Resource Rents, Democracy and Corruption: Evidence from Sub-Saharan Africa

Rabah Arezki
Thorvaldur Gylfason

Resource Rents, Democracy and Corruption: Evidence from Sub-Saharan Africa

Abstract

We examine the effect of the interaction between resource rents and democracy on corruption for a panel of 29 Sub-Saharan countries during the period from 1985 to 2007. We find that higher resource rents lead to more corruption and that the effect is significantly stronger in less democratic countries. Surprisingly, we also find that higher resource rents lead to fewer internal conflicts and that less democratic countries face not a higher but a lower likelihood of conflicts following an increase in resource rents. We argue that these findings can be explained by the ability of the political elites in less democratic countries to more effectively quell the masses through redistribution of rents to the public. We support our argument by documenting that higher resource rents lead to more (less) government spending in less (more) democratic countries. Our findings suggest that the mechanisms through which resource rents affect corruption cannot be separated from political systems.

JEL-Code: C330, D730, D740, D720, H210.

Keywords: resource rents, corruption, political systems, internal conflicts.

Rabah Arezki
International Monetary Fund
Washington DC
USA
rarezki@imf.org

Thorvaldur Gylfason
Department of Economics
University of Iceland
Iceland - 101 Reykjavik
gylfason@hi.is

1. Introduction

For many developing countries and most importantly for Sub-Saharan African countries, resource rents constitute a significant source of income. According to the World Bank (2010), resource rents represented on average 11 percent of Gross National Income (GNI) in 2006. For countries such as the Republic of Congo and Equatorial Guinea, resource rents represented approximately 80 percent of GNI that year. Given the economic significance of resource rents and the key role governments play in administering those rents, the consequences of higher resources rents on the level of corruption is an issue of key importance for both academics and policy makers who have an interest in the governance of Sub-Saharan African countries.[1]

In this paper, we analyze specifically whether the impact of oil rents on corruption is independent of political systems. World Bank President Zoellick, for example, argues that "our (The World Bank's) message to our clients, whatever their political system, is that you cannot have successful development without good governance".[2] While this quote celebrates the importance of good governance including the fight against corruption to achieve development, it also begs the question as to whether and how political systems affect good governance and corruption in particular. Sub-Saharan countries provide an interesting laboratory for the study of such interaction. While those countries are relatively homogenous because of their shared history and geography, they also differ importantly in terms of the quality of their political institutions according to Marshall and Jaggers (2009). The mechanisms through which resource rents affect corruption in Sub-Saharan are thus likely to differ depending on their political systems.

The purpose of this paper is to examine with rigorous panel data techniques the consequences of the interaction between resource rents and political systems on corruption. Our study differs from most existing studies that have primarily focused on exploring the relationship between resource rents

---

[1] Governments are often involved in the natural resource sector either through taxation, the sale of licenses to foreign companies, or more directly through government-owned companies.
[2] April 6, 2011 at Peterson Institute for International Economics in Washington, D.C.,
   see http://go.worldbank.org/ZLVSCW1IX0

and corruption without taking into account the importance of the interaction between the former and political systems. Most recently, Arezki and Bruckner (2011) examine the effects of oil rents on corruption for a panel of 30 oil-exporting countries during the period 1992–2005. They find that an increase in oil rents significantly increases corruption. Interestingly, they also document a significant effect of oil rents on corruption in countries with a high share of state participation in oil production while no such link exists in countries where state participation in oil production is low. Beyond the participation of the state in the resource sector, there are many channels through which political systems may mediate the relationship between resource rents and corruption. The most straightforward channel is the presence of checks and balances in democracies that are likely to help prevent the squandering of public funds in general and of resource rents in particular given the often ill-defined property rights associated with the latter. Because democracies function by consensus and given the presence of constraints on the power of the executive branch, democracies may be less prone to so-called pork-barrel spending which is often a way to disguise the misappropriation of public funds. In this paper, we provide evidence that redistribution through government spending following a resource bonanza depends on the political system and thus can help us understand the channels through which resource rents affect corruption in Sub-Saharan Africa.

Our main finding is that higher resource rents are conducive to more corruption and that the effect is significantly stronger in less democratic countries. Surprisingly, we also find that higher resource rents lead to fewer internal conflicts and that less democratic countries face not a higher but a lower likelihood of conflicts following an increase in resource rents. We argue that these findings can be explained by the ability of the political elites in less democratic countries to more effectively quell the masses through redistribution to the public. We support our argument by documenting that higher resource rents lead to more (less) government spending in less (more) democratic countries. Our findings suggest that the mechanisms through which resource rents affect corruption cannot be separated from political systems.

