



ENERGY AND CONFLICT



By Elnur Soltanov



Energy?

- Energy:

Non-Renewables especially Oil and Natural Gas

Abundance or Scarcity? - Abundance





Conflict?


- Conflict: Domestic and International

Onset or Duration? - Onset





Question

- Is there an association between energy resources and domestic and international conflicts?
 - If so, what are the possible causal mechanisms?
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Literature

- The questions above are parts of the larger question: the association between primary commodities and conflicts (Collier & Hoeffler 1998)
- Most of the literature:
- natural resources in general → domestic conflicts/civil wars



Energy and Domestic Conflict

- Oil has the most robust association with civil wars among all natural resources (Fearon & Laitin 2003; **Humphreys 2003**; de Soysa 2002) – both quantitative and qualitative studies
- (Controlling for the Middle East, Africa and Muslim population)
- The only component among natural resources?
- Yet mainly oil exporter dummies and production. Reserves tend to be insignificant.

Characteristics of Energy Resources
and Types of Civil War (Le Billon
2001)

**Closeness to
the Capital
City**


Distribution

Proximate

Point

Distant

Diffuse



Characteristics of Energy Resources and Types of Civil War (Le Billon 2001)

POINT & PROXIMATE

POINT & DISTANT



Characteristics of Energy Resources and Types of Civil War (Le Billon 2001)

POINT & PROXIMATE	POINT & DIFFUSE
<i>State Control Or Coup D'etat</i>	<i>Secession</i>
Algeria (gas)	Angola/Cabinda 1975 (oil)
Angola (oil)	Indonesia/Aceh 1975 (oil and gas)
Chad (oil)	Nigeria/Biafra 1967 (oil)
Congo–Brazzaville (oil)	Sudan – South 1983 (oil)
Iraq (oil)	
Iran (oil)	

Causal Mechanisms: How?

- Motive or Capacity?
- Physical concentration : easy to capture and control
- Need for foreign investment: incentive to secede
- Capital intensive - local derivation: incentive to secede
- Oil and gas could be considered as “unlootable”: incentive to secede

Two Main Causal Linkages


- Direct Effect: increases the value of controlling the state (Le Billon 2001; Fearon & Laitin 2003)
- Indirect effect: resource curse

slow economic growth (Sachs & Warner 2001)

poverty (Ross, 2003)

corruption (Collier & Gunning 1999)

authoritarianism (Ross 2001)

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- There are increasingly more and more qualifications of the resource – civil war linkage.
 - Smith (2004) shows that energy resource dependence leads to neither internal disturbances nor regime failures (the related governments might be more legitimate than we think)



Question2:

How do natural resources influence the likelihood of international conflict (if at all)?


What about mechanisms?






References, Events and Common Sense


- ▶ References: Renner et al. (1991); Galtung (1982); Westing (1986); Gleditsch (1998)

 - ▶ Events: Iran-Iraq War, Iraq-Kuwait War, U.S.-Iraq Wars.. (must be about oil!)
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Energy and International Conflict

- ▶ Beyond anecdotal evidence there have been few empirical studies (see Diehl and Gleditsch 2001) with “little systematic evidence” (Gleditsch 1998).
 - ▶ **Examples:** Westing (1986); Klare (2001); Solem and Scanlan (1986); Giordano et al. (2005).
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Why? Could the Environmental/Malthusian Approach be part of the problem?


- ▶ population growth/high resource consumption per capita →
- ▶ deteriorated environmental conditions → increasing resource scarcity →
- ▶ harsher resource competition →
- ▶ greater risk of violence



What are the problems related to the environmental theory and what are the suggested solutions?

- ▶ 1. Do we really fight over scarcity (see Giordano et al. 2005)?

 - ▶ 2. Level of Analysis Problem: Malthus designed his theory for the domestic level!
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▶ 3. Lumping together nonrenewable and renewable natural resources

▶ Diamond vs. Timber

▶ Oil vs. Water




▶ Value/Volume Ratio

▶ Windfall Potential


▶ Ease of Export and Capture

Alternative Solution? Resource Curse

- ▶ Resource curse is a loose collection of arguments highlighting counter-intuitively negative consequences of resource richness.
- ▶ Negative effects on economic growth, democracy, domestic conflict, etc (Sachs and Warner 1995; Ross 2001; Collier and Hoeffler 2005).



1. Greedy Outsiders Mechanism: a *direct* linkage between resources and international conflict

- ▶ Coined by Humphreys (2005)
 - ▶ Capture of the state or the region belonging to that state increases the “prize” value of the act (Fearon and Laitin 2003; Englebert and Ron 2004; Fearon 2005).
 - ▶ Smith (2004) mentions “greed-driven neighbors” targeting oil rich states (243).
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Greedy Outsiders Mechanism: Theory

- ▶ Two main points in Mearsheimer's (2001) offensive realism:
 - ▶ 1. states are after power in an aggressive manner;
 - ▶ 2. natural resources are an essential facet of the power they are trying to acquire.
- ▶ Therefore: resource rich regions must be on the short list of aggressors.



