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The Opec Boys and the political economy of smuggling in northern Uganda

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Abstract: In this article, we unearth the institution for enforcement of the agreement between the Opec Boys, fuel smugglers and ex-rebels, and a politician, who allows them to conduct illegal smuggling. Rather than the Opec Boys' threat of rebellion, their promise of political support and refraining from civil disorder matters to inflict cooperation. A repeated play mechanism where the players punish each other for defection but return to cooperation makes up the 'rules of the game'. Uncovering this endogenously emerged institution for contract enforcement explicitly reveals the importance of political alliances in the second economy in a fragile state environment.

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1. The political economy of smuggling: A theoretical framework

The Opec Boys, a group of thuggish youth, many of them ex-rebels, are smuggling fuel from the Democratic Republic of Congo (DRC) to Arua, Uganda, where they sell it. This business is not at all run undercover but conducted with consent from local politicians who support the Opec Boys in many ways. What is more, the Opec Boys are considered strategic political players. This suggests an alliance between the 'ruler' and the Opec Boys. In what follows it will be uncovered why this coalition exists. Secondly, given the illegal nature of the trade, the state as a third party enforcer of their agreements is unlikely. We will explore how the two parties ensure commitment to their agreement by identifying what type of enforcement mechanism is at work and by discerning what threats are effective to make the agreement self-enforcing.

This study contributes to understanding the complex reality in a contemporary development context, often referred to as a fragile state, characterized by the absence of effective state enforcement and the presence of lingering low-intensity conflicts. This research is an endeavor in institutional analysis. It studies endogenously emerged economic institutions for property right protection and contract enforcement in the second economy. An additional innovation of this work is that it employs the analytic narratives approach (Bates *et al*., 1998; Greif *et al*., 1994; Greif, 1997; Gambetta, 1993), but rather than using historical data, the input is an in-depth ethnographic case study of the fuel smuggle in Arua, northern Uganda[1].

In northern Uganda access to property and economic opportunities are interrelated with political power and political relations which suggests that the economic and political system are intertwined. Therefore, studying the political economy of smuggling calls for a framework

[1] Field research carried out in Arua by author II from October – December 2005 and April-May 2007.

for analysis that permits to look at economic behavior and political behavior as being endogenous.

The theoretical framework adopted here is recently developed by North et al. (2006) building on other works in comparative political economy that combine the theory of economic behavior with the theory of political behavior (North, 1990, Acemoglu and Robinson, 2005, Barzel, 2001, Levi, 1988, Greif *et al*. 1994, Greif 1995 in: North *et al*., 2006; and Acemoglu, Johnson and Robinson, 2004). More specifically, North *et al*. (2006) argue that a 'limited access order', is a political economy arrangement that uses the political system to limit economic entry to create rents which serve to stabilize the political system and limit violence. Only a relatively limited group of elite, the dominant coalition, gets privileged access to resources and rents and therefore have an incentive to support the current regime, to strive for social stability and to suppress violence[2]. However, to avoid being overthrown, a coalition supporting the 'rulers' must have a predominance of coercive power. This implies that the coalition must also include those that have sufficient (coercive) power and resources to challenge the ruling coalition over control over the 'state'[3]. In arguing this, North *et al*. (2006) further develop the framework of neo-patrimonial politics, as analyzed by for example Chabal and Daloz (1999) or Bratton and Van De Walle (1997)[4].

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[2] Note that this theory and our study focus on agents' behaviour in this context and not on the origin of their relative power.

[3] 'State' is to be understood broadly here as it does not refer to a set of governing institutions that has sovereignty over a specific territory or nation-state. The more general concept 'polity', referring to any political organization of a group, could be used here.

[4] Cf. also Bayart (1997), Clapham (1982), Reno (1998)

Northern Uganda, on the border with DRC, the context dealt with in this article, is characterized by the near absence of political and economic competition, by frequent violence and by the importance of 'patron client' relationships. This article thus is an empirical study of a 'polity' under limited access order. One of the groups studied, the Opec boys, obviously is a group with potential of coercive power and potential to overthrow vested power structures. That is why they are included in the ruling coalition, are expected to give political support to the 'rulers' and as a reward they can exploit the 'monopoly' of the fuel smuggle in Arua and the wider region.

The 'polity' under limited access order can be viewed as an organization, made up of specific groups of individuals that all pursue a mix of common and individual goals through partially coordinated behavior. The relationships of the members of the organization are shaped by its institutional structure, or the commonly acknowledged patterns of interaction that govern and constrain the interactions of the different actors. Institutions in this sense are understood as 'the rules of the game' and are made up of both formal rules and informal norms and habits (North *et al*., 2006).

More specifically we look at a type of organization that is characterized by self-enforcing incentive compatible agreements among their members rather than relying on third party enforcement (North *et al*., 2006). Given that a state-actor entered a coalition with a group engaging in illegal fuel smuggle, the state as a third party enforcer is highly unlikely. In a situation like this the other option of a third party enforcer would be an alternative organization providing protection of property rights and contract enforcement (for example the mafia (Gambetta, 1993).

However, it is suggested that property right protection and contract enforcement in this type of social orders typically happens on the basis of personal exchange and privileges for

specific groups and exchanges are enforced by face to face repeated play mechanisms (North *et al*., 2006). Various case studies in new institutional economics have explored exchange and contract enforcement in the absence of effective third party enforcement (Clay, 1994, Milgrom, North and Weingast, 1990 in: Greif, 2000; and Bates *et al*. (1998), Greif *et al*., 1994, Greif, 1998). Comparing our case with this literature suggests that this is effectively the type of enforcement of agreements at work.

The concrete conceptualization of an institution that we will use here is that of a self-enforcing equilibrium of a repeated game in which agents mutually believe and which guides and constrains their actions (Aoki, 2001, Greif, 2006). Institutionalized 'social rules' provide retrospective agents with limited rationality with the necessary information and cognitive model to choose behavior (Greif, 2006). As each agent bases his actions and beliefs on these common 'social rules' they are reproduced by behavior and beliefs of all agents. Thus they are self-enforcing and have become institutionalized in this way. It also implies that the only social rules that can be institutionalized or become common knowledge are the rules that each individual finds optimal to follow and thus are an equilibrium of the game.

As such this article is an empirical study of an endogenous economic institution for enforcement of agreements that came to exist within the organization being the coalition of the Opec Boys and the politician. This commonly acknowledged pattern of interaction that governs and constrains these agents' relationship has evolved over time and is accepted by both the Opec Boys and politicians as the 'rules of the game'. This study can therefore be labeled as applied institutional analysis.

2. The Opec Boys: Fuel and politics

The Opec Boys started their activities after most of the population of West Nile returned from exile in Sudan or DRC in the mid-eighties, with little jobs available, a growing demand for fuel and no filling stations present. As fuel in the DRC is taxed less than in Uganda, once smuggled to Arua, they manage to sell their fuel at a cheaper price than the official (Ugandan taxed) petrol stations. From Arua town, they also provide fuel to the wider West Nile region through sub-divisions of the Opec Boys. The Opec Boys together constitute about 300 men and are divided into several sub-groups but have an overarching committee - with a chairman, secretary, treasurer - that coordinates their activities[5].

The transborder fuel smuggle is situated in the 'second economy' and is obviously illegal in the sense that taxes are evaded at large scale. One would expect this business to be run undercover but it is conducted surprisingly open. Within Arua town, the Opec Boys openly sell their fuel in jerry cans on literally almost every street corner. And what is more, local politicians consider the Opec Boys to be strategic political players and assist the Opec Boys in various ways.

