

**How Does Natural Resource Wealth Influence Civil War?**  
Evidence from 13 Case Studies

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## **How Does Natural Resource Wealth Influence Civil War?**

### **Abstract**

Several large-N studies have found that a country's natural resource dependence is correlated with either the likelihood it will suffer from civil war, or the duration of a civil war once it begins. What accounts for these natural resource-civil war correlations?

The causal mechanisms behind the correlations are neither obvious, nor well-explained by the large-N studies. It is important to identify the correct causal mechanisms, both to rule out endogeneity and spurious correlations, and because different causal mechanisms have different policy implications.

This paper uses a novel "medium-N" approach to examine the causal mechanisms behind the natural resource-civil war correlation. It begins by explaining the rationale for the unusual research design. It then describes nine hypotheses about how resources may influence a conflict; specifies the observable implications of each; and reports which of these implications can be observed in a sample of 13 civil wars. The findings suggest that the natural resource-civil war correlation found by the large-N studies may be accounted for by a variety of different mechanisms, some of which influence the onset of conflict, some of which influence the duration of conflict, and some of which influence the intensity of conflict. One of the most widely cited causal mechanisms, suggested by Collier and Hoeffler, is not observed in any of the 13 wars.

## **Introduction**

Several recent studies have found that natural resources and civil war are highly correlated. According to Collier and Hoeffler [1998, 2000], states that rely heavily on the export of natural resources face a much higher risk of civil war than resource-poor states. Using different data, both de Soysa [2000], and Elbadawi and Sambanis [2001] have replicated this finding. Fearon [2001], who uses still another data set, finds that resource dependence is correlated with the duration of civil wars, although not the incidence of civil war.<sup>1</sup>

It is not obvious why natural resource dependence should be linked to civil war. Different scholars make different arguments about how resource dependence might lead to, or lengthen, civil wars. Existing data sets are too limited to allow us to use regressions to distinguish among potential causal mechanisms. Identifying the correct mechanism is important because different mechanisms suggest different policy interventions. For example, if mining causes conflict because it produces grievances over access to jobs and resource revenues, the solution might be greater community involvement by mining firms. But if conflicts occur because rebel groups are extorting money from resource firms, the solution might be stricter mine site security and *less* community involvement.

A better understanding of causal mechanisms can also help address the problems of endogeneity and spuriousness. The natural resource-civil war correlation, for example, might be the opposite of what it appears: civil wars might produce resource dependence by forcing a country's manufacturing sector to flee while leaving its resource sector – which is location-specific and cannot depart – the major force in the economy by

default. Even though Collier and Hoeffler employ lagged independent variables in their regressions, this does not rule out reverse causality: since civil wars are not recognized as “beginning” until they have generated at least a thousand combat-related deaths, the wars might be preceded by years of low-level violence that drives off manufacturing firms, producing a higher level of resource dependence before the civil war officially commences.

The correlation could also be spurious: both civil war and resource dependence might be independently caused by some unmeasured third variable, such as the weak rule of law. A state where the rule of law is weak might be unable to attract investment in its manufacturing sector, and hence would depend more heavily on resource exports; it might also face a heightened risk of civil war through a different process. The result could be a statistically-significant correlation between resource dependence and civil war, even though neither factor would cause the other.

Even if resource dependence does influence the course of civil wars, scholars disagree about which dimension of conflict is affected. Collier and Hoeffler find that resource dependence strongly influences the likelihood of civil war but not its duration [Collier, Hoeffler, and Söderbom 2001]; Fearon [2001] finds it has no influence on the likelihood of civil war but strongly affects its duration.

These and other scholars also disagree over how resource dependence has these pernicious effects. Newspaper reports and case studies sometimes claim that resources have “fueled” a given conflict but are vague about how this occurred. The problem is compounded by the abysmal quality of the data on civil wars in developing states.

This paper begins with an explanation of the medium-N method I employ to explore the mechanisms that link resource dependence to civil war. Section Two describes nine causal mechanisms that might account for the correlation, and suggests how they might be confirmed or disconfirmed in case studies. Section Three presents the results from the 13 cases, and the final section concludes. The analysis suggests that the resource dependence-civil war correlation is produced by a variety of causal mechanisms, but finds no evidence of the widely-cited Collier-Hoeffler “looting” mechanism.

### **1. The Medium-N Method**

To explore this problem I use what might be called a “medium-N” approach; it is motivated by an effort to circumvent the limited ability of both large-N and small-N research to shed light on the causal mechanisms behind the natural resource-civil war correlation.<sup>2</sup> Large-N cross-national regressions have identified a natural resource-civil war correlation, but existing data sets are too crude to enable us to distinguish among the different mechanisms that might cause it. Collier and Hoeffler [2000], for example, both identify the resource dependence-civil war correlation, and present a theory of civil wars that can account for it, which suggests that resource dependence causes civil war because it makes it easier for nascent rebel groups to fund the start-up costs of rebellion by engaging in resource looting. Yet this is just one possible mechanism that could account for the natural resource-civil war correlation; as I suggest below, there are at least eight others, and without vastly better data sets, large-N regressions will not enable us to distinguish among them.

Case studies can tell us a great deal about causal mechanisms in one or two instances, by what is commonly called “process-tracing” – making explicit or implicit inferences about the salience of the intervening variables that link cause and effect. Yet when the theory we wish to examine is probabilistic (such as economic theories of civil war), it becomes virtually impossible to generalize from a single case study to a larger population, since the case we are examining has only a certain probability of exhibiting the hypothesized phenomena. One solution is to commission a large number of case studies to achieve some measure of generality. Yet, as anyone who has read an edited volume of such case studies knows, it is hard to aggregate the results of different case studies made by different authors, since they typically their define their variables and construct counterfactuals in different ways.<sup>3</sup> It is not simply that “the whole is less than the sum of the parts”; rather, the parts cannot even be summed.

The medium-N approach described below is simply a means of aggregating information about causal relationships in a uniform way across a modest number of cases. To make the cases easier to compare, it employs similar types of counterfactuals – and hence makes similar kinds of causal inferences – within each of the cases. It is designed to have some of the desirable properties of case studies, including attention to causal linkages, accounting for difficult-to-quantify variables, and sensitivity to case-specific factors; at the same time, it borrows some of the admirable properties of statistical analysis, including greater generality, methodological transparency, and the use of clear, uniform, and (usually) explicit assumptions about causal relationships. At the same time, it sacrifices some of the close attention to detail found in lengthier case studies, and leaves little room for more elaborate counterfactual analysis; and it does not identify

partial correlations across a large number of observations the way regressions can. It can, however, generate insights into causal relationships both within the sample of cases, and – depending on how the cases are selected – a larger population of cases.

The analysis has five steps. It begins – like any quantitative or qualitative method – with a set of general, falsifiable hypotheses. The researcher must then state the observable implications of each hypothesis – what he or she would expect to observe at the case-study level if the hypothesis were true, in a manner that is general enough to cover a wide range of cases but specific enough to minimize spurious inferences. The third step entails the selection of cases,<sup>4</sup> and the fourth step, the investigation of each case in sufficient depth to ascertain the presence or absence of each of the observable implications. The final step is the aggregation and analysis of the results. If the goal is not to test the hypotheses but simply to develop them and explore their plausibility (as is the case here), the researcher then uses the results to modify the hypotheses for future out-of-sample testing.

In the analysis below, I begin by describing nine causal mechanisms that might link the presence of natural resources – including oil, gas, timber, minerals, and agricultural commodities – to a civil war. I formulate these mechanisms as falsifiable hypotheses, and specify the observable implications of each. This generates a list of intervening variables that may or may not be present in the case studies.

Three of these mechanisms were derived from larger theories of civil wars devised by Collier and Hoeffler [2000] and Fearon [1999, 2001]. The other six have sometimes been implied by the case study literature, but are not usually stated as general, falsifiable hypotheses. Since several of them grew out of my analyses of the 13 cases, I

make no claims about hypothesis testing; rather, I treat this as an exploratory exercise that clarifies potential mechanisms and gathers data on their plausibility without subjecting them to more careful out-of-sample tests.

## 2. Case Selection

The 13 cases in the sample were selected from the Collier-Hoeffler list of 39 civil wars that began or continued between 1990 and 2000. The cases were not randomly selected, in two senses: I did not include any cases where no civil war occurred; and I purposely chose cases in which a causal link between natural resources and civil war was *most likely* to have occurred.

If I were trying to determine *whether* resource wealth is correlated with civil war, this would be the wrong set of cases to look at, since in these cases such a link is likely due to the selection method. But this is not my concern: the resource dependence-civil war correlation has already been established by the large-N studies discussed above. What I wish to do is describe the causal processes that link the variables together – or more precisely, to develop and refine hypotheses about these causal processes. The biased selection method prevents me from making valid cross-national inferences within the sample. I limit my causal inferences to those that I can make longitudinally within each individual case.

