

Fossil Fuel Rents: Who Initiates International Crises?

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Abstract

Existing research suggests that both natural resource abundance and scarcity are likely to increase the risk of interstate and domestic conflict. Two crucial aspects, however, have largely been neglected in the existing literature: (1) the analysis of international crises (i.e., non-violent conflicts) and (2) the effects of different market conditions of energy resources. Especially a growing number of market participants can affect the strategic value of natural resources and, thus, the incentives for international crisis initiation. It is argued that different market structures make countries to adopt either aggressive or more peaceful behavior towards other states, and this is why I empirically then disaggregate fossil fuels along with the market that they belong to. This study examines 179 countries at the monadic level since 1980. The results suggest variation on the incentives of crisis initiation along the different fossil fuels, while I also correct for potential endogeneity issues.

Keywords: international crisis, natural resource, endogeneity, instrumental variable

Introduction

Often literature employs the term “petro-aggression” to show that major oil exporters are more likely to engage in crises when oil prices are high (Friedman, 2009). In other words, oil rents reduce “the leader’s risk of domestic punishment for foreign policy adventurism” (Colgan, 2013: 161) and thus, provide incentives to engage in international crises.

Other literature suggests that the increasing globalization of energy markets (Goldthau and Witte, 2009) and the increasing competition in certain segments of oil production (Hughes and Long, 2015) has changed states’ behavior in the international system. These changing market conditions often decrease the incentive for foreign policy adventurism because consumers are able to substitute unreliable suppliers.

This study builds on the idea that market incentives matter (Månsson, 2014) by systematically analyzing whether fossil fuel exporters¹ tend to engage more often in international crises. I extend the framework developed by Colgan (2013) within the framework of “producer politics”. I introduce a “rents-pacification” argument that suggests that fossil fuel exporters do not risk their fossil revenues in order to get engaged in a crisis.

I examine the opportunity costs associated with assertive behavior of exporters across three market structures: (1) monopoly, (2) oligopoly and (3) free market. Based on the rates of fossil fuel rents and the market competition, gas represents a stylized example for a monopoly (very few competitors if not only one competitor) (Gordon et al., 2003; Saidu, 2008; Henderson and Pirani, 2014), oil for an oligopoly (a few competitors) (Cognigni and Manera, 2014) and coal for a free market structure (many competitors) (Böhringer and Rutherford, 2002). Under conditions of monopoly, I expect the domination of a “petro-aggression” mechanism, because states have relatively low opportunity costs of initiating a crisis. Under conditions of oligopoly, it dominates a “rents-pacification” mechanism, as exporters have to face the possibility of consumers switching to other suppliers. Finally, under free market conditions, I expect that the opportunity costs of initiating a crisis are low since free market products are easily accessible and inexpensive.

There is little systematic research and inclusive empirical findings, linking fossil fuels and international crises onset (Koubi et al., 2014; Sovacool, 2014; Bove et al., 2015). Apart from making a general contribution to this strand of research, this study: (1) systematically tests the probability of states’ crises initiation, (2) disaggregates fossil fuels according to different market structures and introduces the “rents-pacification” argument, and (3) solves the potential endogeneity bias, by proposing an instrumental variable.²

Energy fossil fuels' rents of different economic markets have an impact on states' choice of initiating a crisis. The type of the market that each product belongs to determines the direction of the outcome. That is, exporters of monopolistic and free market products appear with an aggressive policy behavior whilst exporters of other markets (oligopoly) consider potential losses of their revenues when triggering a crisis.

Energy Resources and Paths to International Crisis

A state initiates a crisis only if it expects more gains through crises rather than through other means (Bueno de Mesquita, 1980; Powell, 2006; Reiter, 2003; Wagner, 2000). The key to understanding the incentives of the energy rents countries is to think about the opportunity costs associated with different paths of crisis initiation. Along the same lines, trade might increase the opportunity costs of conflicts and thus lead to more peaceful relations (Oneal and Russett, 1999; Hegre et al., 2010). Nonetheless, under certain market conditions, (e.g., trade asymmetries) trade can also fuel conflicts (Barbieri, 1996; Garfinkel et al., 2008).