Two risks seem to be of crucial importance in informing the attitudes of the politicians towards the Opec Boys. First, the Opec Boys are the most important provider of fuel in Arua town. Arua only has three 'official' petrol stations which are by far not enough to meet the demand of fuel, as Arua is an important trading centre in the wider region (Uganda, DRC, Sudan). If they would stop selling fuel, this would provoke a fuel crisis in the whole of the West Nile region and in the cross border trade between Uganda, Sudan and the DRC.

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[5] For more information on the Opec Boys, their history, structure and activities, cf. Titeca (2006), Titeca and Vervisch (forthcoming).

Secondly, there is a general feeling that the Opec Boys could take up arms and turn to rebellion again if pushed out of the fuel business – certainly in the light of the relocation and proximity of rebels groups such as the Lord's Resistance Army or Allied Democratic Forces in the nearby DRC[6]. As the Mayor of Arua town states: 'These boys can be though; they are former soldiers and rebels. They are dangerous and could go back to the bush if not treated carefully'[7]. An estimated 40% of the Opec Boys are former combatants: most of these former combatants are ex-rebels from the many rebel movements which have been active in the area, while others are defected government soldiers (Gersony 1998; Titeca 2006). After receiving amnesty, the ex-rebels, often without education, land or other assets, were easily drawn into the smuggling business. Moreover, many ex-combatants have not handed over their weapons to the authorities (CERFORD 2002), in an area in which decades of armed conflict already resulted in an abundance of available light weapons.

What is more striking is that the Opec Boys, a group of thuggish youth, takes up social responsibilities and are well respected in the community. In a region which considers itself strongly neglected, betrayed and marginalized under the current Museveni government, the Opec Boys are locally seen as 'survivors' whose activities not only provide employment for themselves but also support their (extended) families. This respect is further enhanced by the fact that they act as protective force for other marginalized groups within society. For example, when small kiosks had to be relocated in Arua town in early 2007, they staged a

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[6] The West Nile region has a long history of rebel groups (Leopold 2005); and although the rebel groups have ceased to exist, these ex-rebels still have deep-rooted feelings of marginalization. A factor which is enhanced by the fact that the government is not fulfilling its promises on the amnesty.

[7] Interview Mayor Arua 11-04-07. This view is confirmed by various other actors, such as the URA Customs Enforcement Unit officer 21-11-05, sub-county chairpersons 01-05-07, local trader 11-04-07 and so on (cf. Titeca,2006).

(successful) protest against this decision. On top of this, the Opec Boys are important actors of conflict-resolution within the community. They are preferred to the police for solving issues of disputes and theft, as they are deemed quicker (their presence all over town enables them to rapidly solve cases of theft), more efficient (through their violent methods of corporal punishment) and less corrupt than the police (Titeca, 2006).

Yet, through this position of general respect and the services they deliver, the Opec Boys are key-players in the political game. Locally, people are convinced they can change the public opinion on politicians - according to the mayor of Arua town 'almost overnight'[8]. Much of this has to do with their dominant and visible presence in town, their respected status and their firm connection with numerous other urban groups – with people in the transport sector (motorcycle and vehicle taxis and drivers; loaders and off loaders), with petty traders as well as with owners and customers of small restaurants, pubs, disco's and khat chewing places they are frequenting. Moreover, as many of the Opec Boys are Aringa, a Muslim sub-group of the Lugbara ethnic community, they have a voice in the mosques in town. These various networks permit them to quickly rally support behind politicians, but also allow them to quickly provoke disorder to spill over to the community. Because of their loud and rowdy nature they also are an important force in electoral campaigns. Mobilized as a group (and given fuel for their motorcycles) they draw the attention towards the rally and create the impression that '(…) the politician is on the winning side with a lot of support!'[9]. And conversely, their actions and mobilization equally allow them to boycott and 'break'[10] politicians.

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[8] Interview Mayor Arua 11-04-07.

[9] Interview local businessman, Arua, 18-04-07.

[10] Interview Opec Boy 23-11-05

In return, politicians are compelled to provide several services to the Opec Boys. Most importantly, the politicians make sure certain 'rules' are respected with regard to harassment and confiscation of the smuggled fuel by the revenue authorities and police. Firstly, they ensure no fuel is confiscated within town and confiscation out of town remains limited; and secondly, they make sure the revenue authorities and local authorities do not use disproportional force against the Opec Boys. In addition, they have been linking them with donors or have helped them to write project proposals through which the Opec Boys have accessed additional funding, for example to start a savings- and credit association. They also provide them with material assistance – many Opec Boys consult politicians in case of financial problems such as sickness or problems with school fees for their children.

3. The political economy of fuel smuggling in Northern Uganda: The rules of the game

From the above narrative, it is obvious that the Opec Boys are a group with the potential to instigate violence and challenge the vested power structures; hence the need to include them in the ruling coalition in Arua, as the theory of limited access orders suggests (North *et al*., 2006). This explains why politicians tolerate the smuggling business of the Opec Boys even if they could easily crack down on the fuel smuggle, encourage legal fuel trade and tax the fuel business. However, the Opec Boys are rewarded for their social and political support with rents created by limiting entry. They are granted the exclusive right to exploit 'the border' - the only valuable resource in this region - and to engage in fuel smuggling. This kind of agreements is typically observed in this type of social order.

Under these conditions, agreements between coalition members are typically enforced by repeat-play mechanisms rather than by a third party (North *et al.* (2006). In what follows, the endogenous institution for contract enforcement that arises in this organization is studied using the analytic narrative approach (Bates *et al*., 1998; Greif *et al*., 1994). Based on case

study observations, we systematically look for the rationale behind the strategic behavior of the players using game theory. We start by defining the game that is likely to be played, identifying the players, the potential strategies of each player and payoff associated with the different outcomes of the game. Next, we consider the type of enforcement mechanism and whether repeating the game we defined can be the basis for 'contract' enforcement thereby discerning what threats are effective to make the agreement self-enforcing.

3.1. The players

Only the enforcement of the agreement with regard to the fuel smuggle between the Opec Boys and a politician, is considered here, although the ruling coalition may consist of many players with various pacts and agreements. The institutionalized contract enforcement is modeled through a game played by two players. One of the players in this game is a politician[11].

The Opec Boys operate as a group and are considered one player as such. The Opec Boys are a membership organization and a financial contribution is due[12]. The members are motivated relying on a system of beliefs, in this case on a rhetoric of marginalization[13]. Together with a

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[11] The politician dealt with can change occasionally following elections, but the institutionalised, commonly known rules each time guide interactions between Opec Boys and a politician. Obviously, limiting the game to be played between the Opec Boys and only one politician is a simplification of reality.

[12] The association of the Opec Boys also provides informal credit and insurance and 'business' information is shared to an extent (on business partners in DRC, transporters, clients, etc.).

[13] Skaperdas (2001), studying groups involved in organised crime like mafia and gangs, observes that these 'develop and articulate cultures and ideologies, systems of beliefs about the world that have a certain internal logic that outwardly at least all its members appear to subscribe' (Skaperdas, 2001, p 185). He interprets this as a

tight hierarchical structure and strong discipline in which social norms, in the form of a specification of desired behavior together with sanction rules, make sure they act as a unity in the game played with politicians and that deviators are punished[14] – a form of meta-punishment (Kuran, 1995). Similarly, if the police or revenue authorities break the rules of the game on an individual Opec Boy, for example by mistreating him, the Opec Boys will always react as a group. A former Opec Boy chairman summarized: 'The moment you touch one of us, you touch the whole group! This is our strength'[15].