The political science literature has so far mainly focused the impact of resource rents on the political system. Indeed, Ross (1999b) reviews the political aspects of why resource rich countries tend to manage their economies poorly, arguing that state ownership of the resource industry leads politicians to abuse political power for private gain. More specifically, Karl (2004) argues that countries dependent on oil are often characterized by corruption and exceptionally poor governance, a culture of rent seeking, and high incidence of civil conflict and inter-state war. While Ross (1999a) shows that oil rents significantly undermine democracy, Haber and Menaldo (2009) find that oil does not significantly foster authoritarianism. This literature has, however, overlooked the potential for an interaction between resource rents and political institutions in determining the level of corruption. We contribute to this literature by providing evidence that political systems play a role in shaping the way in which resource rents affect corruption.[3]

A related literature also looks at the effects of resource rents on state stability. Several scholars have offered different theories of the impact of natural resource wealth on civil conflict: mineral wealth could foster conflicts by funding rebel groups (Collier and Hoeffler, 2004); weakening state institutions (Fearon and Laitin, 2003; Snyder and Bhavnani, 2005); making the state a more attractive target for rebels (Fearon and Laitin, 2003); facilitating trade shocks (Humphreys, 2005); making separatism financially attractive in resource rich regions (Le Billon, 2005; Collier and Hoeffler, 2004); or through other processes (Ross, 2006; Humphreys, 2005). We also contribute to this literature by providing evidence that the competition for the resource itself is mediated by the level of democracy. In other words, we present evidence for Sub-Saharan Africa that more democratic countries suffer not less but more from accrued competition for resources and thus face more internal tensions than less democratic countries.

---

[3] Bhattacharyya and Hodler (2009) provide a rare attempt to investigate the impact on the interaction between resource rents and democracy on corruption. They find empirical evidence for the prediction of their game-theoretical model that resource rents lead to an increase in corruption if the quality of the democratic institutions is relatively poor, but not otherwise.

Finally, studying the impact of resource rents on corruption is also relevant to understanding the economic performance of resource rich countries. Indeed, our paper is related to the literature on the impact of natural resources on economic growth, also known as the resource curse (see Frankel, 2011, for a survey). Moreover, our paper is related to the literature on corruption and growth performance. Among others, Mauro (1995) attempts using cross-sectional regressions to isolate the exogenous effect of corruption on economic growth and investment using measures of ethnic fractionalization as instruments. He finds that corruption has a statistically significant negative impact on both growth and investment.

The remainder of the paper is organized as follows. Section 2 describes the resource rents and data on political institutions; Section 3 explains our estimation strategy; Section 4 discusses the main empirical results; and Section 5 concludes.

2. Data

Resource Rents. The resource rents data are taken from World Bank (2011). Natural resources give rise to rents because they are not produced; in contrast, for produced goods and services competitive forces will expand supply until economic profits are driven to zero. An economic rent represents an excess return to a given factor of production. For each type of resource and each country, unit resource rents are thereby derived by taking the difference between world prices (to reflect the social opportunity cost of resource extraction) and the average unit extraction or harvest costs (including a "normal" return on capital). [4] Unit rents are then multiplied by the physical quantity extracted or harvested to arrive at total rent (see Hamilton and Ruta, 2008 for more details on resource rents computation).

---

[4] The energy resources include oil, natural gas and coal, while metals and minerals include bauxite, copper, gold, iron ore, lead, nickel, phosphate, silver, tin, and zinc.

