Congo: The Prize of Predation

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CONGO: THE PRIZE OF PREDATION [*]

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Abstract

The article analyzes the war against Mobutu (1996-97) and the more recent war (1998-) in the Democratic Republic of the Congo with particular attention to greed and grievance as motivating factors in these two wars. Whereas our usage of the term 'greed' simply reflects the desire to gain control of natural resource rents, we model 'grievance' as deliberate institutional differences, implemented by the ruler, between the formal and informal sectors. On the basis of quantitative and qualitative evidence, we outline a model of a predatory conflict between a kleptocratic ruler and a group of potential predators within a given region. The potential predators choose between peaceful production and predation on the ruling elite, who control the country's natural resource rents. It is shown that institutional grievance between the formal and informal sectors, along with the relative strength of the ruler's defense, play a key role for the initiation of a war. This observation is used to explain the timing of the two wars analyzed in this article. The model also shows that once a war has commenced, the abundance of natural resources and the ruler's kleptocratic tendencies determine conflict intensity. This result is also well in line with experience from the most recent Congolese war.

They were no colonists; their administration was merely a squeeze, and nothing else, I suspect. They were conquerors and for that you want only brute force...They grabbed what they could get for the sake of what was to be got. It was just robbery with violence, aggravated murder on a great scale, and men going at in blind - as is very proper for those who tackle a darkness.

(From *Heart of Darkness*, Joseph Conrad, 1989, p 21)

Introduction

Joseph Conrad's description of king Leopold's Congo Free State from 1899 applies as well to the predatory war that has been raging in the Democratic Republic of the Congo since 1998. This war alone, fought in remote jungles by a multitude of rebel and national armies from the Great Lakes region, is believed to have taken some 3 million lives and left 2.5 million internally displaced.[1] A primary reason for the continuation of the fighting has been a desire to gain control of easily appropriable and highly valuable natural resources like gold, diamonds, and coltan that Congo is endowed with (Panel of Experts, 2001a, 2001b). Though grievances might have been the spark that initiated the fighting, the real engine of the great war in Central Africa appears to be greed.

Our study is inspired by Collier & Hoeffler's (2001) empirically based distinction between greed and grievance as the two main motivations for civil wars. The grievance aspect is well known and is covered in numerous political science studies. Grievance is usually meant to imply inequality in terms of political and economic rights, inequality of income, and ethnic or religious divisions. Economists - schooled in the tradition of rational, profit maximizing

entrepreneurs - and a growing number of other social scientists, have lately come to analyze civil wars as a competition between warlords for the appropriation of valuable resources. In Collier & Hoeffler's (2001) statistical investigation of the prevalence of civil wars from 1960 to 1999, they find that such greed-related explanations have a greater explanatory power than grievance.

The broad aim of this article is to analyze the roles of greed and grievance in initiating and sustaining the two recent wars in Congo; the rebellion against Mobutu 1996-97 and the great African war that started in 1998. We have chosen to focus on Congo specifically because we believe that any model of appropriative conflict should have something substantial to say about the big war in Central Africa which in terms of the natural resource rents at stake, the number of casualties, and the number of nations involved make most other recent military conflicts wane. The article starts with a review of the quantitative and qualitative evidence of greed and grievance in the two wars. We argue that while grievances associated with the Tutsi-Hutu conflict in Rwanda that spilled over to Congo in the mid-nineties were important factors for the initiation of both wars, the opportunity to conquer Congo's exceptional natural resource riches appears to have been a primary determinant of conflict intensity, in particular during the war that started in 1998.

By using the framework of appropriative conflict theory, we then outline a game with two groups of players; a ruler and his cronies who control a flow of natural resource rents and a big group of informal subsistence producers who consider starting a predatory uprising against the ruler. The grievance motive that we employ differs from the more general definition in Collier & Hoeffler (2001). In this article, it is modelled as deliberate institutional differences, installed by the ruling group, between formal and informal sector production. Institutional differences are meant to capture aspects like strength of property rights, rule of law, and similar factors affecting production possibilities that are directly under the control of

the ruler. More abstract grievances like historical and ethnic rivalries are therefore not included. The greed motive is simply the opportunity for ordinary peasants to conquer the ruling group's natural resource rents. It is shown that while grievance plays a key role for the initiation of a predatory conflict, the intensity of conflict increases linearly with natural resource abundance and with the ruling group's propensity to divert resources for personal enrichment.

In the last analytical section, we use the case study and the model's results to address the question why a predatory conflict did not break out until 1996, considering Congo's exceptional riches and history of extremely kleptocratic regimes? Our conclusion is that the deterioration in the relative effectiveness of government military forces, in combination with the sudden increase in grievances following the invasion of Hutu refugees after 1994, both contributed to the shift to a conflict equilibrium. The enormous quantity of appropriable natural resources then explained the intensity of the great scramble for Congo.

Whereas the interpretation in the literature of the reasons behind the uprising against Mobutu appears to be relatively straightforward, there is less agreement about the motives behind the 1998 war. Our conclusions are largely supported and inspired by the findings in Panel of Experts (2001a, 2001b). They also conform to the framework of warlord competition in weak African states as spelled out by Reno (1998, 2002). In assessing Uganda's reasons for its renewed military effort in Congo, Clark (2001), on the other hand, downplays and even questions the indications of an economic agenda and argues that it was rather the Ugandan interest in the survival of Rwanda's Tutsi government that fuelled the war.