This type of internal organization is needed to coordinate their members in cooperation or defection with the politician and to enforce playing by the – internal and external - rules of the game (Greif *et al*., 1994; Kandori, 1992). In essence, the Opec Boys rely on a multilateral reputation mechanism and show similarities with the merchant guilds studied by Greif *et al*. (1994). Although the case study provides several examples of these internal mechanisms for enforcement, commitment and group reactions, we will not focus on these here but emphasize these are a necessary condition to treat the whole group of Opec Boys as one player in this game.

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way to motivate the 'employees', to induce loyalty and reduce infighting and other transaction costs which is critical for an organisations' success. And in many cases gangs or mafia draw on a rhetoric of marginalisation.

[14] For example, Opec Boys who do not stick to their cartel price agreements are sanctioned, as well as members who disobey internal rules by stealing their colleague's fuel, or by selling low quality or diluted fuel. Disrespecting the politician who gets support from the Opec Boys – for example by boycotting this politician or disturbing his rallies – is another reason for (corporal) punishment and/or expulsion from the association, as it strongly weakens their position towards that politician.

[15] Interview former chairman Opec Boys, Arua 12-04-07.

3.2. The games

In an initial step we model the situation by defining the underlying one-stage game, in order to determine the instruments the Opec boys and the politician recur to for inflicting cooperation and to examine what threats are effective to make their agreement self-enforcing. Based on the case information we identify the strategies that the Opec Boys and the politician can follow respectively. Next, we infer the possible outcomes and the associated payoffs for both players of that specific game.

The Game G is played between two players, the Opec Boys and a politician with strategy spaces S_i (i=O,P). The strategy space of each of the two players, S_i, consist of two possible strategies: either to cooperate with or to defect the other player. This game thus has four potential outcomes: (cooperate, cooperate), (cooperate, defect), (defect, cooperate) and (defect, defect). The respective players' payoffs (u_O, u_P) associated with each of the outcomes, (r_O, r_P), (s_O, t_P), (t_O, s_P) and (p_O, p_P), are specified below in table 1.

$$G = \{S_O, S_P; u_O, u_P\}$$
$$S_i = (cooperate, defect); i = O, P$$
$$u_i = \{r_i, s_i, t_i, p_i\}; i = O, P$$

Table 1: Bi-matrix of the game played amongst the Opec Boys and the politician

		Politician	
		Cooperate	Defect
Opec Boys	Cooperate	$(u_O, u_P) = (r_O, r_P)$	$(u_O, u_P) = (s_O, t_P)$
	Defect	$(u_O, u_P) = (t_O, s_P)$	$(u_O, u_P) = (p_O, p_P)$

3.2.1. The Opec Boys' rebel threat: Is it credible?

The danger that the Opec Boys challenge those in power by turning to rebellion explains why they have to be part of the ruling coalition. What we want to examine here is whether, in the game repeated within this coalition, the Opec Boys' threat of becoming rebels[16] is also a credible threat effective to inflict cooperation and enforce their right to smuggling fuel? And if not, what threat or promise matters for enforcing the players' agreement?

To answer this question, it is instructive to see what would be the theoretical Nash equilibrium of the one-stage game when defection by the Opec Boys means rebellion. Cooperation then consists of refraining from being rebels, which is assumed not to involve any cost for the Opec Boys. Defecting however brings about the cost of being rebels, more specifically the aggregate of each Opec Boy's cost of being a rebel, labelled $rebel_O$.

First, rebel activities are often portrayed in the light of direct economic gain, often in the form of looting of natural resource rents (Collier 2000, 2004; Collier *et al*. 2003). However, empirical research suggests that protection, security and social services provided by the rebel group might be equally valued (Guichaoua, 2007; Vinci, 2007). Others (Duffield 1998, 2001; Keen 1998, 2000; Reno 1998) see a more indirect link to economic gain and argue that the existence of a conflict, and especially the absence of the rule of law, enables rebel movements

[16] Rebellion is seen here as an armed uprising against an established civil or political authority. Rebels typically engage in regular or guerrilla combat against the armed forces of the established regime, or conduct sabotage and harassment in order to undermine the government's position as leader. We oppose this to civil disorder. This is seen as a disturbance caused by a group of people in protest against certain socio-political problems, which is not characterised by the degree of violence utilised by rebel forces. civil disorder provoked by the Opec Boys consists of demonstrations in town, occasionally setting something ablaze and sporadic targeting of government symbols (see further).

to enrich themselves. In this situation of unlawfulness, illegal activities such as looting, exploitation of natural resources or labour exploitation are possible, but also activities such as organised black market trade. As no valuable natural resources are available in West Nile (Jackson, 2002) , the geographical and national borders are the most valuable 'resource' in the area, providing opportunities for illegal cross border smuggling[17]. However the Opec Boys do not need to resort to armed rebellion to exercise their illegal smuggling activities, as the current cooperation in Arua gives them a 'legal' state of exception to freely perform their cross border activities.

Second, rebellion might also be instigated by a perceived need to fight marginalization and gain future benefits for a suppressed group (Collier, 2004; Weinstein, 2005 in: Guichaoua, 2007). The Opec Boys draw on the rhetoric of marginalization and their 'cause' of acting against the suppression of the national government to motivate their members and their supporters in the community. They offer the thuggish, unemployed youth they are composed of the opportunity to air feelings of marginalization and suppression. And through lobbying politicians they have found a legitimate way to make claims and inflict government attention, as their demands are seriously taken into consideration and politicians provide them with services of different kinds. Also for these purposes, the Opec Boys are a comfortable substitute to rebellion.

[17] Empirical studies show that in rebel movements in northern Uganda, greed for natural resource rents did not play a major role. Although most Ugandan rebel movements were being supported by external forces such as Sudan, the majority of the rebels still had very limited access to resources and food, which forced these rebel movements to loot food for their day-to-day survival. They were therefore rather driven by pure need than greed (Olsen, 2007).

Moreover, social pressure in West Nile strongly acts against the (re-)formation of rebel groups. After decennia of armed conflict, the general public in West Nile strongly opposes armed rebellion, which discourages the Opec Boys in this regard because it would seriously reduce their support by the community. Lastly, as shown below, given the daily profits one can gain by smuggling fuel, rebellion has a large opportunity cost for each individual Opec Boy. For all of the reasons mentioned here, it can be argued that rebellion is a costly alternative for the Opec Boys as a group and for its members individually. Therefore we can reasonably take on the assumption that $rebel_O >> 0$ (3.2.1.a).

The benefits of the fuel smuggle for the Opec Boys consists of the aggregate net return of fuel traded by all Opec Boys and is labelled $\Pi_O(q_O)$ with $q_O \in \{q_O^d, q_O^c\}$. q_O^c being the volume of fuel traded in absence of harassment and confiscation by customs or police and q_O^d the volume of fuel traded when there is confiscation and taxation. It is taken that $\Pi_O(q_O^d) < \Pi_O(q_O^c)$ (3.2.1.b)[18]. Given the relatively high and secure income and other benefits the Opec Boys offer, this trade is a lucrative alternative to rebellion for most individuals[19]; even more so if the dislocation and disruption of community and family life when joining a

[18] Although we assume that aggregate profits in times of defection by the politician are lower than profits under unlimited trade, one could argue that a reduced supply of fuel on the market can cause prices to rise. However, three regular petrol stations still serve the market which limits scarcity induced price increases of smuggled fuel.

[19] It is estimated that on average, the daily profit (nominal) of an Opec Boy ranges from 24,000 UGX (10.2 €) from 2000 to 2005, up to 36,500 UGX (15.5 €) currently. Compared to the average daily household income in Northern Uganda, which is 6968 UGX (3 €) in urban areas and 2541 UGX (1 €) in rural areas, this is a relatively high income (UNHS 2005/2006). Furthermore, the association of the Opec Boys provides protection, informal credit and insurance to its members. Yet it was impossible to get more informed estimates of the Opec Boys' average profit and their returns in times of cooperation and in times of defection.

rebel group are taken into consideration. So, in line with the argumentation that the risky 'profession' of rebel is costly and given that the Opec Boy association answers to a large extent potential economic or grievance induced motives for rebellion, it is presumed that $rebel_O > \Pi_O(q_O^c)$ (3.2.1.c).

