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What is This?

Resource Curse or Rentier Peace? The Ambiguous Effects of Oil Wealth and Oil Dependence on Violent Conflict*

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The 'resource curse' hypothesis claims that abundance in natural resources, particularly oil, encourages especially civil war. Natural resources provide both motive and opportunity for conflict and create indirect institutional and economic causes of instability. 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 patronage, 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 conflict proneness. This article presents part of a solution to this apparent puzzle for the case of oil-producing countries. The key argument is that both resource wealth per capita and resource dependence need to be taken into account, since only the availability of very high per capita revenues from oil allows governments to achieve internal stability. The empirical analysis supports this hypothesis. The findings of multivariate cross-country regressions indicate a U-shaped relationship between oil dependence and civil war onset, while high resource wealth per capita tends to be associated with less violence. The results of a macro-qualitative comparison for a reduced sample of highly dependent oil exporters are even more clearcut. Using the same reduced sample, we find that oil-wealthy countries apparently manage to maintain political stability by a combination of large-scale distribution, high spending on the security apparatus and protection by outsiders. Compared to oil-poor countries and in contradiction to the rentier state theory, the institutions of oil-wealthy countries do not seem to be particularly characterized by patronage and clientelism.

Introduction

The growing literature on the 'resource curse' (Sachs & Warner, 1995; Auty, 2001) and the 'paradox of plenty' (Karl, 1997) has been linking the extraction of natural resources to corruption, authoritarianism,

economic decline and civil war. In the study of peace and war, natural resources are said to provide both finance and motive for armed conflict and to create indirect economic and institutional causes of violence (Ross, 2006; Humphreys, 2005; Fearon, 2005). Numerous empirical studies have provided evidence that natural-resource dependent and rich countries indeed seem to be more likely to lapse into violence (see Ross, 2004, 2006).

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* The data and self-contained STATA-codes to perform the multivariate analyses of this article, as well as the appendices, are available at http://www.prio.no/jpr/datasets. Correspondence: Basedau@giga-hamburg.de.

However, the resource-conflict link is probably more complex than conceptualized in the scientific mainstream. Empirical studies have shown that *on average*, oil and lootable resources favour violent conflict (Ross, 2004), but, beyond averages, for one resource abundant or dependent country affected, two are spared from violence (Ross, 2003). As a result, the debate has begun to look at 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, 2006; 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 empirically untested – that governments use abundant resources to buy off opposition or suppress armed rebellion, thereby contributing to political stability and preventing armed conflict.

This article 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 are not. Our first hypothesis is that very high per capita revenues from oil allow governments to avoid conflict. We assess this hypothesis by including a measure of oil wealth per capita into the multivariate framework proposed by Collier & Hoeffler (2004). These cross-country regressions, which are based on modified replication datasets, show an inverted U-shaped relationship between revenues from oil per capita and violent conflict, while we find a destabilizing effect of oil dependence measured in terms of oil exports as a 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 violent 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 article 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. Finally, we summarize major findings and highlight areas for future research.

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

The academic debate on the resource–civil war link has been dominated by the notion of an adverse effect of natural resources on peace. It was Collier & Hoeffler's (2001) influential work on 'greed and grievance' that stimulated a large number of subsequent studies. Collier & Hoeffler (2004) 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. 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 onset.[1] (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) Similarly 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 Fearon, 2005; Fearon & Laitin, 2003).[2] (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 therefore involve numerous contextual conditions. In particular, the literature has emphasized the relevance of the characteristics of the available resource (Le Billon, 2001; Auty, 2001; Ross, 2003). Especially 'lootability' makes a difference with respect to 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 of the central

Table I. Causal Mechanisms Connecting Resources to Civil War Onset

Working primarily through	*Effect on peace-mechanism*	
	Fuelling war	*Avoiding war*
Motive	Greedy rebels	Large-scale distribution
	Greedy outsiders	
	Grievances	
	Weak state (1)	Selective co-optation
	Sparse networks	
Opportunity	Feasibility (rebel finance)	Repression (security apparatus)
	Weak state (2)	Outside protectors

On the basis of Humphreys (2005), Le Billon (2001) and others.

