

Resource curse in autocracies

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Abstract

We use a parsimonious decision model to study the conditions under which natural resource abundance negatively affects economic development in autocratic regimes. We assume that the autocrat values both economic prosperity and the security of his office, and that resource abundance determines the constraint in his choice of the two. The work predicts an economic and political resource curse in the absence of institutions that limit the autocrat’s ability to prolong his term in office. In such a case, development will, in effect, become an inferior good for the autocrat, and will be reduced following an increase in resource abundance. Resource curse is less likely if the autocrat faces institutional constraints on his tenure, when it is very difficult (and costly) for him to increase his probability of survival by each additional percent.

1 Introduction

The proposition that natural resource (and, particularly, oil) abundance can lead to political and/or economic dysfunction has been studied extensively in the past two decades. Several empirical patterns seem to emerge.

First, natural resource wealth (and, in particular, oil wealth) prevents democratic transitions, and/or positively associated with the survival of political leaders (Omgba, 2009; Cuaresma, Oberhofer and Raschky, 2011; Wright, Frantz and Geddes, 2015; Ross, 2001, 2015). On the subnational level windfall revenue (and, in some cases, federal transfers that act in a similar way) also serve to increase the terms in office of local officials (Ross, 2015).

Second, while many countries have experienced the resource curse, others have shown little or no adverse effects or even benefited from resource windfalls — hence, resources were a “blessing”. There is a growing evidence that the two groups of countries are characterized, to a large degree, by the institutional quality (Van der Ploeg, 2011), with poor institutions associated with the resource curse. It has been argued that resource abundance is negatively associated with media freedom, but only in authoritarian states (Egorov, Guriev and Sonin, 2009); that its adverse effect on per capita income is conditional on bad rule of law (Arezki and Van der Ploeg, 2011; Mehlum, Moene and Torvik, 2006); or that the adverse effect of resources on political freedoms is more likely to be observed in autocracies (Wiens, Poast and Clark, 2014; Caselli and Tesei, 2016). Similarly, oil and other resources prolong the tenure of political leaders in autocracies but not in democracies (Andersen and Aslaksen, 2013).

The goal of our analysis is to understand the mechanism linking authoritarian survival, institutions, resource abundance, and economic outcomes. We use a simple model to focus on the dictator’s decision to allocate the state’s resources between measures that promote economic growth and those that increase the probability of the dictator staying in power. The dictator faces a constraint, as the amount of resources at his disposal is limited. More generally, reducing the political risks to the dictator requires policies that are harmful to development, such as concentrating power in the hands of the few, creating patronage networks, quashing free media, and maintaining a tight control over the judiciary at the expense of the rule of law (Acemoglu and Robinson, 2013).¹

Prolonging the dictator’s tenure may be increasingly costly as it can involve overriding various institutional barriers, such as powerful legislatures, courts, or rules governing executive turnover. If prolonged undemocratic rule is seen as illegitimate, then compliance from the population may have to be secured by force, which is also very costly. Sources of legitimacy include good economic track record by the dictator and the public’s acceptance of an ideology (such as Communist or Islamist) that justifies dictatorship (Brooker, 2013, p. 133-142). Mexico under PRI in 1940-90s was a particularly striking example of an authoritarian regime with safeguards against

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¹At the same time, democratic transitions were shown to have a positive effect on future GDP (Acemoglu et al., 2014).

personal rule, with the presidents being constitutionally limited to a single six-year term as a consequence of an elite sentiment against long dictatorial tenures. Besides having an institutionalized leadership turnover, the regime was also unusual among autocracies as it underwent democratization after a large resource boom that started in 1974 (Ross, 2015).

In the modeling terms, these factors determine the shape of the function that relates the dictator’s survival probability to the amount of resources needed to attain it. In the presence of constraints on the dictator’s tenure, raising the survival probability by each subsequent percent would require sacrificing more and more of the country’s economic growth, so the function would be highly concave. In the absence of constraints, the function would be close to linear.

We make the standard assumption that the dictator receives office rents if he remains in power. We also let the dictator care about the state of the economy, including in the event where he is ousted. The latter assumption is made because the fates of outgoing dictators can be very different (ranging from death, exile, or imprisonment to safe retirement or even an eventual return to power), and that bad outcomes such as death or exile are less likely if per capita GDP is higher, or in less personalist regimes (Escribà-Folch, 2013).

Our model predicts resource curse in regimes with few institutional barriers against the prolongation of the dictator’s rule. This is a consequence of the assumption that an extra unit of resources spent on economic development will matter more for the dictator in case he is deposed, and is unable to enjoy the large material and psychological benefits that the office provides.² Hence, if a resource boom is used to increase the dictator’s probability of survival, then spending on the economy will become relatively less attractive compared with spending on security, prompting the dictator to cut down on economic development. That will not happen if the marginal cost of the dictator’s stay in office is increasing due to institutional constraints; in that case, at least some of the resource boom will be spent on economic development.