The other player in the game, the politician, also has two strategies. His cooperation consists, firstly, of lobbying police and customs and secondly, of making sure no fuel is confiscated in town and only limited confiscation takes place on the smuggling routes. Additionally, he provides members of the Opec Boys with financial and material support and protection. For simplicity, these efforts are taken to cost the politician nil[20].

The politician defects by allowing full-scale confiscation and taxation of smuggled fuel - both in town and on the smuggling routes - and even the arrest of Opec Boys. In this case he gains the sum of taxes on confiscated fuel $T_P(q^{con}) > 0$ (3.2.1.d). When no fuel is confiscated, i.e. when the politician cooperates, no taxes are recovered and $q^{con} = 0 \Rightarrow T_p(0) = 0$ (3.2.1.e)[21]. If

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[20] Taking a cost into account would not change the game as $T_p(q^{con}) > 0 \Rightarrow T_p(q^{con}) > T_p(0) \Rightarrow T_p(q^{con}) > T_p(0) - x$, therefore $t_p > r_p - x$ and $p_p > s_p - x$.

[21] Checking the archives – a few ragged notebooks - of the Uganda Revenue Authorities (URA) provided very little information on the amount of fuel confiscated by URA. No systematic records are kept at the URA and there is no recording of what the mobile police confiscates (since their confiscation is illegal). The URA manager roughly estimates that 500 to 3000 litres of fuel are confiscated per month (early 2005 up to April 2007) (interview data 02-05-07). Confiscated fuel is either stored, sent to Kampala or auctioned locally as a way to recover lost taxes. It is unclear what happens to the confiscated fuel – there are no records on how much is stored, how much is sent and how much is auctioned - and what is the amount of taxes recovered. Accurate estimates of $T_P(q^{con})$ in times of cooperation and in times of defection are therefore impossible. But from interviews and long-term participant observation it is apparent that during cooperative stages no fuel is supposed

the Opec Boys defect, the politician faces the cost of the Opec Boys' transformation into rebels $rebel_P > 0$ (3.2.1.f).

Table 2 summarizes this game and each player's payoffs in different situations given the assumptions:

$-rebel_O << 0$ (3.2.1.a)

$\Pi_O(q_O^d) < \Pi_O(q_O^c)$ (3.2.1.b)

$rebel_O > \Pi_O(q_O^c)$ (3.2.1.c)

$T_P(q^{con}) > 0$ (3.2.1.d)

$q^{con} = 0 \Rightarrow T_p(0) = 0$ (3.2.1.e)

$-rebel_P < 0$ (3.2.1.f)

Table 2: Bi-matrix of the game with the Opec Boys' rebel threat

		Politician	
		Cooperate	Defect
Opec Boys	Cooperate	$(u_O, u_P) = (r_O, r_P)$ with $r_O = \Pi_O(q_O^c) + 0$ and $r_P = T_P(0) + 0$	$(u_O, u_P) = (s_O, t_P)$ with $s_O = \Pi_O(q_O^d) + 0$ and $t_P = T_P(q^{con}) + 0$
	Defect	$(u_O, u_P) = (t_O, s_P)$ with $t_O = \Pi_O(q_O^c) - rebel_O$ and $s_P = T_P(0) - rebel_P)$	$(u_O, u_P) = (p_O, p_P)$ with $p_O = \Pi_O(q_O^d) - rebel_0$ and $p_P = T_P(q^{con}) - rebel_P)$

Having defined this game, we come to the following proposition:

Proposition 1: *Given the assumptions 3.2.1.a, d, e and f, the Nash equilibrium of the above defined one-stage game, where defection by the Opec boys is rebellion, consists of the Opec Boys cooperating and the politician defecting.*

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to be confiscated in Arua town. So by assuming $q^{con} = 0$ in times of cooperation this limits to the 'game' in Arua.

Proof: To identify the Nash equilibrium of the above defined game we look for the Opec Boys' best response in case the politician defects and in case the politician cooperates. Correspondingly, we determine the politician's best response to both of the Opec Boys' possible strategies. If the player's respective best responses concur this is a Nash equilibrium of this game.

First, if the politician's strategy is to cooperate, the Opec Boys' best response is to cooperate as this gives them the highest payoff ($r_O > t_O$). When the politician defects, the Opec Boys' strategy with the highest gains is to cooperate since $s_O > p_O$. Defecting by the Opec Boys is essentially a dominated strategy in this case.

Second, the politician gains most by defecting if the Opec Boys cooperate ($t_p > r_p$). If the Opec Boys would defect, defection will also be the politician's strategy with the highest payoff ($p_p > s_p$). Hence cooperation is a dominated strategy for the politician.

The best responses uniquely concur where the politician defects and the Opec Boys cooperate. This thus constitutes the unique Nash equilibrium of this one-stage game. Payoffs for the Opec Boys and the politician are ($u_O = \Pi_O(q_O^d) + 0\,; u_P = T_P(q^{con}) + 0$). *Q.E.D.*

The next step to assess whether the Opec Boys' rebel threat is effective in enforcing their agreement with the politician through a repeated play mechanism is to look if infinitely repeating[22] the above defined one-stage game can lead to cooperation being a sub-game perfect Nash equilibrium[23]. We can conclude that given our assumptions and given the underlying one-stage game, the Opec Boys' threat of defecting and becoming rebels as

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[22] Or playing an indefinite number of rounds.

[23] An operational definition will be given later.

punishment for defection by the politician is not credible. However, in the game as it is defined here, mutual cooperation would benefit the Opec Boys as their smuggling profits would be higher ($\Pi_O(q_O^d) < \Pi_O(q_O^c)$ (3.2.1.b) But this is not a Pareto-improvement compared to the one-stage game Nash equilibrium because, if the Opec Boys cooperate, the politician is worse off by cooperating than by defecting as there are no recovered taxes ($t_p > r_p$). Therefore, infinitely repeating this game could never lead to mutual cooperation between the two players because of the lack of a credible punishment by the Opec Boys and because mutual cooperation is Pareto inferior[24].

Since cooperation is clearly observed in Arua, this is unlikely to be the game played. Besides, if this would be the game played, there would be no obvious reason why the Opec Boys offer political support and why they take up responsibilities in the community.

3.2.2. Political mobilization and maintaining order: Credible promises?

Observing the efforts the Opec Boys undertake for the community and the enormous impact of their social and political support for the politician's success, calls for a closer look at a game where these elements constitute the payoffs. Hence we will consider a one-stage game where abandoning all political and social support for the politician and provoking chaos in the community is the Opec boys' defection and determine the theoretical Nash equilibrium of this

[24] Likewise, the Opec Boys' threat of 'closing the taps' when they feel the politician does not support or protect their business well enough, is not deemed credible (definitely not in the long run), as it on a long term translates the net profit made in the fuel business into net losses as capital investments and working capital (like bicycles, jerry cans, advance payments) are acquired but sales are stopped. The Opec Boys' defection would be a dominated strategy and the game would take the same form as the above defined 'rebel threat game'. Nevertheless, short term fuel sale embargos by the Opec Boys in Arua town are observed in the light of causing civil disorder. But in line with the above reasoning, these embargos are always of short duration.

game. Next, we will assess whether repeating this game can be the mechanism ensuring enforcement of the agreement between the Opec Boys and the politician.