We believe that a general contribution and novelty of our article compared to the existing literature is our use of conflict theory and the greed-grievance taxonomy for discussing the initiation and intensity of the Congolese wars. The predator-prey model that we present follows in the spirit of the appropriative conflict-literature (Hirshleifer, 1991; Neary, 1997;

Collier, 2000; Skaperdas, 2002; Mehlum et al, 2003), in particular Grossman (1991, 1999) and Grossman & Kim (1995). As in Olsson (2003), an innovation in our model compared to the earlier literature is the ruler's choice situation between spending available natural resource proceeds on public utilities or on defense of his personal riches, a fraction of which might otherwise be lost to predators. A more specific contribution, unique to this article and in line with empirical observation, is our result that whereas grievances in the form institutional differences are the key determinant for the initiation of a predatory war, natural resource abundance and the rulers' degree of kleptomania are the primary engines of the subsequent conflict intensity.

The article is organized as follows: The second section reviews Congolese social conflicts from the Rwandan genocide in 1994. The third section presents the theoretical model that is designed to explain some of the mechanisms behind the two wars. On the basis of the model's results, the fourth section analyzes the question why a predatory conflict did not occur until the late 1990s, given the country's highly appropriable natural resources and kleptocratic regime. The fifth section concludes the essay.

Greed and Grievance in Congolese Conflicts

In this section, we briefly recapitulate some key features of conflicts in Congolese history with an emphasis on developments since the Rwandan genocide in 1994. In particular, the discussion will be structured around the distinction between two major motivations of civil wars; greed and grievance.

Background: 1960-1994

Congo gained independence from Belgium in 1960 but immediately fell into a state of chaos and disintegration. In 1965, Colonel Joseph Mobutu seized power through a coup quietly approved by the Western powers, changed the country's name to Zaire and his own to Mobutu Sese Seko. Zaire became an important pawn in the Cold War as an African bastion of anti-communism. This helped Mobutu to hold his gigantic and ethnically divided country together. When rebel movements threatened to overtake parts of the country in 1964 and in 1977-78, Western powers intervened with military support (Schatzberg, 1997). Even during the last months of Mobutu's reign in 1997, France allegedly organized the hiring of foreign mercenaries in order to avoid the dictator's fall from power[2] (Callaghy, 2001).

In the 1970s, Mobutu and his cronies seriously started to lay their hands on the country's wealth. In a process called 'Zairianization', key economic sectors were put under direct state control (Nzongola-Ntalaja, 2002). Mobutu's kleptocratic regime was coupled with poor growth rates and a mounting public external debt. International donor pressure and the end of the Cold War finally forced Mobutu to abandon one-party rule in 1990. He also became more marginalized as the government in Kinshasa assumed some of his former powers. But Mobutu would make an unexpected comeback on the world scene.

The Rwanda Genocide and the War Against Mobutu: 1994-97

To understand the insurgency against Mobutu in 1996, it is necessary to recount earlier developments in neighboring Rwanda. Rwanda's two major ethnic groups, the Hutu and the Tutsi, had fought a small-scale civil war since 1990 when an army of Tutsi rebels (RPA), hosted and supported by Uganda, invaded the country. The dramatic turning point happened

in 1994 when Rwanda's Hutu president Habyarimana was killed along with Burundi's president after their plane was shot down. Although it is still not clear who was responsible for this attack, extremist Hutu groups drew their own conclusions and soon started a systematic genocide on the civilian Tutsi minority in Rwanda. According to some estimates, around 800,000 people were killed in a few months (Nzongola-Ntalaja, 2002).

The RPA and its leader Major Colonel Paul Kagame managed to conquer Kigali and oust the Hutu government. Fearing Tutsi revenge, around 1.2 million Hutu, including some 40,000 of the militia responsible for the genocide, fled to the North and South Kivu provinces in neighboring Zaire (Emizet, 2000). At this point, Mobutu saw an opportunity to regain the initiative. He accepted to host the refugees on Congolese soil and thereby became a partner to international aid organizations. The move also allowed him to regain some respectability, at least in the eyes of the French who once again embraced him (Reno, 1998). At the same time, Mobutu used the inflow of Hutu to instigate hostilities towards the Banyamulenge, a people of Tutsi origin who had lived in eastern Congo for generations. The parliament even decided that the Banyamulenge should lose their citizenship. In October 1996, the governor of South Kivu ordered the Banyamulenge to leave their homes within a few days. In desperation, they turned to their Tutsi cousins in Rwanda for help.

The new rulers in Rwanda had an even greater grievance on their hands. The Hutu militia used the refugee camps in Kivu as a base for attacks against the Tutsi-dominated regime in Rwanda. Helped by Mobutu, they became a serious threat to the new government's security. In September 1996, the RPA joined the Banyamulenge and attacked the Hutu refugee camps on Congolese soil. They were soon joined by several anti-Mobutu rebel groups and engaged in battles against government forces.

Among the groups that joined the rebellion was a small one called PRP led by Laurent Kabila. Kabila belonged to Lumumba's socialist faction in the 1960s, but after Mobutu's consolidation

of power Kabila and his men withdrew to the South Kivu mountains where they formed something of a mini-state. Not much is known of his activities from then on, except that during long periods he made a living as a gold smuggler (Schatzberg, 1997). From late 1996 he suddenly appears as the leader of the newly formed Alliance of the Democratic Forces for the Liberation of Congo (ADFL). It was therefore suspected that Kabila was something of a puppet, at least initially; suspicions that were later confirmed in interviews with Rwanda's strongman Paul Kagame. In Schatzberg's (1997, p 80) words: 'From the Rwandan perspective, Kabila was a familiar face who may simply have been in the right place at the right time. Rwanda was the Godfather of the Congolese rebellion.'