The selection method also restricts my ability to make inferences about the larger population of states, with one exception.

. First, if any of the causal mechanisms suggested by prior studies are *not* present in these thirteen cases – a set in which they are likely to be found – I can infer that the

mechanism is unlikely to be valid more generally.<sup>5</sup> Similarly, by observing whether a mechanism is absent in all of the separatist or non-separatist conflicts, I can make inferences about the mechanism's validity in each sub-category of conflicts. The cases also serve a heuristic or exploratory purpose, helping me to generate hypotheses about potential causal mechanisms that have not been carefully studied, and to refine existing hypotheses. To determine whether these mechanisms are valid for a larger set of countries would require statistical tests, should they become possible.

The 13 cases represent all civil wars that occurred between 1990 and 2000 in which scholars, non-governmental organizations, or United Nations agencies suggested that natural resource wealth, or natural resource dependence, influenced the onset or course of a civil war. While there are additional cases in which natural resources may have influenced low-level conflicts, the sample is limited to cases that meet the common definition of a civil war as a conflict between a government and an organized rebel movement that produces at least one thousand battle-related deaths.<sup>6</sup>

The thirteen cases vary by conflict type, and include three separatist wars (Sudan, Indonesia, and Burma) and ten non-separatist wars (Afghanistan, Angola, Cambodia, Colombia, Republic of Congo, Liberia, Peru, Sierra Leone, and two successive wars in the Democratic Republic of Congo [DRC]).

Since the sample only includes cases in which resource wealth is likely to have an effect on the onset or duration of a civil war, I am unlikely to find – and indeed, do not find – evidence that the resource-civil war correlation is spurious, or that civil wars cause resource dependence instead of the reverse. But by determining whether the resource

wealth-civil war link is internally valid in a substantial number of cases, I can ease (or heighten) suspicions that the correlation is spurious or reversed.

To make my within-case inferences both transparent and consistent across the 13 cases, I code each of the cases using a uniform process. This entails using the best available data to determine the presence or absence of each of these observable implications for each of the nine possible mechanisms. When data are missing or ambiguous, I note this either in the text or an appendix of case studies.<sup>7</sup> Since I am not making claims about statistical significance, I believe my findings are robust to alternative codings of ambiguous data points.

### **3. Nine Possible Mechanisms**

There are at least nine ways that a country's natural resource wealth might influence the initiation or duration of a civil war [Figure 1].<sup>8</sup> The first three mechanisms describe ways that resource wealth could lead to the initiation of conflict; the next three suggest ways that resource wealth could influence the duration of a conflict; and the final three describe how resource wealth might influence the intensity of a conflict, i.e., the casualty rate. I include the hypotheses on conflict intensity because it is possible that the resource wealth-civil war correlation is produced solely (or partly) by an intensity effect. To become classified as a civil war, a conflict must pass a certain threshold, producing a certain number of combat-related deaths (typically one thousand) over some period of time. The presence of resource wealth might turn low-intensity conflicts into high-intensity conflicts without influencing the total number of conflicts; this could produce a statistical correlation between resource dependence and the incidence of civil war by

increasing the number of conflicts that cross the critical threshold. Similarly, if resource wealth increased the number of years in which the conflict crossed the thousand-death threshold without influencing the conflict's beginning and end dates, it could produce a spurious correlation between resource wealth and duration. Hence it is valuable to explore whether resource wealth has an influence on the intensity of civil wars.

FIGURE ONE ABOUT HERE

### *Incidence of Civil War*

The presence of resource wealth might increase the incidence of civil wars in three ways.

The first is the Collier-Hoeffler “looting” mechanism: if nascent rebel organizations have the opportunity to extract and sell resources (or extort money from those who do), then they are more likely to launch a civil war.<sup>9</sup> Collier and Hoeffler note that natural resources offer rebel groups a unique funding opportunity, because they typically produce rents and are location-specific, which makes them susceptible to looting on a sustained basis. If rebels instead tried to loot or extort money from manufacturing firms, the firms would relocate to a safe area or be forced out of business altogether. States whose economies are more heavily based on resource exports should therefore also face a higher risk of civil wars.

If this is correct, then in case studies we should observe rebel organizations raising money, prior to the start of the civil war, through the extraction and sale of natural resources, or from the extortion of resource firms.<sup>10</sup>

The second possible mechanism would be resource-related grievances.<sup>11</sup> Many scholars have found that grievances over economic issues, often proxied by poverty or

inequality, tend to influence the danger of civil war.<sup>12</sup> If resource extraction leads to land expropriation, environmental damage, and labor migration to remote areas it may increase the probability of extraction-related grievances, which in turn could contribute to the onset of civil war. If resource extraction leads to disputes over how resource wealth should be distributed, these distribution-related grievances could also contribute to the initiation of conflict. Several popular books about “resource wars,” including Gedicks [1993] and Klare [2001], discuss this mechanism.

If resource dependence led to civil war through a grievance mechanism, we should observe the rebels criticizing resource firms or the resource sector in their propaganda; and we should see them make resource firms a target of their violence, apart from looting or extortion attempts. Of course, neither of these indicators would prove that the rebels are *truly* motivated by resource-related grievances. But they would imply that the rebels believe that resource issues are salient concerns in the population they wish to mobilize, and that raising these issues will help them build support.

Resource wealth might also generate conflict indirectly through what might be called a “predation” mechanism, if it fosters the growth of predatory groups such as private armies, militias, and warlords, which in turn may contribute to the onset of a civil war. In much of the developing world, the state’s ability to enforce property rights – and hence, to protect firms from extortion – is limited, and tends to dwindle in remote areas. For this reason, most types of large firms avoid operating in areas beyond state control; if they did operate in remote areas and were subject to significant predation, they would soon fail. But since resource firms are location-specific they must sometimes operate in places where the state’s authority is weak; moreover, because they commonly generate

rents they can turn a profit even when subject to predation. If resource wealth is located in a region where the state's authority is weak, and the availability of resource rents leads to the rise (or strengthening) of organized predation – in the form of private armies, militias, or warlords – it could lead to civil war in one of two ways: these groups could support a rebel group once it arises; or they could further weaken the state's influence in the region, and make it easier for rebel groups to form.<sup>13</sup> The rise of resource-based warlords has been detailed by both Reno [1998] and Le Billon [2001].

If resource wealth contributes to the incidence of civil war through this predation mechanism, we should observe in case studies the rise of predatory groups associated with resource extraction before the war breaks out; and we should see these groups either aiding the rebel movement, or impeding the government's efforts to suppress an insurrection.

### *Duration*

Natural resource wealth may influence the duration of civil war, independent of its effects on the incidence of civil war. There are three mechanisms that could either lengthen or shorten a conflict, depending on how they occur.

The first mechanism, once again, is looting: resource wealth may lengthen a conflict if it enables the rebels to fund themselves, and hence continue fighting instead of being crushed or forced to the negotiating table. Many journalistic accounts of recent wars in the mineral-rich states of Central and West Africa – including Liberia, Sierra Leone, the Democratic Republic of Congo, and Angola – appear to refer to this mechanism when they claim that resources are “fueling” a conflict.

The mechanism entails two key assumptions: that the rebels are the weaker side; and that strengthening the weaker side tends to lengthen conflicts. In fact, there is evidence from interstate conflicts to support the latter claim: Bennet and Stam [1996] find that international conflicts tend to last longer when the two sides have more equal resources. This implies that when the weaker side gains additional resources, the conflict will be lengthened; but it also implies that when the stronger side gains additional resources, the conflict will be shortened. Hence this argument has a seldom-recognized corollary: if resource looting is carried out by the stronger party, it should shorten the conflict by bringing about a quicker victory or settlement.<sup>14</sup>

If either of these mechanisms has occurred, there should be evidence that one side or the other has raised money from the resource sector – through looting, extortion, or other means – after the war began. If both sides raised funds from the resource sector simultaneously, I infer that the net effect has been to lengthen the conflict, based on the conjecture that combat is likely to continue as long as the weaker party does not run out of money.<sup>15</sup>

Resource wealth could also act as an incentive, or disincentive, for a peace settlement. On one hand, wartime looting may be so profitable for the combatants that they prefer war to peace. Sherman [2000: 699], for example, suggests that

“Rebel groups in Angola, Sierra Leone, Democratic Republic of Congo (DRC) and elsewhere enrich themselves through the sale or exchange of diamonds...economic interests not only shape the conflict, but, if the economic advantage of fighting outweighs that of peace, perpetuate it as well.