In this game, cooperation by the Opec Boys consists of ensuring political support and community approval for the politician and avoiding civil disorder. When the Opec Boys cooperate they face the cost Soc_o which stands for the aggregate net costs to the group of Opec Boys of avoiding chaos, engendering community appreciation for the politician and for active political mobilization and support (with $Soc_o > 0$ (3.2.2.a)). When they defect, the cost of not organising political mobilisation and social support is evidently nil. Furthermore, it is assumed that when the Opec Boys invoke civil disorder it does not imply a high cost, for simplicity this cost is set at zero here[25].

As defined in the previous game, the fuel smuggle gives the Opec Boys an aggregate net return $\Pi_O(q_O)$ with $q_O \in \{q_O^d, q_O^c\}$ and $\Pi_O(q_O^d) < \Pi_O(q_O^c)$ (3.2.1.b). Since the cost of the Opec Boys' efforts for society and the politician are considered negligible compared to the profits they make out of the fuel trade - but they are not zero either - it is taken that $\Pi_O(q_0^c) > Soc_O > 0$ (3.2.2.b).

One of the strategies of the politician is cooperation which consists of support and protection of the fuel smugglers. These efforts are assumed to cost the politician nothing. When the politician defects there is confiscation and the politician gains taxes on the confiscated fuel ($T_P(q^{con}) > 0$ (3.2.2.c)). This is zero when the politician cooperates ($q^{con} = 0 \Rightarrow T_p(0) = 0$ (3.2.2.d)).

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[25] The game would be similar to the 'rebel threat game' if provoking civil disorder would cost the Opec Boys more than Soc_o

In case the Opec Boys defect, the politician suffers an important cost because of the loss of community stability and the loss of political support. Therefore $NoSup_P$ stands for the sum of the cost of urban chaos, the cost for the politician of decisions disapproved by society, the cost of boycotts of election campaigns by the Opec Boys and the opportunity cost of their political support (with $NoSup_P > 0$ (3.2.2.e)). When the Opec Boys cooperate, the politician enjoys peace and order in the community and political support. These benefits are represented by Sup_P which stands for the sum of the benefits of the politician's popularity and approval by the community, the benefits of active political and electoral support by the Opec Boys and the indirect gain of peace in the community (with Sup_P>0 (3.2.2.f)).

The game defined here is summarized in table 3 specifying each player's payoffs in different situations, given the following assumptions:

$Soc_o > 0$ (3.2.2.a)

$\Pi_O(q_0^c) > Soc_O > 0$ (3.2.2.b)

$T_P(q^{con}) > 0$ (3.2.2.c)

$q^{con} = 0 \Rightarrow T_p(0) = 0$ (3.2.2.d)

$NoSup_P > 0$ (3.2.2.e)

$Sup_P > 0$ (3.2.2.f)

Table 3: Bi-matrix of the game with the Opec Boys' social and political support promise

		Politician	
		Cooperate	Defect
Opec Boys	Cooperate	$(u_O, u_P) = (r_O, r_P)$ with $r_O = \Pi_O(q_O^c) - Soc_O$ and $r_P = T_P(0) + Sup_p$	$(u_O, u_P) = (s_O, t_P)$ with $s_O = \Pi_O(q_O^d) - Soc_O$ and $t_P = T_P(q^{con}) + Sup_p$
	Defect	$(u_O, u_P) = (t_O, s_P)$ with $t_O = \Pi_O(q_O^c) - 0$ and $s_P = T_P(0) - NoSup_p$	$(u_O, u_P) = (p_O, p_P)$ with $p_O = \Pi_O(q_O^d) - 0$ and $p_P = T_P(q^{con}) - NoSup_p$

Having defined the game leads to the following proposition:

Proposition 2: *Given the Opec boys defect by provoking civil disorder and abandoning social and political support to the politician and given the assumptions 3.2.2.a, c, d, e and f, the unique Nash equilibrium of the above defined one-stage game is defection by both the Opec Boys and the politician.*

Proof: We look for the Nash equilibrium in this game by assessing if the players' best responses to each others strategies are in accord. Firstly, both in case the politician cooperates and in case he defects, the best strategy for the Opec Boys is to defect as they avoid the cost of social and political support ($t_O > r_O$ and $p_O > s_O$). In this game, cooperation is a dominated strategy for the Opec Boys. Secondly, whether the Opec Boys defect or cooperate, the politician's best response is to defect each time because this generates tax revenues ($t_p > r_p$ and $p_p > s_p$). Also for the politician cooperation is therefore a dominated strategy. By consequence, the Nash equilibrium of this game is unique and consists of both the politician and the Opec Boys defecting. The respective payoffs are then ($u_O = \Pi_O(q_O^d) - 0$; $u_P = T_P(q^{con}) - NoSup_p$). *Q.E.D.*

Mutual defection is thus the outcome of the one-stage game where the Opec Boys defect by causing community disorder and ending their social and political support for the politician. However, mutual cooperation is a Pareto improvement to mutual defection on two conditions. First, the Opec Boys' net gain from unlimited trade minus the cost for support has to be larger than the profits under confiscation, or $\Pi_O(q_O^c) - Soc_O > \Pi_O(q_O^d)$ (3.2.2.g). Second, the politician's benefit from social and political support has to be larger than the net gain from taxes minus the costs associated with political boycotts and civil disorder, or $Sup_P > T_P(q^{con}) - NoSup_P$ (3.2.2.h). In this case, the game takes the form of a Prisoners' dilemma game.

The first condition 3.2.2.g can be taken as valid since the Opec Boys' profits from unlimited fuel trade $\Pi_O(q_O^c)$ are very high and the efforts for society and the politician Soc_O are insignificant compared to those profits. Case study information suggests that the aggregate profits $\Pi_O(q_O^d)$ are seriously reduced when massive confiscation takes place. Some Opec Boys lose so much they go bankrupt and leave the business. The validity of the second condition 3.2.2.h can be inferred from the following qualitative indications: The recovered taxes $T_p\left(q^{con}\right)$ are merely an indirect benefit to the politician (although there are 'rumors' they also profit directly). Also the cost of chaos, campaign boycotts and losing the Opec Boys' political support $NoSup_p$ can be considerable, especially because these can cause electoral defeat. The direct and individual benefits to the politician in terms of social and political support (or non-boycott) and order in the community, Sup_P, are valued high and also constitutes a reinforcement of his position in power (which gives access to various other sources of income).

Theoretically, given the conditions 3.2.2.g and 3.2.2.h, cooperative behavior *can* be sustained as a subgame-perfect Nash equilibrium if this Prisoners' Dilemma game is infinitely repeated[26], provided that the future is not discounted too heavily, i.e. the discount factor δ is close enough to one, and a credible and suitable punishment strategy is believed to be in place (Gibbons, 1992).

As cooperation is clearly observed in Arua, it is probable that this is the repeated play mechanism adopted to enforce their agreements. And in this game refraining from causing

[26] Under the assumption of stationarity, meaning the same game is repeated over and over which is confirmed by the field information.

turmoil and offering political and social support are the Opec Boys' 'promises' that matter[27]. In return, the politician in question promises tolerance of the smuggling business and protection. These promises make mutual cooperation a potential subgame perfect Nash equilibrium. The Uganda Revenue Authority vice manager seems to support this hypothesis. Answering why the Opec Boys are selling their fuel so openly, he argues: 'We look at risk management! How much can we recover from lost taxes, and how much chaos can we cause in town through chasing them' [28].

In order to make out whether indeed the players have adopted a credible and suitable punishment strategy we first return to case evidence of instances of cooperation and defection after which we interpret this in a game theoretical framework.