Table 1. Description of Variables

Variable	Description	Source
Resource Rents	Resource rent flows as % of GDP. This aggregate covers coal, oil, gas, minerals and forests.	World Bank (2010)
Corruption	The corruption score captures the likelihood that government officials will demand special payments and the extent to which illegal payments are expected throughout government tiers. The score ranges from 1 to 6, with higher values indicating less corruption.	Political Risk Services, (2009)
Internal Conflicts	This is an assessment of political violence in the country and its actual or potential impact on governance. The highest rating is given to those countries where there is no armed or civil opposition to the government and the government does not indulge in arbitrary violence, direct or indirect, against its own people. The lowest rating is given to a country embroiled in an ongoing civil war. The risk rating assigned is the sum of three subcomponents, each with a maximum score of four points and a minimum score of 0 points. A score of 4 points suggests Very Low Risk and a score of 0 points to Very High Risk.	Political Risk Services, (2009)
Polity2	The Polity2 score is based on the constraints placed on the chief executive, the competitiveness of political participation, and the openness and competitiveness of executive recruitment. The original score ranges from -10 to +10, with higher values indicating stronger democratic institutions.	Polity IV database (Marshall and Jaggers, 2005)
Ethnic Fractionalization	The ethnic fractionalization index measures the probability that two randomly selected individuals in a country will not belong to the same ethnic group. The index ranges between 0 and 1 and is strictly increasing in the number of groups.	Alesina et al. (2003)
Government Spending	Logarithmic change in government expenditures per capita in thousands 2005 PPP USD.	Heston, A., R. Summers and B. Aten (2009)

Democracy. Democracy is measured by the revised combined Polity score (Polity2) of the Polity IV database (Marshall and Jaggers, 2009). The Polity2 score ranges from -10 to +10, with higher values indicating more democratic institutions. To examine also specifically the political competition and executive constraints channel, we use the polity sub-scores on constraints on the chief executive and political competition. According to the Polity IV project, constraints on the executive mirror the extent of institutionalized constraints on the decision-making powers of chief executives and span the range from 1 to 7, with greater values indicating tighter constraints. Political competition measures the extent to which alternative preferences for policy and leadership

can be pursued in the political arena. This indicator ranges from 1 to 10, with greater values denoting more competition.

Table 2. Descriptive Statistics

	Mean	Std. Dev.	Min	Max	Observations
ΔCorruption	-0.01	0.10	-0.92	0.69	662
ΔInternal Conflicts	0.01	0.17	-0.92	0.92	662
ΔGovernment expenditure	0.01	0.18	-2.14	1.72	1719
Resource Rents	0.98	1.86	-4.61	5.37	5289
Polity2 Score	2.08	0.45	0.69	3.08	1596
Executive Constraints Score	1.02	0.46	0.00	1.95	1596
Political Competition Score	1.18	0.50	0.00	2.27	1596
Ethnic Fractionalization	0.63	0.24	0.00	0.93	1710

Note: All variables are taken in log. Polity2 score has been rescaled adding 12 to the original score.

Tables 1 and 2 describe all other variables used in our empirical analysis as well as some summary statistics. Appendix table 1 provides a list of countries included in our empirical analysis.

3. Estimation Strategy

We now explain our estimation strategy that allows us to estimate the effect of resource rents on changes in corruption (and other outcome variables of interest). Specifically, we estimate the model:

$$\Delta \text{Corruption}_{it} = \mu_i + \alpha \text{Corruption}_{it-1} + \gamma_t + \beta \text{Resource Rents}_{it} + \lambda \text{Interaction}_{it} + u_{it}$$

where μ_i are country fixed effects that capture unobservable time-invariant country characteristics, and γ_t are year fixed effects that capture shocks common to all countries. The parameter estimate β

reflects, therefore, the (short-run) marginal effect of resource rents on changes in corruption.[5] The parameter estimate λ captures the marginal effect of the interaction between resource rents and country-specific Polity2 score made time invariant by taking the average over the sample period. We also controlled for lagged corruption (Lagged Corruption$_{it-1}$), which captures convergence effects in the level of corruption as corruption scores are bounded. We present estimates using least squares estimation but also system-GMM estimation (Blundell and Bond, 1998) to deal with possible biases arising from dynamic panel data estimates in the presence of fixed effects. The error term u_{it} is clustered at the country level and may hence be arbitrarily serially correlated within countries.

4. Main Results

Resource Rents and Corruption. Table 3 summarizes our estimation results for the link between within-country variation in resource rents and within-country variation in corruption. Column (1) shows the least squares estimates where control variables are country fixed effects as well as year fixed effects (both jointly significant at the 1% level). Using the column (1) estimate, the impact of a shock to corruption at time t would take about 3.9 years to dissipate by one-half.[6] The obtained point estimate on our resource rents measure is -0.03, which is, however, not statistically significant at conventional levels. Because a higher corruption score taken from Political Risk Services (2009) indicates *less* corruption, the point estimate in column (1) implies that a one standard deviation increase in the resource rents increases corruption by about 0.6 standard deviations.[7]

In column (2) we show that this adverse link between oil rents and corruption remains statistically insignificant when omitting to control for time effects. However, column (3) which is our preferred

---

[5] Long-run coefficient could be retrieved by dividing the short-run coefficient by $-1/\alpha$.

