

Rentier peace or resource curse? The ambiguous effects of oil wealth and oil dependency on violent conflict

by

Matthias Basedau* and Jann Lay**

* German Institute for Global and Area Studies, Hamburg, Germany

** Kiel Institute for the World Economy, Germany

MIMEO

Abstract

The ‘paradox of plenty’ and the ‘resource curse’ hypotheses claim that abundance in natural resources, particularly oil, encourages civil war through a number of causal mechanisms. Natural resources provide both motive and opportunity for conflict, rent seeking slows down growth and renders state institutions weak thus creating indirect causes of violent conflict. Contrarily, the theory of the rentier state – largely neglected in the study of peace and war in this respect – suggests that regimes use revenue from abundant resources to buy off peace through corruption, large-scale distributive policies and effective repression. Consequently, such rentier states would tend to be more stable politically and less prone to conflict. These two theories thus imply ambivalent effects of resource abundance on political stability and conflict proneness. This paper presents part of a solution to this apparent puzzle for the case of oil-producing countries. The key argument is that resource wealth per capita needs to be taken into account, since only the availability of very high per capita revenues from oil allows governments to achieve internal stability. Our empirical analyses confirm this hypothesis. More specifically, multivariate cross-country regressions based on replication datasets show an inverted-U-shaped relationship between revenues from oil per capita and violent conflict. We detect the opposite linkage (U-shape) for the effect of oil dependence measured in terms of oil exports as share of GDP. The politically stabilizing effect of resource wealth is also demonstrated in a macro-qualitative comparison for a reduced sample of highly dependent oil exporters. Using the same reduced sample, the paper also examines whether the mechanisms hypothesized by the rentier state theory are at work. Our findings suggest that oil wealthy countries manage to maintain stability by a combination of large-scale distribution, high spending on the security apparatus, and protection by outsiders. In contradiction to the rentier state theory, the institutions of these wealthy countries do not seem to be characterised by patronage and clientelism.

Table of Contents

Introduction	4
The Resource Curse: A Negative Effect of Natural Resources on Peace	5
The Rentier State: A Stabilizing Effect of Revenues from Natural Resources	8
Resources and Conflict: Empirical Evidence to Date	11
Hypotheses and Empirical Strategy	13
Assessing the Effect of Oil Wealth per Capita on Civil War Onset	14
<i>Multivariate Analysis</i>	14
<i>Macroqualitative Analysis</i>	18
Testing for Causal Mechanisms.....	20
Conclusions.....	26
References.....	29
Annexes.....	31
<i>Annex 1: Detailed regression results and variable explanations</i>	31
Preferred specifications	31
Logit-regression with CH controls	32
Logit-regression with FL controls	33
<i>Annex 2: Oil and conflict data for oil-dependent states</i>	34
<i>Annex 3: Data on transmission channels for oil-dependent states</i>	35
<i>Annex 4: Data sources</i>	36

Introduction

It seems to be conventional wisdom that natural resources in general are a 'curse' rather than a 'blessing'. The growing literature on the 'resource curse' (Sachs & Warner, 1995; Auty, 2001) and the 'paradox of plenty' (Karl, 1997) has been linking resource abundance and dependence to corruption, authoritarianism, economic decline and civil war. In the study of peace and war, resource abundance is said to provide both finance and motive for armed conflict ('greed and grievance') as well as to create indirect economic and institutional causes of violence (Ross, 2003; Humphreys, 2005; Fearon, 2005). Numerous empirical studies have provided evidence that natural-resource dependent countries indeed seem to be more likely to lapse into violence (e.g. Collier & Hoeffler, 2001; de Soysa, 2002a; de Soysa, 2006), and the debate is already moving towards practical recommendations for conflict prevention and resolution (Bannon & Collier, 2003, Gary & Karl, 2003).

However, the resource-conflict link is probably more complex than conceptualised in the scientific mainstream. It has been shown empirically that *on average* oil and lootable resources favour the outbreak or persistence of violent conflict (Ross, 2004), but, beyond averages, one finds that one resource abundant or dependent country affected, two are spared from violence (Ross, 2003). As a result, the debate has begun to take into account the complex set of context conditions, as well as the exact causal mechanisms determining whether or not the resource curse strikes, and the manner in which it does so (Ross, 2003; Humphreys, 2005; Collier & Hoeffler, 2005: 627). A more radical theoretical challenge to the 'resource curse' can be derived from the theory of the rentier state. Rentier state theory identifies economic stagnation, corruption and authoritarianism as features inherent to the rentier political economy. However, it also states – contrarily to the resource curse and widely ignored in the debate – that governments use abundant resources to buy off opposition or suppress armed rebellion, thereby contributing to political stability and preventing armed conflict.

This paper addresses this relative neglect of stabilizing effects suggested by the concept of the rentier state. We put two pertinent hypotheses to test which may explain why some oil producing countries are spared from violence and others not. Our first hypothesis is that only the availability of very high per capita revenues from oil allows governments to achieve internal stability. We assess this hypothesis by including a measure of oil wealth per capita into the multivariate framework proposed by Collier & Hoeffler (2005). These cross-country regressions, which are based on replication datasets, show an inverted-U-shaped relationship

between revenues from oil per capita and violent conflict, while the opposite linkage (U-shape) is detected for the effect of oil dependence measured in terms of oil exports as share of GDP. In addition, we perform a macro-qualitative comparison in a reduced sample of highly-dependent oil-exporters, which demonstrates that among these countries those oil-rich in per capita terms are almost completely spared from conflict.

The second hypothesis refers to the operation of the political mechanisms suggested mainly by the rentier state theory. Using a sample of oil exporting countries we find evidence that countries rich in oil per capita manage to maintain peace by a combination of large-scale distribution, high spending on the security apparatus, protection by outsiders and relatively more favourable state institutions.

The paper is organized as follows: We first provide an overview of the literature showing that the effects of natural resources on civil conflict are fairly ambiguous in both theoretical and empirical terms. We then derive the main hypotheses and outline our empirical strategy, which is followed by a presentation and discussion of the empirical results. The final section summarizes the major findings and highlights areas for future research.

The Resource Curse: A Negative Effect of Natural Resources on Peace

The academic debate on the linkages between natural resources and civil war has been dominated by the notion of an adverse effect of natural resources on peace and stability. It was Collier & Hoeffler's (2005) influential work on 'greed and grievance' that made the resource curse hypothesis prominent in the study of peace and war.¹ Collier & Hoeffler (2005) argue that wealth in primary commodities increases the likelihood of civil war onset by providing opportunity and motive ('greed') for armed rebel activity, rather than by causing grievance that in turn would trigger conflict.² These ideas have been further developed, extended, and modified in the literature. Humphreys (2005) has probably provided the most inclusive compilation of six possible causal mechanisms (and several subtypes) for civil war

¹ It should be mentioned, however, that Collier & Hoeffler (2005) do not refer explicitly to this catchphrase. The term 'resource curse' is not mentioned in their papers.

² However, earlier versions did not properly distinguish between motive and opportunity. It seems that opportunity was somewhat automatically linked to the motive of 'greed'.

onset³: (1) The ‘greedy rebels’ mechanism is in line with Collier & Hoeffler’s (2005) argument and suggests that the booty character of natural resources motivates rebels to take up arms and/or continue fighting. (2) In an external variant ‘greedy outsiders’ might be ready to intervene militarily either directly or through support for internal warring factions in order to gain or maintain control over lucrative resources. (3) In contrast, the ‘grievance’ transmission channel suggests that perceived deprivation of producing regions and social groups or indirect negative economic consequences of resource wealth such as the ‘Dutch disease’, price shocks or uneven distribution of revenues create ‘grievances’ and trigger violent uprising, especially secessionism in producing regions. (4) Similar to crime stories, civil wars do not only require a motive but also an opportunity. The ‘feasibility mechanism’ refers to natural resources providing the means for rebel finance. (5) The ‘weak state’ mechanism draws on the harmful effects of resource abundance on the quality of state institutions (corruption, clientelism), which in turn makes internal violent conflict more likely (see also Fearon, 2005; Fearon & Laitin, 2003).⁴ (6) Finally, the ‘sparse network mechanism’ argues that rentier economies have a one-sided integration in the world economy and, hence, cannot develop these ‘thick’ terms of exchange which have been identified as conducive to peace and stability.

All of these mechanisms (see Table I) work more or less indirectly, and are therefore dependent on numerous contextual conditions. The debate has identified several of these conditions, which affect whether and how the respective mechanism operates. In particular, the literature has emphasised the relevance of the characteristics of the available resource (Le Billon, 2001; Auty, 2001; Ross, 2003). It is especially the ‘lootability’ that makes a difference as regards the feasibility of rebellion. As Le Billon (2001) notes, the exploitation of so called ‘distant’ and ‘diffuse’ resources such as alluvial diamonds, timber or drugs can hardly be controlled by the central government - hence, rebels can ‘loot’ them more easily than deep shaft gems or off-shore oil production, which in addition require sophisticated technical know-how. Such ‘point’ resources are more likely to trigger power struggles over the control

³ Humphreys (2005: 514-518) also develops a number of causal mechanisms for civil war duration. Whilst the feasibility and sparse networks mechanisms also apply for the duration of conflict, others work differently. Wars may be prolonged when there is a resource induced military balance between the warring factions or continuing fighting is rewarded with a domestic or international conflict premium. The need to build an organisational structure for resource exploitation may affect rebel organisation thus prolonging conflict. The ‘possibility of pork mechanism’ suggests that if resource production does not depend on peace, fighting is likely to continue.