3.3. The Opec Boys and politicians in good times and in bad times: Repeated play mechanisms

Next with case evidence will be shown that the players indeed repeat a version of the above defined game. They both have adopted trigger strategies with subsequent phases of cooperation and punishment to inflict mutual cooperation. Later we formally define the repeated play mechanism.

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[27] This also explains why the Opec Boys take up responsibilities in the community and lobby for the rights of 'marginalized' groups in society. This way they gain respect by the community and the ability to mobilize people. Their societal and internal legitimacy however also draws on the rhetoric of marginalization and in principle they mobilize people to support politicians critical towards the national government, which is claimed to marginalize people from northern Uganda in general and the West Nile region in particular. Therefore, the cooperation with politicians alongside the government consists of refraining from boycotting political campaigns instead of active support which would not be accepted by the Opec Boys' followers.

[28] Interview, Arua, 10-04-07.

3.3.1. An eye for an eye and a tooth for a tooth… and back to 'business': Case evidence

The political and social power of the Opec Boys was at its peak during the first half of the nineties under the charismatic leadership of Kaku, who was the initiator of the Opec Boys. During this period, transit trucks would simply offload their fuel in town, and fuel was sold openly in two hundred liter drums. Moreover, the Opec Boys were offering many jobs to local unemployed men, not only in the fuel business, but also in other companies which they had started (such as a construction company). Also their community services were at their peak during this period, as – under the strict command of Kaku – the Opec Boys would clean the town or offer free transportation for funerals.

Things started changing from the 1994 Constituent Assembly elections onwards. During these elections, the Opec Boys strongly supported radical government critic Zubairi Atamvaku Nasser. As these were the first national general elections under the Museveni regime (and under the existence of the Opec Boys), it was the first time during which the Opec Boys demonstrated their political power. Yet they were under strong governmental pressure to support the pro-government candidate which they refused. As opposition candidate Atamvaku easily won the elections, the government interpreted this as defection of the Opec Boys and started being harder on the Opec Boys by confiscating more fuel and temporarily arresting some of them. The defection continued after 1994 and the Opec Boys continued being confrontational against the government authorities by disturbing their meetings, tearing down their posters and so on. Furthermore, despite strong government pressure, the Opec Boys again strongly backed the opposition candidate, Paul Ssemogerere, during the 1996 Presidential elections. Although defeated on a national level, Ssemogerere had a landslide victory in Arua district. Directly after this victory, the tension escalated and Kaku and other top leaders of the Opec Boys were arrested and imprisoned on accusations of being a rebel

collaborator. According to local analysts, this was a purely political arrest after guns were put in Kaku's garden[29].

In short, the Opec Boys had become too powerful and in this situation, politicians (and government) deemed cooperation unattainable. Because of these arrests, and particularly because of the arrest of 'President Opec' Kaku, the Opec Boys lost considerable political power and impact on society. Also their other Opec businesses were closed. The Opec Boys therefore never had the same impact and power as in the first half of the nineties. After the 1996 event, they kept siding with the opposition, but they no longer have a violent anti-government attitude: they no longer disturb meetings or harass supporters, something that had become practice under the leadership of Kaku. Nevertheless, through their loss of power, cooperation under different terms and conditions was acceptable again for politicians and could be restored.

After that, consequent periods of continued cooperation between the Opec Boys and a politician are observed in Arua. An example: during the 2001 national elections MP Naser Okuti got elected as the representative of Arua municipality. As he is a strong pro-government advocate, he did not get the Opec Boys' active support. They were however not boycotting him either, as he had always been cooperating with the Opec Boys. He was negotiating with the police whenever the Opec Boys were arrested (and he ended up bailing out Opec Boys); and was lobbying the local government, revenue authorities and national authorities if the revenue authorities were becoming too harsh on the Opec Boys. In this sense, a 'gentlemen's agreement' existed between both sides. During the 2006 elections, the Opec Boys provided

[29] A fact confirmed even by local government security operatives.

strong support for vigorous opposition politician Akbar Goddi[30]. The Opec Boys even provided Goddi with fuel and money, and acted as his campaigning agents. Once elected, he has been looking for other employment opportunities for the Opec Boys and has been defending their case at the revenue authorities, making sure they are able to continue their activities.

But there are still instances of mutual punishment following defection of one of the players. For example in 2001, contrary to the agreements, two Opec Boys selling fuel in town were arrested, their fuel confiscated and their jerry cans taken by the mobile police. This event was a violation of the contract on two levels: Firstly, fuel is not supposed to be taken within town; and secondly, the boys were strongly mistreated (allegedly tortured in order to extract a bribe). The other Opec Boys provoked a massive protest in town, in which the mobile police officers were almost lynched, and the Opec Boys started taking revenge on all symbols of governmental power: local council offices, posters of President Museveni and so on. As a result, the government fought back, bringing in the army and arresting several Opec members. Severe fighting broke out in Arua town in which 15 people were severely injured, among which several Opec Boys. Immediately after fighting broke out, national and local politicians were looking for ways to solve the tensions. Through their efforts, assistance came directly from the highest national level: when admitted to the hospital, the injured Opec Boys were visited by the President, who was campaigning in the area; and were even given financial compensation by him for their injuries[31]. This visit can be seen as an effort to cool down the

[30] Again, Naser Okuti, who was standing another time, failed to win their active support because he was still considered too pro-government. He was however not boycotted either, so the cooperation lasted.

[31] Information independently given by several first-hand witnesses (Interview data 2005-2007).

situation and recognition of the political and social power of the Opec Boys. Moreover, the visit symbolized the renewed cooperation between both sides.

These examples are typical for the interactions between the Opec Boys and a politician: on several occasions, the terms and conditions of their agreement were breached– through confiscating fuel within town, or by using disproportional force on the Opec Boys – where after the Opec Boys retaliated by attacking the revenue authorities and provoking chaos in town. After mediation by the politician things went back to normal and they continued to cooperate. In other cases, the Opec Boys violated the contract by not offering political support when they were expected to and there is retaliation by the politician for that.

3.3.2. 'Contract' enforcement in the fuel smuggle business: the repeated play mechanism

From the sequence of events in the above narrative, it is inferred that the Opec Boys and the politician repeatedly play the Prisoners' Dilemma game defined before. In this game, the Opec Boys defect by ending all political support and causing turmoil and the politician punishes by allowing confiscation of fuel and arrests of the Opec Boys. The players appear to punish each other for defection but they forgive and return to cooperation. They have essentially adopted a trigger strategy to inflict sticking to the agreement.

We first look more closely at the 'confiscation of fuel within town' incident followed by protests by the Opec Boys (table 4 presents the respective payoffs in the different rounds). Before the incident (1…t), both the politician and the Opec Boys enjoy the benefits of their mutual cooperation. The Opec Boys conduct their profitable fuel trade and the politician gets community appreciation instigated by the Opec Boys. There is also peace and order in the community.

But, when fuel is confiscated in town, the politician has not held the mobile police to respect the 'rules of the game' and the contract is breached (t+1). Being unable to sell fuel within

town is a serious reduction of the aggregate payoff for the group of Opec Boys. The net profit of the fuel trade is reduced to $\Pi_O(q_O^d)$ but they still face the cost Soc_O as they invest in society, avoid turmoil and boost the popularity of the politician. So, their payoff is now $s_O = \Pi_O(q_O^d) - Soc_O$.

This instance of defection of the politician however triggers the Opec Boys and the politician to play a round of mutual punishment. The Opec Boys start violent protests and openly disagree with the politician. In this punishment phase (t+2), the Opec Boys only get reduced profits $\Pi_O(q_O^d)$ but they do not face the cost Soc_O. In the punishment phase, the politician gains by recovering taxes on the fuel $T_P(q^{con})$ but faces the huge cost of loosing their support, social disapproval and riots, namely $NoSup_P$.