This is a slippery mechanism to observe in case studies. It should not be sufficient to observe that war is profitable for some combatants: this is virtually inevitable when combat takes place on resource-rich territory, and it hardly proves that

the parties are deliberately lengthening the conflict. What we must determine is whether high level officers, who have the ability to negotiate (or block) a treaty, believe they would profit *more* if the war continues than if it comes to a negotiated end. If this is occurring we should observe evidence that resource looting is generating personal profits for high-level officers; evidence that they would not be compensated in some comparable way by a proposed peace treaty; and evidence that they chose not to sign or adhere to an unprofitable peace accord.

Once again, this mechanism has a seldom-noticed corollary: if one or both parties believe that peacetime profits would be greater than wartime ones, it could help induce them to reach a settlement. If this occurs, we might find evidence that officers who support a peace agreement subsequently profit from – or attempt to profit from – the resource industry.

Wartime resource looting could also affect a conflict's longevity in a third way, if it is carried out by either side in a decentralized manner that benefits lower-ranking officers, and thereby creates discipline problems that influence the likelihood of a settlement. Both rebel and government armies in developing states commonly have difficulty maintaining the chain of command during wartime. Fearon [1999] has suggested that the presence of lootable resources will make principal-agent problems worse by giving officers an incentive to accumulate personal wealth instead of adhering to the orders of their commanding officers. If resource wealth creates principal-agent problems for either side, this may make it more difficult for negotiators to forge a binding, enforceable settlement.

If this mechanism has lengthened a conflict, we should observe that at least one side of the conflict suffers from major principal-agent problems; that disobedient officers are personally benefitting from resource looting; and that these discipline problems have made it harder for that party to sign or adhere to a peace settlement.

It is possible, however, for a resource-related agency problem to have the opposite effect: it could cripple one side's fighting capacity, and thereby hasten that party's military defeat or force them to sign a peace agreement. If this has occurred, we should again see that at least one side of the conflict suffers from major principal-agent problems; that disobedient officers are personally benefitting from resource looting; and that these agency problems helped cause the party's defeat, or forced it to sign a peace agreement that it might otherwise have opposed.<sup>16</sup>

### *Intensity*

Resource wealth might also influence the intensity of civil conflicts, producing more (or fewer) conflict-related deaths over time. At least three mechanisms might bring this about.

The most obvious mechanism is resource-related combat, in which opposing armies do battle over resource-rich territory. Many journalistic accounts of civil wars in resource-rich areas imply that the two sides are "fighting for control" of a resource. I look for evidence in each case of these types of battles; and evidence that these sites had no other intrinsic strategic value.

A second mechanism might be called "pre-emptive repression": a government facing a small resource-related rebellion might act strategically, and use terror against a

population to prevent its growth, in order to protect its access to the resource. Here we might *not* witness a strong rebel group – if the repression is “successful” in the government’s eyes – but nonetheless have a large number of resource-related casualties. If this has occurred in case studies, we should observe an anomalously high level of government-sponsored terror in a resource-rich region, immediately preceding a period of resource extraction.

A third mechanism might reduce the intensity of civil wars. In a plunder-rich environment, battlefield opponents might prefer to cooperate and get rich instead of fighting and staying poor. If this type of cooperative plunder occurs, there should be reports of substantial wartime trade and cooperation in resource exploitation between the two sides.<sup>17</sup> From this we can infer that the presence of resource wealth has reduced the casualty rate.

TABLE TWO ABOUT HERE

### **3. Results from Case Studies**

The causal mechanisms observed in the thirteen cases are summarized in Table 2.<sup>18</sup> Overall there is good evidence to support both the claim that resource wealth makes conflict more likely (in 6 of 13 cases), and the claim that resource wealth tends to make conflicts last longer (in 8 of 13 cases). Within the sample, the influence of resource wealth on conflict intensity varies greatly – appearing to increase the casualty rate in four cases, having a mixed effect in six, and no effect in three.

The most striking finding may be that there is no evidence in the sample of the “looting” mechanism suggested by Collier and Hoeffler; nor were there cases in which

grievances over the extraction of resources (as opposed to the distribution of resource revenues) led to a civil war. There were several notable differences between separatist and non-separatist conflicts.

*Incidence of Conflict: Evidence*

Resource wealth appears to have contributed to the outbreak of conflict in six of the thirteen cases. There is evidence for both the grievance mechanism and the predation mechanism; yet there is no evidence in the sample of resource looting by future rebel groups in advance of a civil war. An expanded definition of “looting,” however, appears to fit four cases.

TABLE 3 ABOUT HERE

There were no cases of resource looting of the type that Collier and Hoeffler describe: in these thirteen cases, nascent rebel groups *never* gained funding before the war broke out from the extraction or sale of natural resources, or from the extortion of others who extract, transport, or market resources. If interpreted strictly, the Collier-Hoeffler looting mechanism gains no support from these cases. While there is abundant evidence that rebel groups engage in looting after a war begins (discussed below), in this sample no rebel group funded its start-up costs from the resource sector. Perhaps those who are able to loot during peacetime are not inclined to start a war; conversely, war may only be economically attractive when peacetime looting is infeasible – for example, when looting requires the mobilization of a large armed force, and the disruption of the government’s territorial control.

It is possible to save the looting hypothesis, however, by broadening it in various ways [Table 4]. In two cases rebels gained start-up funding by selling what might be called “booty futures” – the future right to exploit mineral resources, contingent on victory. In the Congo Republic, a former president, Denis Sassou-Nguesso, received \$150 million from the French oil company, Elf-Aquitaine, to help him defeat the incumbent president, Pascal Lissouba, either by force or through a national election; the payment was clearly meant to ensure Elf’s access to Congolese oil in a future Sassou government.<sup>19</sup> The election never took place. Instead, Sassou and Lissouba fought a four-month war that destroyed much of Brazzaville and cost 10,000 lives, eventually leaving Sassou in charge [Africa Confidential, 1997].

Something similar may have occurred in Sierra Leone, although the evidence is less clear. Sierra Leone’s civil war began in March 1991 when a handful of fighters associated with the Revolutionary United Front (RUF) first crossed the border from Liberia. There is overwhelming evidence that the Liberian leader, Charles Taylor, helped organize and support the invasion; indeed, soldiers from Taylor’s own army made up part of the “RUF” incursion [UN Panel of Experts 2000]. Taylor apparently had several motivations, one of which was to gain access to Sierra Leone’s diamond fields, which were less than 100 miles from the Liberian border [Reno 1998]. This implies that the RUF leadership was able to fund its start-up costs by allowing Taylor to loot Sierra Leone’s diamonds – in effect, using informal mining futures to purchase Taylor’s assistance.

The concept of looting might also be expanded to include the motivations of neighboring governments. In two cases (Sierra Leone, and the second Democratic

Republic of Congo war) neighboring governments who aspired to loot the country's natural resources helped initiate the civil war by organizing and fighting alongside domestic rebel forces. There is strong evidence that the DRC's resource wealth played an important role in the decision of the Rwandan and Ugandan forces to attack the DRC in 1998. The UN Panel of Experts [2001] found that Uganda's decision to enter the war was influenced, in part, by at least three figures who were eager to profit from the occupation of resource-rich parts of the DRC. The prospect of resource looting may have also encouraged the Rwandan government to proceed with the invasion, although for somewhat different reasons. In Uganda, personal profit was apparently a significant motive; in Rwanda, the government's actions were apparently influenced by the belief – which was subsequently proved correct – that resource looting would help offset the cost to the government of the invasion, which might have otherwise been prohibitive. Rwanda's President Kagame explicitly called the DRC conflict a “self-financing war”; and once inside the DRC, the Rwandan army established well-disciplined procedures for extracting Congolese resources and using them to fund the military effort. An economic analysis by the UN Panel of Experts [2001] confirms this pattern.

#### TABLE 4 ABOUT HERE

The looting concept might also be stretched to cover the extortion of firms building infrastructure for resource extraction; if so, it would capture the case of Sudan. The Sudan People's Liberation Army funded itself in the early 1980's through a number of means, including cattle raids, kidnapping and ransoming westerners, and extorting money from western firms who wished to protect equipment they had left in Sudan to build an oil pipeline [O'Ballance 2000].<sup>20</sup>

The grievance mechanism helps account for the origins of three wars: those in Indonesia, Sudan, and possibly Sierra Leone.<sup>21</sup> In all three cases, rebel groups were principally critical of how resource revenues were distributed, not the extraction process itself. The Sudan war was triggered by a series of measures taken by the Sudanese President Numeiry in 1983, including a decision to place newly discovered oil in the country's south under the jurisdiction of the north, and to build an oil refinery in the north instead of the south. The north of Sudan is principally Muslim, and culturally linked to the Arab Middle East; the south is primarily Christian and animist, and more closely tied to Sub-Saharan Africa. The Sudan People's Liberation Army issued complaints that the north was stealing the resources of the south, including water, grain, timber, minerals, and oil; demanded that work cease on a pipeline to take oil from the south to the refinery in the north; and in February 1984, attacked the oil exploration base at Bentiu, killing three foreign workers and bring the project to a halt [O'Ballance 2000, Anderson 1999].