⁴ Though not mentioned by Humphreys nor Fearon, a weak state, particularly in remote areas, also facilitates the formation of armed rebel movements.

of the central state, or, if concentrated in certain regions ('point' and 'distant'), secessionist uprisings (Le Billon, 2001: 31).⁵

Such resource specific conditions are not limited to the type of resource and/or the related characteristics of resource extraction. The external structure of demand may be important. Powerful importing countries may be ready to intervene militarily – either directly or through support for warring factions. Of course, the quality of resource governance can make a difference. Cases such as Botswana and Chile suggest that it may matter who gets the money and especially where it goes to afterwards. The quality of governance and the likelihood of conflict will depend on (initial) country specific characteristics such as the general level of development, relations between identity groups, general quality of state institutions and agency of central actors. Once resource production has begun or become a realistic option, this will also affect the political economy more broadly. Yet, a robust set of favorable structural conditions, working institutions and responsible leadership may prevent resource rich countries to lapse into violence and other pitfalls of resource production. Only recently have all the above conditions come to the fore of the debate (see Humphreys, 2005) and have been declared a 'key research agenda' (Collier & Hoeffler 2005: 627).

This discussion, however, has neglected a further differentiation which refers to the dependent variable: A country's dependence on and its abundance of resources are not identical (de Soysa, 2002a: 8-9, 2002b: 405) although the literature has largely treated both variables – somewhat unconsciously – as synonymous. According to our understanding, dependence means that rents from resources are the most important source of income *relative* to other value-adding activities while abundance or wealth refers to the *absolute* amount of resource rents available in per capita terms. It can be easily illustrated that these two variables may differ substantially. Nigeria and Saudi-Arabia, for instance, were almost equally dependent on oil exports in 2002 – oil exports accounted for 38.9% and 38.5% of GDP, respectively. Yet, would governments have decided to pay out the proceeds from oil exports to their citizens, Nigerians would have been given a mere US\$ 140 while Saudi Arabia's citizens would have earned US\$ 2,715.

Differentiating between dependence and wealth has implications for the analysis of the aforementioned mechanisms. Generally speaking, countries do not need to be wealthy for

⁵ Relevant characteristics beyond 'lootability' refer to whether resource production is easily 'obstructable' by opponents and whether the trade with resources is legal (Ross 2003).

most of the mechanisms to be operating. It might be in the first place dependence that makes conflict likelier: Only in economies whose monolithic structure offers limited alternatives to earn income, the resource in question may become the heart of conflict. Obviously, the ‘grievance’ and ‘sparse networks’ mechanism are directly related to dependence. It is likely however that ‘greed’ among potential rebels also depends on abundance. What regards outsiders it may not even be the amount per capita, but rather the absolute amount of resources available in a country – possibly relative to global scarcity – that decides upon violent interventions. ‘Feasibility’ will also partly depend on wealth as some means for rebellion require substantial resources for internationally traded goods, mainly arms (in contrast to domestic resources needed for rebellion, in particular soldiers). However, as we will demonstrate in the following section, it is equally probable that resource wealth will be used to maintain peace.

Table I. Causal mechanisms connecting resources to civil war onset

<i>Effect on peace/ mechanism</i>	<i>Fuelling war</i>	<i>Avoiding war</i>
<i>working primarily through</i>		
<i>Motive</i>	Greedy rebels Greedy outsiders Grievances Weak state (1) Sparse networks	Large scale distribution (and low tax burden) Selective co-optation
<i>Opportunity</i>	Feasibility (rebel finance) Weak state (2)	Repression (security apparatus) Outside protectors

Source: Authors’ compilation on the basis of Humphreys (2005), Le Billon (2001) and others. For details see main text.

The Rentier State: A Stabilizing Effect of Revenues from Natural Resources

The theorisations of the political and economic consequences of natural resource wealth discussed above, irrespective of their level of sophistication, all share the notion that natural resources harm internal peace. This is at least partially in contradiction to the theory of the rentier state, which stipulates a positive effect of resource abundance on political stability under authoritarian regimes. The concept of the rentier state was developed with regard to Middle Eastern oil-producing states such as Iran and the Gulf Monarchies (Madhavy, 1970; Beblawi & Luciani, 1987; Smith, 2004: 233-235). However, in the resource curse literature it has received attention only in so far as it predicts many of the negative consequences of oil

dependence on economy, institutions and democracy (see, for instance, Ross, 2001), which have been identified as indirect causes of violence.⁶

Rentier state theory argues that the main function of the state in rentier economies, and its strategy of rule, is to distribute rent (rather than extract revenues from the economy). While reliance on rents thus may harm institutional quality, growth and democracy, rents also provide ruling elites with vital resources through which to offset the indirect effects on stability (Beblawi, 1987; Luciani, 1987: 7; Karl, 1997: 21-22). In rentier states, then, various mechanisms are at work and they operate, as in the resource curse theory, through either motive and/or opportunity (see also Ross, 2001; Smith, 2004⁷):

(1) The 'repression mechanism' primarily affects the feasibility of rebellion. Governments might spend resource revenue on a huge state security apparatus, which enables them to suppress any possible opposition that might take up arms. In fact, Collier & Hoeffler (2004: 567) have explained the fact that resource abundant states such as Saudi Arabia have been able to avoid conflict in this vein (see also Le Billon, 2001: 565). According to the rentier state concept repression will extend to the suppression of political freedoms, that is authoritarian rule.⁸

(2) The opportunity for rebellion may also be obstructed by external support for resource-fuelled regimes, especially in the case of the major oil-producing countries. Given their vital role of interest for energy security (or supply with other commodities of vital interest) the major powers might deter or help 'crush' internal rebellion⁹ or even come to the rescue when 'greedy outsiders' threaten to attack the country (see also Humphreys 2005: 533).

(3) Elites may not only use sticks to impede armed opposition, but carrots as well. Revenues can be used in a pro-active manner to buy off demands and opposition. This cooptation-effect, largely observed by scholars studying the Middle East oil monarchies, can come in several

⁶ The political economy literature on the rentier state appears to have fallen into oblivion rather quickly. None of the key contributions to the resource curse literature on the resource-conflict link (Collier/Hoeffler, de Soysa, Ross, Le Billon) cites the classics of rentier state theory Beblawi & Luciani (1987) and Mahdavy (1970). In the special edition of the *Journal of Conflict Resolution* (Ron 2005) only the editor (Ron, 2005) but none of the empirical studies quotes them.

⁷ Some authors in the resource-conflict debate, especially Le Billon (2001: 565; Le Billon 2003), have developed similar thoughts, however, without referring to the concept as such. Ross (2001) explicitly uses the concept but his dependent variable is democracy not conflict.

⁸ It should be noted that any state has to provide security as a public good and to establish what Max Weber has called the *Gewaltmonopol*, yet without necessarily resorting to political repression.

shapes: First, governments may engage in *large-scale* distributive or ‘populist’ policies (Le Billon 2001: 565), by boosting public sector employment, allocating subsidies, or providing free education and healthcare. Thus, large-scale distribution, in many cases, permits access to oil wealth on the mere grounds of citizenship. As a consequence, potential rebel leaders might not emerge or will find it difficult to recruit rank and file. Second, this ‘large scale distribution’ strategy can also be pursued in a less pro-active manner. The ‘taxation effect’ suggests that income from natural resources renders taxation unnecessary for incumbents. Although this may weaken state institutions through reducing the accountability of the state elite (Yates, 1996: 35) and preventing the development of an efficient tax-collecting bureaucracy (Smith, 2004: 233; Humphreys, 2005, 512-513), citizens may feel less motivated to protest or take up arms against a government that does not levy any taxes. Then, ‘no representation without taxation’ implies that there will be ‘no insurrection without taxation’.

(4) Finally, elites may distribute rents selectively and create clientelist networks from which only leaders of politically important groups benefit. Through this distribution mechanism, resource revenues are distributed among a relatively small part of the population, and access is granted through personal ties. By accommodating potential political rivals, this strategy is equally devised to maintain stability. This causal mechanism may also include practices that are commonly referred to as corruption – though the terms patronage or clientelism also embrace practices that are not strictly illegal – and thus connects to the debate on possibly stabilizing effects of corruption, as discussed by Johnston (1986), Le Billon (2003a) and others (see also Fjelde 2006).

The feasibility to successfully pursue one, some or all of the strategies outlined above also depends on the context conditions discussed in the section on the ‘resource curse’. However, for a successful implementation of these policies, resource wealth seems to be crucial – rather than dependence: Buying out protest by large scale distribution requires large amounts of revenue in per capita terms; this also holds true for a large security apparatus. The ‘clientelist network mechanism’ may be cheaper as long as the small portion of the population who benefits does not expect considerable amounts. Dependence will affect the feasibility of the outlined strategies in most of the cases only indirectly and may be irrelevant as long as there is enough money available.

⁹ This, of course, will mean a short violent conflict.

Resources and Conflict: Empirical Evidence to Date

To date, a multitude of empirical studies has tried to demonstrate that natural resources increase the risk of civil war onset and duration. Their results vary and it is fair to state that evidence on whether or not – and especially how – natural resources and intra-state conflict are systematically linked remains fairly contested.

A meta-analysis of 14 econometric studies by Ross (2004) finds that primary commodities as a whole cannot be robustly linked to civil war onset and duration. According to his conclusions the type of resource certainly matters. While no study under review by Ross can establish a relationship between agricultural commodities and violence, ‘lootable’ resources such as narcotics, timber and (alluvial) diamonds do not make the onset of civil war likelier, but seem to influence the duration of a conflict once broken out (see also Lujala et al., 2005¹⁰). Only oil exporting countries seem to be particularly prone to civil war onset, especially secessionist uprisings such as in Angola, Indonesia and Nigeria. Further studies even question the notoriety of oil: Smith (2004) finds a positive effect of oil dependence on regime stability and peace in developing countries. Others (Fearon, 2005; Fearon & Laitin, 2003) have concentrated their criticism on the greed or feasibility mechanism suggested by Collier & Hoeffler (2005) and propose that the oil-violence nexus works through the weak state mechanism (see also de Soysa, 2006: 51-52). According to Humphreys (2005) the resource-conflict link cannot be entirely attributed weak state structures but must be supplemented with effects of ‘sparse networks’. He also finds that resource wars tend to last shorter than others, especially when external supply is threatened.