[6] The half-life is computed as $\log(0.5)/\log(\alpha+1)$ where α is the coefficient estimate on the lagged level dependent variable.

[7] The result is obtained by first multiplying the coefficient associated with the individual effect of resource rents that is 1.86 by the standard deviation of the latter that is 0.03 and then by dividing the product by the standard deviation of corruption that is 0.1.

regression result documents that the estimates of the individual effect of resource rents on corruption while remaining quantitatively similar to the previous estimates becomes significant at the 10 percent level when using the system-GMM estimator (Blundell and Bond, 1998). Indeed, system-GMM estimators should be preferred over least squares estimators which yield estimates of dynamic panel data models that are biased in the presence of country fixed effects.[8]

Table 3. Resource Rents, Democracy and Corruption

	Corruption						
	(1) OLS	(2) OLS	(3) GMM	(4) OLS	(5) GMM	(6) OLS	(7) GMM
Lagged Corruption	-0.164***	-0.136***	-0.066	-0.165***	-0.122***	-0.163***	-0.127***
	[0.030]	[0.034]	[0.045]	[0.030]	[0.037]	[0.030]	[0.038]
Resource Rents	-0.030	-0.037	-0.029*	-0.021*	-0.018*	-0.011	-0.026**
	[0.022]	[0.029]	[0.016]	[0.011]	[0.011]	[0.013]	[0.011]
Interaction with Polity2	0.017**	0.021**	0.016**				
	[0.008]	[0.010]	[0.007]				
Interaction with Executive Constraints				0.029***	0.020**		
				[0.010]	[0.009]		
Interaction with Political Competition						0.016**	0.025***
						[0.007]	[0.009]
Fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time effects	Yes	No	Yes	Yes	Yes	Yes	Yes
R-squared	0.131	0.069		0.134		0.131	
Observations	602	602	599	602	599	602	599
Countries	28	28	28	28	28	28	28

Note: The dependent variable is Δcorruption. Robust standard errors are reported in brackets. *Significantly different from zero at 90 percent confidence, ** 95 percent confidence, *** 99 percent confidence.

Table 3 (columns (1) to (3)) also documents the estimates of an interaction between resource rents and country specific Polity2 scores to explore potential cross-country heterogeneity in the impact of resource rents on corruption. The interaction term involving the multiple of the resource rents and the democracy variable is added in the spirit of Mehlum, Moene, and Torvik (2006) and Collier and Hoeffler (2009). The interaction is positive indicating that stronger political institutions would lead to less corruption following a resource boom. Using results from column (1) the overall effects of resource rents would be computed as dCorr/dRent = -0.030 + 0.017*Pol2. We find that these

---

8   A further advantage of the system-GMM estimation is that the use of past first differences as instruments for the levels of the right-hand-side variables reduces concerns that estimates involving our control variables (resource rents and interactive effects) are biased due to their endogenous response to changes in corruption. First-order and second-order serial correlation tests and the Hansen test on over-identifying moment conditions indicate that the estimated model is correctly specified.

interaction terms are quantitatively large and statistically significant. So much so that the overall effect of resource rents on corruption is negative for the country with the lowest Polity2 score on average over the sample period, namely, Senegal, while the interaction becomes positive for Mauritius, the country with the highest Polity2 score. In turn, columns (4) and (5) use a measure of executive constraints while columns (6) to (7) use a measure of political competition instead of the Polity2 score to test whether our main results are robust to the use of specific component of quality of political institutions. We find that the estimates of the interaction between resource rents and both measures of executive constraints and political competition are positive and statistically significant at least at the 5 percent level. Those results suggest that stronger political institutions through limiting executive power and enhancing political competition do attenuate the negative effect of resource rents on corruption. This result suggests that weaker political institutions exacerbate the impact of higher resource rents on corruption. Democracy may indeed effectively restrain rent seekers, thus making resource rents less prone to corruption in democracies in the face of accrued resource revenues. These findings suggest that resource rich economies need particularly strong checks and balances to contain the potential damage from rent seeking in the face of resource booms. This result follows from the earlier one and suggests that the checks and balances that Collier and Hoeffler (2008) call for are not yet in place in many countries. From this point of view, our empirical findings on the interaction between natural resource dependence and democracy accord also with those of Mehlum, Moene, and Torvik (2006) who report that good institutions deflate the damaging effects of resource dependence on growth.