[1] Humphreys (2005: 514–518) also develops a number of – partly deviating – causal mechanisms for civil war duration (see also Ross, 2006: 282).

[2] Though not mentioned by Humphreys or Fearon, a weak state, particularly in remote areas, also facilitates the formation of armed rebel movements.

state, or, if concentrated in certain regions ('point' and 'distant'), secessionist uprisings (Le Billon, 2001: 31).[3]

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, Chile and Norway – that have fairly successfully managed their resource wealth – 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 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 favourable structural conditions, working institutions, a careful management of the resource sector – including possibly rather private than state ownership (Luong & Weinthal, 2006) – and responsible leadership may prevent resource-rich countries lapsing 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 they have been declared a 'key research agenda' (Collier & Hoeffler, 2005: 627).

This discussion, however, has neglected a further differentiation, which refers to the independent variable. A country's dependence on and its abundance of resources are

not identical (de Soysa, 2002a: 8–9; Ross, 2006: 266), 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, if the governments had 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 wealth and dependence has implications for the analysis of the aforementioned mechanisms. Generally speaking, countries do not need to be wealthy for most of the mechanisms to be operating. It might be dependence that makes conflict likelier in the first place: only in economies with a monolithic structure that offers limited alternatives to earn income is the resource in question likely to become a problem. 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. For 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 determines violent interventions. 'Feasibility' will also partly depend on wealth, as some means for rebellion require substantial resources for internationally traded goods, mainly arms. However, as we will demonstrate in the following section, it is equally probable that resource wealth will be used to maintain peace.

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

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

The conventional notion that natural resources harm internal peace 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) and argues that the main function of the state in rentier economies is to distribute rent. 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 the economy, institutions and democracy (see, for instance, Ross, 2001), which have been identified as indirect causes of violence. Yet, rents also provide ruling elites with vital resources through which to offset these indirect negative effects on stability (Luciani, 1987: 7; Karl, 1997: 21–22). In rentier states, various mechanisms are at work and they operate, as in the resource curse theory, through motive and/or opportunity (see also Ross, 2001; Smith, 2004).[4]

(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. According to the rentier state concept, repression will extend to the suppression of political freedoms, that is, authoritarian rule.

(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 for energy security (or supply of other commodities of vital interest), the major powers might deter internal rebellion or even come to the rescue when 'greedy outsiders' threaten to attack the country (see Humphreys, 2005: 533).

(3) Elites may use not only sticks to impede armed opposition, but also carrots. Revenues can be used in a proactive manner to buy off demands and opposition. This cooptation effect, largely observed by scholars studying the Middle East oil monarchies, can come in several shapes: 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. As a consequence, potential rebel leaders might not emerge or will find it difficult to recruit rank and file members. Possibly, this strategy can be pursued in a less proactive manner. Since resource rents render taxation unnecessary for incumbents, citizens may feel less motivated to protest or take up arms against a government that does not levy any taxes. However, this argument is at least ambiguous: a government that does not depend on its citizens' taxes may be less accountable and would not develop an efficient (tax-collecting) bureaucracy. By reducing the quality of state institutions as a whole, violence may be triggered (Smith, 2004: 233; Humphreys, 2005: 512–513; Snyder & Bhavnani, 2005).

(4) Finally, elites may distribute rents selectively and create clientelist networks, from which only leaders of politically

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[4] Some authors in the resource–conflict debate, especially Le Billon (2001: 565; 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.

important groups benefit. Through this 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 – although 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, for instance, by Johnston (1986), Le Billon (2003) and Fjelde (2009).

The feasibility of successfully pursuing one, some or all of the strategies outlined above also depends on the context conditions discussed in the previous section. 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 which benefits does not expect considerable amounts. Dependence will affect the feasibility of the outlined strategies in most cases only indirectly and may be irrelevant as long as there is enough money available.

Resources and Conflict: Empirical Evidence to Date

Many empirical studies have 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 intrastate 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 more likely, but seem to influence the duration of a conflict once it has broken out (see Lujala, Gleditsch & Gilmore, 2005).[5] 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 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 and propose that the oil–violence nexus works through the weak state mechanism (see Ross, 2006: 290–291) or can be additionally attributed to effects of 'sparse networks' (Humphreys, 2005).