The lack of clarity might be due to missing data and varying operationalisations of civil war as Ross (2004) suggests. In particular, important governance variables such as property rights and rule of law are difficult to measure over time and – due to the third variable problem – even the more robust results may be spurious (Ross, 2004: 338). In any case, the mixed empirical findings prove that the link is a probabilistic one and depends on contextual or surrounding conditions. At best, these studies can prove that oil (or other natural resources) *may* be a problem. All the studies include a number of control variables that have been found to affect the likelihood of civil war, especially income (GDP per capita), ethnic fractionalisation, prior conflict, regime type, and population size. Many of these variables

have been identified as influential. For instance, population size matters. One could argue that ‘small is beautiful’ given that so many small resource rich countries such as Botswana, Brunei or various oil emirates in the Middle East are remarkably stable and peaceful. Furthermore, income from GDP per capita lowers the likelihood of war and the 30% probability of civil war onset is confined to low income resource dependent countries (in terms of GDP per capita).

However, the potentially stabilizing rentier effects have hardly been put to test in cross-country studies. With contrasting results, Ross (2001) and Herb (2003) have investigated the effects of rentierism on democracy, but not on peace and security.¹¹ Only Smith (2004) explicitly refers to the stabilizing effects of the rentier state and finds evidence that, as already mentioned, oil states are less prone to civil war and instability than other developing countries (Smith, 2004). However, his test of the mechanisms at work is limited to repression in terms of the level of democratisation.¹² Moreover, there is – perhaps somewhat hidden – empirical evidence in Collier & Hoeffler (2005) that suggests that natural resource wealth may be conducive to peace as it reaches higher levels. The curvilinear relationship between dependence on natural resources and the onset of civil war predicts a decline of the likelihood of civil conflict once a level of about 30% dependence has been crossed. As already mentioned, Collier & Hoeffler (2005) have argued that if a country such as Saudi Arabia is ‘sufficiently abundant’ it can avoid military rebellion right from the outset, but they have not tested this hypothesis for the whole sample, let alone patronage or large-scale distribution mechanisms.

The reason why the empirical literature has been relatively silent on rentier effects may be its failure to distinguish between resource wealth, on the one hand, and dependence, on the other. There are only few studies which have tried to use a per capita measure for resource wealth – let alone employing and contrasting measures for both phenomena. De Soysa (2002b) is the only author in Ross’ meta-analysis (Ross 2004: 408) using a per capita measure – stocks per capita for mineral and other natural resources –, arguing that the per capita measure might

¹⁰ They find that secondary diamonds are positively linked to the incidence of civil war while primary diamonds lower the risk of both civil war onset and duration.

¹¹ In contrast to Ross, Herb finds that regional characteristics rather than rentier effects hinder democracy.

¹² A recent, unpublished paper (Fjelde, 2006) finds that the interaction of high levels of corruption and appropriate resources reduces the conflict proneness of a country by offsetting the destabilizing effect of resource dependence.

reflect wealth, or ‘availability’ as he calls it, more accurately than the share of resource exports in GDP (*sxp*) (de Soysa 2002b: 404). In addition to his major conclusion that oil exporters are very prone to instability, he also finds that mineral wealth per capita increases conflict. Yet, the indicator used by de Soysa (2002b) proxies potential in wealth per capita rather than actual incomes and quite a number of oil producing countries such as Brunei, Kuwait, Libya, Oman and Qatar¹³ with high levels of per capita income from resources, are excluded. Furthermore, and possibly more importantly, he does not employ measures for dependence *and* wealth per capita. This is also true for Humphreys’ analysis (2005) who tests a number of causal mechanisms with per capita measures for both oil and diamond production which he uses *instead* of *sxp*. Interestingly, some of Humphreys’ results point to at least ambivalent effects of oil production per capita on outbreak of civil war in strong or ‘Weberian’ states (Humphreys, 2005: 528). In short: To date no study has tried to assess the simultaneous effect of dependence and wealth.

Hypotheses and Empirical Strategy

Our main assumption is that the availability of large revenues per capita from resources can explain why in some cases the ‘resource curse’ is at work while in others the stabilizing rentier effect prevails. We formulate the following hypotheses:

Hypothesis 1: Countries with very high revenues per capita from resources will be spared from civil conflict and enjoy higher levels of political stability, even if highly dependent on resources. In contrast, if revenues are not high enough to achieve stability, the dependence of resource rents should be harmful to peace.

Hypothesis 2: Governments in countries with high revenues from resources maintain peace through a) large-scale distributional policies (including a low tax burden), b) clientelist networks, and/or c) high spending on the security apparatus as well as d) external allies.

The empirical examination of these hypotheses will focus on the case of oil. As already outlined, the debate has been vocal on the importance of resource type and we acknowledge the relevance. Concentrating on one resource type reduces the number of possibly important surrounding conditions and we decided to choose oil because it is still – notwithstanding contrary results (e.g. Smith 2004; Myers 2005) – the most notorious resource type in terms of

¹³ In the restricted sample even Equatorial Guinea, Gabon and the United Arab Emirates are excluded.

conflict-proneness (Ross 2004; Fearon & Laitin, 2003; Humphreys, 2005; Fearon, 2005), thus allowing a hard test for our hypotheses. However, we should be aware that the choice of oil also affects the likelihood of causal mechanisms: Due to the technical sophistication required for its exploitation, oil is probably less vulnerable to the rebellion feasibility mechanisms.

We employ a combination of methodologies to put our assumptions to the test. For the test of hypothesis 1, we first employ a cross-country regression based on replication datasets. These regressions try to establish a ‘reduced-form’ positive (negative) relationship between oil wealth and political stability (conflict risk) while controlling for other factors, especially oil dependence as a share of exports of GDP. After this multivariate approach, we analyze this relationship in a macro-qualitative comparison for a reduced sample of highly dependent oil exporters that can include pertinent cases often excluded in replication data. The causal mechanisms at work – hypothesis 2 – will be examined in a macro-qualitative framework based on the reduced sample of dependent oil exporters as well. Working in such a framework, entails the advantage to keep individual cases identifiable.

In principle, causal mechanisms could also be captured in a multivariate framework with a larger sample. A thorough discussion of possible approaches and the difficulties involved, in particular simultaneity and the corresponding identification problems, goes beyond the scope of this paper; except for a short remark on interaction terms: Although frequently applied in the empirical literature on transmission channels of the resource curse (e.g. Mehlum, Moene, Torvik, 2006), introducing interaction terms (interacting the resource variable with a ‘transmission channel proxy’) is of little meaning in our context. Interaction terms only capture that the effect of one explanatory variable varies with the level of another. Yet, our interest does not lie in such interactions, e.g. in whether the effect of oil wealth/dependence on political stability and conflict risk varies with the level of institutional quality (or vice versa), but rather in causal relationships that may be observable just as simple correlations.

Assessing the Effect of Oil Wealth per Capita on Civil War Onset

Multivariate Analysis

The specification of the multivariate analysis follows Collier & Hoeffler (2004).¹⁴ We hence try to predict the risk of a civil war onset during a five-year period using a logit model.

Different specifications have been proposed in the literature. Fearon & Laitin (2003)¹⁵ as well as Humphreys (2005) estimate logit (or rare events logit) models based annual data. In our opinion, the latter procedure is likely to create significant endogeneity problems even if lagged values are used as explanatory variables. This holds in particular for lagged GDP per capita that appears as an explanatory variable in both papers. In addition, using annual data reduces the variance of the estimates somewhat artificially, as the mechanisms that the regression analysis seeks to detect are certainly assumed to be at work over longer time spans. The following multivariate analyses rests on three replication datasets used in CH, FL, and Humphreys (2005).

The dependent dichotomous variable in the following regressions is defined as in CH and takes a value of one if a civil started during a five period between 1965 and 1999 (1965-1969, ..., 1995-1999). It also takes a value of one if a war ended and another war started in the same 5-year period. Ongoing civil wars are coded as missing observations, as the regressions intend to explain civil war onset, not duration.¹⁶ We use two different civil war onset variables in the following. The first is the civil war onset variable from CH; the second dependent variable is computed according to the described principles based on the civil war onset and ongoing civil war variables provided by FL.

As regards the explanatory variables, we use data on oil production (and reserves) from Humphreys (2005). Additional controls are taken from the replication datasets provided by CH and FL. As the replication datasets of FL and Humphreys contain annual data, we had to transform the variables. Explanatory variables which are likely to be heavily influenced by civil war onset, such as GDP or polity, are averages of the preceding 5-year-period. Other variables, such as population, fractionalisation proxies, and could be kept for the initial period (1965, 1970, ..., 1995), as they are either lagged in the replication dataset or (nearly) constant in time.

We decided to combine the replication datasets and keep only the countries common to all of them. This procedure basically implies dropping a number of small-island states from the CH dataset, and (former) socialist countries from FL as well as Humphreys (2005). Sample size also depends on variable choices. As noted above, ongoing civil wars are coded as missing

¹⁴ We refer to Collier & Hoeffler (2004) as CH in the following.

¹⁵ FL will be used for Fearon & Laitin (2003).

¹⁶ See Collier et al.(2004), who show that civil war onset and duration are governed by different mechanisms.

values, which implies that differences in sample size result from using either the CH or the (modified) FL onset variable. Sample size also depends on data availability and hence sample size also varies with the choice of the independent variables.

Regression results for 6 different specifications are reported in Table II. We regress the CH as well as the (modified) FL onset variable on three different sets of independent variables. The independent variables always include oil production per capita (*oil*), primary commodity exports as share of GDP (*sxp*) times an oil-exporter dummy (*oilsxp*), and *sxp* as well as the corresponding squared terms in order to capture ‘non-linear’ relationships. This allows us to separately account for the effect of both oil wealth, measured by *oil*, and oil dependence, proxied by *oilsxp*.

In addition, we include three different sets of control variables. In specifications I and II, we use a ‘preferred’ combination of controls from CH and FL, which we find to have relatively high explanatory power (at least in terms of Pseudo-R²) for the CH onset variable while keeping a relatively large sample. ‘Standard’ control sets from CH are included in specifications III and IV, and from FL in specifications V and VI. In all regression, the significant coefficients of the controls have the expected sign. Among the controls only variables of economic performance, i.e. the level of GDP and GDP growth, population, as well as geographic indicators (e.g. mountainous areas) turn out to be robust across all specifications.¹⁷

¹⁷ The detailed regression results are reported in Annex 1. The definition and construction of the control variables are discussed at length in CH and FL, respectively. In Annex 1, we provide a short explanation.