Oil Rents and Internal Conflicts. In order to foster our understanding of the effect of the interaction between resource rents and political institutions on corruption, it is useful to investigate whether resource rents have an impact on internal stability depending on political systems. We explore this question in Table 4 by examining how resource rents and their interaction with the Polity2 score affect the likelihood of internal conflict. To capture internal conflicts we use an

assessment of political violence from Political Risk Services (2009), a higher score indicating less internal political violence. In column (1) we estimate the individual effect of resource rents on internal conflicts and find that resource rents decrease in a statistically significant manner the assessment of internal conflicts. In columns (2) to (4) we also include an interaction term between resource rents and the Polity2 score. As can be seen from columns (2) and (3), the estimates of the interaction are statistically significant and quantitatively large. So much so that for a country with the same level of democracy as in Mauritius, an increase by one standard deviation in resource rents barely improves the assessment of internal stability (0.1 standard deviation). However, for a country with a lower level of democracy comparable to the one in Senegal, an increase by one standard deviation in resource rents leads to an almost 1.2 standard deviation increase in the assessment of internal stability. We do find, however, that neither the estimate of the individual effect of resource rents nor the estimate of interaction between resource rents and the Polity2 score are significant when using GMM estimator.

Table 4. Resource Rents, Democracy and Internal Conflicts

	Internal Conflict			
	(1) OLS	(2) OLS	(3) OLS	(4) GMM
Lagged Internal Conflicts	-0.360***	-0.367***	-0.288***	-0.146*
	[0.036]	[0.039]	[0.034]	[0.078]
Resource Rents	0.045***	0.144***	0.167***	0.008
	[0.013]	[0.049]	[0.047]	[0.019]
Interaction with Polity2		-0.045**	-0.053**	-0.003
		[0.022]	[0.020]	[0.012]
Country Effects	Yes	Yes	Yes	Yes
Time Effects	Yes	Yes	No	Yes
R-squared	0.301	0.303	0.177	
Observations	623	602	602	599
Countries	29	28	28	28

Note: The dependent variable is Δinternal conflict. Robust standard errors are reported in brackets. *Significantly different from zero at 90 percent confidence, ** 95 percent confidence, *** 99 percent confidence.

Oil Rents and Government Expenditure. What explains the moderating role of political institutions in the relationship between resource rents and internal conflicts in Sub-Saharan Africa? There could clearly be a number of possible reasons but a useful way in answering this question is to focus on aspects of the distribution of resource rents between the political elite and the masses.

Extending transfers to the population may be an effective way to quell the masses following a resource boom. It may, however, prove harder for democracies to effectively quell the masses through redistribution to the public. This can be the case because of the scrutiny of government actions resulting from the existence of constraints on the executive power and checks and balances. Those constraints and checks are likely to hamper accrued redistribution disguised as additional government spending. In contrast, in less democratic countries where no such constraints and checks and balance exist, the content and the volume of government spending may increase drastically following a resource bonanza so as to quell the masses. By doing so, the political elite in less democratic countries may significantly reduce the risk of conflict and thus preserve its rent income from resource revenues.

Table 5. Resource Rents, Democracy and Government Spending

	Government Spending			
	(1) OLS	(2) OLS	(3) OLS	(4) GMM
Lagged Expenditure	-0.196**	-0.130*	-0.120*	-0.105
	[0.078]	[0.066]	[0.066]	[0.073]
Resource Rents	0.016***	0.046***	0.045***	0.017*
	[0.006]	[0.017]	[0.015]	[0.009]
Interaction with Polity2		-0.016**	-0.016**	-0.008**
		[0.006]	[0.006]	[0.003]
Country Fixed Effects	Yes	Yes	Yes	Yes
Time Effects	Yes	Yes	No	Yes
R-squared	0.065	0.051	0.017	
Observations	1438	1312	1312	1265
Countries	43	39	39	39

Note: The dependent variable is Δgovernment spending. Robust standard errors are reported in brackets. *Significantly different from zero at 90 percent confidence, ** 95 percent confidence, *** 99 percent confidence.