The lack of clarity might be due to missing data and varying operationalizations of the dependent variable – civil war – as Ross (2004, 2006) suggests. Another pressing problem remains the inclusion of important intervening variables, in particular governance-related variables (Ross, 2004: 338). Moreover, it is remarkable that the potentially stabilizing rentier effects – and respective intervening variables – have hardly been tested in cross-country studies. With contrasting results, Ross (2001) and Herb (2003) have investigated such effects on democracy, but not on peace and security.[6]

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[5] 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.
[6] In contrast to Ross, Herb finds that regional characteristics rather than rentier effects hinder democracy.

Only Smith (2004) explicitly refers to the stabilizing rentier effects in oil states. Yet, his analysis of mechanisms focuses on repression in terms of the level of democratization, and he finds that the level of democratization does not account for regime stability.[7]

The reason why the empirical literature has been relatively silent on rentier effects may be the common operationalization of the independent variable – its failure to distinguish between resource wealth, on the one hand, and dependence, on the other. Since Sachs & Warner (1995), almost all studies have used share of resource exports in GDP (*sxp*) to proxy resource wealth (Ross, 2006: 265–266). Resource wealth per capita is only very indirectly measured by GDP per capita, which implies that the effect of resource wealth and (non-resource) income per capita are confounded. Collier & Hoeffler (2004) find a curvilinear effect of natural resource dependence: the likelihood of civil conflict declines once a level of about 30% dependence has been crossed. This may suggest that a country can indeed avoid military rebellion right from the outset if it is 'sufficiently abundant' in terms of natural resources (Collier & Hoeffler, 2004).

Only a few studies use a per capita measure for resource wealth. De Soysa (2002b) is the only author in Ross's 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 reflect wealth more accurately than the share of resource exports in GDP (*sxp*) (de Soysa, 2002b: 404), although it certainly measures potential rather than actual income. This is not true for Humphreys (2005) and Ross (2006), who test a number of causal mechanisms with per capita measures of income from both oil and diamond production.

De Soysa, Humphreys and Ross all find that resource wealth increases the risk of civil war onset, although some of the results point to a more ambiguous effect. Humphreys's results suggest at least ambivalent effects of oil production per capita on outbreak of civil war in strong or 'Weberian' states (Humphreys, 2005: 528). Ross's analysis produces a remarkably robust relationship of fuel rents and different measures civil war onset, but he concedes that the relationship fits less well when using squared terms. In fact, none of the studies report results of squared terms and logged measures of per capita resource wealth, thus remaining silent on possible (and probable) non-linear effects. The most serious challenge, however, is the fact that they use a per capita measure *instead* of *sxp*. In short, to date no article has been published that has tried to assess the simultaneous effect of dependence and wealth on civil war.[8]

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:

H1: Countries with very high revenues per capita from resources will be spared from civil conflict, even if highly dependent on resources. In contrast, if revenues remain relatively low, the dependence on resource rents should be harmful to peace.

H2: Governments in countries with high revenues from resources maintain peace through (a) large-scale distributional

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[7] Fjelde (2009) finds that the interaction of high levels of corruption and appropriable resources (oil wealth) reduces the conflict proneness of a country by offsetting the destabilizing effect of resource abundance.

[8] Just one paper (Brunnschweiler & Bulte, 2008) has tested both variables and finds that resource abundance reduces the likelihood of civil war onset, while dependence seems to be a consequence rather than a cause of civil war. A revised version of the paper is forthcoming in *Oxford Economic Papers*.