Table II: Results from multivariate analyses

Dependent variable	Preferred specification		With CH controls		With FL controls	
	I	II	III	IV	V	VI
<i>Independent variables</i>	<i>Civil war onset (CH)</i>	<i>Civil war onset (FL)</i>	<i>Civil war onset (CH)</i>	<i>Civil war onset (FL)</i>	<i>Civil war onset (CH)</i>	<i>Civil war onset (FL)</i>
<i>Oil production per capita (oil)</i>	53.0802 (3.19)***	24.6147 (0.69)	19.2926 (1.28)	-2.5679 (0.14)	56.5949 (3.45)***	28.1783 (2.13)**
<i>Oil production per capita</i> ²	-149.9132 (2.81)***	-151.1495 (0.54)	-81.7643 (1.53)	-13.9784 (0.35)	-168.4320 (2.75)***	-72.0813 (1.92)*
<i>(Primary commodity exports / GDP) x Oil dummy (oilxsp)</i>	-26.3340 (2.59)***	-9.9181 (1.45)	-34.2110 (3.02)***	-16.8902 (2.12)**	-15.2859 (2.15)**	-6.6269 (1.46)
<i>(Primary commodity exports / GDP)² x Oil dummy</i>	95.3996 (2.66)***	25.8365 (1.45)	133.2482 (3.13)***	59.9436 (2.54)**	36.0233 (1.67)*	16.5468 (1.41)
<i>Controls significant, at least at 10 percent level</i>	Primary commodity exports / GDP (and squared), Log GDP (FL), GDP growth (CH), Log population (CH), Log of mountainous terrain (FL), Peace duration (CH), Non-contiguous state (FL), Ethnic fractionalization (FL), Ethnic dominance (CH)	Log GDP (FL), GDP growth (CH), Log population (CH), Log of mountainous terrain (FL), Peace duration (CH), Non-contiguous state (FL)	Primary commodity exports / GDP (and squared), Male secondary schooling, GDP growth, Peace duration, Geographic dispersion, Log population, Social fractionalization, Ethnic dominance	Primary commodity exports / GDP (and squared), Male secondary schooling, GDP growth, Peace duration, Geographic dispersion, Log population, Ethnic dominance	Primary commodity exports / GDP (and squared), GDP, Log population, Log of mountainous terrain	GDP, Log population, Log of mountainous terrain, Noncontiguous state
<i>Controls not significant at 10 percent level</i>	Political instability (FL)	Primary commodity exports / GDP (and squared), Ethnic fractionalization (FL), Ethnic dominance (CH), Political instability (FL)		Social fractionalization	Noncontiguous state, Political instability, Revised Polity 2, Ethnic fractionalization, Religious fractionalization	Primary commodity exports / GDP (and squared), Political instability, Revised Polity 2, Ethnic fractionalization, Religious fractionalization
<i>Pseudo-R²</i>	0.3109	0.2620	0.2887	0.2471	0.2188	0.2049
<i>Observations</i>	649	592	598	549	674	622

Source: Authors' calculations.

Note: Robust z statistics in parentheses, * significant at 10%; ** significant at 5%; *** significant at 1%.

Overall, the effect of oil wealth and dependence correspond to our expectations. Oil wealth increases the risk of civil war onset at lower levels of this variable, while it decreases the risk at higher levels, with a relatively high threshold at approximately 25 barrels per capita per day. We hence detect an inverted-u-shaped relationship between oil wealth and civil war risk. The sign of this 'wealth effect' is always as expected, but it turns out to be significant in only three out of six specifications. It should be noted however that the effect is significant at the 20 percent level in III and, in general, more significant in larger samples. In none of the specifications high levels of oil wealth are linked to a high risk of civil war onset.

The findings on the effect of oil dependence are more robust. Here, we detect a u-shaped relationship with a relatively low turning point of around 10 to 20 per cent of oil exports in GDP. High levels of oil dependence are hence associated with high levels of civil war onset risk, while high levels of oil wealth appear to make countries less prone to civil war.

The effect of *sxp* (referring to all types of resource exports, only reported in Annex 1) maintains its inverted-u shape, as e.g. in CH. Very high levels of non-oil commodity dependence hence decrease civil war risk. This implies that similar results may be obtained

for non-oil commodities, once the effects of wealth and dependence are disentangled, given that, in the current framework, *sxp* rather proxies wealth than dependence. Yet, detecting such effects for non-oil commodities goes beyond the scope of this empirical analysis.

We performed a number of robustness checks. In particular, we check all the reported regressions for the effects of influential outliers that we identify by Pregibon's (1981) approximation to the change in the estimated coefficients given a specific observation is removed from the sample, as suggested by Long and Freese (2003).¹⁸

The reported results for the preferred specification are for reduced samples. Dropping Liberia (1985-89) from I results in an improved fit of the regression and renders the effect of the squared terms of both *sxp* and *oilsxp* significant. In II, dropping Colombia (1995-1999), Guinea-Bissau (1995-1999), Iran (1975-1980), and UK (1965-1970) reduces the z-statistics for oil substantially, but has little impact on other coefficients. Without dropping these cases, both linear and squared oil are significant at the 15 percent level.

For specifications III to VI, results are reported keeping influential outliers, although in some cases dropping these observations leads to important changes. Yet, the latter does not hold for specification III, where only magnitudes change. Dropping Angola (1985-90), Congo (1995-1999), and Iran (1965-1969) in III hence leaves all findings intact. In IV, no influential outliers were detected. Dropping Liberia (1985-1989) in V has a major impact on the magnitude of the effect of *sxp* and the corresponding squared term (the negative effect of squared *sxp* being much higher without Liberia). In VI, dropping Iran (1975-80) and UK (1965-70) renders oil and the corresponding squared term insignificant.

Macroqualitative Analysis

If our main finding from the multivariate analysis is correct, we must expect that within a group of oil exporters which are highly dependent on oil, oil rich countries in per capita terms are very unlikely to lapse into violence whilst oil poor countries are. We thus created a sample of 44 (net) oil exporting countries (at least one year between 1999-2001) in order to capture all relevant cases and included in a reduced sample only those cases which had an average *sxp* value over the above identified turning point of approximately 15% between 1990-2001. We then measured against the cut-off point in oil wealth of approximately 25 barrels per

person a day which corresponds to over 10 tonnes per capita per year in 1996 – the earliest point of time where complete data for dependence and production were available.

Results turn out to be fairly impressive. As Table III displays, all countries above the threshold of oil production per capita in 1996 were spared from any violent conflict measured through cumulated internal conflict intensity by PRIO conflict data 1990-2005. Just three peaceful but oil poor countries deviate from our expectation (Kazakhstan, Syria, Turkmenistan), and even if we regrouped Equatorial Guinea (no substantial oil production in 1996) and Bahrain (wealth mainly from gas) this would certainly be not really contrary to our expectation given that we do not suggest that oil poverty necessarily produces violent outcomes.

Table III: Oil wealth and civil conflict in highly dependent net oil exporters

	<i>Peaceful 1990-2005</i>	<i>Conflict-ridden 1990-2005</i>
<i>Oil rich (oil production p.c. over 10 tonnes p.a. 1996)</i>	Bahrain* Brunei Equatorial Guinea** Gabon Kuwait Libya	Norway Oman Qatar Saudi-Arabia UAE
<i>Oil poor (oil production p.c. below 10 tonnes p.a. 1996)</i>	Kazakhstan Syria Turkmenistan	Algeria (24) Angola (26) Azerbaijan (9) Congo Republic (8) Iran (11) Iraq (17) Nigeria (2) Papua New Guinea (6) Russia (21) Trinidad & Tobago (1) Uzbekistan (2) Venezuela (1) Yemen (2)

Note: In parentheses the cumulated domestic conflict intensities according to PRIO UCDP data set 1990-2005; * Oil and Gas; ** No substantial oil production in 1996, 'oil rich' since 1999.

Results are fairly robust with regard to other measures for conflict and instability, although possibly less clear-cut (see Annex 2). Civil war onset (Fearon & Laitin, 2003; Humphreys 2005) does not include all cases, but none of the 'really rich' oil exporters did experience any outbreak of civil war. 10 oil poor countries deviate given the absence of civil war onset, but we have to keep in mind that many faced ongoing conflict and the onset of civil war is generally a rare phenomenon.

The World Bank governance indicator 'political stability & absence of violence' (average 1996-2004), which also captures problems below the civil war threshold, produces three oil

¹⁸ In addition, the preferred specifications have also been run using a rare events (King and Zeng, 2001) instead of a standard logit, which only had a negligible impact on the results.

poor but peaceful outliers when we expect that oil rich countries are found above the sample median (Kazakhstan, Trinidad & Tobago and Turkmenistan) as well as one oil rich outlier. The latter is Libya, which remains close to the sample median in terms of the dependent variable and Libya's values have constantly improved since 1996.

Stability in terms of regime durability rather than absence of domestic conflict produces somewhat less convincing results. Durability of regimes according to Polity IV data (year: 2003) is linked to oil wealth but shows six outliers of which two are oil rich Gabon and Kuwait with regime stability closely below or on the median of 12 years. In these cases specific historic developments have to be taken into account. Gabon's dinosaur Omar Bongo, Africa's longest standing President, had to introduce multipartidism in the early 1990s but managed to remain firmly in power in a formally democratic setting afterwards. Kuwait's monarchy was briefly interrupted by the Iraqi invasion and occupation in 1990/1991.¹⁹

Partial correlations (see Annex 2) support the results from the macro-qualitative analysis and thus both confirm our findings from the multivariate regressions. Oil wealth in per capita terms above a certain cut-off point does not make civil war likelier - while dependence does. Moreover, the macro-qualitative analysis in the medium N sample implies two further conclusions: Oil wealth compensates the adverse effects of oil dependence on peace and stability once a certain threshold has been crossed and this oil wealth probably avoids violence and instability pro-actively.