The claims and actions of the rebel group in Indonesia – Gerakan Aceh Merdeka (GAM, Aceh Freedom Movement) – have been similar. GAM began in 1976, shortly before a large natural gas facility began operations in Aceh, a province on the northern tip of the island of Sumatra. GAM's 1976 "Declaration of Independence" denounced the Indonesian government for stealing Aceh's resource revenues; but it did not criticize the natural gas facility itself, or Mobil (now ExxonMobil), which operates the facility.<sup>22</sup> One of its first acts was to attack the facility.

It may be significant that two of the three incidences of grievances occurred in separatist conflicts. This may understate the strength of the link between resource grievances and separatist conflicts: in the single non-separatist case, the evidence that

resource grievances mattered is highly ambiguous. The case is the war in Sierra Leone, which began in March 1991 when the Revolutionary United Front (RUF) first crossed the border from Liberia. RUF propaganda complained about resource exploitation, and it targeted diamond-mining operations in its attacks – although these attacks were at least in part motivated by a desire to loot.

Country experts disagree over whether resource grievances played a role in the origins of the conflict. According to Richards [1996], RUF believed that “Sierra Leone has been robbed of its mineral and forest resources”; he cites RUF propaganda that rails against “the raping of the countryside to feed the greed and caprice of the Freetown elite and their masters abroad” – a reference to the Lebanese and Afro-Lebanese businessmen who managed the diamond trade. He also suggests that youths in the diamond areas in southern and eastern Sierra Leone were receptive to this message, and this in turn helped RUF recruit volunteers and successfully indoctrinate conscripts. Richards’ account is disputed by Abdullah [1998, 223], who contends that RUF was a collection of fighters with no real ideology, organization, or discipline, who succeeded thanks to “the indiscriminate use of drugs, forced induction, and violence – to further their ultimate goal of capturing power.” Abdullah suggests that RUF’s putative ideology was hastily patched together from borrowed quotations and unrelated documents, and was irrelevant to RUF’s actual practices. Hence it is unclear whether resource grievances actually mattered in the case of Sierra Leone; however it is coded, though, resource grievances appear to be rare in non-separatist conflicts, occurring in either one or none of such conflicts in the sample.

The predation mechanism was apparent in two cases (Sierra Leone and the 1996-97 war in the Democratic Republic of Congo). In both cases, predatory organizations arose around the mining of alluvial diamonds – that is, diamonds that can be extracted from the topsoil of alluvial plains by small teams of unskilled workers. Before the outbreak of civil war, Sierra Leone’s diamond fields were controlled by a network of armed gangs, private armies and paramilitary forces that sold protection services to miners and traders [Hirsch 2001, Richards 1996]. The presence of these organizations weakened the government’s authority in the diamond areas; when the government tried to re-establish control in early 1991, it displaced thousands of illicit miners, many of whom were recruited by RUF, the rebel organization. The government’s efforts also drove local strongmen into alliances with RUF [Reno 1998].

In the DRC, there was a gradual shift in the 1980s and early 1990s from large-scale deep-shaft mining (for which the government provided security) to small-scale alluvial mining, which helped foster independent military units that were economically and politically autonomous from the government. Some units were organized by local strongmen, who sold protection to small-scale miners; sometimes miners themselves would organize their own self-defense units [MacGaffey 1991]. In other cases, DRC military units were forced to become self-financing, and organized themselves around commerce in diamonds, gold, coffee, timber, cobalt, and arms. One general sold protection services to alluvial diamond miners in Kivu; another general used his unit to ship cobalt from the Shaba province to Zambia [Reno 1998]. These activities may have weakened the DRC military, and hence encouraged the rebel group (organized and led by the Rwandan and Ugandan armies) to launch its assault in October 1996.

To summarize, there is no evidence in the sample for a strictly-defined looting mechanism, but there is evidence of a more broadly-defined looting mechanism; resource grievances were observed over the distribution of resource wealth (including jobs), but not over the social or environmental consequences of the extraction process itself; these grievances may be more prevalent in separatist conflicts than non-separatist conflicts; and the predation mechanism was observed in two cases, both tied to the extraction of alluvial diamonds.

TABLE 5 ABOUT HERE

TABLE 6 ABOUT HERE

*Duration of Conflict: Evidence*

Resource wealth appears to have influenced the duration of ten of the thirteen conflicts: it lengthened eight, shortened two, had a mixed effect in two and no effect in one [Table 5].

Resource looting again took several forms [Table 6]. While looting-by-extraction played no role in the *initiation* of these thirteen conflicts, it played a role in the *duration* of nine conflicts. In other words, in these thirteen cases, rebel groups only started to loot resources after the conflicts began. The most frequently looted resources were gemstones (five cases), drugs (two cases), and timber (two cases). In the three civil wars that did not feature looting-by-extraction, the resource was of a type – such as oil, natural gas, or minerals – that was much harder for small groups to exploit.

Once again, an expanded definition of looting can capture some related phenomena. The futures market figured in three cases (Sierra Leone, Angola, and the DRC II conflict), where the weaker party sold oil or mineral futures to help pay the costs

of ongoing combat, thereby lengthening the conflict. In two wars (Sudan and Colombia), rebels raised money by blowing up oil pipelines and ransoming kidnapped oil workers.

Of the nine wars where looting mattered, eight were lengthened. But in one case – the 1996-97 conflict in the Democratic Republic of Congo (DRC) – resource looting most likely shortened the conflict since it generally benefited the stronger side. In this conflict, the rebel organization (the Alliance of Democratic Forces for the Liberation of Congo/Zaire, led by Laurent-Desiré Kabila<sup>23</sup>) received a huge resource windfall after it became clear that it was defeating the government in combat. In April 1997, Kabila signed an \$885 million contract with American Mining Fields, a U.S. firm intent on exploiting Congolese copper, cobalt, and zinc.<sup>24</sup> Around the same time, the minerals parastatal, Minière de Bakangwa, switched its support from the government to ADFL, offering Kabila both cash and the use of its aircraft fleet [French 1997; Reed 1998]. One month later, Kabila entered the capital and became the new President. Since Kabila's April 1997 sale of mineral futures helped strengthen the hand of the winning side, while the weaker side lost its resource funding, I infer that it helped bring about a swifter end to the war.

The agency mechanism hypothesized by Fearon [1999] appeared to influence the duration of two conflicts, albeit in opposite ways. In Liberia it lengthened the civil war by impeding a settlement, while in Cambodia it shortened the war by crippling the weaker side with defections.

The Liberian civil war lasted from December 1989 to August 1996. Between June 1990 and August 1996 the combatants signed fourteen peace accords, thirteen of

which failed. One important reason for these failures was competition within the parties over the control of resource wealth – competition that made it impossible for some of them to get their own troops to comply with the terms of the agreements [Accord 1996; Ellis 1999]. By delaying the implementation of a peace accord, it lengthened the war.

Conversely, in Cambodia resource wealth created agency problems within the rebel group (the Khmer Rouge) that hastened their breakdown and – at least after 1996 – shortened the civil war. Until 1995, income from the sale of timber and gemstones had helped fund the Khmer Rouge, and hence lengthened the civil war. But in 1996 Ieng Sary, one of the Khmer Rouge’s top officials, surrendered to the government along with 4,000 soldiers under his command. As part of the surrender agreement, he was allowed to retain his troops and keep control of a gem-and-timber-rich area near the Thai border. The Khmer Rouge never recovered from his defection, and by 1998 the Khmer Rouge had collapsed – bringing about an end to war.

There was also evidence in two cases (DRC II and Liberia) that resource wealth lengthened a conflict by giving combatants an economic incentive to avoid signing, or adhering to, a peace agreement. In two other cases (Congo Republic and Burma), however, resource wealth appeared to shorten conflicts by giving combatants a financial incentive to settle.

In Liberia, parties to the conflict signed the 1993 Cotonou accord under heavy international pressure. But almost immediately the signatories created nominally-independent surrogate groups that – because they were not signatories – could carry on with profitable wartime looting. This practice contributed to the accord’s collapse [Alao

et al. 1996, Ellis 1999]. It also implies that combatants subverted the treaty for economic reasons, and thus lengthened the conflict.