The ADFL and their Tutsi comrades were immediately remarkably successful. Mobutu's unpaid army, which he had kept weak and divided so that it would not pose a threat to himself, melted away as the Tutsi veterans approached. During their march westwards, some 200,000 Hutu refugees were allegedly killed (Emizet, 2000) and conquered mines were looted.[3] The old Cold War allies Belgium and the United States declared that they would no longer come to Mobutu's rescue. Only France, frightened by the prospect of an English-speaking new regime, remained Mobutu's friend to the bitter end. On 17 May 1997, Kinshasa surrendered to Kabila's troops and the old dictator fled the country.

The Great African War: 1998-

Early in his presidency, Kabila showed signs of moving towards one-man rule. His control over state resources was highly personalized, and public enterprises were not managed in any long-term sense of the word but rather used to rapidly generate finances through indiscriminate concession granting (Panel of Experts, 2001b). Corruption, patronage and lack

of accountability came to characterize Kabila's presidency, rather than the hoped for democracy and national development.

Kabila's alliance with Rwanda and Uganda was strong immediately following his rise to power. His government contained many Tutsi (both Rwandan and Congolese) and Banyamulenge in top political and military positions. According to Clark (2001), this placed a strain on Kabila's legitimacy as most Congolese regarded them as foreign occupiers, which in turn lead Kabila to marginalize the Tutsi and Banyamulenge members of his administration. We believe that a more plausible explanation for this action is that Kabila, perhaps inspired by the actions of Mobutu before him, was desirous of keeping the financial gain from Congo's resources for himself. Whatever the explanation, Kabila dismissed a Rwandan military officer of Tutsi ethnicity as chief of staff for the Congolese armed forces in July 1998. He then went one step further, sending the commander and his Tutsi Rwandan comrades-in-arms back to Rwanda on July 27th 1998. This move was an apparent attempt to pre-empt a coup, and was a direct cause of the rebellions that took place in both Goma and Kinshasa six days later (Nzongola-Ntalaja, 2002).

After the failure of these rebellions, troops from Rwanda and Uganda entered Congo in August 1998. Both countries stated security reasons for the deployment (Nzongola-Ntalaja, 2002; Clark, 2001). The crisis escalated when Rwandan troops, with some support from Uganda, attempted to seize Kinshasa. At this point, Zimbabwe and Angola intervened on behalf of the Kabila government, saving it from collapse (Clark, 2001). Namibia, Chad and Sudan would later join Kabila's allies, although Chad and Sudan withdrew relatively early.

Angola entered the war in Congo primarily for security reasons; UNITA rebels had been using Congo to launch attacks on Angola. Namibia had no immediate security concerns (although they may have feared a spill-over into their territory if the conflict in Angola got out of hand), but rather supported Kabila based on a decision by President Nujoma, which was

mostly symbolic in nature (Panel of Experts, 2001b). Zimbabwe does not share a border with Congo, and did not face any security threats. The reasons for their involvement seem to be related to investments made in Congo by the government and Zimbabwean businesses (Panel of Experts, 2001b; Nzongola-Ntalaja, 2002).

Economic gain appears to have been a powerful motivator in this war, and there is a general consensus that Rwanda's and Uganda's armies quickly began to shift their attention to commercial enterprise and exploitation. The gains from these activities were used to enrich the governments involved, finance the continuation of the war, and pay individual soldiers.

The plunder of Congo's natural resources took place in two phases. The first involved the wholesale looting of existing stockpiles and took place in the occupied regions of Congo during the first year of the second war. The second phase involved systematic extraction and export of natural resources. This phase involved both foreign and Congolese actors. Both phases were greatly facilitated by the strong transportation networks put in place during the first war (Panel of Experts, 2001a).

Economic data collected by the UN illustrates the trends in mineral exports in Uganda and Rwanda for the years 1994 to 2000 (Table I below) and the trends in mineral production in Rwanda for the years 1995 to 2000 (Table II below).[4] The figures in Table I are compromising for several reasons. Firstly, the annual production of gold in Uganda ranged between 0.0015 and 0.0082 tons while exports over the same period ranged between 0.22 and 11.45 tons. Secondly, Uganda had no reported coltan or niobium production after 1995, while exports increased steadily between 1997 and 1999. Finally, neither Uganda nor Rwanda has any known diamond production.

(Table I in here)

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The figures in Table II also reveal suspicious trends, notably the surge in gold and coltan production beginning in 1997; the same year Rwandan-backed troops began to take over power in Kinshasa.

(Table II in here)

Similar figures for Angola, Namibia and Zimbabwe do not reveal any suspicious trends.[5] In the case of Zimbabwe, however, there is evidence of extensive commercial activity in the form of joint ventures and mining concessions (Panel of Experts, 2001a; Nzongola-Ntalaja, 2002).

Natural resource extraction, particularly mineral extraction, fuelled the continuation of the conflict in Congo. Rwanda's military benefited directly from the war in various ways. The most significant of these has been the extraction of coltan, the price of which rose phenomenally between late 1999 and late 2000. The UN estimates that the Rwandan military could have been selling coltan for as much as $20 million per month. This allowed Rwanda to continue its presence in Congo, protecting individuals and companies who provided minerals. In some cases, the Rwandan army went so far as to attack rebel groups in order to appropriate their coltan supplies. While the Ugandan government was not directly involved in the extraction of natural resources, it did not take action against military and businessmen who participated in this activity (Panel of Experts, 2001a).

