic conflict onset, and the variable is highly significant. Previously we found that secondary diamond production in ethnically heterogeneous countries makes the civil war more persistent. We now also find evidence that these countries have higher prob-

16. Due to the scarcity of the data on mineral wealth, we lose thirteen of twenty-six countries that produce secondary diamonds. Of these thirteen countries, 60 percent had conflict during the period. The data set as a whole has a conflict rate of 32 percent for the same period. If the World Bank data did not have country selection bias, we would expect that only about one-third of secondary diamond-producing countries excluded would have a conflict. Therefore, using the World Bank resource data excludes disproportionately conflict-ridden countries that produce secondary diamonds while keeping peaceful diamond-producing countries in the sample. The same bias, more than 60 percent exclusion, is true for primary diamonds and discovery of both primary and secondary diamonds. We miss, for example, Liberia, Angola, and the Democratic Republic of Congo, which all produced secondary diamonds in the 1990s and had conflict during the same period.

17. Only countries where the second largest ethnic group makes up 5 percent or more of the total population are included.

TABLE 4
Onset and Incidence of Ethnic Civil War, 1945-1999

	Onset of Ethnic Conflict			*Incidence of Ethnic Conflict*		
	Model 6[a]	*Model 7*	*Model 8*	*Model 9*	*Model 10*	*Model 11*
Prior war	–0.849**	–1.180**	–1.213**	5.335***	5.420***	5.351***
	(0.388)	(0.532)	(0.549)	(0.626)	(0.594)	(0.592)
Per capita income	–0.379***	–0.340***	–0.277***	–0.081	–0.025	–0.006
	(0.100)	(0.102)	(0.095)	(0.099)	(0.092)	(0.086)
Population (log)	0.389***	0.410***	0.501***	0.714***	0.743***	0.753***
	(0.110)	(0.103)	(0.112)	(0.174)	(0.167)	(0.171)
Mountainous terrain (log)	0.120	0.176	0.209*	–0.167	–0.097	–0.099
	(0.106)	(0.122)	(0.127)	(0.162)	(0.169)	(0.169)
Noncontiguous state	0.481	0.250	–0.065	–0.736	–1.036	–1.047
	(0.398)	(0.401)	(0.387)	(0.782)	(0.771)	(0.783)
Oil exporter	0.809**	0.720**	0.620**	0.246	0.143	0.139
	(0.352)	(0.299)	(0.277)	(0.459)	(0.452)	(0.450)
New state	1.777***	1.503***	1.577***	1.546***	1.607***	1.533***
	(0.415)	(0.565)	(0.579)	(0.589)	(0.592)	(0.596)
Instability	0.385	0.369	0.386	–0.612*	–0.549	–0.537
	(0.316)	(0.277)	(0.275)	(0.357)	(0.345)	(0.343)
Democracy	0.013	0.017	0.022	–0.045	–0.041	–0.042
	(0.022)	(0.022)	(0.023)	(0.031)	(0.032)	(0.033)
Ethnic fractionalization	0.146	0.119	–0.551	0.965	0.761	0.686
	(0.584)	(0.753)	(0.789)	(0.953)	(0.991)	(1.005)

Religious fractionalization	1.533**	1.634*	1.762**	3.875***	4.055***	4.019***
	(0.724)	(0.865)	(0.844)	(1.305)	(1.303)	(1.307)
Production primary diamonds	—	–0.554	–1.789***	—	–1.283**	–1.238*
	—	(0.521)	(0.522)	—	(0.566)	(0.668)
Production secondary diamonds	—	0.603*	–3.944**	—	1.319**	1.818***
	—	(0.325)	(1.731)	—	(0.516)	(0.642)
Production Secondary Diamonds × Ethnic Fractionalization	—	—	6.949***	—	—	—
	—	—	(2.364)	—	—	—
Production Primary Diamonds × Per Capita Income	—	—	—	—	—	0.027
	—	—	—	—	—	(0.111)
Production Secondary Diamonds × Per Capita Income	—	—	—	—	—	–0.433*
	—	—	—	—	—	(0.255)
N	5,186	5,186	5,186	5,186	5,186	5,186
Wald test	83.39***	93.25***	146.43***	417.71***	409.26***	455.68***

SOURCE: All variables except the diamond data are from Fearon and Laitin (2003). Diamond data are from Gilmore et al. (2005).
NOTE: Coefficients for peace years, cubic splines, and constant term are not shown. Robust standard errors, adjusted over countries, in parentheses.
a. Standard errors not adjusted, peace-years and splines not included.
*$p < .10$. **$p < .05$. ***$p < .01$.

ability of ethnic war onset. As in the case of incidence of civil war, the results show a negative relationship between production of primary diamonds and ethnic conflict onset.

Next, we study the incidence of ethnic war. In Table 4 we first analyze the base model (model 9). Low per capita income and large population size increase the incidence of conflict for ethnic conflicts as well as for conflict generally, and stable states have a lower incidence of conflict. Religious fractionalization now make civil war more persistent. Oil exports or income level do not have any effect on conflict incidence.