To further our understanding of potential opportunity costs that fossil-fuel countries have to face when initiating an international crisis, I relate the opportunity costs to different market structures. I classify the market conditions by the number of competitors in the market: (1) monopoly (one dominant exporter), (2) oligopoly (a few dominant exporters) and (3) free market (many exporters). I base my theoretical argument on the presumption that there are always many consumers in the market, and I develop the following three scenarios.

In an oligopolistic market (oil rents) the major exporter is uncertain about the opportunity costs of initiating a crisis against another state, as the clients might still have a few alternative oil exporters. In this scenario the consumer states *can* interpret initiation of an international crisis as

a threat to their supplies and *can* decide to switch to another exporter. If a major consumer or many consumers switch to another supplier, it means a significant loss of revenues for the exporter. Consequently, under these market conditions the major exporters might prefer to keep political stability in order to protect their revenues. Thus, in this case instead of petro-aggression, I expect the dominance of a rents-pacification behavior.

In a monopolistic market (gas rents) a major exporter has relatively low opportunity costs of initiating a crisis against another state, as there is not alternative exporter in the market. The exporter state *can* assume that other consumers do not have a credible alternative and the prospect of switching to another exporter and thus, the revenues will not be affected by the country's aggressive foreign policy behavior. Additionally, given the strategic value of energy (Yergin, 2011), the dominance in the energy market might be easily transposed into political or military power preponderance, thus creating more incentives to initiate an international crisis.

In a free market (coal rents) a major exporter takes smaller share of the market and thus generally smaller revenues as compared to monopolistic or oligopolistic markets.³ Smaller revenues are then associated with lower opportunity costs when initiating a crisis. In a free market where many states cover their needs for coal by their own domestic production, losing a few consumers who do not approve of a potential aggressive foreign policy behavior might not hurt economically the exporter state. Hence, under free market conditions exporters will be less concerned about their reputational damage among the consumers, and will, therefore, initiate more international crises.

Based on the aforementioned considerations I propose the following hypotheses:

H1: Countries with high oil rents do not initiate international crises (oligopolistic market conditions).

H2: Countries with high gas rents initiate international crises (monopolistic market conditions).

H3: Countries with high coal rents initiate international crises (free market conditions).

Methodological approach

For this analysis I employ the actor level data of the International Crisis Behavior (ICB) Project for 179 countries from 1980 to 2006. A recent crisis in the dataset is the regime change in Iraq, which was triggered by the US in 2002 with the involvement of the United Kingdom (UK). The year 2002 is thus coded as a crisis year for Iraq, USA and UK. Meanwhile, 2003 is not a crisis year in the dataset as the crisis was escalated to war. Although a dyadic level of analysis would account for the relations of pairs of states in the market, the ultimate goal of this study is to examine whether there is a difference across the type and the quantity of the energy goods that countries export and their incentives to initiate an international crisis.

Crisis initiation

Existing literature indicates that the relation between interstate crises and energy natural resources remains rarely analyzed (Koubi et al., 2012). Due to the decrease of international armed conflict (Gleditsch and Pickering, 2014), I examine the impact of energy resources in international crises and move beyond an examination of the Militarized Interstate Dispute (MID) data (Ghosn et al., 2004). The dependent variable, *crisis initiation*, indicates the trigger of a crisis by a state actor in a specific year⁴. It is a binary variable that is coded 1 for crisis initiation (0 otherwise). I use the monadic version of the International Crisis Behavior dataset (ICB) (Brecher and Wilkenfeld, 2010).