Greedy Outsiders Mechanism: Hypotheses

- ▶ *H₁: States richer in terms of natural resource endowments are more likely to be attacked than their poorer counterparts, other things being equal.*
- ▶ *H_{1.1}: States richer in terms of natural resource endowments are more likely to be attacked by major powers than their poorer counterparts, other things being equal.*
- ▶ *H_{1.2}: States richer in terms of natural resource endowments are more likely to be attacked by their neighbors than their poorer counterparts, other things being equal.*

VARIABLES AND RESEARCH DESIGN

Dependent Variable

- ▶ *Force Use Onset* taken from Militarized Interstate Disputes (MID) Dataset (Ghosn and Palmer 2003).
- ▶ Includes only militarized interstate disputes with hostility levels of four (uses of force) and five (wars).

Main Independent Variables

- ▶ Hamilton and Clemens (1999), annually updated by the World Bank (2006).
- ▶ Ross (2006) refers to it as one of the best measures available (273).
- ▶ *Energy Rent*: the product of unit resource rents and the physical quantities of energy extracted. It covers crude oil, natural gas, and coal," and is measured as the percentage of GNI.
- ▶ *Oil Production* (Humphreys 2005)



Control Variables

Democracy (Marshall and Jagers 2003) (+ or -?)

Trade (percentage of GDP) (World Bank 2006) (+)

Level of Income (GDP per capita in constant 2000 \$US) (World Bank 2006) (+)

Economic Growth (annual percentage) (World Bank 2006) (+)

Domestic Instability (Banks 2004)



Government Size (the percentage of GDP in constant 2000 prices) (Penn World Tables 2004)

Military Expenditure is obtained (World Bank 2006)

Variable	Observations	Mean	Standard Deviation	Min	Max
Force Use Onset	6174	0.156949	0.363782	0	1
Target of Major Power	5982	.0160481	.1256712	0	1
Target of Neighbor	6174	0.094428	0.292447	0	1
Energy Rent	4253	4.980565	12.11678	0	96.58109
Net Energy Exports	3528	1.259699	5.344252	0	118.1321
Oil Production	3858	0.384886	1.216596	-0.01655	10.0925
Oil Reserves	3867	4.610889	20.46478	0	261.5
Trade	4643	69.21391	40.6375	1.530677	282.8884
Level of Income	4728	0.499671	0.755138	0.005652	5.294334
GDP Growth	4805	3.583825	6.76468	-51.0309	106.2798
Democracy	5000	-0.3936	7.531163	-10	10

Table 14: Summary Statistics for Key Variables Used in the Analysis

- ▣ Time series cross sectional models
- ▣ Period: 1970-2002
- ▣ Up to 144 countries and about 3500 country years
- ▣ The unit of analysis: country year
- ▣ Main models: population average logit with robust standard errors (Zorn 2001).
- ▣ Temporal dependence is controlled for by peace years with three cubic splines (Beck, Katz and Tucker 1998).
- ▣ All independent variables are lagged to mitigate the endogeneity problem.
- ▣ All models are run in Stata 10.