Several events have improved the chances of ending the conflict in Congo. The first is Joseph Kabila's rise to power after the assassination of his father in early 2001. The younger Kabila has shown interest in finding a solution to the conflict and reinstating democracy in Congo. Agreements focusing on the transition of the Congolese government towards democracy have been signed, and foreign troops have withdrawn from Congolese soil. However, optimism must be tempered given the persistent fighting between rebel groups in the northeastern part

of Congo (United Nations, 2002, 2003). This has led the UN to adopt Resolution 1484, which authorizes the deployment of UN peacekeepers until 1 September, 2003.

Congo has experienced two wars in a rather short period of time. Both wars were sparked by grievance (Mobutu's attacks on Tutsi and Banyamulenge in the first war, Kabila marginalizing Tutsi and Banyamulenge, and his neighbors' security concerns, in the second), and involved many of the same actors. Despite these similarities, however, there are important differences. The war against Mobutu was relatively quick and effective, and resulted in his ousting. In contrast, the second war has been long and drawn-out, with sporadic fighting between armed groups. Kabila, unlike Mobutu, was able to hold onto power by virtue of his foreign allies. When his enemies found themselves unable to take control of Congo's resources directly, they turned their efforts to appropriating these resources through looting and extraction. This could only be accomplished by maintaining a military presence in Congo, which in turn prolonged the war.

The Model

In the section below, a general model of appropriative conflict in developing countries is presented that is primarily designed to explain the motives and the scale of the two recent wars on Congolese soil. In particular, our model shows that there is a greed and a grievance motive for potential predators that turn out to play very different roles. The model borrows some of its key features from the economics literature on conflict theory.

Agents

We assume a country or an economically integrated region with two categories of agents. The first comprises a ruler and his cronies who control a flow of natural resource rents, plus a relatively small group of urban people working in the formal, modern sectors of the economy who are loyal to the ruler. The second category contains the great majority of ordinary peasants or workers who normally engage in subsistence activities but who might also choose to start a predatory aggression. This category might also include people in small neighboring countries who share a similar cultural background and who are disproportionately affected economically by the actions of the ruler.[6] Let us assume that the latter category consists of n individuals. We assume that these diverse groups of people have solved the problem of internal coordination of interests so that they act like a single, rational individual.

These individuals can choose between two activities; peaceful, informal production or more or less violent predation on the ruling group's natural resource rents. Labor is allocated so that $n = l + r$ where l is the number of people in informal production and r is the labor devoted to predation. The group's income from predation is $p\gamma R$. This income forms the 'greed' motive for starting aggressions against the ruler. In the expression, R is the total world market value of the rents from natural resources like copper, cobalt, and diamonds. Out of the total flow, a fraction γ of total resources is diverted by the kleptocratic ruling group as a means of personal enrichment and is available for predation.

Out of the total value γR that can be conquered, the predators manage to lay their hands on a share $p < 1$. This share is given by a typical 'contest success function':[7]

$$
p \quad = \frac{r}{r + \theta d} = \frac{1}{1 + \frac{\theta d}{r}}
\tag{1}
$$

The variable d measures the resources that the ruler devotes to defending his natural resources riches while θ reflects the relative strength of defense. The latter parameter is meant to

capture both the effectiveness of the domestic forces as well as the strength of foreign alliances with countries that do not fall into the 'potential predator'-category.[8] If several countries support the ruler, θ will be large whereas it will be small if there is external support for the predatory groups.[9] We will discuss this parameter more below. It is easily shown that the predation success function in (1) has the following properties:

$$\frac{\partial p}{\partial r} > 0; \quad \frac{\partial^2 p}{\partial r^2} < 0; \quad \frac{\partial^2 p}{\partial r \partial d} \leq 0 \text{ or } \frac{\partial^2 p}{\partial r \partial d} \geq 0; \quad \frac{\partial p}{\partial \theta} < 0 \tag{2}$$

In other words, p is a positive, concave function of r so that there are diminishing returns to increasing predatory effort. At low levels of d, the marginal impact of r increases with d whereas at higher levels, the reverse is true. Finally, an increase in the relative efficiency of defense θ strictly decreases the share that the predators conquer.

The peaceful alternative to predation is informal subsistence production. The production function for this strategy is

$$q = A_P l \tag{3}$$

In this expression, q is total output, A_P is a measure of labor productivity in the informal sector and l is the allocation of labor to production. In line with much of the recent empirical literature on comparative development (Knack & Keefer, 1995; Hall & Jones, 1999), A_P might be thought of as reflecting the level of technology or the quality of institutions prevailing in the informal sectors of the region's economy. It incorporates aspects like the rule of law, strength of private property rights, and protection against random government expropriations. The ruler and his government are the key players in determining the level of A_P. As we shall see, A_P might differ from factor productivity in the formal sectors, A_E, due to

intentional discrimination efforts by the ruler. Workers in the informal sector do not pay taxes to the government and thus retain all that they produce.

Individuals in this group receive utility either from production or predation. By combining the equations above, we can form the following utility function for ordinary people:

$$U_P = \frac{\alpha \gamma R}{1 + \frac{\theta d}{r}} + A_P(n - r)$$ (4)

The first term on the right-hand side is utility from predation and the second utility from production. Note that the utility function above is constructed so that the control variable is r, the allocation of labor to predatory activities.