Fossil fuel rents

Smith (forthcoming) proposes a measurement of “rent leverage” computed by dividing fuel income per capita with the purchasing power parity (PPP)-corrected GDP per capita. In other words, the measure employed by Smith is highly linked to the average citizen’s livelihood. This, in turn, can impact on domestic political stability. While this measure might indeed be appropriate for the analysis of domestic mechanisms that lead to political instability and domestic conflict, for the purposes of this study, I opt for a simple measure that only refers to the revenues made by fossil fuels. That is, I measure fossil fuel rents as the percentage of GDP that is in GDP 2005 prices. Ultimately, this measure focuses on state capacity *per se* that could potentially have some impact on international crises. The theoretical framework suggests that certain market conditions have a restrictive effect on aggressive foreign policy behavior, regardless whether rents are used to boost patronage or not. Thus, I employ the World Bank’s indicators for oil, gas and coal, which are estimated through the difference between the values of production at world prices and total costs of production (The World Bank indicators, 2015).

Instrumental variable

Endogeneity is a major methodological problem in the study of the relationship between natural resources and crises (Ross, 2006; Lujala, 2009; Brunnschweiler and Bulte, 2009, Koubi et al., 2012; Mitchell and Thies, 2012). Economic and political factors that are meant to explain the dependent variable of interest (crisis initiation) are likely to affect the main explanatory variables (fossil fuels) as well. In order to address this endogeneity problem, this study employs an instrumental model approach.

A valid instrument is a variable that is correlated with the key independent variable, but at the same time it should be uncorrelated with the error term. In turn, this can resolve the problems that measurement error, omitted variable bias, and simultaneous causation create – “endogeneity bias” (Ramsay, 2011). That is, an instrumental variable replaces the problematic independent variable with a substitution variable that is uncontaminated by error or unobserved factors that affect the outcome. The literature offers a series of instruments aiming to solve potential endogeneity bias in the study of natural resources⁵.

For the purposes of this analysis, I employ the terrain quality as an instrument. Two major conditions have to be satisfied for an instrument to provide consistent parameter estimates: (1) the instrument has to be exogenous to international crisis initiation (dependent variable) and (2) it has to be related to changes in fossil fuel rents (core explanatory items).

Arguing that terrain quality does not affect the probability of crisis initiation satisfies the first condition. Civil war research indicates that terrain quality is a factor influencing *intrastate* conflict, because it allows rebels to hide from the stronger government forces, thus addressing the power asymmetry between state and non-state actors (Buhaug and Gates, 2002; Fearon and Laitin, 2003; Hegre and Sambanis, 2006). That said, there is no obvious argument for why terrain quality should affect the likelihood of *international* crisis initiation. To be clear: while there are arguments linking domestic conflict, and its underlying processes, with the outbreak of interstate disputes (Salehyan, 2008), none of the arguments in the literature refers to terrain quality. Hence, I can consider the variable on terrain quality as an exogenous factor and, in fact, an unrelated determinant of international crisis.

Regarding the second condition, the terrain quality must be related to the fossil fuels (oil, gas and coal). To this end, I consider a basic parameter of fossil fuel rents, i.e., the method of

transportation as a link between our instrument and fossil fuel rents. I expect that the less difficult the transportation of a product, the higher the rents that it may generate. Oil, gas, and coal are mostly transported using trucks, trains, and pipelines. Transportation is fairly easy and cheap when a country's terrain is approachable. Pipelines, for instance, are considered the safest method of fuels' transportation. Pipelines are located away from the woods and forested areas. However, rough or mountainous terrain might constitute a problem for the construction of pipelines; it might be either not feasible to construct a pipeline at all or too expensive. For the aforementioned reasons, terrain quality is likely to be strongly associated with fossil fuel rents.

Table 1 summarizes the measurement and sources for all variables included in the analysis and Table 2 illustrates descriptive statistics of all variables.

Table 1: Concept Specification and Operationalization

Variable name	Measurement
International crisis initiation	Coded as 1 if state has triggered (trigger entity variable) at least one international crisis per year (Brecher and Wilkenfeld, 2010).
Oil Rents	Oil rents as a share of GDP (constant 2005 prices). Measured as the difference between the value of crude oil production at world prices and total costs of production. Available through: World Development Indicators.
Gas Rents	Gas rents as a share of GDP (constant 2005 prices). Measured as the difference between the value of crude gas production at world prices and total costs of production. Available through: World Development Indicators.