Testing for Causal Mechanisms

How do governments in oil-rich countries make oil work for peace? In the literature review we have developed a number of causal mechanisms – repression, outside protectors, clientelist networks and large scale distribution (as well as possibly low tax burden) – how resource or oil wealth may translate into peace or stability. In the following, we assign pertinent indicators to the respective mechanisms for the sample of highly dependent net oil exporters.

¹⁹ This may be one of the cases where a rather direct 'greedy outsiders' mechanism seems to be at work.

With regard to the repression mechanism we use arms imports per capita between 1990-2000 as indicator for a huge security apparatus (for details on data see Annex 3).²⁰ We further examine whether the use of coercive measures translates into the political variant of repression – authoritarian rule – by looking at levels of democracy in terms of the average of the Freedom House political rights and civil liberties scores.²¹ Arms imports may also reflect the existence of military ties to external allies and hence the outside protectors mechanism. Yet, we find the permanent military presence of at least one permanent UN security council member on the soil of the country in question (1990-2000) a more adequate indicator for this mechanism. The third mechanism, large scale distribution, is proxied by current government expenditures per capita (including interest payments). For the less pro-active variant – low tax burden – we use total taxes per capita (both in 1997). The patronage/clientelism mechanism is certainly most difficult to operationalise. Here we decided to use the World Bank Indicator control of corruption (1998) as a proxy variable. Though clientelism and corruption (or controlling it) are not exactly the same we can assume that widely applied patronage is also accompanied by high levels of corruption. Patronage tends to negatively affect government effectiveness as well, which is why we also consider the respective World Bank indicator.

²⁰ Ross (2001) proxies repression by military expenditure as share of GDP and armed forces as share of the labour force. For many oil-rich states these indicators are not available.

²¹ We checked for robustness with the World Bank indicator ‘voice and accountability’. We did not use Polity IV data because sparsely populated countries are not covered.

Table IV: Causal mechanisms linking oil wealth to peace

<i>Transmission channel</i>	<i>Repression</i>		<i>Outside protectors</i>	<i>Large scale distribution (and low tax burden)</i>		<i>Patronage-clientelism</i>	
	<i>Average arms imports p.c. 1990-2002</i>	<i>Average Freedom House ratings 1990-2005</i>	<i>Permanent military base by UNSC member 1990-2000</i>	<i>Government expenditure p.c. 1997</i>	<i>Total taxes p.c. 1997</i>	<i>Control of corruption 1998</i>	<i>Government effectiveness 2002</i>

Oil rich and peaceful

Bahrain	X	X	-	X	-	-	-
Brunei	X	X	X	n.d.	n.d.	-	-
Equatorial Guinea	-	X	-	-	X	X	X
Gabon	-	-	X	-	-	X	X
Kuwait	X	-	X	X	-	-	-
Libya	X	X	-	n.d.	n.d.	X	X
Norway	X	-	X	X	-	-	-
Oman	X	X	X	X	-	-	-
Qatar	X	X	X	X	n.d.	-	-
Saudi-Arabia	X	X	X	X	n.d.	-	-
UAE	X	X	X	X	-	-	-

Oil poor and peaceful

Kazakhstan	-	-	X	-	X	X	X
Syria	X	X	-	-	-	-	-
Turkmenistan	-	X	-	-	X	X	X

Oil poor and violent

Algeria	X	-	-	X	X	X	X
Angola	X	X	-	-	X	X	X
Azerbaijan	-	-	-	-	X	X	X
Congo, Rep.	-	-	-	-	X	X	X
Iran	X	X	-	X	X	-	-
Iraq	-	X	-	n.d.	n.d.	X	X
Nigeria	-	-	-	-	X	X	X
PNG	-	-	-	-	-	X	-
Russia	-	-	(-)	X	-	-	-
TNT	-	-	-	X	-	-	-
Uzbekistan	-	X	-	-	X	X	X
Venezuela	-	-	-	X	-	X	X
Yemen	X	-	-	-	X	-	X

Notes: Filled boxes indicate the respective causal mechanism at work. PNG stands for Papua New-Guinea, TNT for Trinidad and Tobago, n.d. denotes missing data. For details on the indicators and further descriptive statistics see Annex 3.

Indicator values for specific countries are judged against sample median values and we consider a causal mechanism to be at work if the respective country indicator values lies above/below (depending on the theoretical expectation and construction of the proxy) this threshold. For instance, we expect oil-rich countries to have government expenditure per capita values that are at least equal to or higher than the sample median This exercise allows to detect whether individual choices correspond to theoretical expectations, and can be used to preliminarily judge the general fit of the causal mechanisms. Table IV illustrates the results of this procedure, where the grey-shaded areas depict a causal mechanism working in

accordance with theory. The indicator values underlying Table IV as well as bivariate correlations (and significance values) are reported in Annex 3.²²

Whereas some findings correspond to our theoretical expectations, other results appear to contradict the hypothesized causal mechanisms. The data confirms that oil-rich countries engage in large scale distribution policies to achieve internal peace. In addition, outside protectors can be found in these countries whose presence appears to be conducive to internal stability. The evidence however on oil rents being used for repression instruments is less clear-cut.. Possibly not completely unexpectedly, but in contradiction to the ‘selective-cooptation’ mechanism, we find oil-rich countries to be less corrupt and to have more effective governments, i.e. to have better institutions.

The first column of Table IV suggests that the Romans were right saying *si vis pacem para bellum* as the oil-rich and peaceful countries spend considerably more on arms imports. Yet, the mere fact that oil-rich (and peaceful) countries import more arms does not necessarily imply that the repression mechanism extends to authoritarianism or political repression. While most of the oil-rich states are repressive in political terms, this does not seem to distinguish them from many oil-poor countries. Although almost two thirds of the cases show the expected position vis-à-vis the threshold value of 5.4 – indicating a fairly undemocratic regime – many oil poor states are equally repressive in political terms Furthermore, these results are not robust with regard to other measures of democracy such as ‘voice and accountability’ (not reported).²³

The outside protectors mechanism seems to work very well: Although foreign military presence might be designed to deter greedy outsiders it apparently also helps avoid domestic conflict. Except for Bahrain, Libya and Equatorial Guinea all oil-rich countries allowed foreign troops on their soil to stay permanently. It is not only US military bases in the Persian Gulf but also French (Gabon) or British (Brunei) military presence.²⁴

²² Significant bivariate correlations may be interpreted as additional substantiating evidence. Yet, as theory suggests and as the multivariate analysis has demonstrated, the considered relationships are unlikely to be linear, which is why the empirical content of these correlations is limited.

²³ If the inverted U-curve on the link between democracy and violent conflict is correct (Hegre et al. 2001), we must expect either very democratic or very authoritarian regimes in the oil-rich countries. If we use Freedom House ratings, it is merely Gabon and possibly Kuwait that deviate in oil-rich countries. Yet, there are only four oil-poor countries that turn out to show the moderate levels of democracy identified as being conflict-prone.

²⁴ In the case of Russia, a permanent UNSC-member, the indicator is not applicable.

Large scale distributional policies are popular amongst almost all oil-rich governments, Equatorial Guinea being the only deviant case in this group, and as it seems most of the non-rich countries cannot afford to pursue them. Noteworthy exceptions are Algeria, Iran, Trinidad and Tobago and Venezuela which have values above the median that, however, can hardly compare with the high spending rates of oil-rich states. Whereas pro-active large scale distribution hence is the expected successful way to avoid domestic conflict, a low tax burden is not related to peace - rather the other way around. Less than 30% of the cases can be explained this way. Yet, it may be premature to conclude that taxing citizens guarantees stability. First, our proxy also includes taxes from private companies and, as a matter of fact, these tend to be high in oil exporting countries. Second, and maybe more importantly, low taxes in non-rich countries may rather reflect deficient tax collecting institutions, which is in line with our findings on the last causal mechanism.

We do not find patronage and clientelism to be an effective way to maintain peace and stability. Our proxy variables 'control of corruption' and 'government effectiveness' tend to display more favourable values for oil-rich countries in contrast to their oil-poor cousins. A possible reason could be that the latter cannot afford large scale distribution and have to rely on patronage which then proves not to be working well. Yet, we should be cautious to draw wide-ranging conclusions. Again it should be mentioned that our proxies are second best and somewhat ambiguous.

Both indicators can also be interpreted as proxies for weak states, and, in fact, oil-rich states have relatively better institutions, or, in other words, stronger states (see also the strong and significant bivariate correlation between the institutional indicators and per capita oil production reported in Annex 3). Whether this proves that better institutions prevent oil-rich states from lapsing into violence and/or whether higher oil revenues tend to improve state institutions (at least within the group of oil exporters) cannot be answered at this point, for example given that data for institutional quality at the beginning of oil age for all countries are almost impossible to obtain (see also Ross 2004: 338).

As regards individual countries, the most remarkable result is that most of the oil-rich states employ the three effective mechanisms simultaneously, which separates them from the bulk of the oil-poor countries. For seven out of eleven oil-rich countries we detect three causal mechanisms (high spending on the security apparatus, external allies, and large-scale distributional policies). Most of them are Gulf petro-states but they are joined by Brunei and

Norway, which is the only full democracy among the oil rich states. Bahrain comes close to the group but lacks outside protection, as it does not host foreign troops on its territory.

The remaining three cases show more individual patterns. Libya seems to use only a huge security apparatus and large scale distribution. Gabon does not spend a lot on its security apparatus, but hosts a French garrison. In fact, French troops intervened during the 1990s in order to prevent the regime from being overthrown. As regards large-distribution, Gabon is close to the median, and it fits into the picture that there is plenty of evidence of oil rents fuelling corruption and patronage in the country (Yates, 2005). The most unique case, however, seems to be Equatorial Guinea, which deviates in virtually every respect: Security spending is relatively low, there is no foreign military base nor are there any signs for distributional policies. Corruption however is rampant, an interesting parallel to the Gabon case. When considering the case of Equatorial Guinea, it should be borne in mind that oil production only started very recently and was not accompanied by major institutional or political changes (Wood, 2004; Frynas, 2004).