Our model is one of several that looked at the effect of resource windfall on development and political outcomes. Acemoglu, Verdier and Robinson (2004) argued that in weakly institutionalized societies, rulers appropriate resource rents as they are better positioned to buy off opponents. In Besley and Persson (2011), income shocks can lead to political violence if the ruler is not constrained to share resource spoils with the opposition. Other studies looked at the distribution of labor between rent seeking and production (Mehlum, Moene and Torvik, 2006), incumbent’s ability to credibly promise rents to his supporters (Robinson, Torvik and Verdier, 2006), or the number of groups that can extract fiscal transfers (Tornell and Lane, 1999). Similarly to this work, Caselli and Cunningham (2009) took a general form of the dictator’s security vs. prosperity constraint, but did not assume that the dictator cared for the state of the economy in case he is ousted. Starting with a somewhat different set of assumptions than ours, Caselli and Tesei (2016) introduced a concave dictator’s survival probability function. In their setting (as well as in Tsui (2010)), resource booms did not crowd out economic development; on the contrary, in our work we derive a clear sufficient condition on the reduced-form dictator’s probability of survival function for the economic resource curse to occur.

The remainder of this paper is organized as follows: Section 2 contains the main results; Section 3 concludes.

2 Results

We model the dictator’s choice of his level of security and the country’s economic prosperity as the outcome of a constrained utility maximization problem. The dictator values both staying in power (which gives access to office rents) and the country’s level of economic development, and faces a dilemma, as the maximum level of country economic performance that can be achieved is decreasing in the probability of his political survival. Formally, let the country’s level of economic development g and the level of security s be subject to the constraint

$$s + g \leq I. \tag{1}$$

The value I is the amount of resources at the dictator’s disposal. If there is a natural resource boom, a higher level of prosperity can be achieved for the same level of security, and vice versa, and the constraint (1) is relaxed, making a broader range of alternatives available to the autocrat.

The dictator remains in power with probability $p(s)$ and is deposed with probability $1 - p(s)$. We assume that $p(\cdot)$ is a continuous function that is twice differentiable everywhere except possibly at $s = \bar{s}$, with $p'(s) > 0$ and $p''(s) \leq 0$ at $s \in [0, \bar{s})$, and $p(s) = \bar{p} < 1$ at $s \geq \bar{s}$.

²Here we assume that the dictator, in case he is ousted, enjoys a safe retirement. The model can be extended to the case where there is a probability the dictator is killed or imprisoned if he is ousted; a similar result will hold in that case, provided that the latter probability is not too large.

If the dictator remains in power, he receives a (psychological or material) benefit $R > 0$. In addition, the dictator receives benefit g regardless of whether he is deposed or not. This value accounts for the assumption that the dictator, *ceteris paribus*, prefers his country's economy to be more developed — either for altruistic reasons, or because he may enjoy the legacy as an efficient ruler.³ The utility function $u(\cdot)$ is twice differentiable, with $u(x)' > 0$, $u''(x) < 0$, $u'''(x) > 0$ for $x > 0$, and $u(0) = \infty$.⁴

The dictator will seek to maximize his expected payoff given constraint (1). As a result, the constraint will be binding, with the expected payoff being

$$U = u(g)(1 - p(I - g)) + p(I - g)u(g + R). \quad (2)$$

This is a very basic setup to study the choice of the dictator between prosperity on one hand, and his political survival on the other. We want to know what effect will resource wealth have on economic development and autocratic survival. In particular, we want to know under what conditions will a natural resource boom have an adverse effect on economic development (and, correspondingly, lead to a large increase in regime stability).

We have $u'(0) = \infty$, so development g^* maximizing the dictator's payoff is positive. If $g^* < I$ and $I - g^* < \bar{s}$, then the following first-order condition for maximization of (2) must be satisfied:

$$\frac{\partial U}{\partial g} = u'(g)(1 - p(I - g)) + u'(g + R)p(I - g) + p'(I - g)(u(g) - u(g + R)) = 0, \quad (3)$$

while the corresponding second-order condition should be⁵

$$\frac{\partial^2 U}{\partial g^2} = -p''(I - g)(u(g) - u(g + R)) + 2p'(I - g)(u'(g) - u'(g + R)) + u''(g)(1 - p(I - g)) + u''(g + R)p(I - g) < 0. \quad (4)$$

By the implicit function theorem, the relationship between g^* and I has the same sign as the cross partial derivative

$$\frac{\partial^2 U}{\partial I \partial g} = p''(I - g)(u(g) - u(g + R)) - p'(I - g)(u'(g) - u'(g + R)). \quad (5)$$

An increase in resources I has two countervailing effects on the dictator's marginal payoff from prosperity $\frac{\partial U}{\partial g}$. The first of these effects is negative. As the amount of resources I and the probability of dictator's survival $p(I - g)$ increase, the dictator will be more likely to receive $u'(g + R)$ for a one-unit increase in g , and will be less likely to receive $u'(g)$, which is the larger amount.