Coal Rents	Coal rents as a share of GDP (constant 2005 prices). Measured as the difference between the value of coal production at world prices and total costs of production. Available through: World Development Indicators.
Military strength	Military Personnel adjusted by population. Data taken from the Correlates of War (COW) project.
Military expenses	A natural logarithm of countries' military expenditures transformed in thousands of constant 2005 US Dollars. Data taken from the Correlates of War (COW) project and DiGiuseppe, 2015.
Openness	Openness is calculated by the sum of imports and exports divided by GDP (Gleditsch, 2002).
GDP per capita	The natural logarithm of GDP per capita in constant 2005 prices (Gleditsch, 2002).
Democracy	Polity2 measure ranges from -10 to 10. Data from the Polity IV project (Marshall et al., 2010).
Borders	Total number of borders. Data from the COW project site (Stinnett et al., 2002).
IGO	The total number of IGO memberships per year. Data from the COW project site (Pevehouse et al., 2004).
Terrain quality (Instrument)	The terrain quality is measured by the estimated percentage of mountainous terrain and using data from Fearon and Laitin (2003).

Table 2: Descriptive statistics

Variable	Obs.	Mean	Std. Dev.	Min	Max
International crisis initiation	4,698	0.04	0.19	0	1
Oil rents (lag)	3,954	4.30	10.67	0.00	78.93
Gas rents (lag)	4,275	0.73	3.26	0.00	64.90
Coal rents (lag)	4,327	0.05	0.30	0.00	6.85
GDP _{ln} (lag)	4,280	8.35	1.18	4.90	11.52
Democracy (lag)	3,643	1.50	7.34	-10	10
Borders	4,324	5.81	3.40	0	29
Military Strength (lag)	4,238	0.01	0.01	0	0.08
Military expenses _{ln} (lag)	3,533	12.70	4.88	-6.68	20.02

Openness (lag)	4,267	4.61	12.30	-0.02	305.20
IGO (lag)	4,151	55.07	21.69	1	129
Quality of terrain (instrumental variable)	3,923	3.06	2.49	0	6

Empirical analysis

I first present probit models (Tables 3-5) that examine a direct relationship between crisis initiation and fossil fuels. I, however, expect that the results obtained through probit estimations be biased because fossil fuel exports are endogenous to international crises (Ross, 2006; Lujala, 2009; Brunnschweiler and Bulte, 2009, Koubi et al., 2012). To obtain robust results I apply an instrumental variable approach (Brunnschweiler and Bulte, 2009; Ramsay, 2011) and compute probit models with endogenous regressors (ivprobit). Thus, I proceed with the analysis of the instrumental models (Tables 3-5) and I present second stage results for ivprobit. Considering the structure of the instrumental model, I employ a test that examines the magnitude of the endogenous coefficients' effect (oil, gas and coal rents). Hence, I implement a robust postestimation test for instrumental models provided by Mikusheva and Poi (2006; see also Finlay and Magnusson, 2009). This robust-instrumental variable test ("rivtest") examines whether the coefficient of an endogenous variable (oil, gas and coal rents) is different from 0 (null hypothesis). For the instrumental-variable probit, the rivtest calculates the minimum distance version of the Anderson-Rubin (AR) test statistic (a joint test of the structural parameter) and it presents the Wald test. A statistically significant value for both measures suggests that the coefficient of the endogenous variable is different from 0, which provides strong evidence in turn that the instrument is suitable. Inconsistent results across the two measures (AR and Wald) may – but do not have necessarily – point to weak instrument, as the

Wald test can be unsuitable for weak instruments (not the AR test, though). The AR test is a more conservative statistic.

When examining the impact of oil and coal rents on crisis initiation, both measures (AR and Wald) are significant. This indicates that the results presented in the instrumental models (Table 3 and 5) are robust. Coming to the impact of gas on crisis initiation, the AR and Wald tests are not consistently significant, which may affect – but not necessarily – the robustness of the results of the IV model presented in Table 4. To provide further evidence that the terrain quality indicator is indeed an exogenous item, I also provide a reduced form model (Table 6) that examines directly the relationship between the dependent variable of interest (crisis initiation) and the instrumental variable (terrain quality). The results show that there is no statistically significant relationship between the two measures. That is, I am confident that in the IV-probit regression, I can employ the terrain quality for oil, gas and coal rents as an instrument in the selection equation.