In Table 5 we provide evidence supporting our argument by documenting that higher resource rents lead to more (less) government spending in less (more) democratic countries. In columns (1) we estimate the individual effect of resource rents on government spending and find that resource rents increase in a statistically and economically significant manner government spending. A one standard deviation increase in resource rents leads to an increase by 0.16 standard deviation in government spending. In columns (2) to (4) we also include an interaction term between resource rents and the Polity2 score. As can be seen from columns (2) and (5), the estimates of the

interaction are statistically significant and quantitatively large.[9] So much so that for a country with the same level of democracy as in Mauritius, an increase by one standard deviation in resource rents *decreases* government spending by 0.08 standard deviations whereas for a country with a level of democracy as in Senegal government spending would *increase* by 0.1 standard deviation. We attribute this dichotomous effect to the ability of political elites in autocracies to effectively redistribute to the public in periods of resource bonanza rendered possible by the lack of scrutiny they face. Our findings suggest that the mechanisms through which resource rents affect corruption cannot be separated from political systems.

Table 6. Robustness Checks

	Corruption		Internal Conflicts		Government Expenditure	
	(1) OLS	(2) GMM	(3) OLS	(4) GMM	(5) OLS	(6) GMM
Lagged Corruption	-0.164***	-0.067				
	[0.030]	[0.046]				
Lagged Internal Conflicts			-0.369***	-0.151**		
			[0.038]	[0.076]		
Lagged Government Expenditure					-0.131*	-0.099
					[0.066]	[0.074]
Resource Rents	-0.007	-0.032**	0.155*	0.015	0.046**	0.018*
	[0.033]	[0.017]	[0.056]	[0.021]	[0.017]	[0.011]
Interaction with Polity2	-0.002	0.017**	-0.053*	-0.012	-0.017**	-0.009*
	[0.019]	[0.007]	[0.031]	[0.012]	[0.007]	[0.006]
Interaction with Ethnic Fractionalization	-0.048	-0.003	-0.021	-0.049**	-0.006	-0.006
	[0.033]	[0.014]	[0.061]	[0.022]	[0.018]	[0.010]
R-squared	0.133		0.304		0.054	
Observations	602	599	602	599	1284	1276
Countries	28	28	28	28	38	38

Note: The dependent variables are respectively Δcorruption, Δinternal conflicts and Δgovernment expenditure. Robust standard errors are reported in brackets.
*Significantly different from zero at 90 percent confidence, ** 95 percent confidence, *** 99 percent confidence. All regressions included fixed and time effects but estimates are not shown.

Robustness Checks. To ascertain that our main results are not driven by other factors than political systems we further control for the level of ethnic fractionalization. Indeed, Sub-Saharan Africa is the most ethnically fractionalized continent (see Alesina et al., 2003). Furthermore, ethnic fractionalization has been used either as an instrument for corruption (see Mauro, 1995) or as a key determinant of the likelihood of conflicts (see Collier and Hoeffler, 2004). Table 6 documents the results of our previous regressions adding to the specification an interaction between resource rents and the country specific level of ethnic fractionalization. Albeit some estimates have become less

---

[9] These results are robust to using GMM estimators and to the use of time effects as shown in column (5) which is our preferred estimate.

statistically significant, the signs and magnitudes appear virtually unchanged. This suggests that our main result that political institutions moderate the relationship between resource rents and corruption/internal stability is not driven by omitted variables such ethnic fractionalization.

5. Conclusion

Understanding the interplay between political systems and resource rents is a matter of key importance for the design of risk management strategies to tackle corruption in Sub-Saharan Africa as well as in other regions. We have here attempted to show that, indeed, it is not advisable to separate the issue of resource rents from political systems when studying the evolution of corruption following a resource bonanza. We found that, paradoxically, while corruption resulting from an increase in resource rents decreases in more democratic countries, the likelihood of conflicts increases in the latter countries. This is because more democratic countries are less able to redistribute to the public because of the level of scrutiny they face. In contrast, less democratic countries are able to dispense pork-barrel spending to disguise redistribution and quell the masses.

To best manage the opportunities created by natural resources for development, a new initiative called the Natural Resource Charter has promulgated a set of economic principles for governments and societies to guide their choices and suggest strategies that governments might pursue. Our study could help shed light on the necessity to implement policies tailored to political systems. One could also more preventively think about designing early warning systems which would, for instance, alert civil society that autocracies may be more prone to increased spending during a resource bonanza. It is, however, clear that exposing such behavior can only be successful if the population, whom the political elites are trying so hard to quell, can be informed and educated around those issues of misappropriation. Thus it is important to recognize the importance of civil society to enforce more transparency in budget activity and that judicial systems are also truly independent to mitigate the consequences of weak political institutions.