Given their relatively peaceful domestic politics we may expect some causal mechanisms to be working in the oil-poor countries Kazakhstan, Syria and Turkmenistan: Syria apparently relies on repression and, compared to the oil-poor and violent states, exhibits relatively more favourable institutions (though close to the median, see Appendix 3 for details). The central Asian countries may well be different because of their Soviet legacy. A detailed comparative analysis of these ‘post-soviet-rentier’ states could yield interesting insights given the similarities of these countries in context variables (Soviet legacy, authoritarian regime) and possible differences in how resource rents are used.

Finally, we do not want to hide that two out of 13 oil-poor and violent countries show patterns somewhat similar to those of the oil-rich and peaceful cases. Algeria and Iran have fairly high security expenditure and engage in large-scale distribution policies. Yet, as already stated, government expenditure per capita is close to the sample median and thus not comparable to the levels of spending in most oil-rich countries.

In sum, we can conclude that three causal mechanisms – a huge security apparatus, large-scale distribution and outside protection – distinguish the oil-rich from the oil-poor states. This is also true for patronage and clientelist networks which however function in a direction opposite to our theoretical expectation, pointing to an positive effect of oil wealth on state institutions. Although partial correlations between wealth and causal mechanism indicators

also support our findings, there remain imperfections, particularly as illustrated by some deviant cases.

Conclusions

The debate on the resource-conflict link has been dominated by a notion of a negative impact of natural resources, particularly oil, on internal peace. Evidence presented in this paper suggests a substantial modification of this idea. It is dependence rather than wealth that creates problems. Oil exporters tend to be prone to violence as a group but countries oil-rich in per capita terms are spared from internal violence despite being highly dependent. Regardless of the methodology applied one conclusion seems to be safe: In terms of per capita wealth of oil production there is no paradox of plenty as regards the likelihood of civil conflict. Apparently, governments use the large resource revenues to maintain internal peace by a combination of huge security apparatus and generous distributional policies. Such policies are costly and we find that oil-rich countries have to cross a fairly high threshold of per capita wealth to be able apply them. In addition to these two traditional rentier state mechanisms, we identify a role for the presence of outside protectors in achieving internal stability.

No evidence however can be found for using huge amounts of oil rents to establish state institutions that would be characterized by patronage and clientelism, another causal mechanism suggested by the rentier state theory. We concede that our empirical operationalisations of clientelism and patronage are problematic and consider the search for better indicators and detailed country assessments key to a better understanding of this mechanism. Furthermore, our findings with regard to the relationship between institutional quality and resource wealth point towards a broader field of future research. In contrast to theoretical predictions, oil-wealthy states tend to have better state institutions than their oil-poor counterparts. Theory does not have much to say on why resource-wealthy countries should have better state institutions or, more generally, stronger states. Possibly, the availability of large resource rents triggers more public demand for transparency, a mechanism that would run opposite to the ‘no-taxation-no-representation mechanism’ assumed by the rentier state theory.

The resource-institutions link certainly merits further investigation. Yet, one should not draw too far-ranging conclusions from our observations in this regard, as the present study largely disregards the dynamic dimension of the resource-conflict link. Hence, our results, in

particular concerning the relationship between resource wealth and institutions have to be taken with caution. More specifically, we do not assess the role of institutional conditions at the time when oil was discovered. These initial institutional conditions are very likely to affect how resource revenues are used, how institutions develop, and whether resource abundance contributes to conflict proneness. An empirical analysis of such dynamics may however not be feasible in the type of cross-country comparisons employed in this paper because of data shortcomings (e.g. institutional data when countries start to exploit resources) and analytical problems (e.g. the specification of a dynamic system with sufficient degrees of freedom and adequate instrumental variables).

Although oil-rich countries are spared from violence and tend to have better institutions, all this is not to say that oil abundance is generally a blessing for them. In most of these countries, oil seems to work to uphold authoritarian regimes, whose presence may be seen socially undesirable from many other perspectives safe internal stability. Moreover, our analysis ignores another important dynamic aspect that matters for the resource-conflict link: Many countries may face serious conflict once oil is running out or the oil price is subject to a – currently unlikely – strong downward trend. In addition, even if general increasing international demand continues to guarantee a stable influx of revenues international scarcity may provoke international violent conflict over the control over these resources exemplified by the Iraqi invasion of Kuwait in 1990 and possibly the US attack on Iraq in 2003.

All of the above issues are related to the starting point of this paper: The conceptualisation of resource wealth. We have clearly shown the importance of distinguishing between resource wealth (in per capita terms) and dependence, which work in different directions as regards peace. This conceptualisation matters beyond the reduced-form relationship between resource abundance and internal conflict and, hence, has implications for understanding the causal mechanisms behind it. Furthermore, the conceptualisation of resource wealth bears importance beyond academic debate. In the final instance ‘wealth’ is not an absolute term but remains subject to perception and social construction. The social construction of what oil or resource wealth means may also affect the likelihood of social conflict. The shared notion of a country being resource or oil-rich is likely to raise popular expectations, thereby affecting political stability negatively: If a country with relatively low income from resources is labelled ‘resource rich’, expectations may rise that governments will fail to fulfil.

In sum, it must be conceded that our study is far from providing a final solution to the apparently highly ambivalent and complex resource-conflict link. Yet, the paper illustrates

that a more careful conceptualisation and empirical operationalisation of ‘natural resource abundance’ is a prerequisite for understanding it. Future research may focus and collect new data on dynamic aspects, in particular conditions at the beginning of oil age and boom and bust effects, as well as the related resources-institutions link (e.g. better proxies for patronage and clientelism). It should also embrace non-oil natural resources, on which our study remains silent. Precise causal mechanisms need to be analysed within a more sophisticated theoretical framework that takes the complexity and ambivalence of resources and conditioning circumstances into consideration. In particular the examination of the dynamic dimensions will require in-depth and carefully selected comparative case studies.

References

- Auty, Richard M., ed., 2001. *Resource Abundance and Economic Development*. Oxford: Oxford University Press.
- Bannon, Ian & Paul Collier, 2003, eds. *Natural Resources and Violent Conflict. Options and Actions*. Washington/DC: World Bank.
- Beblawi, Hazem, 1987. 'The Rentier State in the Arab World', in Hazem Beblawi & Giacomo Luciani, eds.. *The Rentier State*. London: Croom Helm.
- Collier, Paul & Anke Hoeffler, 2001. *Greed and Grievance in Civil War*. Washington/DC: World Bank.
- Collier, Paul & Anke Hoeffler, 2005. 'Resource Rents, Governance, and Conflict', *Journal of Conflict Resolution* 49(4): 625-633.
- Collier, Paul and Anke Hoeffler, 2004. 'Greed and grievance in civil war', *Oxford Economic Papers* 56(4): 563-595.
- Collier, Paul, Anke Hoeffler, and Mark Söderbom, 2004. 'On the duration of civil war', *Journal of Peace Research* 41(3): 253-273.
- Collier, Paul, V.L. Elliott, Håvard Hegre, Anke Hoeffler, Marta Reynal-Querol & Nicholas Sambanis, 2003. *Breaking the Conflict Trap. Civil War and Development Policy*. World Bank Policy Research Report, London and Washington: Oxford University Press and World Bank.
- De Soysa, Indra, 2002a. 'Paradise is a Bazaar? Greed, Creed and Grievance in Civil War 1989-1999', *Journal of Peace Research* 39(4): 395-416.
- De Soysa, Indra, 2002b. 'Ecoviolence: Shrinking Pie, or Honey Pot?', *Global Environmental Politics* 2(4): 1-34.
- De Soysa, Indra, 2006. 'The 'Resource Curse'. An Empirical Overview', in Arne Dauderstädt and Arne Schildberg, eds., *Dead Ends to Transition. Rentier Economies and Protectorates*. Frankfurt/New York: Campus (48-58).
- Fearon, James D. and David Laitin, 2003. 'Ethnicity, Insurgency, and Civil War', *American Political Science Review* 97 (1): 75-90.
- Fearon, James D., 2005. 'Primary Commodities and Civil War', *Journal of Conflict Resolution* 49(4): 483-507.
- Fjelde, Hanne, 2006. 'Natural Resources, Quality of Government and Civil Conflict', paper prepared for presentation at the 47th Annual Convention of the International Studies Association, San Diego, USA, 22 - 25 March 2006.
- Frynas, Jędrzej G., 2004. 'The Oil Boom in Equatorial Guinea', *African Affairs* 103(413): 527-46.
- Hegre, Håvard, Scott Gates, Nils Petter Gleditsch & Tanja Ellingsen, 2001. 'Toward a Democratic Civil Peace? Democracy, Political Change and Civil War 1816-1992', *American Political Science Review* 95(1): 34-48.
- Herb, Michael, 2003. 'No Representation without Taxation? Rents, Development and Democracy', manuscript, (http://www2.gsu.edu/~polmfh/herb_rentier_state.pdf).
- Humphreys, Macartan, 2005. 'Natural Resources, Conflict and Conflict Resolution', *Journal of Conflict Resolution* 49(4): 508-537.
- Johnston, Michael, 1986. 'The Political Consequences of Corruption. A Reassessment', *Comparative Politics* 18(4): 459-477.