- ▣ `XTGEE Y X1 X2...XN PEACEYEARS SPLINE1 SPLINE2 SPLINE3, PA ROBUST`

Empirical Tests: Table 1: Resource Rent and Force Use Onset: Direct

Greedy Outsiders Mechanism

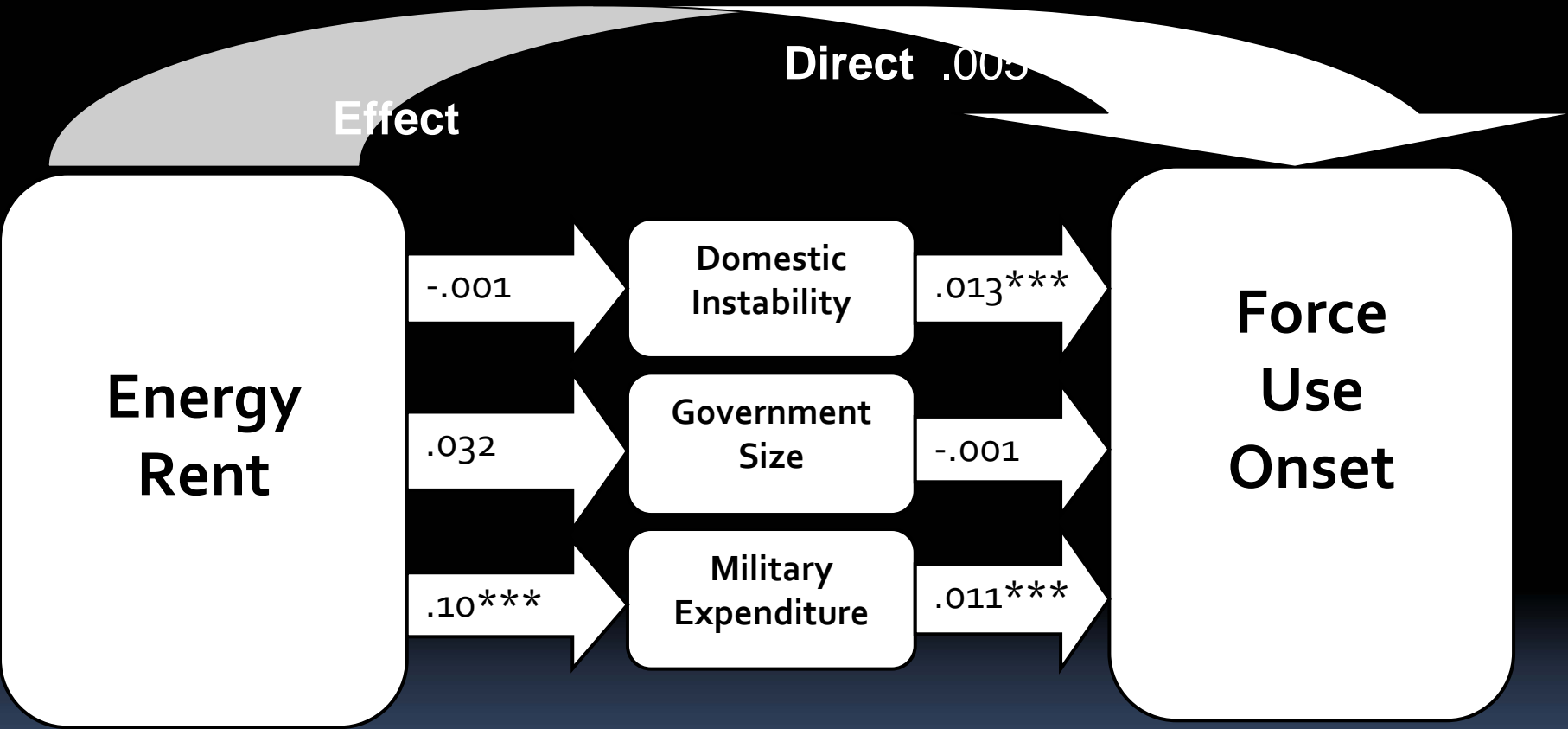
DV: Force Use Onset	(1)	(2)	(3)	(4)
	<u>Involvement</u>	<u>Target</u>	<u>Targeted by Neighbor</u>	<u>Targeted by Major Power</u>
Energy Rent	0.014*** (0.005)	0.016** (0.007)	0.026*** (0.007)	0.027* (0.015)
Mineral Rent	-0.004 (0.018)	0.014 (0.020)	0.015 (0.018)	0.028 (0.109)
Trade	-0.006** (0.003)	-0.006** (0.003)	-0.008*** (0.003)	-0.013** (0.006)
Level of Income	-0.019 (0.136)	-0.072 (0.130)	-0.411*** (0.156)	0.275 (0.204)
GDP Growth	-0.002 (0.008)	0.006 (0.009)	0.013 (0.010)	-0.013 (0.023)
Democracy	-0.007 (0.010)	0.003 (0.011)	0.004 (0.012)	0.016 (0.030)
Peace Years	-0.331*** (0.116)	-0.050 (0.110)	-0.132 (0.090)	-0.390*** (0.144)
Constant	-0.629*** (0.191)	-1.261*** (0.211)	-1.253*** (0.248)	-1.589*** (0.512)
Observations	3511	3511	3511	3387
Countries	144	144	144	

Energy Rent and Probability of International Conflict

Energy Rent

■ Baseline	.14	.13	.09	.01
■ Mean+1SD	.17	.16	.11	.01
■ Mean+2SD	.19	.19	.15	.02

Figure 3: A Model of Linkages between Energy Rent and Force Use Onset



Observations 1373 * significant at 10%; ** significant at 5%; *** significant at 1%

Figure 4: A Model of Significant Linkages between Energy Rent and Force Use Onset