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) – the most notorious resource type in terms of conflict-proneness (Ross, 2004, 2006), thus allowing a hard test for our hypotheses. However, the choice of oil also affects the likelihood of causal mechanisms: because of 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 cross-country regressions based on replication datasets. These regressions try to establish a 'reduced-form' positive (negative) relationship between oil wealth and civil war onset while controlling for other factors, especially oil dependence as measured by the share of exports in GDP. After this multivariate approach, we analyse 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. Equally important, this analysis allows us to disentangle the hypothesized effects of oil wealth from those of dependence, the levels of which are similar among the countries included. 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 also allows keeping 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 article, 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 capture only that the effect of one explanatory variable varies with the level of another. Yet, our interest does not lie in such interactions – for example, 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), CH hereafter. 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), FL hereafter, as well as Humphreys (2005) estimate logit (or rare events logit) models based on 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 studies. In addition, the assumed time structure (explanatory variables lagged by one year only) does not seem to adequately reflect the supposed transmission mechanisms.[9] The following multivariate analysis rests on a dataset that is generated using three replication datasets provided by CH, FL and Humphreys (2005).

The dependent dichotomous variable in the following regressions is defined as in CH and takes a value of 1 if a civil war started during a five-year period between 1965 and 1999 (1965–69, …, 1995–99). It also takes a value of 1 if a war ended and another war started in the same five-year period. Ongoing civil wars are coded as missing observations, as the regressions intend to explain civil war onset, not duration.[10] We use two different civil war onset variables in the following. The first is the civil war onset variable from CH; the second set of dependent variables is constructed according to the described principles based on UCDP/PRIO's conflict database.[11]

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.[12]

Explanatory variables that are likely to be heavily influenced by civil war onset, such as GDP or polity, are averages of the preceding five-year period. Other variables, such as population and fractionalization proxies, could be kept for the initial period (1965, 1970, …, 1995) as they are either lagged in the replication dataset or (nearly) constant over 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 values, which implies that differences in sample size result from using either the CH or the UCDP/PRIO-based onset variable. Finally, sample size depends on data availability and hence varies with the choice of the independent variables.

We regress the CH as well as the UCDP/ PRIO-based onset variables on two different sets of independent variables using a logit model. The independent variables always include oil production per capita (*oil*),[13] primary commodity exports as share of GDP (*sxp*) multiplied by 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 account for the effect of both oil wealth, measured by *oil*, and oil dependence, proxied by *oilsxp* separately.

We include two different sets of additional control variables. In specifications I to III, we use a 'preferred' combination of controls from CH and (modified) variables from FL. The results are reported in Table II.

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[9] As the CH framework is not free from specification problems, we also ran regressions using the FL framework based on Humphreys's (2005) replication data.

[10] See Collier & Hoeffler (2004), who show that civil war onset and duration are governed by different mechanisms.

[11] We constructed two onset variables. The first onset variable is coded 1 for the onset of any conflict with more than 25 battle-related deaths in at least one of the years of the five-year spell (all conflicts), the second variable only for those with at least 1,000 battle-related deaths in one of the years (war). See Gleditsch et al. (2002) for details.

[12] A Stata do-file that uses the replication datasets and performs the necessary transformations is available from the authors upon request.

[13] More precisely, oil production is measured by its value; that is, the production is multiplied with an oil price index also provided by Humphreys (2005).

Table II.   Results from Multivariate Analyses

Independent variables	Specification		
	I	*II*	*III*
	Dependent variable		
	Civil war onset (All conflicts)	*Civil war onset (Wars only)*	*Civil war onset (CH)*
Oil production per capita (oil)	0.146*	0.131	0.229**
	(0.077)	(0.096)	(0.089)
Oil production per capita^2	–0.004**	–0.003	–0.005**
	(0.002)	(0.002)	(0.002)
Primary commodity exports / GDP (sxp)	12.665**	18.866**	23.191***
	(5.551)	(9.293)	(8.966)
(Primary commodity exports / GDP)^2 (sxp^2)	–49.978***	–67.940**	–80.439***
	(16.333)	(30.187)	(31.203)
(Primary commodity exports / GDP) × Oil dummy (oilsxp)	–8.567*	–14.681*	–18.759**
	(5.057)	(8.393)	(8.006)
(Primary commodity exports / GDP)^2 × Oil dummy	44.932***	65.739**	78.024**
	(16.224)	(30.302)	(30.705)
Log GDP (FL)	–0.260***	–0.256**	–0.338***
	(0.057)	(0.101)	(0.105)
GDP growth (CH)	–0.107***	–0.112***	–0.081**
	(0.033)	(0.041)	(0.039)
Log population (CH)	0.154	0.084	0.191
	(0.096)	(0.130)	(0.137)
Log of mountainous terrain (FL)	0.234**	0.469***	0.446***
	(0.099)	(0.144)	(0.135)
Peace duration (CH)	–0.001	–0.003***	–0.002**
	(0.001)	(0.001)	(0.001)
Non-contiguous state (FL)	1.154***	1.100**	0.859*
	(0.357)	(0.555)	(0.513)
Ethnic fractionalization (FL)	1.053**	1.123	–0.167
	(0.474)	(0.702)	(0.601)
Ethnic dominance (CH)	0.320	0.594	0.595*
	(0.253)	(0.379)	(0.351)
Constant	–5.006***	–5.439**	–6.881**
	(1.774)	(2.648)	(2.677)
Observations	692	710	742
Dropped outliers	Liberia, 1980, 1985; Saudi Arabia, 1975; Iraq, 1980	Liberia, 1985; Iraq, 1980	Liberia, 1985, 1990; Kuwait, 1975