- Karl, Terry Lynn & Ian Gary, 2003. 'Bottom of the Barrel: Africa's Oil Boom and the Poor', report, Catholic Relief Services (www.crs.org/get_involved/advocacy/policy_and_strategic_issues/oil_report.cfm)
- Karl, Terry, Lynn, 1997. *The Paradox of Plenty. Oil Booms and Petro-States*. Berkeley: University of California Press.
- King, Gray and Lanche Zeng, 2001. 'Logistic regression in rare events data'. *Political Analysis* 9: 137-163.
- Le Billon, Philippe, 2001. 'The Political Ecology of War. Natural Resources and Armed Conflict', *Political Geography* 20(5): 561-584.
- Le Billon, Phillippe, 2003a, 'Buying Peace or Fuelling War: The Role of Corruption in Armed Conflicts', *Journal of International Development* 15(4): 413-426.
- Le Billon, Phillippe 2003b, 'Fuelling War: Natural Resources and Armed Conflicts', Adelphi Paper 357.
- Luciani, Giacomo, 1987. 'Allocation vs. Production States: A Theoretical Framework', in Hazem Beblawi & Giacomo Luciani, eds., *The Rentier State*. New York: Croom Helm
- Lujala, Päivi, Nils Petter Gleditsch & Elisabeth Gilmore, 2005. 'A Diamond Curse? Civil War and a Lutable Resource', *Journal of Conflict Resolution* 49(4): 538-562.
- Mahdavy, Hossein (1970), 'Patterns and Problems of Economic Development in Rentier States. The Case of Iran', in M. A. Cook, ed., *Studies in the Economic History of the Middle East*. London: Oxford University Press.
- Mehlum, Halvor, Karl Moene and Ragnar Torvik (2006). Institutions and the Resource Curse. *The Economic Journal* 116(508): 1-20.
- Myers, Keith, 2005. 'Petroleum, Poverty and Security', Africa Programme, AFP BP 05/01 (June).
- Pregibon, Daryl (1981). Logistic Regression Diagnostics. *Annals of Statistics* 9(4): 705-724.
- Ron, James, 2005. 'Paradigm in Distress? Primary Commodities and Civil War', *Journal of Conflict Resolution* 49 (4): 443-450.
- Ross, Michael L., 2001. 'Does Oil Hinder Democracy?', *World Politics* 53(April): 325-61.
- Ross, Michael L., 2003. 'The Natural Resource Curse: How Wealth Can Make You Poor', in Bannon, Ian & Paul Collier, 2003, eds., *Natural Resources and Violent Conflict. Options and Actions*. Washington/DC: World Bank
- Ross, Michael L., 2004. 'What Do We Know about Natural Resources and Civil War?', *Journal of Peace Research* 41(3): 337-356
- Sachs, Jeffrey D., Andrew M. Warner (1995). 'Natural Resource Abundance and Economic Growth', Harvard Institute for International Development, Development Discussion Paper No. 517a.
- Smith, Benjamin, 2004. 'Oil Wealth and Regime Survival in the Developing World, 1960-1999', *American Journal of Political Science* 48(2): 232-246.
- Stauffer, T., 1987. 'Income Measurement in Arab States', in: Beblawi Hazem and Giacomo Luciani, eds., *The Rentier State*. New York: Croom Helm.
- Wood, Geoffrey, 2004. 'Business and Politics in a Criminal State: The Case of Equatorial Guinea', *African Affairs* 103(413): 547-567.
- Yates, Douglas A., 1996. *The Rentier State in Africa. Oil Rent Dependency and Neocolonialism in the Republic of Gabon*. Asmara: Africa World Press.
- Yates, Douglas A., 2005. 'Neo-Petro-monialism' and the Rentier State in Gabon', in Matthias Basedau & Andreas Mehler, 2005, eds. *Resource Politics in sub-Saharan Africa*. Hamburg African Studies Vol. 14, Hamburg: Institute of African Affairs.

Annexes

Annex 1: Detailed regression results and variable explanations

Preferred specifications

<i>Specification</i>	<i>I</i>	<i>II</i>
<i>Dependent variable</i>		
<i>Independent variables</i>	<i>Civil war onset (CH)</i>	<i>Civil war onset (FL)</i>
<i>Oil production per capita (oil)</i>	53.0802 (3.19)***	24.6147 (0.69)
<i>Oil production per capita²</i>	-149.9132 (2.81)***	-151.1495 (0.54)
<i>Primary commodity exports / GDP (sxp)</i>	33.1049 (2.88)***	5.8811 (0.87)
<i>(Primary commodity exports / GDP)² (sxp²)</i>	-98.8583 (2.66)***	-16.2855 (0.96)
<i>(Primary commodity exports / GDP) x Oil dummy (oilxsp)</i>	-26.3340 (2.59)***	-9.9181 (1.45)
<i>(Primary commodity exports / GDP)² x Oil dummy</i>	95.3996 (2.66)***	25.8365 (1.45)
<i>Log GDP (FL)</i>	-0.6819 (4.54)***	-0.6418 (4.03)***
<i>GDP growth (CH)</i>	-0.1961 (3.71)***	-0.2226 (4.81)***
<i>Log population (CH)</i>	0.4736 (2.24)**	0.4111 (2.50)**
<i>Log of mountainous terrain (FL)</i>	0.4702 (3.01)***	0.3776 (3.08)***
<i>Peace duration (CH)</i>	-0.0024 (2.10)**	-0.0022 (1.79)*
<i>Non-contiguous state (FL)</i>	1.0998 (1.72)*	1.6606 (2.88)***
<i>Political instability (FL)</i>	0.5061 (1.14)	0.3176 (0.76)
<i>Ethnic fractionalization (FL)</i>	-1.3128 (1.79)*	-0.2378 (0.33)
<i>Ethnic dominance (CH)</i>	0.7232 (1.75)*	0.6151 (1.56)
<i>Constant</i>	-11.5652 (3.06)***	-8.4695 (3.04)***
<i>Pseudo-R²</i>	0.3109	0.2620
<i>Observations</i>	649	592

Source: Authors' calculations based on replication data as described in the main text.

Note: For detailed variable descriptions see CH and FL. The FL dataset has been modified to fit into the 5-year-period design underlying the above regression. A Stata-do-file that uses the replication dataset provided by FL and performs the necessary transformations is available from the authors upon request. Robust z statistics in parentheses, * significant at 10%; ** significant at 5%; *** significant at 1%.

Logit-regression with CH controls

Specification Dependent variable	With CH controls			
	not reported in main text	III	IV	
Independent variables	Civil war onset (CH)	Civil war onset (CH)	Civil war onset (CH)	Civil war onset (FL)
Oil production per capita (oil)		-6.2859 (1.89)*	19.2926 (1.28)	-2.5679 (0.14)
Oil production per capita ²			-81.7643 (1.53)	-13.9784 (0.35)
Primary commodity exports / GDP (sxp)	47.8123 (3.99)***	53.1834 (3.94)***	53.2097 (3.98)***	18.1604 (2.14)**
(Primary commodity exports / GDP) ² (sxp ²)	-123.1747 (3.30)***	-149.1653 (3.36)***	-150.1823 (3.37)***	-52.5392 (2.31)**
(Primary commodity exports / GDP) x Oil dummy (oilsxp)	-25.9716 (3.07)***	-27.2652 (2.91)***	-34.2110 (3.02)***	-16.8902 (2.12)**
(Primary commodity exports / GDP) ² x Oil dummy	98.8381 (2.91)***	122.5205 (3.01)***	133.2482 (3.13)***	59.9436 (2.54)**
Male secondary schooling	-0.0345 (3.52)***	-0.0304 (3.44)***	-0.0318 (3.74)***	-0.0266 (3.63)***
GDP growth	-0.1193 (2.74)***	-0.1182 (2.32)**	-0.1124 (2.37)**	-0.1494 (3.29)***
Peace duration	-0.0033 (2.87)***	-0.0025 (2.17)**	-0.0024 (2.14)**	-0.0032 (2.28)**
Geographic dispersion	-2.9149 (2.40)**	-3.7638 (2.96)***	-3.7763 (3.04)***	-1.9463 (1.69)*
Log population	1.0697 (4.69)***	1.0683 (4.34)***	1.0687 (4.61)***	0.9260 (5.02)***
Social fractionalization	-0.0003 (2.41)**	-0.0004 (2.83)***	-0.0003 (2.59)***	-0.0001 (1.36)
Ethnic dominance (CH)	0.7791 (2.18)**	0.8794 (2.35)**	0.8332 (2.24)**	0.6928 (1.94)*
Constant	-19.2045 (5.08)***	-19.1237 (4.64)***	-19.1922 (4.90)***	-15.1306 (5.08)***
Pseudo-R ²	0.2837	0.2794	0.2887	0.2471
Observations	614	598	598	549

Source: Authors' calculations based on replication data as described in the main text.

Notes: For detailed variable descriptions see Collier & Hoeffler (2004). Robust z statistics in parentheses, * significant at 10%; ** significant at 5%; *** significant at 1%.

Logit-regression with FL controls

Specification Dependent variable	With FL controls not reported in main text			VI
	V Civil war onset (CH)	Civil war onset (FL)	Civil war onset (FL)	Civil war onset (FL)
<i>Independent variables</i>				
<i>Oil production per capita (oil)</i>	56.5949 (3.45)***		1.6180 (0.83)	28.1783 (2.13)**
<i>Oil production per capita²</i>	-168.4320 (2.75)***			-72.0813 (1.92)*
<i>Primary commodity exports / GDP (sxp)</i>	17.7109 (2.33)**	1.9876 (0.39)	1.1692 (0.22)	1.3881 (0.26)
<i>(Primary commodity exports / GDP)² (sxp²)</i>	-36.3910 (1.67)*	-8.2406 (0.78)	-7.8925 (0.67)	-8.4592 (0.69)
<i>(Primary commodity exports / GDP) x Oil dummy (oilxsp)</i>	-15.2859 (2.15)**	-3.7290 (0.91)	-3.1634 (0.75)	-6.6269 (1.46)
<i>(Primary commodity exports / GDP)² x Oil dummy</i>	36.0233 (1.67)*	14.4156 (1.44)	13.6443 (1.20)	16.5468 (1.41)
<i>Log GDP</i>	-0.6181 (3.81)***	-0.5445 (3.61)***	-0.5625 (3.62)***	-0.6478 (3.74)***
<i>Log population</i>	0.4500 (2.92)***	0.3085 (2.09)**	0.2822 (1.92)*	0.2750 (1.83)*
<i>Log of mountainous terrain</i>	0.3826 (3.22)***	0.2879 (2.64)***	0.2815 (2.56)**	0.2771 (2.54)**
<i>Non-contiguous state</i>	0.6285 (1.09)	0.9072 (1.99)**	0.9525 (2.06)**	1.1601 (2.43)**
<i>Political instability</i>	0.6758 (1.61)	0.3788 (0.95)	0.4018 (1.01)	0.3990 (0.99)
<i>Polity 2</i>	-0.0303 (0.77)	0.0173 (0.57)	0.0211 (0.69)	0.0296 (0.95)
<i>Ethnic fractionalization</i>	-0.8935 (1.38)	0.5960 (0.92)	0.5957 (0.91)	0.5184 (0.78)
<i>Religious fractionalization</i>	0.2721 (0.36)	-0.1906 (0.25)	-0.3153 (0.41)	-0.2644 (0.35)
<i>Constant</i>	-8.0718 (5.13)***	-5.0396 (3.17)***	-4.6502 (2.97)***	-4.4710 (2.84)***
<i>Pseudo-R²</i>	0.2188	0.1996	0.1984	0.2049
<i>Observations</i>	674	626	622	622

Source: Authors' calculations based on replication data as described in the main text.