Let us then consider the ruling kleptocratic elite. This group controls a flow of natural resource rents R, which is used for three purposes. We have already mentioned that a fraction γR is used for their own personal enrichment. The remaining part, $(1-\gamma)R$, is split between defense spendings d and investment in public utilities k. Whereas private wealth γR might be conquered by the predators, the defense and public utility spendings are not natural targets for predation. Defense in this setting should be thought of as a private army of security forces, loyal only to the kleptocrat and whose primary purpose is to defend the ruler's personal riches. All in all, the ruling group therefore faces the budget restriction:

$$k + d = (1 - \gamma)R$$ (5)

We assume that the ruling group gains utility from personal enrichment and total formal sector income according to the function below:

$$U_E = (1 - p)\gamma R + A_E(h + k) \tag{6}$$

The ruling group succeeds in defending a share $(1-p)$ of their personal riches γR against the predators. Note that if $\gamma = 0$, the utility function above depends only on formal sector income, as in standard growth models.

Total output from the formal sector is $A_E(h + k)$ where A_E is productivity in the formal sector, h is human capital faithful to the ruler that is employed in the formal sector, and k is public utilities provided by the ruler.[10] As was the case with informal sector productivity, A_E reflects the institutional framework created by the ruling elite. In a society with a benevolent ruler, the same basic laws and rights should apply to both sectors so that $A_P = A_E$. However, this is seldom the case in reality. The normal situation is rather that the formal sector is strongly favored, perhaps because it is made up of people belonging to the same ethnic group as the ruler.[11] A_P might fall in a neighboring country if the ruler is harboring groups disruptive to the economic conditions in that country. In extreme situations, ordinary subsistence farmers might even be deprived of their citizenship, as happened to the Banyamulenge of Eastern Congo in 1996 on Mobutu's initiative. In such a scenario, A_P would be extremely low. Let us therefore define $A_E / A_P = \hat{A} \geq 1$ as a measure of discrimination or of 'institutional grievance', based on deliberately created differences.

By exploiting (1) and the fact that (5) implies $k = (1-\gamma)R-d$, we can rewrite the expression for welfare as:

$$U_E = \frac{\theta d\gamma R}{r + \theta d} + A_E\left(h + (1-\gamma)R - d\right) \tag{7}$$

The noteworthy feature of this welfare expression is that the ruling group's key control variable d enters as a positive influence on $(1-p)$, i.e. a greater d increases the share that the

kleptocrats retain in the appropriative struggle, whereas a greater d also crowds out investments in public utilities and hence decreases tax incomes. There is thus a trade-off to be made between using natural resource rents for productive ends (k) or for securing the elite's wealth (d). This equation completes the description of the basic model.

The Game and Its Solution

The appropriative struggle between the predators and the ruling group assumes the form of a two-stage game where the kleptocrats move first as leaders, taking into account the known response from the potential predators. In the second stage, the predators move and take the ruling group's choice as given. The kleptocrats' choice variable is the level of d whereas the people choose the optimal level of average predatory activity r.

The game is solved by using backward induction. Hence, we start at the second stage with the people's move. Let us assume that the people are able to coordinate their actions in case of a conflict so that they rise as one opponent against the ruler. They therefore maximize (4) with respect to the choice variable r. The first-order conditions for maximum are:

$$\frac{\gamma R \theta d}{\left(r^* + \theta d\right)^2} - A_P : \ \leq 0, \ r^* = 0$$
$$= 0, \ r^* > 0$$

(8)

The case in the upper row describes a corner solution where $r^* = 0$ is the optimal choice. In the lower case, however, an interior solution exists. The negative sign in the second-order condition further shows that what we have is a maximum and that U is a concave function of r.

If we have a solution $r^* > 0$, the first-order condition implies that

$$r^* = \sqrt{\frac{\theta d \gamma R}{A_P}} - \theta d \qquad (9)$$

This expression defines the predatory alliance's reaction function to the ruling group's defense spendings, d. Differentiation shows that $r'(d) \leq 0$ or $r'(d) \geq 0$, $r''(d) < 0$, and where $r\left(\frac{\gamma R}{\theta A_P}\right) = 0$. Hence, r^* initially increases with d and then decreases until r^* intersects the d-axis, as shown in Figure 1. The area where $r^* > 0$ might be referred to as the 'conflict zone'. At higher levels of d, there will be no predation and no conflict equilibrium.

We might restate this finding as a Lemma:

Lemma 1. *A predatory aggression will occur only if $d < \tilde{d} = \frac{\gamma R}{\theta A_P}$*

We will analyze the different possibilities below.

Since the ruling elite has the role of a Stackelberg leader in this game, they take the people's reaction function as given in their own optimization. By inserting r^* into (7), we can derive the first-order condition:

$$\frac{\sqrt{\theta \gamma R A_P}}{2\sqrt{d^*}} - A_E = 0 \qquad (10)$$

From here, we can solve for the ruling group's optimal level of defense:

$$d^* = \frac{\theta \gamma R A_P}{4 A_E^2} = \frac{\theta \gamma R}{4 A_E} \cdot \frac{1}{\hat{A}}$$ (11)

From this simple expression, we receive some clear results:

Proposition 1. *The ruling group's optimal defense effort increases with γ, R, θ and A_P and decreases with A_E.*

The result that the kleptocratic ruler and his cronies increase defense efforts with the size of their own enrichment γR, is logical. So is the fact that defense spendings decrease with productivity in the formal sector, A_E. A high A_E means that the opportunity cost of d is high. Less obvious perhaps is the finding that d^* increases with the quality of defense technology θ. The intuition behind this result is that a high θ means that the marginal returns of an extra million in defense spendings is relatively high. Hence, the prediction is that kleptocratic regimes with a relatively advanced private army will spend more on defense than regimes with an inefficient defense. The result regarding A_P can be explained in a similar manner: A high A_P means that r^* will be small (see equation (9)), which means that the marginal benefit of an extra million in defense spendings is high.