Robust z-statistics in parentheses; *significant at 10%; **significant at 5%; ***significant at 1%. The analysis rests on 128 (specification I) and 129 (specifications II and III) countries. For detailed variable descriptions see CH and FL.

'Standard' control sets from CH are included in specifications IV to VI that are reported in Appendix 1. In all regressions, the significant coefficients of the controls have the expected sign. Among the controls, the level of GDP (specifications I–III) and GDP growth (all specifications), population (IV–VI), peace duration and geographic indicators

Figure 1.   Effects of Oil Wealth and Dependence on Civil War Onset Probability
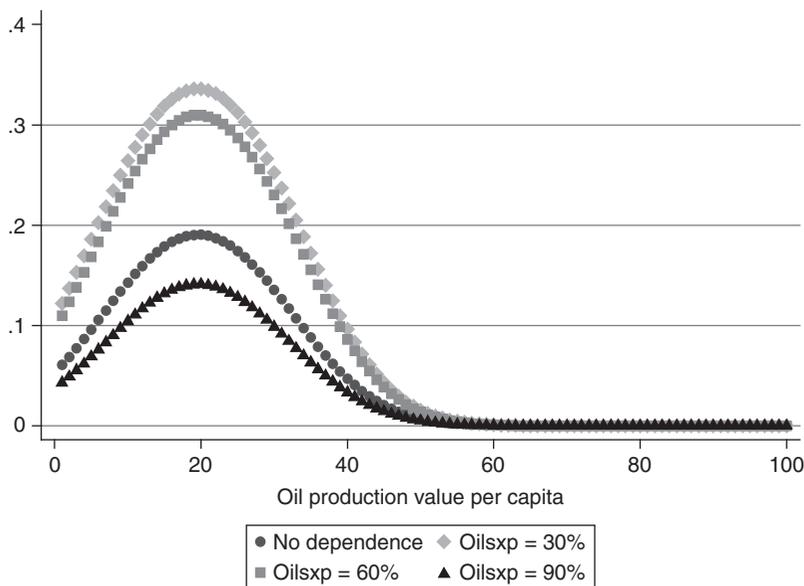
Based on Specification I in Table II. The figure shows predicted probabilities for different levels of oil dependence, holding all other variables constant at the mean and varying oil production value per capita.

(e.g. mountainous areas) turn out to be relatively robust across specifications.[14]

In only two of the six specifications, the effect of oil wealth corresponds to the hypothesized expectations at high levels of significance: oil wealth increases the risk of civil war onset at lower levels of this variable, while it decreases the risk at higher levels. Figure 1 (based on results of specification I) illustrates this inverted U-shaped relationship between oil wealth and civil war risk. To put the results in perspective, it should be noted that in our dataset only Gabon, Iraq, Kuwait, Norway, Oman, Saudi Arabia and United Arab Emirates surpass a threshold of 50 for the wealth proxy in at least one time spell. The 'wealth effect' in specification II is not significant, as in the specifications using the CH control set.[15]