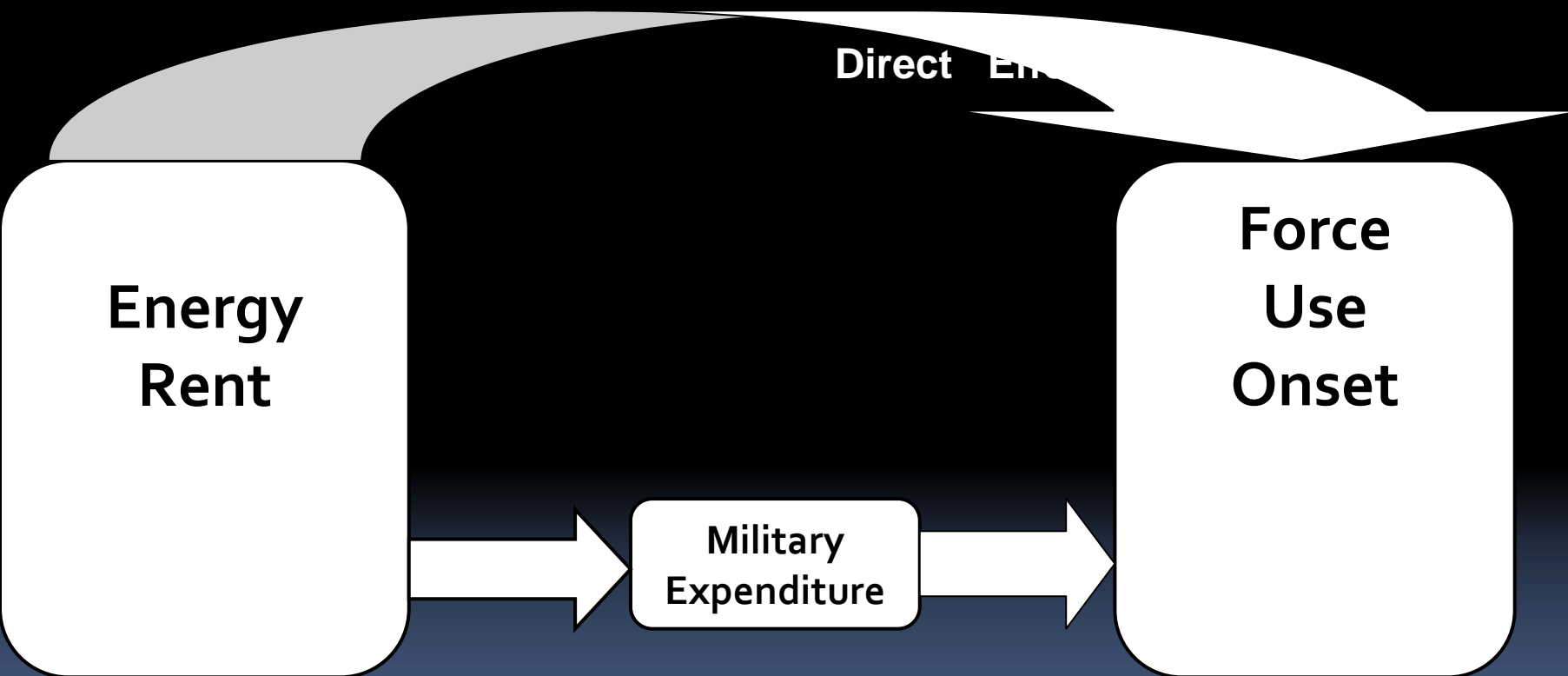


Table 4: Energy Rent as the Determinant of Military Expenditure

Standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

DV: Military Expenditure	(1)	(2)	(3)	(4)	(5)	(6)
Energy Rent _(t-1)	0.052***	0.052***	0.052***	0.049***	0.045**	0.031*
	(0.019)	(0.019)	(0.019)	(0.019)	(0.019)	(0.019)
Per Capita Income _(t-1)		-0.269	-0.269	-0.259	-0.096	0.309
		(0.293)	(0.293)	(0.291)	(0.292)	(0.294)
GDP Growth _(t-1)			-0.001	-0.000	0.009	0.008
			(0.016)	(0.016)	(0.016)	(0.015)
Force Use _(t-1)				0.825***	0.633**	0.623**
				(0.247)	(0.247)	(0.245)
Civil War _(t-1)					1.739***	1.691***
					(0.317)	(0.314)
Democracy _(t-1)						-0.117***
						(0.024)
Constant	2.859***	2.995***	2.997***	2.857***	2.461***	2.595***
	(0.259)	(0.298)	(0.300)	(0.301)	(0.310)	(0.302)
Observations	1540	1540	1540	1540	1540	1540
Countries	134	134	134	134	134	134
Model Chi Sqr	7.587	8.396	8.397	19.74	49.82	75.92


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General Contributions

Resource Curse Approach

1. Simplify models
 - a. focus on abundance,
 - b. nonrenewable vs. renewables
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General Contributions

- Unlike the environmental literature, a large N study with tangible empirical results: can be easily expanded
 - ▣ Unite scarcity and abundance in one variable: scarcity never significant
 - Application of the Resource Curse Literature's principles to explain a new dependent variable: International Conflict
 - Application of Offensive Realism to a new independent variable: Natural Resource
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