Model 2 in Table 3 shows that countries with oil rents are statistically significant associated with crisis initiation. The probability of crisis initiation decreases with oil rents. I also calculated substantive effects in the form of predicted probabilities. When examining these, the probability of crisis initiation is around 15% for the minimum value of oil rents; conversely, the risk of triggering a crisis drops by 5%-points, when moving to the maximum of the oil rents item. These findings are in line with the theoretical argument above: states with insignificant revenues might trigger a crisis. The underlying assumption is that countries with insignificant revenues might trigger a crisis in order to challenge the stability of the energy market.

With regard to gas rents (Table 4), I find that states having a monopoly are more likely to initiate a crisis, knowing that there is unlikely to be much damage to their fuel revenues (Model 2).

Indeed, the substantive effect of gas rents emphasizes that the maximum value of gas rents is associated with a conflict initiation risk of 37%.

Rents from a free market product, such as coal (Table 5), increase the probability of crisis initiation, as the damage of the revenues would be smaller (Model 2). The substantive effects indicate that states with high coal revenues (maximum value of that variable) have a probability of about 90% to initiate a crisis (holding all other variables constant at their means), while states characterized by the lowest value of coal revenues have risk of triggering a crisis of around 75%.

Coming to the control variables, the results show that GDP per capita affects the risk of crisis initiation differently across markets. That is, wealthier countries are less likely to initiate a crisis in the model that focuses on gas. The results suggest that the impact of GDP per capita might differ as soon as we consider the impact of oil and coal rents that, however, mirrors much of the earlier research.

Moreover, countries' military capabilities and military expenses positively affect crisis initiation almost consistently across the models. For instance, the average elasticity of military capabilities across all models is 0.14. The average elasticity of military expenses across all models is 0.70. Similarly, more memberships in international organizations are associated with a higher likelihood of crisis initiation (in the models on gas and coal rents), which mirrors the underlying rationale of states being more involved in international affairs to be involved in more low-intensity conflict. That said, when examining the effect of oil rents, states with fewer memberships are more likely to initiate crisis.

Furthermore, I find that openness is a significantly positive indicator of crisis initiation in the model on coal while it has significantly negative impact on crisis initiation in the model on gas

rents. Nevertheless, openness is not statistically significant to crisis intuition in the model on oil rents. Shared borders are usually associated with a better opportunity for crisis (oil rents), and I find some evidence for this albeit not consistently across the different estimations. The findings, finally, highlight that democracies seem to be prone to crisis initiation (gas rents). The democracy effect is statistically insignificant in the models on oil and coal rents.

The overall results illustrate what are the actors that are likely to trigger a crisis based on the fossil fuel product they produce and thus make income. In an attempt to examine the different market structures of fossil fuels with regards to crisis initiation, the results indicate that free markets and monopolies have a higher probability of triggering a crisis due to the low associated opportunity costs with energy revenues. In essence, these markets are placed at the extremes of the market structure. A monopoly (gas) faces little competition issues, if not at all (see also Gordon et al., 2003; Saidu, 2008; Henderson and Pirani, 2014). Strictly speaking, a monopoly consists of only one producer. However, the general development of fossil fuel production allows few countries to produce small quantities of gas as well (e.g., Italy, Denmark) (Glachant et al., 2013). And this is precisely the reason why gas can be referred to a “clumsy” monopoly. This is similar to the case of oil that few decades ago belonged to a “clumsy” monopoly, before it switched to an oligopoly market (Adelman, 2004). Yet, when only one state is the major exporter of a fossil fuel (i.e., gas), we still refer to a monopoly. Although, a free market (coal) is usually very competitive, the reality that there are many producers makes the product less desirable and as a result of a lower importance for a country’s revenues. On the contrary, a country of an oligopolistic product (oil) deals with a lot of uncertainty due to the amount of producers and the excessive need for the product. Therefore, the revenues from an oligopolistic market product are not stable and often very subtle to the market’s fluctuations. This makes

countries that rely on oil revenues more careful and rather risk averse towards their relations with other states.