With regard to the effects of oil dependence, we detect the expected U-shaped relationship. The positive coefficient of squared *oilsxp* is significant at least at the 10% level in five out of eight specifications. Yet, as our proxy for oil dependence is constructed as an interaction term of *sxp* and an oil exporter dummy, we have to consider the sum of the two effects or the sum of the four coefficients, including the two squared terms. The effect

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[14] The definition and construction of the control variables are discussed at length in CH and FL, respectively.
[15] As a robustness check, we have also introduced squared wealth terms into the regressions reported by Humphreys

(2005, Table 2). For both (lagged) production per capita and (lagged) oil production value per capita, the coefficients of the squared terms have the expected negative sign. Yet, this effect is significant only at the 15% and 25% level, respectively. Because this regression does not control for dependency, as measured for example by *sxp*, we also matched Humphreys's dataset with the CH data on *sxp* and *oilsxp*, hence proxying dependency in single years (e.g. for each year between 1985 and 1989) by five-year *sxp* averages of the preceding period (e.g. the 1980–84 *sxp* and *oilsxp* average). In this setup, neither *sxp* nor *oilsxp* (nor the squared terms) turn out to be significant, but the signs of the coefficients correspond to expectations. The effects of the oil wealth terms are hardly affected by the inclusion of *sxp* and *oilsxp* in this setup.

of *sxp* maintains its inverted U-shape as, for example, in the original CH paper, which implies that very high levels of commodity dependence decrease civil war risk.[16] The oil interaction hence counteracts this effect; yet, as can be seen in Figure 1, the onset probability holding dependency constant at 90% even lies below the 'no dependence' line. Yet, the inverted U-shape becomes flatter for lower levels of wealth (see Appendix 2).

Some technical notes are in order, which have important implications for the interpretation of these findings. As regards the sample, it may be interesting that five cases with very high oil revenues per capita and *without* any civil war onset are missing (Brunei, Equatorial Guinea, Libya, Qatar, United Arab Emirates). Moreover, the reported results are based on samples from which outliers have been removed systematically. We drop all 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 & Freese (2003). We do so in a loop until no such outlier is left in the sample, a procedure that leads to substantial reductions of the sample. We report these outliers for each specification (see Table II and Appendix 1), and it is remarkable that they are almost exclusively oil exporters. This strongly points to the existence of mechanisms that render oil countries special cases and that cannot be captured by the above reduced-form effects of wealth and dependence, even though they allow for some non-linearity.[17]

In sum, the multivariate analysis allows us to draw only limited conclusions about the relationship between oil wealth and dependence, on the one hand, and civil war risk, on the other. Yet, there is a tendency for high levels of oil dependence to be associated with high levels of civil war onset risk, while high levels of oil wealth appear to make countries less prone to civil war.

Macro-Qualitative Analysis

We now investigate our main hypotheses for a sample of 27 (net) oil-exporting countries (at least one year between 1973 and 2001), which had an average *oilsxp* and 2001. Thus, dependence is held relatively constant, which particularly allows us to detect the assumed effects of different levels of oil wealth. We consider an oil exporter as oil-rich if the country surpasses a cutoff point of approximately 25 barrels per person per day, which corresponds to over ten tonnes per capita per year in 1996 – the earliest point of time for which complete data for dependence and production were available. These 11 countries also include the five oil exporters that were missing in the multivariate regressions.

Results turn out to be fairly impressive. 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 UCDP/PRIO conflict data for the period 1990–2005. Just three peaceful[18] but oil-poor countries deviate from our expectation (Kazakhstan, Syria, Turkmenistan), and even regrouping Equatorial Guinea (no substantial

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[16] 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.

[17] The regressions have also been run using a rare events (King & Zeng, 2001) instead of a standard logit model, as the share of ones, that is, the share of spells with onsets, lies only slightly above 5% for more intense conflicts (CH coding or 'wars only'). In fact, using the rare events model has a considerable impact on coefficients and confidence

levels in most specifications, in particular on the oil-related coefficients. This is likely to be due to combing one rare event, civil war onset, with another, being an oil-exporter. The main conclusions, however, remain valid.