Since the kleptocrats are Stackelberg leaders, the optimal level d^* is also the equilibrium level. By comparing this value with the critical level for conflict in Lemma 1, we obtain the following result:

Proposition 2. *A Stackelberg equilibrium with a predatory conflict will exist only if θ < 2Â.*

Proof. From Lemma 1, we know that a predatory conflict, i.e. $r^* > 0$, will break out if

$$d^* = \frac{\theta \gamma R A_P}{4 A_E^2} < \tilde{d} = \frac{\gamma R}{\theta A_P}.$$ By manipulating this inequality comparison yields the result that

$d^* < \tilde{d}$ if $\theta < 2\hat{A}$.

What this result tells us is that a predatory aggression, i.e. an equilibrium inside the conflict zone in Figure 1, will occur if the ruling group's relative strength of defense θ is low and if grievance in terms of institutional differences $\hat{A}$ is high. This simple condition nails down what might be referred to as the 'trigger factors' that determine the timing of a conflict[12].

The interesting finding is the key role for the grievance term $\hat{A}$. Should institutional differences pass the critical threshold $\theta/2$, predation will become a relevant alternative and a part of the informal labor force n will initiate a conflict.

Equally interesting is what is not included in the Proposition; the greed motive γR. As long as $\gamma R > 0$, the size of natural resource rents or the nature of the ruler's enrichment strategy will not matter in the decision whether to start a conflict or not. Natural resource wealth is therefore not a trigger factor. We will discuss this aspect further below.

The second major result in this section concerns conflict intensity, once a predatory insurrection has been initiated. We define conflict intensity as the total resources devoted to the struggle. The equilibrium overall intensity of appropriative conflict can be calculated to be

$$r^* + d^* = \frac{\theta \gamma R}{4 A_E} \cdot \left(2 + \frac{(1-\theta)}{\hat{A}} \right) \tag{12}$$

The implications of this result can be summarized in a proposition:

Proposition 3. *The equilibrium level of total conflict intensity $r^* + d^*$ increases with R, γ, and with θ if θ < $\hat{A}$ + 0.5 and with $\hat{A}$ if θ > 1 and decreases with A_E.*

In other words, given a conflict equilibrium, high levels of γ and R unambiguously increase the intensity of conflict. Thus, whereas natural resource rents might not be the igniting factor of a conflict, it is a structural factor that increases its intensity. This result appears to be well in line with what has been observed in civil wars in natural resource-rich countries such as Angola, Sudan, and most importantly, Congo. This also forms part of an explanation to the curse of natural resources that has been noted by several economists.

Defense technology θ has a concave relationship with conflict intensity. When defense technology is ineffective, an improvement in quality increases conflict intensity whereas the reverse is true at higher levels of θ. Once again, the relation between θ and $\hat{A}$ is crucial.

Another important result is that conflict intensity increases with $\hat{A}$ if the ruling group has a military strength in the interval $θ \in (1, 2\hat{A})$. If the ruler has an ineffective defense so that θ < 1, conflict intensity decreases with the level of grievance. What this implies is that if the kleptocrats want to reduce the fighting, they will do so by trying to decrease grievances only if they have a relatively effective defense. A ruler that is very weak militarily will only aggravate the fighting by improving the predators' institutional environment. Hence, the role of grievance is not as clear as the role of greed for understanding conflict intensity.

In summary, the model shows that whereas the grievance motive - defined as institutional differences between the formal and informal sectors - typically is a key factor for explaining the outbreak of violent aggression, the greed motive is a primary determinant for understanding the scale of the conflict.

Analysis

While both the war against Mobutu and the war against Kabila share a number of features, and hence are difficult to distinguish as two completely separate wars, there are a few key differences. In this section we analyze both wars according to the model presented above and explain why the two wars are the same in some respects and differ in other respects.

The first issue that will be addressed in this section is the timing of the two most recent wars in Congo. In a huge and ethnically divided country such as Congo, one would certainly have expected natural resource-driven conflicts to develop. After all, in a neighboring state such as Angola, a civil war with strong elements of appropriative conflict had been going on since the 1980s. So why didn't Congo experience the same type of war until the mid-1990s?

We believe that our model provides an answer to this puzzle. Proposition 2 states that a predatory conflict will break out only if $\theta < 2\hat{A}$. As noted above, neither ruler's degree of kleptomania γ nor the value of natural resources rents R thus affect the decision. The intuition is simply that γR is as precious to the ruling group as it is to the predators. If γR increases, the allocation of labor to predation will tend to increase. However, ruler's defense spending will increase as well, which deters the potential predators. The effects cancel each other out.

Proposition 2 rather suggests that the triggering factors of the two wars were $\hat{A}$, the institutional measure of grievance, and θ, the relative strength of defense. We will address the war against Mobutu first. While institutional quality has long been poor in Congo, it was Mobutu's direct actions against the Banyamulenge, coupled with his lack of action against Hutu militia on Congolese soil, that tipped the balance and widened the gap between A_E and A_P (i.e. increased the size of $\hat{A}$). At the same time, θ was falling. When government forces faltered in the 1977-78 rebellion, Mobutu's 'troika' of Cold War friends (United States, Belgium, and France) came to the rescue with more or less direct military support. Despite the

fact that Mobutu's own army was weak and ineffective, he knew he could count on the military support of his allies, which in turn kept θ artificially high. All that changed with the end of the Cold War. Abandoned by his powerful allies, Mobutu's crumbling army was easily swept aside by Kabila's ADFL in 1996-97.