In the war that has plagued the DRC since 1998 – which has both the qualities of a civil war and an international war – the profitability of resource looting for foreign governments, rebel militias, and individual officers has substantially reduced their incentive to end the conflict [ICG 2000; Vick 2001; UN Panel of Experts 2001]. Even though a peace accord was signed in Lusaka in July 1999, it has not been implemented, in part because it would force foreign combatants to withdraw from the DRC, and they are loathe to lose their access to the country's remarkable resource wealth.

Conversely, the 1997 civil war in the Congo Republic may have been shortened by the combatants' agreement to share the oil revenues.<sup>25</sup> Similarly, the Burmese government reached settlements with the Shan State Army (in 1989) and the Kachin Independence Army (in 1994) after agreeing to jointly exploit the opium, timber, and precious stones in rebel-held territory. Although rebel groups already controlled these resources, the agreements made it easier for them to attract new investment in, process, and export their goods [Lintner 1999; Scott and Clark-Levy 2001].

There was little evidence of a resource incentive problem in two cases where others suspect it exists: Angola and Sierra Leone [Sherman 2000]. In both cases, rebel leaders have at times generated enormous sums from resource looting; this has caused observers to falsely infer that resource wealth has caused the rebels to prefer war to peace. But in each case, peace negotiators have anticipated this problem and drafted accords that would enable rebel leaders to continue getting rich – or get even richer – in peacetime. Both the 1999 Lomé accord in Sierra Leone, and the 1994 Lusaka Protocols

in Angola, offered to place the rebel leader (Foday Sankoh in Sierra Leone and Jonas Savimbi in Angola) in charge of the country's natural resources under a unity government. Peace would also allow the minerals sector in each country to expand by enabling abandoned mines to reopen and new ones to develop, presenting the rebels with new opportunities for enrichment. In these cases, we can infer that peace failed for reasons other than the lure of wartime looting.

In sum, there is good evidence that resource wealth can influence the duration of civil wars; but it can shorten as well as lengthen them.

#### TABLE 7 ABOUT HERE

##### *Intensity of Conflict: Evidence*

Resource wealth appeared to heighten the casualty rate in three wars, and had simultaneous conflict-heightening and conflict-lowering effects in seven wars. In three cases, it had no discernible effect.

Resource battles occurred in nine of the thirteen cases, as combatants fought for control of areas rich in alluvial gemstones (Sierra Leone, Liberia, Cambodia), opium fields and processing plants (Peru, Burma), oil pipelines that traveled over disputed lands (Colombia, Sudan), mines (DRC, Liberia), and commercially-valuable forests (Cambodia, Liberia).

Yet in eight of these nine cases, combatants intermittently cooperated in exploiting the same resources they fought over. In four cases (Sierra Leone, Liberia, the DRC, and Cambodia) there were long periods in which the major parties more or less ceased their

combat and entered a kind of commercial equilibrium. Even in extraordinarily bitter wars like the one in Sudan, profitable alliances were often struck between groups on opposing sides – in this case, to guard the pipeline and oilfields that the rebels have long opposed [ICG 2002].

The only war that featured resource battles but not cooperative plunder was in Peru, between the government and the hard-line Maoist group, Sendero Luminoso. Beginning around 1983, Sendero Luminoso controlled a large coca-producing area in Peru's Upper Huallaga Valley; they also periodically clashed with both government forces and a rival guerrilla group over control of the coca trade. Their failure to cooperate with the Peruvian military in coca production likely reflected both their highly-disciplined and ideological character, and their ability to fly coca paste directly from the Upper Huallaga Valley to Colombia without passing through government-controlled territory or airspace.

In five of these nine cases (Sudan, Sierra Leone, Liberia, the DRC II, and Cambodia), resources had an even more powerful effect on the conflict, helping fracture rebel or government alliances based on ethnic, religious, or ideological grounds, and creating new alliances based on commercial grounds.<sup>26</sup>

Resource battles and cooperative plunder seem to be closely linked. In the eight cases where both occurred, it was impossible to judge which of these two effects had the greatest impact. I hence infer that they at least partially offset each other and produced a “mixed” effect on the intensity of combat.

The third effect, pre-emptive repression, was less ambiguous. It occurred in two cases: Indonesia and the Sudan. Both were separatist conflicts, in which the resource was

located in the rebellious region; conversely, there was no evidence of pre-emptive repression in the ten non-separatist wars.

In the Indonesian case, the government imposed martial law, terrorized villages, and carried out egregious human rights abuses in Aceh between 1990 and 1998 to crush a tiny independence movement in this resource-rich region. The death toll from the terror pushed the conflict across the thousand-death threshold around 1990-1991. The repression ultimately backfired, triggering a larger rebel movement and a renewal of the conflict in 2000 and 2001.

In Sudan pre-emptive repression was extraordinarily severe: since the late 1990s the government has attempted to create a *cordon sanitaire* around a 936-mile pipeline that brings oil from the rebellious south to a port in the north. Since early 1999, the government has used summary executions, rape, ground attacks, helicopter gunships, and high-altitude bombing to force tens of thousands of people from their homes in the oil regions [Amnesty International 2000].<sup>27</sup> The correlation between oil exploitation and pre-emptive repression has often been transparent. In one well-documented case, Lundin Oil (a Swedish firm) discovered a major oil reserve in April 1999 at Thar Jath; a month later, government troops displaced tens of thousands of people from the area. When fighting nonetheless erupted ten months later around the Thar Jath site, Lundin Oil suspended operations while government troops used aerial bombing, the burning of villages and summary executions to depopulate a large area around the oilfield. Shortly after depopulation was completed, Lundin Oil resumed operations [Christian Aid 2001].<sup>28</sup>

Pre-emptive repression only occurred in separatist conflicts, at least within this sample. This may be because governments are more willing to take repressive measures

against peripheral minority groups than members of the majority population. It may also be that governments are more likely to expect trouble when resource exploitation occurs in regions with separatist aspirations than when it occurs in other regions.

#### **4. Conclusion**

This paper uses case studies of 13 recent conflicts to examine the causal links between resource wealth and civil wars. It presents nine hypotheses about how resources may influence a conflict; it specifies the observable implications of each; and it reports which of these implications can be observed in the 13 cases. The paper's central aim is not to test the hypotheses, but to develop them and explore their plausibility. However, if any of the hypothesized causal mechanisms are not observed in these 13 civil wars – a sample in which they are most likely to be found – it should cast doubt on the validity of the hypotheses for the larger population of states.

There are seven notable findings.

First, there is good evidence at the case study level – based on a sample that is biased but relatively large – that natural resource wealth is causally linked to civil conflict. This study cannot dismiss the possibility that the natural resource-civil war correlation is, in part, spurious, or that causality runs in the opposite direction. Indeed, there is good evidence in at least one case (Angola) that the onset of civil war made the economy more dependent on resource exports [Minter 1994]. But in these 13 conflicts there is strong evidence that resource wealth has made conflict more likely to occur, and last longer and produce more casualties when it does occur.

Second, there are a variety of causal mechanisms at the case study level that appear to link resource dependence to civil war – some that contribute to the onset of war, some that influence the duration of wars, and some that influence the casualty rate. No single mechanism was observed in more than nine of the thirteen cases. If there is a single underlying causal mechanism behind the resource-civil war correlation, it is not apparent in this sample.

Third, resource wealth does not seem to always make conflicts worse. While the net effect of resource wealth on conflict in this sample was harmful, the cases suggest that resources can sometimes have contradictory and even beneficial effects over the course of a civil war. Resource wealth appeared to bring about a quicker end to two wars. And claims that resource wealth tends to heighten the intensity of conflict may be only partly correct. Observers often note that combatants fight for the control of natural resources, and that these battles appear to increase the war's overall casualty rate. But they fail to note that natural resources also lead to battlefield cooperation that may reduce the casualty rate. In nine of the thirteen cases examined here, combatants fought battles over resource wealth; in eight of these cases, they also laid down their arms (at other junctures) to cooperatively exploit these same resources.

The fourth finding concerns the work of Collier and Hoeffler [2000], who both identify a correlation between natural resource dependence and civil war, and argue that it is due to the tendency of rebel groups to fund their start-up costs through resource looting. The cases in this sample offer strong support for their finding that resource wealth is causally linked to civil war, but finds no evidence for the causal mechanism they specify. The Collier-Hoeffler mechanism, strictly defined, occurred in none of the

thirteen cases. But if the definition of “resource looting” is expanded to include related phenomena – such as the sale of resource futures, the extortion of money from firms building resource infrastructure, and the incentives facing neighboring governments – then the Collier-Hoeffler looting mechanism is found in four of the 13 cases. Still, the expanded Collier-Hoeffler mechanism is just one of three that appears to be linked to the initiation of conflict. In five cases there is evidence of a “grievance” mechanism, while in two cases there is indication of a “predation” mechanism.