After the punishment phase the players go back to cooperation and restore their agreement (t+3): There is no more confiscation of fuel within town and order is restored. When the President visits an Opec Boy who ended up in hospital because of the riots, this can be interpreted as an affirmation of the importance of a return to cooperation and suggests that the support by the Opec Boys Sup_P is highly valued.

Table 4: The 'confiscation of fuel within town' incident: Sequence of cooperation and punishment phases and associated payoffs

T	(S_O, S_P)	(u_O, u_P)
1…t	(cooperate, cooperate)	$(u_O = \Pi_O(q_O^c) - Soc_O ; u_P = T_P(0) + Sup_P)$
t+1	(cooperate, defect)	$(u_O = \Pi_O(q_O^d) - Soc_O ; u_P = T_P(q^{con}) + Sup_P)$
t+2	(defect, defect)	$(u_O = \Pi_O(q_O^d) - 0 ; u_P = T_P(q^{con}) - NoSup_P)$
t+3,….t+n	(cooperate, cooperate)	$(u_O = \Pi_O(q_O^c) - Soc_O ; u_P = T_P(0) + Sup_P)$

Second, we interpret what happened in the period when the Opec Boys grew too powerful. Punishment amongst the players endured while cooperation proved to be very beneficial for both. This must be further explained (the sequence of rounds played is presented in table 5).

In this period (1…t), the Opec Boys could freely conduct their fuel business, made a lot of money and invested in other businesses, their profits $\Pi_O(q_O^c)$ were considerable. Their charismatic leader Kaku 'disciplined' the rowdy Opec Boy members and they offered a lot of services, and even jobs, to the wider community. By consequence, they were very popular in the community and were considered political 'kingmakers' (Titeca, 2006). The politician gained a lot when the Opec Boys inflated their popularity in the community and from the Opec Boys' electoral support (Sup_P was considerably high).

But then the Opec Boys defected (t+1) by not supporting and severely boycotting the pro-government candidate for the Constituent Assembly. This triggered defection by the politician, proved by large scale confiscation of fuel and arrests (t+2). Next, instead of returning to mutual cooperation, the Opec Boys continued to be exceedingly antagonistic towards government-sided politicians (the cost for the politician $NoSup_P$ was substantial). Subsequently, the Opec Boys supported the opposition candidate for the presidential elections and after the victory of their candidate in the West-Nile region, Kaku and four other Opec Boy leaders were accused of being rebels, arrested and removed from the scene.

It appears that Kaku became too powerful and too influential and as a result the benefits of the Opec Boys' support Sup_P and the costs associated with the loss of support $NoSup_P$, were too high. These factors could in effect 'make or break the politician' as an Opec Boy stated[32]. This was compromising the negotiation position of the politician because he feared to deviate

[32] Interview Opec Boy 23-11-05.

from mutual cooperation. Moreover, the politician's threat of confiscation as punishment lost credibility. He also dreaded the punishment phase as his payoff, the recovered taxes minus the costs representing the loss of social and political support $u_P = T_P(q^{con}) - NoSup_P$, was almost negative under these conditions. The Opec Boys knew this and defected. The politician thus had no other choice than to defect as a response, but his losses were tremendous. And because of their strong position, the Opec boys' defection endured. The politician found this situation unattainable and in the end, by arresting Kaku and the other leaders, the Opec Boys' influence was seriously trimmed down, reducing the costs of boycott $NoSup_P$ considerably but also lowering the benefits of support Sup_P. Nevertheless, this intercession greatly improved the politician's negotiation position. After changing these parameters in the politicians' payoffs, an evolution towards restoring the contract was observed and the game was resumed with more balanced negotiation positions.

Table 5: The 'powerful Opec Boys era': sequence of cooperation and punishment phases and associated payoffs

T	(S_O, S_P)	(u_O, u_P)
1…t	(cooperate, cooperate)	$(u_O = \Pi_O(q_O^c) - Soc_O ; u_P = T_P(0) + Sup_P)$
t+1	(defect, cooperate)	$(u_O = \Pi_O(q_O^c) - 0 ; u_P = T_P(0) - NoSup_P)$
t+2	(defect, defect)	$(u_O = \Pi_O(q_O^d) - 0 ; u_P = T_P(q^{con}) - NoSup_P)$
….		
t+3,….t+n	(cooperate, cooperate)	$(u_O = \Pi_O(q_O^c) - Soc_O ; u_P = T_P(0) + Sup_P^{'})$

This empirical evidence of a sequence of cooperation and punishment in the repeated game between the Opec Boys and the politician proves the adoption of a trigger strategy in which both players believe. In the literature this type of trigger strategy is termed a Carrot-Stick strategy (Abreu, 1987 in Gibbons, 1992)[33]. This strategy ensures that the players converge

[33] A Carrot-Stick trigger strategy works like this: Both players cooperate in the first period. In the t-th period, both players cooperate if in period t-1 both players cooperated or both defected, otherwise the players do not

back to their agreement and cooperate. The case evidence thus suggests this is the endogenously emerged repeated play mechanism for contract enforcement amongst the Opec Boys and the politician.

But before we can call this an institutionalized contract enforcement mechanism, it remains to be proven formally that this Carrot-Stick trigger strategy is a subgame perfect Nash equilibrium, and can therefore assure continued mutual cooperation, is mutually believed in and is self-enforcing. This is provided that the future is not discounted too heavily, i.e. the discount factor δ is close enough to one[34] and under the following conditions:

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cooperate. Essentially, there are two phases: a collusive phase and a punishment phase. If either player deviates from the collusive phase, the punishment phase begins. If neither deviates from the punishment phase, there is again mutual cooperation. However, if there is deviation from the punishment phase, the punishment phase begins again (Abreu, 1987 in Gibbons, 1992). In this case the subgames in the infinitely repeated game can be grouped into collusion subgames, which follow cooperative stages (or mutual defection stages), and punishment subgames, which follow stages in which there was no mutual cooperation, nor mutual defection.

[34] Table 7 gives a rough estimate of the discount factor δ based on interest rates for 'medium' term loans in Arua whereby assumed the medium term is one year. These estimates just serve the purpose of showing that the discount factor can rightfully be considered close enough to one and that future benefits are valued (Interview data, Arua, 2007).

Table 7: Estimate of the discount factor in Arua on the basis of interest rates for medium term loans

	interest rate	discount rate	discount factor
SACCO medium term loan	10%	9%	92%
informal medium term loan to reliable person	5%	5%	95%
informal medium term loan to unreliable person	30%	23%	81%
bank 'salary' loan medium term	19%	16%	86%

Table 6: Conditions for Carrot-Stick strategy to be subgame perfect Nash equilibrium

	Opec Boys	Politician
Carrot-Stick collusion subgames	*Assuming politician adopted Carrot-Stick and cooperation in previous periods, cooperation is best response of Opec Boys if* $\delta \geq \frac{Soc_O}{\Pi_O(q_O^c) - Soc_O - \Pi_O(q_O^d)}$ (3.3.2.c)	*Assuming Opec Boys adopted Carrot-Stick and cooperation in previous periods, cooperation is best response of politician if* $\delta \geq \frac{T_p(q^{con})}{Sup_p - (T_p(q^{con}) - NoSup_p)}$ (3.3.2.d)
Carrot-Stick punishment subgames	*Assuming politician adopted Carrot-Stick and no mutual cooperation nor mutual punishment in previous period, punishment is best response of Opec Boys if* $\delta \geq \frac{-Soc_O}{\Pi_O(q_O^c) - Soc_O - \Pi_O(q_O^d)}$ (3.3.2.e)	*Assuming Opec Boys adopted Carrot-Stick and no mutual cooperation nor mutual punishment in previous period, punishment is best response of politician if* $\delta \geq \frac{T_p(0) - T_p(q^{con})}{(T_p(0) + Sup_p) - (T_p(q^{con}) - NoSup_p)}$ (3.3.2.f)

Proposition 3: *Assuming stationarity and δ is close enough to one; conditional on 3.3.2.a, b, c and d, the Carrot-Stick trigger strategy the Opec Boys and politician have adopted is a subgame perfect Nash equilibrium.*

For the Carrot-Stick trigger strategy to be a subgame perfect Nash equilibrium, it must be a Nash equilibrium to play the strategy both in the collusion subgames, which follow cooperative stages (or mutual defection stages) and in the punishment subgames which follow stages in which there was no mutual cooperation, nor mutual defection (Selten, 1965 in Gibbons, 1992).