[18] Generally, the term 'peaceful' is used in the sense of negative peace – that is, no violent conflict according to UCDP/PRIO data – and does not imply a completely peaceful society in the broader sense.

Table III. Oil Wealth and Civil Conflict in Highly Dependent Net Oil Exporters

	Peaceful 1990–2005		*Conflict-ridden 1990–2005*	
Oil-rich (oil production p.c. over 10 tonnes p.a. 1996)	Bahrain* Brunei Equat. Guinea** Gabon Kuwait Libya	Norway Oman Qatar Saudi Arabia UAE		
Oil-poor (oil production p.c. below 10 tonnes p.a. 1996)	Kazakhstan Syria Turkmenistan		Algeria Angola Azerbaijan Congo Republic Iran Iraq	Nigeria Papua New Guinea Russia Trinidad & Tobago Uzbekistan Venezuela Yemen

'Peaceful' = no year of conflict; 'conflict ridden' = at least one year of conflict (all conflicts), according to UCDP/PRIO dataset 1990–2005; * Oil and gas; ** No substantial oil production in 1996, 'oil-rich' since 1999.

oil production in 1996) and Bahrain (wealth mainly from gas) would not contradict our hypotheses, given that we do not suggest that oil poverty necessarily produces violent outcomes (see Table III).

Results are fairly robust, although somewhat weaker, with regard to other measures for conflict and instability, such as civil war onset (FL), the World Bank governance indicator 'political stability & absence of violence' (average, 1996–2004) and regime durability according to Polity IV (see Appendix 3). Moreover, partial correlations (see Appendix 3) support the results from the macro-qualitative analysis: oil wealth in per capita terms above a certain cutoff point does not make civil war more likely, while dependence does. In sum, the macro-qualitative analysis in the medium-*N* sample suggests that oil wealth compensates for the adverse effects of oil dependence on peace and stability, once a certain threshold has been crossed.

Testing for Causal Mechanisms

As outlined in the literature review, several causal mechanisms – repression, outside protectors, clientelist networks and large-scale

distribution (as well as possibly low tax burden) – can explain how resource or oil wealth may translate into peace. In the following, we assign pertinent indicators to the respective mechanisms for the sample of highly dependent net oil exporters.

With regard to the repression mechanism, we use arms imports per capita between 1990 and 2000 as indicator for a huge security apparatus (for details on data, see Appendix 4).[19] 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.[20] 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

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

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 theoretically less convincing variant – low tax burden – we use total taxes per capita (both in 1997). The patronage/clientelism mechanism is certainly most difficult to operationalize. Here we decided to use the World Bank Indicator control of corruption (1998) as a proxy variable.[21] Although clientelism and corruption 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.

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 value 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 us 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 areas marked X 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 Appendix 4.[22]

The first column of Table IV shows that oil-rich and peaceful countries spend considerably more on arms imports, and this finding is not confined to members of the Cooperation Council in the Persian Gulf whose high military spending may reflect historical external threat perceptions. 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]

Although foreign military presence might be designed to deter greedy outsiders, the outside protectors mechanism 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 – not only US military bases in the Persian Gulf, but also French (Gabon) or British (Brunei) military presence.

Large-scale distributional policies are employed by all oil-rich governments, except Equatorial Guinea, while most of the non-rich countries cannot afford to pursue them. Noteworthy exceptions are Algeria, Iran, Trinidad and Tobago, and Venezuela, which

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[21] We could not obtain pertinent indicators, such as cabinet size, for a sufficient number of countries and/or years.
[22] Significant bivariate correlations may add substantiating evidence. However, their explanatory value is limited because, as theory suggests and as the multivariate analysis has demonstrated, the considered relationships are unlikely to be linear.

[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 (peaceful) oil-rich countries. If we use Freedom House ratings, it is merely Gabon and possibly Kuwait that deviate among the 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.