As in the previous analysis, we start by adding the aggregated diamond production dummy. Contrary to other models, we find a positive link between diamond production and incidence of ethnic conflict (see Table 5, model 18). However, we expect the effect of primary and secondary diamonds to differ in their effect on ethnic conflict incidence. Indeed, model 10 shows that the effect of the two types of diamonds is more nuanced than the aggregated variable indicates. The presence of secondary diamonds increases significantly the incidence of ethnic war while the production of primary diamonds decreases it. The effect of production dummies is significant and the effect is large. While production of primary diamonds decreases the probability of ethnic conflict incidence by 80 percent, the production of secondary diamonds increases the probability by more than 200 percent.

Next we study whether the production of secondary and primary diamonds contributes to the incidence of conflict both in poor and rich countries (model 11). The results show that production of secondary diamonds in poor countries increases the incidence of conflict but that the effect of production decreases the more economically developed the country. The effect of the primary diamond production does not depend on the income level in country.

Finally, we run all the ethnic conflict models with the dummies for diamond deposits rather than for production. As in the case of the general model, all diamond deposit dummies are insignificant (see Table 5, panel B, models 24-27).

End of the Cold War

Has the role of diamonds in armed conflict changed over time? These results are also summarized in Table 5. Models 12 to 19 illustrate clearly the increased impact of diamonds on civil war since 1985. Production of secondary diamonds now substantially increases the likelihood of civil war onset compared to the insignificant effect in the general model (Table 3, model 2). We find a similar effect when we consider the incidence of conflict. In the post-1985 period, not only are secondary diamonds positively and clearly related to conflict incidence, but primary diamond production now significantly reduces the incidence. We find a similar tendency when we limit the analysis to ethnic conflict: the effect of diamonds is clearly stronger during the 1985 to 1999 period. The separate dummies for primary and secondary diamond production are all significant and have a substantial effect on ethnic war.

When we conduct the same analysis by using diamond deposit dummies (models 20-27), we find no evidence that the mere presence of diamonds increases the risk of

TABLE 5
Diamonds and Conflict by Time Period, Deposits versus Production, and Onset versus Incidence

		1945-1999		*1985-1999*	
		Coefficient	SE	*Coefficient*	SE
Panel A: Diamond Production					
Onset of war					
Model 12	Secondary or/and primary	0.106	0.250	0.686	0.386*
Model 13	Primary	–0.185	0.409	–0.680	0.569
	Secondary	0.219	0.246	1.151	0.422***
Incidence of war					
Model 14	Secondary or/and primary	–0.179	0.275	0.379	0.313
Model 15	Primary	–0.526	0.382	–1.342	0.496***
	Secondary	0.067	0.327	1.196	0.490**
	N		6,327		2,065
Onset of ethnic conflict (5,186)					
Model 16	Secondary or/and primary	0.341	0.328	0.425	0.387
Model 17	Primary	–0.554	0.521	–1.477	0.559***
	Secondary	0.603	0.325*	1.170	0.438***
Incidence of ethnic conflict					
Model 18	Secondary or/and primary	0.891	0.517*	1.194	0.557**
Model 19	Primary	–1.283	0.566**	–1.857	0.644***
	Secondary	1.319	0.516**	2.115	0.700***
	N		5,186		1,739
Panel B: Diamond Deposits					
Onset of war					
Model 20	Secondary or/and primary	0.110	0.232	0.571	0.357
Model 21	Primary	0.088	0.330	–0.110	0.473
	Secondary	0.133	0.245	0.798	0.422*
Incidence of war					
Model 22	Secondary or/and primary	–0.213	0.248	0.273	0.323
Model 23	Primary	–0.079	0.343	–0.428	0.524
	Secondary	–0.118	0.339	0.665	0.470
	N		6,327		2,065
Onset of ethnic conflict					
Model 24	Secondary or/and primary	0.324	0.316	0.289	0.376
Model 25	Primary	0.090	0.408	–0.376	0.605
	Secondary	0.365	0.326	0.615	0.510
Incidence of ethnic conflict					
Model 26	Secondary or/and primary	0.676	0.492	0.502	0.509
Model 27	Primary	–0.387	0.560	0.397	0.706
	Secondary	0.922	0.622	0.357	0.684
	N		5,186		1,739

NOTE: Robust standard errors, adjusted over countries. All models include the Fearon and Laitin (2003) variables (see Tables 3 and 4), peace-years, and cubic splines.
**p* < .10. ***p* < .05. ****p* < .01.

civil war neither before nor after the end of the cold war. These and previous results strongly suggest that the effect of diamond deposits is confined to exploitation and that presence of these gems is not enough to spark conflict.

SENSITIVITY ANALYSES

More than half the countries with diamond deposits and production are located in Africa, and Africa is also overrepresented when it comes to conflict (Collier and Hoeffler 2002; Eriksson and Wallensteen 2004). Therefore, we cannot neglect the possibility that our diamond dummies are picking up an Africa effect. We have run all our analysis with a dummy for Sub-Saharan Africa. All our findings are robust to inclusion of the region dummy. To exclude the possibility that the diamond dummies are not exogenous to colonialism, we also have run the models with a dummy for former British and French colonies.[18] This does not change our results either. We have replicated the analyses by using the new data set on ethnic and religious fractionalization from Alesina et al. (2003). The two data sets are highly correlated ($r = .75$ for ethnic and $r = .85$ for religious fractionalization). There are no significant changes in the coefficients or in the significance levels for the diamond dummy variables.