The collusion subgame is a Nash equilibrium if both players prefer to infinitely receive the payoff under mutual cooperation over receiving the payoff when defecting single-handedly in the first period, followed by a mutual punishment round in the next period and cooperation thereafter or $r_i * (1 + \delta + \delta^2 + \delta^3 + ...) > t_i + \delta * p_i + r_i * (\delta^2 + \delta^3 + ...)$ (3.3.2.a) .

Assuming that the politician adopted the Carrot-Stick strategy and given there was mutual cooperation (or mutual defection) in the previous period: Cooperation is the Opec Boys' best response if they prefer to get the payoff under mutual cooperation forever, to the payoff when

they cheat on the politician followed by punishment in the next period and infinite cooperation thereafter. Substituting r_O, t_O, p_O and rewriting condition 3.3.2.a comes down to:

$\delta \geq \frac{Soc_O}{\Pi_O(q_O^c) - Soc_O - \Pi_O(q_O^d)}$ (3.3.2.c). Given assumption 3.2.2.g, $\Pi_O(q_O^c) - Soc_O > \Pi_O(q_O^d)$, the right hand side of condition (3.3.2.c) is positive. The right hand side will be smaller than the discount factor δ if the difference between the Opec Boys' profits when the politician defects or cooperates, $\Pi_O(q_O^d)$ and $\Pi_O(q_O^c)$, is large enough. This means that the Opec Boys' gains from the politician's cooperation must be worthwhile, which is evidently the case. Subsequently, the Opec Boys' best response in the collusive subgame is cooperation if the politician is believed to follow the same trigger strategy.

Similarly, if believed that the Opec Boys follow the Carrot-Stick trigger strategy, abiding to the collusion subgame after a period with mutual cooperation is the politician's best response on condition that $\delta \geq \frac{T_p(q^{con})}{Sup_p - (T_p(q^{con}) - NoSup_p)}$ (3.3.2.d). The right hand side of the above condition will be smaller than δ if the difference between the politician's benefits from the Opec Boys' cooperation, Sup_p, and the costs of their defection, $NoSup_p$, is deemed large enough. This is confirmed by case evidence. Note that the period in which Kaku and his Opec Boys were very powerful, both the benefits, Sup_p, and costs, $NoSup_p$, were extremely high, thus the condition was not binding enough. As condition 3.3.2.d is valid, playing along with the collusion subgame is also the politician's best response. The intermediate conclusion can be drawn that the collusion subgame is a Nash equilibrium.

Next, the punishment subgames must a Nash equilibrium as well for the Carrot-stick strategy to be a subgame perfect Nash equilibrium. This is the case if both players prefer a round of mutual defection followed by mutual cooperation over single-handedly not defecting when

the other defects[35] followed by another punishment phase or $p_i + r_i * (\delta + \delta^2 + \delta^3 + ...) \geq s_i + \delta * p_i + r_i * (\delta^2 + \delta^3 + ...)$ (3.3.2.b).

Thus, if believed that the Carrot-Stick strategy is taken on by the politician and there was no mutual cooperation (nor mutual defection) in the previous period, it is the Opec Boys' best response to follow the punishment phase on condition 3.3.2.b. Rewriting this condition gives $\delta \geq \frac{-Soc_O}{\Pi_O(q_O^c) - Soc_O - \Pi_O(q_O^d)}$ (3.3.2.e). Given assumption 3.2.2.g, the denominator is positive, thus the right hand side of the condition takes a negative value as $Soc_O > 0$ (assumption 3.2.2.a.). Therefore the condition will always be valid since the discount factor can not be negative. As a result, following the punishment phase is always the best response for the Opec Boys presuming that the politician follows the same trigger strategy.

Following the same reasoning, playing along with the punishment phase is the politician's best response if $\delta \geq \frac{T_p(0) - T_p(q^{con})}{(T_p(0) + Sup_p) - (T_p(q^{con}) - NoSup_p)}$ (3.3.2.f). Given assumption 3.2.2.h, $Sup_P > T_P(q^{con}) - NoSup_P$, and assumption 3.2.1.d, $T(q^{con}) > T_p(0) = 0$, the right hand side of the above condition is negative. Condition 3.3.2.f is therefore always valid. Thus, going along with the punishment phase is the politician's best response in this situation. Consequently, the punishment subgames are a Nash equilibrium as well.

As both the collusion and punishment subgames are Nash equilibria, we can conclude that the Carrot-Stick trigger strategy is a subgame perfect Nash equilibrium. *Q.E.D.*

By proving that the Carrot-Stick trigger strategy adopted by the Opec Boys and the politican is a subgame perfect Nash equilibrium, we demonstrated that that the repeated play

[35] i.e. deviation from the punishment phase

mechanism, whereby cooperation is restored after punishment for defection, is mutually believed in and self-enforcing. It can therefore be seen as the institutionalized contract enforcement mechanism which endogenously emerged under the alliance of the Opec Boys and the politician.

Conclusion

The Opec Boys, unruly fuel smugglers, many of them ex-rebels, conduct their illegal business with consent from local politicians and are considered strategic political players. This suggests a coalition between the politician and the Opec Boys. The Opec Boys are kept from rebellion by rewarding them with the rents from smuggling fuel. In return they abstain from boycotting those in power.

Given the illegal nature of the trade, state enforcement of the agreement within this coalition is unlikely. A repeated play mechanism enables the two parties to ensure commitment to their agreement. Yet, we show that repeatedly playing a game in which the Opec Boys threaten to turn to rebellion is not an effective enforcement mechanism. This is because rebellion is a costly alternative to the Opec Boys business and this threat can therefore not be credible.

The Opec Boys' political support and refraining from causing civil disorder are the credible promises which are at the heart of the repeated play mechanism for inflicting cooperation. Confiscating fuel and arresting Opec Boy members is the politician's effective threat in this game.

We show that the repeated play mechanism, whereby the players punish each other for defection but restore cooperation, is mutually believed in and self-enforcing by proving that this strategy is a subgame perfect Nash equilibrium. This permits to conclude this is an institutionalized contract enforcement mechanism which endogenously emerged within the politician – Opec Boys alliance.

By explicitly showing the importance of political alliances for economic transactions in the second economy like the fuel smuggling business, we demonstrated how the economic and political system are intertwined in this context. As such this study contributes to uncover the complex reality in a fragile state environment. Moreover, the study points out the difficulties in ending the smuggling activities of the Opec Boys: firstly, politicians have no incentive for curbing smuggling. Secondly, ending the Opec Boys' smuggling activities would end their income generation and their opportunity to sooth their grievances, therefore reducing their opportunity cost for rebellion. Any attempt to curb smuggling must therefore take into account these realities, by simultaneously addressing the grievances of the Opec Boys and creating new possibilities for income generation.

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