The fifth finding concerns the discrepancy between scholars who find that resource dependence is tied to the incidence of conflict but not its duration [Collier and Hoeffler 2000; Collier, Hoeffler, and Söderbom, 2001], and the work of Fearon [2001], who finds that resource dependence is linked to the duration of civil wars but not their incidence. This paper finds case-study evidence to support both claims: resource wealth is linked to the onset of conflict in 8 of 13 cases and the duration of conflict in 9 of 13 cases.

A closer look at the cases suggests that the “initiation vs. duration” dispute may be in part an artifact of disparities in the coding rules used by different scholars to demarcate the beginning and end of civil wars. In several of the wars (such as Sudan and Indonesia), resources became salient after a rebel group was founded but before the conflict had produced one thousand battle deaths. In other cases (like Burma and Cambodia), civil wars that subsided for several years began anew when rebel groups gained access to lootable resources. In still other cases (such as Afghanistan and Angola), a conflict has fluctuated in intensity over several decades, and can reasonably be classified as either a single civil war of long duration, or multiple civil wars of brief

duration. In all these examples, coding decisions about when a war begins and ends will influence whether resource wealth is seen as initiating a new war or prolonging an existing one.

Sixth, resources appear to play a different role in separatist conflicts than non-separatist conflicts. Grievances over the distribution of resource wealth helped initiate two of the three separatist wars in the sample (Sudan, Indonesia), but played no role in the ten non-separatist wars, except for the ambiguous case of Sierra Leone. These two separatist conflicts were also the only ones to face pre-emptive repression, which is a government's use of terror to suppress the rise or growth of rebel movements that may interfere with resource exploitation. This mechanism amplified the intensity of conflict in Indonesia and the Sudan, and may help account for the statistical link between resources and civil war.

Finally, the cases suggest that a futures market for post-combat resource rights – what might be called the “booty futures” market – has emerged in sub-Saharan Africa. The market enables the weaker party to raise money to initiate or prolong conflicts; in this sample it contributed to the onset of at least two major wars (Sierra Leone and the Congo Republic) and the prolongation of three (Angola, Sierra Leone, and the DRC II). The market for booty futures may have frightening consequences for resource-rich states.

**Figure 1: Causal Mechanisms**

<i>Incidence of Civil War</i>
1. <b>Looting</b> by Potential Rebels → Start-up Costs Funded → Civil War 2. Resource Extraction → <b>Grievances</b> → Civil War 3. Resource Extraction → <b>Predation</b> opportunities → Rise of violent non-state groups → Civil War
<i>Duration of Civil War</i>
4. <b>Looting</b> by weaker (stronger) party → more arms → war prolonged (shortened) 5. War (peace) appears financially profitable → less (more) <b>incentive</b> to sign peace accord → war prolonged (shortened) 6. Looting by either party → <b>agency</b> problems → leaders' peacemaking (warfighting) capacity undermined → war prolonged (shortened)
<i>Intensity of Civil War</i>
7. Two sides engage in <b>resource battles</b> → more casualties 8. Two sides engage in <b>cooperative plunder</b> → fewer casualties 9. <b>Pre-emptive repression</b> by government to protect resources → more casualties

**Table 1: Civil Wars Linked to Resource Wealth, 1990-2000**

<b>Country</b>	<b>Duration</b>	<b>Resources</b>
Afghanistan	1978-2001	Gems, opium
Angola	1975-	Oil, Diamonds
<i>Burma</i>	1949-	Timber, tin, gems, opium
Cambodia	1978-97	Timber, gems
Colombia	1984-	Oil, gold, coca
Congo, Rep.	1997	Oil
Congo, Dem. Rep.	1996-97	Copper, coltan, diamonds, gold, cobalt
Congo, Dem. Rep.	1998-	Copper, coltan, diamonds, gold, cobalt
<i>Indonesia (Aceh)</i>	1975-	Natural gas
Liberia	1989-96	Timber, diamond, iron, palm oil, cocoa, coffee, marijuana, rubber, gold
Peru	1980-1995	Coca
Sierra Leone	1991-2000	Diamonds
<i>Sudan</i>	1983-	Oil

Separatist conflicts are listed in italics.

**Table 2: Summary of Findings**

	<b>Incidence</b>	<b>Duration</b>	<b>Intensity</b>
<b>Afghanistan</b>	No	Longer	No
<b>Angola</b>	No	Longer	Mixed
<b>Burma</b>	No	Mixed	Mixed
<b>Cambodia</b>	No	Mixed	Mixed
<b>Colombia</b>	No	Longer	Mixed
<b>Congo, Rep.</b>	Yes	Shorter	No
<b>Congo, Dem. Rep. I</b>	Yes	Shorter	No
<b>Congo, Dem. Rep. II</b>	Yes	Longer	Mixed
<b>Indonesia</b>	Yes	None	Yes
<b>Liberia</b>	No	Longer	Mixed
<b>Peru</b>	No	Longer	Yes
<b>Sierra Leone</b>	Yes	Longer	Mixed
<b>Sudan</b>	Yes	Longer	Yes

**Table 3: Origins of Conflict**

	<b>Looting</b>	<b>Looting<sup>29</sup></b>	<b>Grievance</b>	<b>Predation</b>
<b>Afghanistan</b>	No	No	No	No
<b>Angola</b>	No	No	No	No
<b>Burma</b>	No	No	No	No
<b>Cambodia</b>	No	No	No	No
<b>Colombia</b>	No	No	No	No
<b>Congo, Rep.</b>	No	Yes	No	No
<b>Congo, Dem. Rep. I</b>	No	No	No	Yes
<b>Congo, Dem. Rep. II</b>	No	Yes	No	No
<b>Indonesia</b>	No	No	Yes	No
<b>Liberia</b>	No	No	No	No
<b>Peru</b>	No	No	No	No
<b>Sierra Leone</b>	No	Yes	Yes	Yes
<b>Sudan</b>	No	Yes	Yes	No

**Table 4: Origins of Conflict, types of looting<sup>30</sup>**

	<b>Extraction</b>	<b>Futures</b>	<b>Extortion</b>	<b>Neighbor</b>
<b>Afghanistan</b>	No	No	No	No
<b>Angola</b>	No	No	No	No
<b>Burma</b>	No	No	No	No
<b>Cambodia</b>	No	No	No	No
<b>Colombia</b>	No	No	No	No
<b>Congo, Rep.</b>	No	Yes	No	No
<b>Congo, Dem. Rep. I</b>	No	No	No	No
<b>Congo, Dem. Rep. II</b>	No	No	No	Yes
<b>Indonesia</b>	No	No	No	No
<b>Liberia</b>	No	No	No	No
<b>Peru</b>	No	No	No	No
<b>Sierra Leone</b>	No	Yes	No	Yes
<b>Sudan</b>	No	No	Yes	No

**Table 5: Duration Effects**

	<b>Looting</b>	<b>Agency</b>	<b>Incentive</b>	<b>Net Effect</b>
<b>Afghanistan</b>	Yes	No	No	Longer
<b>Angola</b>	Yes	No	No	Longer
<b>Burma</b>	Yes	No	Yes*	Mixed
<b>Cambodia</b>	Yes	Yes*	No	Mixed
<b>Colombia</b>	Yes	No	No	Longer
<b>Congo, Rep.</b>	No	No	Yes*	Shorter
<b>Congo, Dem. Rep. I</b>	Yes*	No	No	Shorter
<b>Congo, Dem. Rep. II</b>	Yes	No	Yes	Longer
<b>Indonesia</b>	No	No	No	None
<b>Liberia</b>	Yes	Yes	Yes	Longer
<b>Peru</b>	Yes	No	No	Longer
<b>Sierra Leone</b>	Yes	No	No	Longer
<b>Sudan</b>	Yes	No	No	Longer

\*Made the conflict shorter

**Table 6: Duration, types of looting**

	<b>Extraction</b>	<b>Futures</b>	<b>Extortion</b>
<b>Afghanistan</b>	Yes	No	No
<b>Angola</b>	Yes	Yes	No
<b>Burma</b>	Yes	No	No
<b>Cambodia</b>	Yes	No	No
<b>Colombia</b>	Yes	No	Yes
<b>Congo, Rep.</b>	No	No	No
<b>Congo, Dem. Rep. I</b>	No	Yes	No
<b>Congo, Dem. Rep. II</b>	Yes	Yes	No
<b>Indonesia (Aceh)</b>	No	No	No
<b>Liberia</b>	Yes	No	No
<b>Peru</b>	Yes	No	No
<b>Sierra Leone</b>	Yes	Yes	No
<b>Sudan</b>	No	No	Yes