Table 3: Crisis initiation: effects of oil rents (oligopolistic market) (1980-2006)

	(Model 1) Probit	(Model 2) IV Probit
Oil rents (lag)	0.00 (0.00)	-0.07** (0.02)
GDP _{ln} (lag)	-0.14** (0.06)	0.05 (0.11)
Democracy (lag)	0.02* (0.00)	-0.03 (0.02)

Borders	0.01 (0.01)	0.05* (0.02)
Military strength (lag)	16.39** (6.48)	10.11 (6.60)
Military expenses _{ln} (lag)	0.08** (0.03)	0.14** (0.02)
Openness (lag)	0.01 (0.00)	-0.01 (0.00)
IGO (lag)	-0.00 (0.00)	-0.01** (0.00)
t	-0.12* (0.05)	-0.10* (0.04)
t ²	0.00 (0.00)	0.00 (0.00)
t ³	-0.00 (0.00)	-0.00 (0.00)
Constant	-1.18** (0.44)	-2.77** (0.47)
N	3,036	2,783
Pseudo R ²	0.16	
Wald Chi ²	150.68**	295.27**

Notes: All explanatory variables except the borders are lagged by one year.
Standard errors in parentheses ** p<0.01, * p<0.05

Table 4: Crisis initiation: effects of gas rents (monopolistic market) (1980-2006)

	(Model 1) Probit	(Model 2) IV Probit
Gas rents (lag)	-0.05 (0.03)	0.25** (0.03)
GDP _{ln} (lag)	-0.16** (0.06)	-0.10** (0.02)
Democracy (lag)	0.02* (0.00)	0.03** (0.00)

Borders	0.02 (0.02)	-0.03** (0.00)
Military strength (lag)	17.27** (6.58)	21.51** (4.73)
Military expenses _{ln} (lag)	0.08** (0.03)	-0.03 (0.04)
Openness (lag)	0.01 (0.01)	-0.01** (0.01)
IGO (lag)	-0.00 (0.00)	0.01** (0.01)
t	-0.11* (0.07)	-0.05 (0.04)
t ²	0.00 (0.00)	0.00 (0.00)
t ³	-0.00 (0.00)	-0.00 (0.00)
Constant	1.18** (0.45)	1.04* (0.50)
N	3,014	2,776
Pseudo R ²	0.16	
Wald Chi ²	144.91**	648.19**

Notes: All explanatory variables except the borders are lagged by one year.
Standard errors in parentheses ** p<0.01, * p<0.05

Table 5: Crisis initiation: effects of coal rents (competitive market) (1980-2006)

	(Model 1) Probit	(Model 2) IV Probit
Coal rents (lag)	0.18 (0.10)	3.07** (0.16)
GDP _{ln} (lag)	-0.16** (0.06)	-0.05 (0.06)
Democracy (lag)	0.02* (0.00)	-0.00 (0.00)

Borders	0.01 (0.01)	-0.03** (0.00)
Military strength (lag)	20.09** (6.56)	21.67** (5.04)
Military expenses _{ln} (lag)	0.06* (0.03)	-0.07 (0.04)
Openness	0.00 (0.00)	-0.01** (0.00)
IGO (lag)	-0.01 (0.00)	0.02** (0.00)
t	-0.11* (0.05)	0.01 (0.04)
t ²	0.00 (0.00)	-0.00 (0.00)
t ³	-0.00 (0.00)	0.00 (0.00)
Constant	-1.02** (0.44)	-0.17 (0.36)
N	3,021	2,783
Pseudo R ²	0.16	
Wald Chi ²	145.11**	3356.89**

Notes: All explanatory variables except the borders are lagged by one year.
Standard errors in parentheses ** p<0.01, * p<0.05

Table 6: Crisis initiation and terrain quality (reduced form model) (1980-2006)