ANALYSIS WITH OTHER DIAMOND DATA

We have replicated our analysis for the period 1990 to 1999 by using the Snyder and Bhavnani (2005 [this issue]) list of countries that produced more than eight thousand carats of alluvial diamonds in 1990. We find all coefficients to be positive, but partially due to a short time period and few observations they fail to be significant. When we extend the list of countries to include those that produced below the cutoff point in 1990, we still fail to get any significant results. As Snyder and Bhavnani admit, their list of countries that produced less than eight thousand carats in 1990 is not exhaustive, and some of the countries have insignificant occurrences of diamonds. The discrepancy between their list and our data is considerable (the correlation between the extended Snyder and Bhavnani list and our data is only .63), and this probably explains partially the insignificant findings.

Humphreys (2005 [this issue]) uses a new diamond data set to measure the total annual diamond production since 1960. Unfortunately, his data do not differentiate between the two types of diamonds (secondary and primary), and therefore our results are not directly comparable. We construct the same variable as Humphreys to measure "strong" states and interact this variable with our measure of secondary and primary diamond production. We then conduct an analysis using these new variables for the period 1960 to 1999 (the period studied by Humphreys) and by using the same control variables from Fearon and Laitin (2003). Unlike Humphreys, we find that strong states that produce primary diamonds are less likely to experience civil war onset while weak

18. We are grateful to an anonymous referee for suggesting these two points.

states face an increased likelihood of civil war. We find little evidence that this would be the case for countries that produce secondary diamonds. Humphreys's result that civil wars in countries with diamond production tend to be shorter is in accordance with our result that primary diamond production is associated with a lower incidence of civil war. However, we find no evidence that primary diamond production dummy is associated with higher risk of civil war onset since 1960.

DOES THE TYPE OF RESOURCE MATTER?

Throughout the analysis, we have used separate dummies for the two fundamentally different diamond deposits types; while primary diamonds cannot generally be considered lootable, secondary diamonds provide one of most valuable resources available for rebels. We have also used an aggregated dummy that does not differentiate between the two types of diamond deposits. This aggregate diamond measure is usually insignificant. However, we find a strong positive link from secondary diamonds to civil war and a substantial negative relationship from primary diamonds. Under some circumstances, the effect of secondary diamond production is so strong that we find a significant relationship between diamond production generally and civil war. This result, however, masks the real effects of the two very different types of diamonds that pull in opposite directions. This illustrates once again the importance of disaggregating natural resource with respect to the degree of lootability. Failure to do so may yield biased conclusions.

CONCLUSION

To our knowledge, this is the first systematic study into the effect of primary diamonds (a nonlootable natural resource type) and secondary diamonds (lootable) on conflict by drawing on a new data set that tracks the worldwide occurrence of diamonds, DIADATA (Gilmore et al. 2005).

Our results provide four main contributions to the literature on natural resources and conflict. First, we find that diamonds matter for civil war incidence but that they do not generally affect the risk of conflict onset. The effect of diamonds depend on the level of ethnic fractionalization and they mainly affect ethnic wars. Second, the geological form of the diamond deposits matters a great deal. Easily exploited resources like secondary diamonds can be used to finance ongoing conflicts that can drag on for prolonged periods. Nonlootable resources, on the other hand, may even depress the risk of conflict onset and incidence. It has been argued that the contrasting effects of diamond riches in Sierra Leone and Botswana—for conflict as well as economic performance—can be accounted for by differences in institutional capacity (Collier et al. 2003). But this two-country comparison is oversimplified, since Sierra Leone's diamonds are secondary while Botswana has primary deposits. Third, the impact of secondary diamonds on the onset of civil war has been substantially higher after the end of cold war. Fourth, our results suggest that diamonds are dangerous only after production has started; the mere discovery of a diamond deposit in a country does not seem to affect the risk of civil war in any way.

Thus, while a general scenario of a resource curse that includes armed conflict receives little support in our analysis, we do confirm that diamonds are dangerous under particular circumstances. There is ample reason to try to regulate the trade in "conflict diamonds," as is currently being undertaken under the so-called Kimberley process.[19] At the same time, we need to understand better how diamonds and other valuable resources may be used to initiate and sustain conflict. In particular, we need to conduct geographically disaggregated studies that can show whether the rebels have access to lootable resources (Buhaug and Lujala 2005). If the resource is in a different part of the country from where the conflict takes place, the rebels are not likely to have an opportunity for looting.[20] Such studies will help to provide a more balanced view of the role of natural resources in conflict.

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19. See http://www.kimberleyprocess.com.

20. For a first attempt to control for location of conflict and diamond deposits, see Buhaug, Gates, and Lujala (2002).

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