**Table 7: Intensity**

	<b>Battles</b>	<b>Plunder</b>	<b>Repress</b>	<b>Net Effect</b>
<b>Afghanistan</b>	No	No	No	No
<b>Angola</b>	Yes	Yes	No	Mixed
<b>Burma</b>	Yes	Yes	No	Mixed
<b>Cambodia</b>	Yes	Yes	No	Mixed
<b>Colombia</b>	Yes	Yes	No	Mixed
<b>Congo, Rep.</b>	No	No	No	No
<b>Congo, Dem. Rep. I</b>	No	No	No	No
<b>Congo, Dem. Rep. II</b>	Yes	Yes	No	Mixed
<b>Indonesia</b>	No	No	Yes	Yes
<b>Liberia</b>	Yes	Yes	No	Mixed
<b>Peru</b>	Yes	No	No	Yes
<b>Sierra Leone</b>	Yes	Yes	No	Mixed
<b>Sudan</b>	Yes	Yes	Yes	Yes

## References

- Abdullah, Ibrahim (1998) "Bush path to destruction: the origin and character of the Revolutionary United Front/Sierra Leone," *Journal of Modern African Studies* 36 (2), 203-235.
- Accord (1996), "Special Issue on Liberia." Downloaded from <http://www.c-r.org/accord> on September 1, 2001.
- Africa Confidential (1997), "A dictator returns," Volume 38, Number 21, October 24; downloaded on [www.Africa-Confidential.com](http://www.Africa-Confidential.com), September 1, 2001.
- Alao, Abiodun, John Mackinlay, and 'Funmi Olonisakin (1999), *Peacekeepers, Politicians, and Warlords: The Liberian Peace Process*. New York: United Nations University Press.
- Amnesty International (2000), "Oil in Sudan - Deteriorating Human Rights," Report AFR 54/01/00ERR, May 3.
- Anderson, G. Norman (1999), *Sudan in Crisis*. Gainesville: University Press of Florida.
- Auvinen, J. Y. (1997) "Political Conflict in Less Developed Countries, 1981-89," *Journal of Peace Research* 34, 177-195.
- Bennett, D. Scott and Alan C. Stam III (1996) "The Duration of Interstate Wars, 1816-1985," *American Political Science Review* 90(2), 239-257.
- Christian Aid (2001), "The Scorched Earth." Downloaded from <http://www.christian-aid.org.uk/indepth/0103suda/sudanoil.htm> on September 1, 2001.
- Collier, David and James Mahoney (1996), "Insights and Pitfalls: Selection Bias in Qualitative Research," *World Politics* 49:56-91.
- Collier, Paul and Anke Hoeffler (1998) "On economic causes of civil war," *Oxford Economic Papers* 50, 563-573.
- (2000), "Greed and Grievance in Civil War," Policy Research Working Paper 2355, World Bank Development Research Group.
- Collier, Paul, Anke Hoeffler, and Mans Söderbom (2001), "On the Duration of Civil War." Paper presented at the Workshop on Civil Wars and Post-Conflict Transitions, University of California, Irvine, May 18-20 2001.
- de Soysa, Indra (2000), "Natural Resources and Civil War: Shrinking Pie or Honey Pot?," Paper presented at the International Studies Association, March 2000, Los Angeles.

Dudley, Ryan and Ross Miller (1998) "Group Rebellion in the 1980s," *Journal of Conflict Resolution* 42, 77-96.

Elbadawi, Ibrahim and Nicholas Sambanis (2002) "How Much War Will We See? Estimating the Prevalence of Civil War in 161 Countries, 1960-1999," *Journal of Conflict Resolution*.

Ellis, Stephen (1999), *The Mask of Anarchy: The Destruction of Liberia and the Religious Dimension of an African Civil War*. New York: New York University Press.

Fearon, James D. (1991), "Counterfactuals and Hypothesis Testing in Political Science," *World Politics* 43: 169-195.

--- (1999), "Weak States, Rough Terrain, and Large-scale Ethnic Violence," Paper presented at the Annual Meeting of the American Political Science Association, Atlanta, GA, September 1999.

--- (2001), "Why Do Some Civil Wars Last So Much Longer Than Others?," Paper presented at the World Bank-UC Irvine conference, "Civil Wars and Post-Conflict Transition," Irvine, California, May 18, 2001.

French, Howard W. (1997) "The Great Gold Rush in Zaire," *New York Times* (18 April), A6.

Geddes, Barbara (1990), "How the Cases You Choose Affect the Answers You Get: Selection Bias in Comparative Politics," *Political Analysis* 2: 131-152.

Gedicks, Al (1993) *New Resource Wars: Native and Environmental Struggles Against Multinational Corporations*. Cambridge, MA: South End Press.

Gleditsch, Nils Petter (1998) "Armed Conflict and the Environment: A Critique of the Literature," *Journal of Peace Research* 35 (3), 381-400.

Gurr, Ted Robert (1970), *Why Men Rebel*. Princeton: Princeton University Press.

Hirsch, John L. (2001), *Sierra Leone: Diamonds and the Struggle for Democracy*. Boulder: Lynne Rienner.

Homer-Dixon, Thomas (1998), *Environment, Scarcity, and Conflict*. Princeton: Princeton University Press.

International Crisis Group (2000), "Scramble for the Congo: Anatomy of an Ugly War," ICG Africa Report No. 26, December 20, 2000.

--- (2002), *God, Oil, and Country: Changing the Logic of War in Sudan*. Brussels: IGC Press.

Klare, Michael (2001), *Resource Wars: the new landscape of global conflict*. New York: Metropolitan Books.

King, Gary, Robert O. Keohane, and Sidney Verba (1994), *Designing Social Inquiry: Scientific Inference in Qualitative Research*. Princeton: Princeton University Press.

Le Billon, Philippe (2001), "The political ecology of war: natural resources and armed conflicts," *Political Geography* 20, pp. 561-584.

Lebow, Richard Ned (2000), "What's So Different About a Counterfactual?" *World Politics* 52:550-585.

Leite, Carlos and Jens Weidmann (1999), "Does Mother Nature Corrupt? Natural Resources, Corruption, and Economic Growth," IMF Working Paper WP/99/85.

Levy, Adrian and Cathy Scott-Clark (2001), *The Stone of Heaven: Unearthing the Secret History of Imperial Green Jade*. New York: Little, Brown.

Lintner, Bertil (1999), *Burma in Revolt: Opium and Insurgency Since 1948*. Chaing Mai (Thailand): Silkworm Books.

MacGaffey, Janet (1991), *The Real Economy of Zaïre*. Philadelphia: University of Pennsylvania Press.

Minter, William (1994), *Apartheid's Contras: an inquiry into the roots of war in Angola and Mozambique*. London: Zed Books.

Muller, Edward N. and Mitchell A. Seligson (1987) "Inequality and Insurgency," *American Political Science Review* 81 (2), 425-451.

Muller, Edward N. and Erich Weede (1990) "Cross-National Variation in Political Violence," *Journal of Conflict Resolution* 34, 624-651.

O'Ballance, Edgar (2000), *Sudan, Civil War, and Terrorism 1956-1999*. New York: St. Martin's.

Peluso, Nancy and Michael Watts, eds. (2001), *Violent Environments*. Ithaca: Cornell University Press.

Reed, William Cyrus (1998), "Guerrillas in the Midst," in *African Guerrillas*, ed. Christopher Clapham, Bloomington: Indiana University Press, 134-154.

Reno, William (1998), *Warlord Politics and African States*. Boulder: Lynne Rienner.

Richards, Paul (1996), *Fighting for the Rain Forest: War, Youth, and Resources in Sierra Leone*. Oxford: James Currey.

Ross, Michael (2001), *Extractive Sectors and the Poor*. Washington D.C.: Oxfam America.

Sachs, Jeffrey D. and Andrew M. Warner (1995), "Natural Resource Abundance and Economic Growth," Development Discussion Paper No. 517a, Harvard Institute for International Development, Cambridge.

Sherman, Jake (2000), "Profits vs. peace: the clandestine diamond economy of Angola," *Journal of International Affairs* 53:2, 699-719.

Suliman, Mohamed, ed. (1999), *Ecology, Politics, and Violent Conflict*. New York: Zed Books.

UN Commission on Human Rights (2001), "Situation of human rights in the Sudan," Draft report of the Commission, 57th session. E/CN.4/2001/L.11/Add.3. - 21 April 2001.

UN Panel of Experts (2000), "Report of the Panel of Experts Appointed Pursuant to Security Council Resolution 1306 (2000), Paragraph 19, in Relation to Sierra Leone," United Nations Security Council S/2000/1195, December 20, 2000.