References

Alesina, A., A. Devleeschauwer, W. Easterly, S. Kurlat, and R. Wacziarg (2003). "Fractionalization." *Journal of Economic Growth* 8: 155-194.

Arezki, R. M. Brueckner, "Oil rents, corruption, and state stability: Evidence from panel data regressions." *European Economic Review* (forthcoming).

Bhattacharyya, S. and R. Hodler (2009). "Natural Resources, Democracy, and Corruption." *European Economic Review*, vol. 54(4): 608-621.

Blundell, R. and S. Bond (1998). "Initial Conditions and Moment Restrictions in Dynamic Panel Data Models." *Journal of Econometrics* 87: 115-143.

Collier, P. and A. Hoeffler (2004). "Greed and Grievance in Civil War." *Oxford Economic Papers* 56: 563-596.

Collier, P. and A. Hoeffler (2009). "Testing the Neocon Agenda: Democracy in Resource-Rich Societies." *European Economic Review* 53(3): 293-308.

Frankel, J. (2010). "The Natural Resource Curse: A Survey." Working Paper Series rwp10-005, Harvard University, John F. Kennedy School of Government.

Fearon, J. and D. Laitin (2003). "Ethnicity, Insurgency, and Civil War." *American Political Science Review* 97: 75-90.

Fearon, J. (2005). "Primary Commodity Exports and Civil War." *Journal of Conflict Resolution* 49: 483-507.

Haber, S. and V. Menaldo (2008). "Do Natural Resources Fuel Authoritarianism? A Reappraisal of the Resource Curse." Working Paper No. 351, Stanford University.

Heston, A., R. Summers and B. Aten (2009). "Penn World Table Version 6.3", Center for International Comparisons of Production, Income and Prices at the University of Pennsylvania, August 2009.

Hamilton, K. and M. Clemens (1999). "Genuine Savings Rates in Developing Countries." *World Bank Economic Review* 13: 333-356.

Humphreys, M. (2005). "Natural Resources, Conflict and Conflict Resolution." *Journal of Conflict Resolution* 49: 508-537.

Karl, T. (2004). "The Social and Political Consequences of Oil." Cutler Cleveland, ed. Encyclopedia of Energy. San Diego: Elsevier.

Le Billon, P. (2005). *The Geopolitics of Resource Wars*. Frank Case: New York.

Mauro, P. (1995). "Corruption and Growth." *Quarterly Journal of Economics* 110: 681-712.

Marshall, M. and K. Jaggers (2005). Polity IV Project: Dataset Users' Manual. Center for Global

Policy, George Mason University (www.cidcm.umd.edu/polity). [Polity IV Data Computer File, Version p4v2004. College Park, MD: Center for International Development and Conflict Management, University of Maryland.]

Mehlum, Halvor, Karl Ove Moene, and Ragnar Torvik (2006), "Cursed by resources or institutions?."*World Economy* 29(8): 1117-1131.

Political Risk Services (2009). *International Country Risk Guide.*

Ross, M. (1999a). "Does Oil Hinder Democracy?" *World Politics* 53: 325-361.

_____, (1999b). "The Political Economy of the Resource Curse." *World Politics* 51: 297-322.

_____, (2006). "A Closer Look at Oil, Diamonds, and Civil War." *Annual Review of Political Science* 9: 265-300.

Snyder, R. and R. Bhavnani (2005). "Diamonds, Blood, and Taxes." *Journal of Conflict Resolution* 49: 563-597.

World Bank (2010). *World Development Indicators* (Washington D.C., World Bank).

Appendix Table 1. List of Countries

1	Angola	15	Mali
2	Burkina Faso	16	Mozambique
3	Botswana	17	Malawi
4	Cameroon	18	Namibia
5	Congo, Republic of	19	Niger
6	Ethiopia	20	Nigeria
7	Gabon	21	Senegal
8	Ghana	22	Togo
9	Guinea	23	Tanzania
10	Gambia, The	24	Uganda
11	Guinea-Bissau	25	South Africa
12	Kenya	26	Congo, Dem. Rep.
13	Liberia	27	Zambia
14	Madagascar	28	Zimbabwe