	(Model 1) Probit
Quality of the terrain	0.07 (0.04)
GDP _{ln} (lag)	-0.20** (0.06)
Democracy (lag)	0.02* (0.00)
Borders	0.00

	(0.00)
Military strength (lag)	17.84** (6.40)
Military expenses _{ln} (lag)	0.12** (0.03)
Openness (lag)	0.00 (0.00)
IGO (lag)	-0.00 (0.00)
t	-0.13** (0.05)
t ²	0.00 (0.00)
t ³	-0.00 (0.00)
Constant	-1.53** (0.46)
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N	2,872
Pseudo R ²	0.18
Wald Chi ²	169.18**

Notes: All explanatory variables except the quality of terrain and borders are lagged by one year. Standard errors in parentheses ** p<0.01, * p<0.05

Conclusion

Previous studies have considered different types of resources as influential to conflict (i.e., oil and diamonds) (Ross, 2006). With a few exceptions (Goenner, 2010) the different levels of competition across the major energy markets have not been explicitly addressed by the existing

literature. For this reason I have disaggregated the energy resources according to the level of competition in the markets, and examined the association with crisis initiation.

The results indicate that countries with oil rents acknowledge the instability of the oligopolistic market that oil belongs to, and they choose a pacifier's behavior in their relations with other states. Countries with rents from monopolistic and free markets products -although very different structures- behave similarly with a positive relationship to crisis initiation. The features of the markets allow the actors to adopt aggressive behavior, given that their energy revenues are not affected, either because there is no competition (gas) or because the very high levels of competition (coal) generate small benefits. The major assumption behind this link is that actors before initiating a crisis calculate the potential damage. In these markets the damage of the fuels revenues is ultimately small because there are no many alternative gas exporters in the market and because there is very little need for coal imports. Therefore, "the resource backed aggression" (Colgan, 2010) is reversed to "market restricted behavior" and thus, pacifier's behavior for fossil-fuel states of an oligopolistic market (i.e., oil).

A prominent example of a major monopoly as a gas supplier is Russia. That said, the Russian market share as the dominant gas supplier has been declining since 1997 and overall the market has been exhibiting an increasing competition. Therefore, the expectation is to see a decline in crisis initiation also by the major gas exporters in the future due to the change of the market structure.

In general, the study of states' relations over fossil fuels is related to the literature on the pacifying effects of trade between states (e.g., Reuveny and Kang, 1998; Polachek et al., 1999). For example, research generally shows that trade ties between states improve their bilateral relations (Oneal and Russett, 1999; Barbieri, 1996), although more disaggregated work (e.g.,

Dorussen, 2006) emphasizes that the composition of trade flows (i.e., “what you trade”) ultimately influences whether we see a pacifying or conflictive effect. Specifically, these latter studies find that there is variation across the types of commodities as they are “not uniform in their characteristics and can vary significantly in terms of their substitutability” (Goenner, 2010, p. 550).

The present study examined the impact of oil rents on crisis initiation; yet, it is still worth examining whether governments also consider anticipated fossil fuel rents before initiating a crisis. That is, such a research question can be examined with prediction and forecasting techniques. In addition, while natural energy resources remain an important factor of states’ behavior and relations, renewable energy resources might change the scenarios by increasing market competition and therefore, the interests of major exporters and consumers respectively.

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¹ For simplicity reasons I use the word exporters throughout the text but this also refers to states with domestic profits from fossil fuel rents.

² Instrumental variable approach to account for endogeneity was also utilized by Ramsay (2011) and Brunnschweiler and Bulte (2009).

³ Given that many countries produce coal themselves, the export rates of coal are rather low and therefore the total revenues are also smaller.

⁴ Refer to the appendix for a list of the countries included in the sample indicating whether they initiated a crisis between 1980 and 2006.

⁵ For example, Ramsay (2011) examines the relationship between resource income and political freedom employing the occurrence of natural disasters as an instrument. Along the same lines, Tsui (2011) examines the long-term effect of discovering oil, and uses oil discoveries as an instrument for oil wealth. Brunnschweiler and Bulte (2009) explore the nature of the causal link between resources and the onset of war, using a set of exogenous instruments such as geographical variables (i.e., distance to the nearest coast), the average openness to trade and government system.