The war against Kabila was also triggered by institutional grievance. Despite strong relations with Rwanda and Uganda in the beginning of his presidency, Kabila was accused of mismanaging security issues along the Rwandan and Ugandan borders. Kabila then denounced the alliance with the Tutsi and sent them back to Rwanda in July 1998, which could be interpreted as a worsening of the institutional climate for the Tutsi in Congo and thus also for their fellow tribesmen in Rwanda. As a result, A_P fell and $\hat{A}$ became large once again. In addition, θ fell nearly to zero when Kabila's allies became his enemies. Hence, both the war against Mobutu and the war against Kabila were triggered by institutional grievance coupled with weak defense.

The second issue that we would like to raise in this section concerns the scale of the conflict. For many years, Congo managed to stay together and in peace, but by the time the war against Kabila broke out, it involved the whole region. Proposition 3 is the key for understanding this scenario. Whereas the level of γR does not affect the decision to start a conflict, once it had been started, equilibrium conflict intensity increases linearly with γR. We have already discussed the extremely high natural resource rents R that were an important motivation for many of the players.

This raises the question why, given both a large R and a high γ, the war against Mobutu did not evolve into a drawn-out predatory conflict? The evidence in Tables I and II suggest that both Rwanda and Uganda began to exploit Congo's natural resources during the first war, which would lead one to expect a predatory conflict to evolve. The answer lies instead in the value of θ, which fell to zero once Mobutu's weakened forces were defeated. As can be seen

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from Proposition 3, once θ becomes zero, the entire expression becomes zero. Hence, once Mobutu's forces were defeated, the conflict ended. Further, Rwanda and Uganda had seen to it that a man who (they believed) was loyal to them was put in power. It is quite plausible that Rwanda and Uganda had hoped to take over the role of kleptocratic leaders indirectly, via Kabila.

When Rwanda and Uganda turned on Kabila, initiating the second war, θ once again fell to a level close to zero. It is almost certain that Kabila would have suffered the same fate as his predecessor had Angola and Zimbabwe not intervened. While the support of these allies raised θ significantly, it was not enough to decisively end the war. In other words, the relationship $\theta < 2\hat{A}$ from Proposition 2 still held. Furthermore, Proposition 3 tells us that when $\theta < \hat{A} + 0.5$, an increase in θ increases the equilibrium level of conflict intensity. Therefore, when Angola and Zimbabwe raised θ, they also increased the intensity of the conflict.

Two other variables that become crucial to conflict intensity are R and γ. As noted above, Congo is a country rich in natural resources, so R has always been large. Many circumstances suggest that when Kabila had completed his conquest of the country, he continued his predecessor's tradition and simply replaced Mobutu with 'Mobutuism' (Callaghy, 2001). Therefore, γ remained high under his rule. These factors combined provided Rwandans and Ugandans with the incentive to prolong the conflict in order to appropriate as many natural resources as possible. Furthermore, the nature of many of these resources made extraction and selling relatively easy. This in turn provided the actors involved with a steady stream of finances, which facilitated the continuation of the war.

Another factor that helps to explain the scale of the conflict is the country's general level of productivity in the formal sector, captured in our model by A_E. Conflict intensity in Proposition 3 decreases linearly with A_E. The parameter might be seen as an indicator of the opportunity cost of conflict on the part of the ruler. So, while the relationship between A_E and

A_P (i.e. $\hat{A}$) determines the timing of the war, it is the absolute level of A_E that affects the overall level of conflict intensity. After decades of extortion and mismanagement, Congo's general level of total factor productivity had deteriorated. Hall & Jones (1999) estimate Zaire's total factor productivity (a residual) for 1988 to be 16% of that of the United States and among the lowest in the world. When the same authors measure the quality of institutions, or what they call countries' 'social infrastructure', Zaire gets the lowest score of all 127 countries included in the sample (Hall & Jones, 1999, Figure 2).

The effect of $\hat{A}$ on equilibrium conflict intensity is more complex, because its influence acts in opposite directions in the r^* and d^* functions. When $\theta < 1$, the d^* component of $r^* + d^*$ dominates. As a result, $r^* + d^*$ decreases when $\hat{A}$ increases. When $\theta > 1$, r^* dominates, and conflict intensity increases with $\hat{A}$. It is not possible to know exactly what the situation was in the most recent war in Congo, but it is likely reasonable to assume that θ was relatively low, despite support from allies. Further, $\hat{A}$ could actually be falling, not due to an increase in A_P but rather a fall in A_E. It is therefore difficult to analyze the effect of $\hat{A}$ on conflict intensity in this case.

In summary, grievance coupled with ineffective defense on the part of the ruler pushed Congo into a predatory conflict equilibrium. Once the threshold was passed, the great abundance and value of natural resources, the extent of the ruling group's parasitic inclinations, the poor general quality of social institutions, and the relationship between grievance and the strength of defense all help to explain the dimension of the great scramble for Congo, which is estimated to have taken some 3 million lives.

Concluding Remarks

The purpose of this article has been threefold: to explain the two most recent wars in the Congo in terms of grievance and greed, to present a model that explains the mechanisms behind these two wars, and to answer the question why a predatory war did not take place in the Congo before 1998.