Table IV. Causal Mechanisms Linking Oil Wealth to Peace

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

(*Continued*)

Table IV.   Causal Mechanisms Linking Oil Wealth to Peace (*Continued*)

Transmission channel	Repression		Outside protectors	Large-scale distribution (and low tax burden)		Patronage-clientelism	
Indicator	Average arms imports p.c. 1990–2002	Average freedom house ratings 1990–2005	Permanent military base by UNSC member 1990–2000	Government expenditure p.c. 1997	Total taxes p.c. 1997	Control of corruption 1998	Government effectiveness 2002
Iraq	–	X	–	n.d.	n.d.	X	X
Nigeria	–	–	–	–	X	X	X
Papua New Guinea	–	–	–	–	–	X	–
Russia	–	–	(–)	X	–	–	–
Trinidad and Tobago	–	–	–	X	–	–	–
Uzbekistan	–	X	–	–	X	X	X
Venezuela	–	–	–	X	–	X	X
Yemen	X	–	–	–	X	–	X

X indicates the respective causal mechanism at work. n.d. denotes missing data. For details on the indicators and further descriptive statistics, see Appendix 5.

have values above the median that, however, can hardly compare to the spending rates of oil-rich states. Whereas proactive large-scale distribution is hence the expected successful way to avoid domestic conflict, a low tax burden is adversely related to peace. Yet, it may be premature to conclude that taxing citizens guarantees stability. Our proxy also includes taxes from private companies, and these taxes tend to be high in oil-exporting countries. 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. 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 about drawing wide-ranging conclusions. Our proxies are second best and both indicators – as well as a low tax burden – can also be interpreted as proxies for weak states. In fact, oil-rich states have relatively better institutions or stronger states (see also the strong and significant bivariate correlation between the institutional indicators and per capita oil production reported in Appendix 4). 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, given that data for institutional quality at the beginning of the oil age are almost impossible to obtain for all countries (see Ross, 2004: 338).

As regards individual countries, it is remarkable 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 7 of 11 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, the latter being 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 prevented the regime from being overthrown during the 1990s, which shows that the 'outside protection' mechanism has high explanatory value in this country case. As regards large-scale distribution, Gabon is close to the median, and there is plenty of evidence of oil rents fuelling corruption and patronage in the country (Yates, 2005). The most distinctive case, however, is 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 started only very recently and was not accompanied by major institutional or political changes (Wood, 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). 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, 2 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. 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 state institutions (also in terms of tax collecting capacity).

Conclusions

The debate on the resource–conflict link has been dominated by the notion of a negative impact of natural resources, particularly oil, on internal peace. Evidence presented in this article suggests a substantial modification of this idea. It is, if anything, 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. The article hence illustrates the importance of

distinguishing between resource wealth (in per capita terms) and dependence, which work in different directions as regards peace. This conceptualization matters beyond the reduced-form relationship between resource abundance and internal conflict and, hence, has implications for understanding the causal mechanisms behind it. Apparently, governments use the large resource revenues to maintain internal peace by combining a huge security apparatus with generous distributional policies. Such policies are costly and oil-rich countries have to cross a fairly high threshold of per capita wealth to be able to 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 abundant oil rents to establish state institutions characterized by patronage and clientelism, another causal mechanism suggested by the rentier state theory. We concede that our empirical operationalizations of clientelism and patronage may rather proxy the quality of state institutions. In this view, however, our findings – including also their larger tax-raising capability – suggest a further challenge to the literature and point to a broader field of future research. In contrast to theoretical predictions of the 'weak state' mechanism, oil-wealthy states tend to have better state institutions than their oil-poor counterparts. Theoretically, this could be explained by a modified weak state mechanism. The higher available amounts of revenues per capita may have a positive net effect on the quality of institutions or on the strength of the state as a whole, at least compared to other similarly dependent oil-exporting countries with lower revenues per capita.

Yet, one should not draw too far-ranging conclusions on the resources–institutions link, as the present study largely disregards important dynamic dimensions. More specifically, we do not assess the role of institutional

conditions at the time when oil was discovered. An empirical analysis of such dynamics may, however, not be feasible in the type of cross-country comparisons employed in this article 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 relatively 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 will be seen as socially undesirable from many other perspectives except for 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 strong downward trend. In addition, even if generally increasing international demand continues to guarantee a stable influx of revenues, global scarcity may provoke international violent conflict over the control of these resources.

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