Appendix

Table Yes: List of countries included in the sample (1980-2006)

Country	International crisis initiation
Afghanistan	No
Albania	No
Algeria	No
Angola	Yes
Antigua and Barbuda	No
Argentina	Yes
Armenia	Yes
Australia	No
Austria	No
Azerbaijan	Yes
Bahamas	No
Bangladesh	No
Barbados	No
Belarus	No
Belgium	No
Belize	No
Benin	No
Bhutan	No
Bolivia	No
Bosnia and Herzegovina	Yes
Botswana	No
Brazil	No
Bulgaria	No
Burkina Faso	Yes
Burundi	No
Cambodia	No
Cameroon	Yes
Canada	No
Cape Verde	No
Central African Republic	No
Chad	Yes
Chile	No
China	Yes
Colombia	Yes
Comoros	No
Congo	No
Costa Rica	No
Cote d'Ivoire	No
Cuba	No

Cyprus	Yes
Czech Republic	No
Denmark	No
Djibouti	No
Dominica	No
Dominican Republic	No
Ecuador	Yes
Egypt	Yes
El Salvador	No
Estonia	No
Ethiopia	Yes
Fiji	No
Finland	No
France	Yes
Gabon	No
Gambia	Yes
Georgia	Yes
Germany	No
Ghana	No
Greece	Yes
Grenada	Yes
Guatemala	No
Guinea	No
Guyana	Yes
Haiti	No
Honduras	Yes
Hungary	No
India	Yes
Indonesia	No
Iran	Yes
Iraq	Yes
Ireland	No
Israel	Yes
Italy	No
Jamaica	No
Japan	No
Jordan	No
Kazakhstan	No
Kenya	Yes
Kiribati	No
Kuwait	No
Kyrgyz Republic	No
Laos	Yes
Latvia	No
Lebanon	No
Lesotho	No

Liberia	No
Libya	Yes
Lithuania	No
Luxembourg	No
Macedonia	No
Madagascar	No
Malawi	No
Malaysia	No
Maldives	No
Mali	Yes
Marshall Islands	No
Mauritania	Yes
Mauritius	No
Mexico	No
Micronesia	No
Moldova	No
Mongolia	No
Morocco	Yes
Mozambique	Yes
Myanmar	Yes
Namibia	No
Nepal	No
Netherlands	No
New Zealand	No
Nicaragua	Yes
Niger	No
Nigeria	Yes
North Korea	Yes
Norway	No
Oman	No
Pakistan	Yes
Palau	No
Panama	Yes
Papua New Guinea	Yes
Paraguay	No
Peru	Yes
Poland	No
Portugal	No
Puerto Rico	No
Qatar	Yes
Russia	Yes
Rwanda	Yes
Saint Kitts and Nevis	No
Saint Lucia	No
Saint Vincent and the Grenadines	No

Samoa	No
Saudi Arabia	Yes
Senegal	Yes
Seychelles	No
Sierra Leone	No
Slovak Republic	No
Slovenia	No
Solomon Islands	Yes
Somalia	Yes
South Africa	Yes
South Korea	Yes
Spain	Yes
Sri Lanka	Yes
Sudan	Yes
Suriname	No
Swaziland	No
Sweden	Yes
Switzerland	No
Syria	Yes
Taiwan	No
Tajikistan	No
Tanzania	No
Thailand	Yes
Togo	Yes
Tonga	No
Trinidad and Tobago	No
Tunisia	No
Turkey	Yes
Turkmenistan	No
Tuvalu	No
Uganda	Yes
Ukraine	No
United Arab Emirates	No
United Kingdom	Yes
United States	Yes
Uruguay	No
Uzbekistan	No
Vanuatu	No
Venezuela	Yes
Vietnam	Yes
Yemen	No
Yugoslavia	Yes
Zambia	No
Zimbabwe	Yes