Based on the quantitative and qualitative evidence presented in the second section, we have concluded that the war against Mobutu was motivated primarily by grievance, interpreted as institutional differences between the ruling group and the people, even if greed likely played a role. The war against the Kabila regime in 1998 was motivated initially by grievance, but quickly evolved into a predatory war when Kabila was not immediately overthrown.

In the third section, we outlined a model of predatory war based on the framework of appropriative conflict theory created by Grossman (1991) and Hirshleifer (1991). The model takes the form of a Stackelberg game involving two categories of agents: the ruling elite who control the flow of natural resource rents and the majority of ordinary citizens who either engage in subsistence activities or participate in a predatory conflict. We have found that a predatory war will occur if the ruler's defensive strength is low and grievance (conscious differences in institutions) is high. The equilibrium level of overall conflict intensity increases with natural resource abundance, the degree of ruler appropriation and the general deterioration of institutional quality. The effect of grievance and ruler's defensive strength on overall conflict intensity depends on the somewhat complex relationship between these two variables.

In the fourth section, we address the reasons why, despite the Congo's long history of kleptocratic regimes and its abundance of natural resources, a predatory war did not occur

until 1998. We conclude that grievance and relative military strength were deciding factors; Kabila's allies provided him with enough military strength to keep from being overthrown, but not enough to defeat the aggressors. This led to a drawn out conflict, fuelled by the economic rewards of natural resource predation and worsened by poor institutional quality in the formal sector.

Table I. Mineral Exports: 1994-2000

| Year | Uganda | | | | Rwanda |
	Gold (tons)	Coltan (tons)	Niobium (USD '000)	Diamonds (USD '000)	Diamonds (USD '000)
1994	0.22	-	-	-	-
1995	3.09	-	0	-	-
1996	5.07	-	0	-	-
1997	6.82	2.57	13	198.3	720.4
1998	5.03	18.57	580	1 440	16.6
1999	11.45	69.5	782	1 813.5	439.3
2000	10.83	-	-	1 263.4[*]	1 788[*]

[*]As of October 2000

Compiled from Panel of Experts (No. S/2001/357)

Table II. Rwanda: Mineral Production, 1995-2000

Year	Gold (kg)	Cassiterite (tons)	Coltan (tons)
1995	1	247	54
1996	1	330	97
1997	10	327	224
1998	17	330	224
1999	10	309	122
2000	10	437	83

Compiled from Panel of Experts (No. S/2001/357)

Figure 1. Equilibrium Conflict Intensity
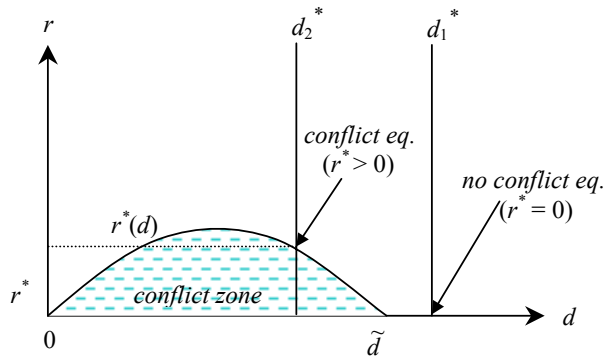
Notes

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[1]. See for instance Coakley (2000), Ngonzola-Ntalaja (2002), and United Nations (2003) for estimates of casualties and refugees.

[2]. This behavior might partly be explained by the words of President Mitterand's adviser on African affairs: 'Zaire is the most important Francophone country after France' (Ndikumana & Boyce, 1998, p 210).

[3]. Reno (1998) claims that the government-controlled diamond company MIBA had to pay a ransom of 3.5 million USD to Kabila when his rebels had captured the company's boss in April 1997.

[4]. These two charts help illustrate a fundamental difference in the way Rwanda and Uganda benefited from the extraction of natural resources in the Congo. Rwanda used the economic gains from their activities to fund further military action in the Congo; as President Kagame himself admits, the war in the Congo was self-financing. Uganda, on the other hand, has benefited mainly from the re-export economy, with gold exports greatly improving the balance of payments, and other natural resources generating revenues in the form of taxes and customs duties (Panel of Experts, 2001a).

[5]. Although both Angola and Namibia have received some concessions from the Kabila government, these are small and accepted by most experts as compensation for their involvement in the war.

[6]. In general, we believe that an analysis of civil wars in Africa that fails to consider the influence of actors in neighboring countries is incomplete. For instance, it is impossible to understand the present civil conflict in Liberia without discussing the roles played by supporting groups from Guinea and Ivory Coast. In the case of Congo, we would argue that the second category includes Ugandans and Rwandans (Tutsis) with close economic or ethnic ties to the Congolese.

[7]. One might think of p as a probability so that $p\gamma R$ is the expected income from predation. See Neary (1997) for a discussion of the properties of this class of functions. The particular form below follows Grossman & Kim (1995).

[8]. In the Congolese case, Angola, Zimbabwe, Sudan, and Namibia are considered to be such countries. These countries only got involved in the conflict as a response to the aggressions by other parties (Panel of Experts, 2001a)

[9]. Grossman (1999) assumes a stochastic θ so that rebels are uncertain about the actual strength of the incumbent ruler.

[10]. For simplicity, h and k are perfect substitutes in formal sector production.

[11]. A well-known example is the domination of the Kikuyu tribe in Kenya's post-independence administration and formal sector.

[12] We are grateful to an anonymous referee for suggesting this kind of terminology.

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