--- (2001), "Report of the Panel of Experts on the Illegal Exploitation of Natural Resources and Other Forms of Wealth of the Democratic Republic of Congo (S/2001/357)," United Nations Security Council, April 12, 2001.

Vick, Karl (2001) "Vital Ore Funds Congo's War," *Washington Post* (19 March), A1.

## Endnotes

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<sup>1</sup> For a more popular account of the link between resources and conflict, see Klare [2001]. Note there is also a literature on the scarcity of renewable resources (such as water and arable land) and violent conflict, which this paper does not address; recent works on this latter topic include Gleditsch [1998], Homer-Dixon [1998], Suliman [1999], and Peluso and Watts [2001].

<sup>2</sup> The term “medium-N” was first suggested by Roy Licklider, to describe his own research on civil wars.

<sup>3</sup> On counterfactual analysis, see Fearon [1991]; Lebow [2000].

<sup>4</sup> As with any other approach, the way the cases are selected is critical. In small-N research, the random selection of cases is typically inappropriate; a medium-N analysis may open the door to random selection, although this issue is beyond the scope of this paper. There is an extensive literature on case selection for qualitative analysis. Some important recent contributions including Geddes [1990], King, Keohane, and Verba [1994], and Collier and Mahoney [1996].

<sup>5</sup> This method is similar to using a crucial case study in small-N research: if a hypothesized phenomenon is not observed in a crucial case, where it is deemed likely to appear, the hypothesis is cast in doubt. To circumvent the problems created by probabilistic claims (discussed above), I have in effect chosen a large number of crucial cases.

<sup>6</sup> These low-level conflicts include the Bougainville rebellion in Papua New Guinea; the Cabinda conflict in Angola; the West Papua rebellion in Indonesia; the conflict in Senegal’s Casamance region; and the independence movement in Western Sahara. For a

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more extensive discussion of these and other cases, see Le Billon (2001).

<sup>7</sup> I intend to make this appendix available on my personal website, once this paper has been accepted for publication.

<sup>8</sup> I use the terms “resource wealth” and “resource dependence” interchangeably here. The large-N studies measure the correlation between civil war and resource *dependence*, defined as the ratio of natural resource exports (including oil, gas, minerals, timber, and agricultural commodities) to GDP. Most scholars treat this as an indicator of the relative abundance of natural resource wealth in the economy. But since this indicator is sensitive to changes in the size of the non-resource sector, and the size of GDP, it is a less-than-ideal measure. In the case studies I observe the effects of commercially-exploited resource *wealth* on conflict, which eliminates this problem.

<sup>9</sup> Collier and Hoeffler [2000] estimate that the correlation between resource dependence and civil war is curvilinear, suggesting that the risk of civil war declines when resource dependence reaches exceptionally high levels, at which point “the increased tax revenue eventually augments the capacity of the government to defend itself sufficiently to offset the enhanced finances of the rebels.” Other scholars estimate the correlation to be linear.

<sup>10</sup> The looting mechanism suggests a second observable implication: if looting resource firms is easier, or more sustainable, than looting non-resource firms, we should observe rebel groups gaining a greater fraction of their financing from the resource sector (relative to its size in the economy) than from other economic sectors. This would be hard to test unless rebel organizations agree to have their finances audited.

<sup>11</sup> Some might argue that resource wealth should promote economic growth, and hence reduce poverty and grievances. In fact, resource exploitation appears to *reduce* economic

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growth rates [Sachs and Warner 1995; Leite and Weideman 1998], and to increase poverty rates, child malnutrition, and infant mortality [Ross 2001].

<sup>12</sup> See, for example, Gurr [1970]; Muller and Seligson [1987]; Muller and Weede [1990]; Auvinen [1997]; Dudley and Miller [1998].

<sup>13</sup> If a predatory group itself challenged the state and thereby initiated a civil war, this would constitute the “looting” mechanism described above.

<sup>14</sup> This raises several important problems for the coding of case studies. First, a judgement must be made about the relatively military strength of the two sides before the resource is exploited, to avoid the problem of endogeneity. Second, it is necessary to restrict the analysis to *contested* resources. Virtually all governments derive at least a fraction of their revenue from the sale of natural resources; but I only treat these as relevant if they are located in the contested terrain. For civil wars that are national in scope, I treat all resources as contested.

<sup>15</sup> This is more likely to be true in separatist conflicts than non-separatist conflicts. As Fearon [2001] points out, separatist and non-separatist conflicts appear to have substantially different characteristics: separatist conflicts tend to last longer, and often continue even when the separatist movement is at an overwhelming financial disadvantage. This may be because separatist movements can often sustain themselves indefinitely in a territory dominated by members of their own ethnic group, in which government forces are considered alien.

<sup>16</sup> Fearon [2001] has suggested another way that resource abundance might lengthen *separatist* conflicts. He specifies a model in which rebels are likely to settle a conflict through an agreement for regional autonomy only if they believe the government is likely

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to adhere to it. The model suggests that if the region has resource wealth the government is more likely to renege on any such agreement, in order to gain access to future resource revenues; even if the government does not plan to renege, the rebels are more likely to *expect* them to renege, and hence should be more hesitant to sign a peace accord. The net result is that separatist conflicts over resource-rich regions should be unusually difficult to settle.

Unfortunately, this final mechanism is hard to verify in case studies unless we know a great deal about the perceptions and motivations of rebel leaders. For this reason, I exclude it from these case studies.

<sup>17</sup> I am deliberately omitting a fourth possible mechanism: that resource looting enables one or both combatants to arm themselves with more lethal equipment and hence kill each other at a faster rate. It is not obvious that greater military spending produces more lethal combat; moreover, I am already assuming that resource revenues influence the duration of conflict and do not wish to double-count.

<sup>18</sup> I conducted one of the case studies – Indonesia – using primary sources and field work in June-July 2000. I based the other twelve case studies on secondary sources, including academic studies, discussions with country experts, United Nations reports, journalistic accounts, and reports from non-governmental organizations.

<sup>19</sup> Elf had lost its oil contract under the government of Lissouba, Sassou's rival.

<sup>20</sup> This could be classified as contributing to either the initiation or the duration of the conflict, depending on when the civil war begins. The events that triggered the war began in 1983, but it is not clear when the thousand-death threshold was first crossed.

<sup>21</sup> Grievances over resource distribution appear to be common in separatist conflicts that

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fail to reach the thousand-death threshold, including the Bougainville rebellion in Papua New Guinea, the West Papua rebellion in Indonesia, the Cabinda conflict in Angola, and the separatist movement in the Western Sahara. Both Fearon (2001) and Le Billon (2001) discuss this phenomenon.

<sup>22</sup> Indeed, the founder of GAM, Hasan di Tiro, was a businessman who failed in his effort to win a bid for a work contract at the natural gas facility.

<sup>23</sup> The ADFL was led by the Rwandan army and backed by the Ugandan army, who were principally concerned with eliminating the threat created by the exiled Rwandan government in eastern Congo. The exiled Rwandan government was led by ethnic Hutus and was responsible for the 1994 Rwandan genocide. Kabila was a longtime political figure who had opposed Mobutu since the early 1960s.

<sup>24</sup> The \$885 million figure represented future investment. However, it is customary in large deals for the company to also pay a signing bonus, which would have augmented the AFDL's revenues. The Kabila government later reneged on the contract.

<sup>25</sup> Pierre Englebort, personal communication, October 2001.

<sup>26</sup> It is impossible, however, to know if resource wealth leads to an unusually high rate of alliance fracture without examining alliance stability in comparable resource-poor conflicts.

<sup>27</sup> Although foreign observers have often been prevented from entering the affected areas, the pattern of displacements has now been well documented by both the UN Commission on Human Rights [2001] and several NGOs.

<sup>28</sup> In the Sudan, all three effects – resource battles, cooperative plunder, and pre-emptive repression – have occurred. Since the first two effects offset each other, while the third

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effect dramatically raised the casualty rate, I infer that overall resources tended to heighten the intensity of combat.

<sup>29</sup> This column refers to the expanded definition of looting

<sup>30</sup> In both the DRC II and Sierra Leone cases, the presence of resource wealth led to military intervention from a neighboring country, but I code these cases differently. In the case of Sierra Leone, I treat this as both an intervention from a neighboring state, and the sale of booty futures by the Sierra Leone rebel group (the Revolutionary United Front) to a Liberian group (the National Patriotic Front of Liberia). In the case of the DRC 1998 conflict, I treat this only as the intervention of neighboring states (Rwanda and Uganda). This is because in Sierra Leone, an autonomous rebel group (RUF) existed prior to the intervention, while no such group existed in the DRC conflict.