Notes: For detailed variable descriptions see Fearon and Laitin (2003). Robust z statistics in parentheses, * significant at 10%; ** significant at 5%; *** significant at 1%.

Annex 2: Oil and conflict data for oil-dependent states

<i>Indicator</i>	<i>Oil production p.c. (1996)</i>	<i>Oil dependence (1990-2001)</i>	<i>PRIO cumulated conflict intensity (1990- 2005)</i>	<i>Civil war onset (1991- 2000)</i>	<i>Political stability and absence of violence (1996- 2004)</i>	<i>Regime Durability, Polity IV (2003)</i>
<i>Unit</i>	<i>tons per capita per year</i>	<i>as share of GDP</i>		<i>(0 or 1)</i>	<i>(-2.5 to +2.5)</i>	
<i>Oil rich and peaceful</i>						
Bahrain	0.18	0.69	0	0	-0.01	28
Brunei	28.52	0.38	0		1.19	
Equat. Guinea	0.00	0.86	0		-0.03	34
Gabon	14.94	0.40	0	0	-0.11	12
Kuwait	32.66	0.36	0	0	0.44	11
Libya	11.07	0.36	0	0	-0.74	52
Norway	33.06	0.15	0	0	1.49	57
Oman	18.43	0.37	0	0	0.90	46
Qatar	35.34	0.34	0		1.10	32
Saudi-Arabia	16.84	0.32	0	0	-0.09	77
UAE	38.48	0.49	0	0	0.95	32
<i>Oil poor and peaceful</i>						
Kazakhstan	0.63	0.20	0	0	0.13	12
Syria	1.14	0.20	0	0	-0.41	40
Turkmenistan	0.05	0.26	0	0	-0.09	12
<i>Oil poor and violent</i>						
Algeria	1.23	0.24	24	1	-2.04	8
Angola	2.61	0.27	26	1	-1.81	6
Azerbaijan	0.00	0.28	9	1	-0.82	8
Congo, Rep.	2.96	0.45	8	1	-2.39	6
Iran	2.00	0.17	11	0	-0.48	6
Iraq	0.19	0.27	17	0	-2.41	0
Nigeria	0.88	0.39	2	0	-1.48	4
Papua NG	0.00	0.15	6	0	-0.74	28
Russia	0.86	0.16	21	1	-0.70	2
Trin. and Tob.	2.74	0.23	1	0	0.36	41
Uzbekistan	0.03		2	0	-0.73	12
Venezuela	4.30	0.20	1	0	-0.74	35
Yemen	0.89	0.28	2	1	-1.25	10
Correlation with oil production p.c.		0.09	-0.38	-0.32	0.71	0.43
<i>Sig. level</i>		0.68	0.05	0.13	0.00	0.03
Correlation with oil dependence			-0.31	-0.09	0.12	0.09
<i>Sig. Level</i>			0.12	0.68	0.57	0.67

Source: Authors' compilation.

Note: For data sources see Annex 4.

Annex 3: Data on transmission channels for oil-dependent states

<i>Indicator</i>	<i>Arms imports 1990-2000</i>	<i>Freedom House ratings 1990-2005</i>	<i>Permanent military base by permanent UNSC- member 1990- 2000</i>	<i>Current expenditure p.c. (1997)</i>	<i>Total taxes p.c. (1997)</i>	<i>Control of corruption (1998)</i>	<i>Government effectiveness (2002)</i>
<i>Unit</i>	<i>USD</i>	<i>(1 to 7)</i>	<i>(0 or 1)</i>	<i>int. 1997 USD</i>	<i>int. 1997 USD</i>	<i>(-2.5 to +2.5)</i>	<i>(-2.5 to +2.5)</i>
<i>Oil rich and peaceful</i>							
Bahrain	129.3	5.8	0	2806	748	0.34	0.45
Brunei	14.2	5.9	1			0.00	1.27
Equat. Guinea	1.3	6.8	0	231	100	-0.86	-1.55
Gabon	2.4	4.4	1	757	706	-0.96	-0.99
Kuwait	180.6	4.9	1	2967	1850	1.01	0.32
Libya	5.1	7.0	0			-0.97	-0.98
Norway	41.4	1.0	1	6335	13102	2.29	2.18
Oman	36.4	5.8	1	2758	1046	0.83	0.79
Qatar	142.9	6.2	1	2758		0.75	0.71
Saudi-Arabia	62.7	6.9	1	3103		0.28	-0.09
UAE	187.4	6.0	1	5822	3159	0.72	0.68
<i>Oil poor and peaceful</i>							
Kazakhstan	3.7	5.4	1	486	468	-0.93	-0.83
Syria	9.3	7.0	0	344	529	-0.64	-0.43
Turkmenistan	0.5	6.8	0	368	472	-1.19	-1.36
<i>Oil poor and violent</i>							
Algeria	10.4	5.6	0	817	411	-0.77	-0.77
Angola	8.4	6.0	0	657	88	-1.16	-1.13
Azerbaijan	2.4	5.4	0	363	196	-1.08	-1.05
Congo, Rep.	0.6	4.7	0	191	30	-1.06	-1.24
Iran	8.1	6.1	0	1003	333	-0.70	-0.30
Iraq	2.7	6.9	0			-1.43	-1.39
Nigeria	0.2	5.1	0	51	41	-1.13	-1.22
Papua NG	0.4	2.7	0	523	577	-0.77	-0.41
Russia	0.1	4.1	0	797	797	-0.76	-0.50
Trin. and Tob.	0.7	1.8	0	1575	1303	0.06	0.09
Uzbekistan	0.0	6.5	0	184	374	-1.04	-0.89
Venezuela	2.6	3.1	0	807	1011	-0.84	-0.72
Yemen	6.0	5.4	0	168	68	-0.64	-0.59
Correlation with cumulated conflict intensity	-0.29	0.04	-0.43	-0.29	-0.21	-0.40	-0.34
<i>Sig. level</i>	<i>0.14</i>	<i>0.85</i>	<i>0.02</i>	<i>0.17</i>	<i>0.35</i>	<i>0.04</i>	<i>0.08</i>
Correlation with oil production p.c.	0.72	-0.10	0.83	0.85	0.65	0.80	0.76
<i>Sig. level</i>	<i>0.00</i>	<i>0.61</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>
Correlation with oil dependence	0.32	0.38	0.04	0.07	-0.19	0.05	-0.09
<i>Sig. level</i>	<i>0.11</i>	<i>0.06</i>	<i>0.85</i>	<i>0.75</i>	<i>0.40</i>	<i>0.81</i>	<i>0.67</i>

Source: Authors' compilation.

Note: For data sources see Annex 4.

Annex 4: Data sources

<i>Variable</i>	<i>Unit/Scale</i>	<i>Source(s)</i>
<i>Oil production p.c. (1996)</i>	tons per capita per year	OPEC, Energy Balances of Non-OECD Countries 1996/97, http://www.opec.org/library/Annual%20statistical%20Bulletin/pdf/AB002000.pdf
<i>Oil dependence (1990-2001)</i>	as share of GDP	Exports from Comtrade; GDP from World Development Indicators; missing data filled from Collier and Hoeffler (2005) and IMF country reports
<i>PRIO cumulated conflict intensity (1990-2005)</i>	(0 to 3)	PRIO-UCDP, http://www.pcr.uu.se/research/UCDP/our_data1.htm
<i>Civil war onset (1991-2000)</i>	(0 or 1)	Fearon and Laitin (2003)
<i>Political stability and absence of violence (1996-2004)</i>	(-2.5 to +2.5)	World Bank, http://info.worldbank.org/governance/kkz2004/indicator_report.asp?indicatorid=2
<i>Regime durability (2003)</i>		CIDCM, http://www.cidcm.umd.edu/inscr/polity/
<i>Arms imports (1990-2000)</i>	per capita in constant 1990 USD	World Bank, World Development Indicators
<i>Freedom House ratings (1990-2005)</i>	(1 to 7)	http://www.freedomhouse.org/template.cfm?page=15&year=2006
<i>Permanent military base by permanent UNSC-member (1990-2000)</i>	(0 or 1)	US: http://www.globemaster.de/bases.html ; France: http://www.defense.gouv.fr/sites/defense/activites_des_forces ; GB: Defense report http://www.dasa.mod.uk/natstats/tsp6/tsp6_jul06.pdf ; Russia: google!
<i>Current expenditure p.c. (1997)</i>	int. 1997 USD	IMF Statistical Appendices and World Bank Development Indicators, OECD: http://www.oecd.org/dataoecd/34/6/1907567.pdf
<i>Total taxes p.c. (1997)</i>	int. 1997 USD	IMF Statistical Appendices and World Bank Development Indicators; OECD, http://www.oecd.org/dataoecd/34/6/1907567.pdf
<i>Control of corruption (1998)</i>	(-2.5 to +2.5)	World Bank Governance Indicators, http://info.worldbank.org/governance/kkz2005/pdf/2005kkdata.xls
<i>Government effectiveness (2002)</i>	(-2.5 to +2.5)	World Bank Governance Indicators, http://info.worldbank.org/governance/kkz2004/tables.asp

Note: (Year-year) are simple averages. More detailed information on statistical sources (by country) is available from the authors upon request.