This effect can be negated by the institutional constraints on the dictator's tenure. In the presence of such constraints, increasing the probability of dictator's political survival by each subsequent percent will require sacrificing more and more of the country's economic performance; this corresponds to a large absolute value of the second derivative $p''(I - g)$. In that case, an increase in I will result in an extra unit spent on economic development having a smaller adverse effect on the dictator's probability of survival, prompting the latter to increase g . The second effect will not be manifest if the function $p(\cdot)$ is sufficiently flat and the marginal cost of increasing the dictator's probability of survival is near constant. In that case, economic development will be, in effect, an inferior good for the dictator. An increase in the state resources will relax the constraint (1), but the dictator will instead increase investment in his political survival by so much that the country's economic performance will suffer.⁶

In particular, the following is true.

³Alternatively, one can assume that the dictator consumes a public good, the amount of which is proportional to the economy's output. In the constraint (1) we assumed, without loss of generality, that this fraction is equal to unity. However, this is only a simplifying assumption, so the amount of office rent R can potentially be larger than g consumed by the dictator.

⁴The positive third derivative means that the dictator's (negative) utility premium from taking on a zero-mean lottery increases with his income; this assumption is consistent with observed experimental behavior (Noussair, Trautmann and Van de Kuilen, 2013).

⁵In the generic case, a sufficient condition for the existence of $g^* \in (0, I)$ maximizing (2) subject to (4) would be a large enough $p'(0)$ and $I < \bar{s}$.

⁶It is straightforward to generalize this setting to the case where the dictator's survival probability depends on economic development, given a fixed investment in security. If we have $p = p(I - g)$, then the second derivative (5) will become

$$\frac{\partial^2 U}{\partial I \partial g} = (p_{11} - p_{12})(u(g) - u(g + R)) - p_1(u'(g) - u'(g + R)).$$

It follows that it does not matter whether economic development makes the dictator's survival more or less likely. An additional sufficient condition for the economic development to be an inferior good is $p_{12} < 0$, which means that in more developed countries prolonging the dictator's political survival requires greater spending on security.

Proposition 1 Suppose that

$$p(s) = \begin{cases} \bar{p}s/\bar{s}, & s \leq \bar{s} \\ \bar{p}, & s > \bar{s} \end{cases}, \quad (6)$$

the solution to

$$\bar{s}u'(I) - \bar{p}(u(I+R) - u(I)) = 0 \quad (7)$$

in I exists and is given by $\bar{I} < \bar{s}$, and $R < \bar{s}/\bar{p}$. Then there exists a function \tilde{g} defined on (\bar{I}, \bar{s}) that is decreasing almost everywhere, such that for each $I \in (\bar{I}, \bar{s})$, $g = \tilde{g}(I) \in (0, I)$ maximizes the dictator's payoffs.

The value \bar{I} is the amount of resources such that the dictator's first order condition is satisfied at $g = \bar{I}$. If $I \in (\bar{I}, \bar{s})$, then the solution to the dictator's maximization problem will be interior, with a positive amount of resources channeled to both economic development and security. There will be a corner solution at $g = I$ if $I \leq \bar{I}$, and a corner solution $g = I - \bar{s}$ if $I \geq \bar{s}$. In the latter case, the dictator's probability of staying in power will be maxed out at \bar{p} .

On Figure 1 we show how the solution to the dictator's problem depends on the values of I and R .⁷

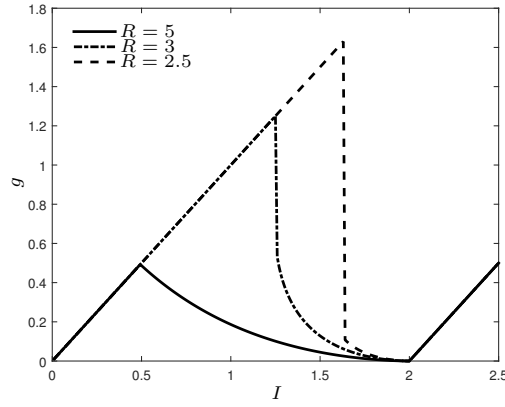


Figure 1: Economic development for different levels of state capacity and office rent.

When I is sufficiently small, the autocrat chooses $g = I$ and $s = 0$; this is a consequence of our assumption that $u'(0) = \infty$. If $R \geq \bar{s}$ and the dictator has enough resources at his disposal, some of them are spent on security; in accordance with Proposition 1, an increase in I will result in a decrease in development g , and a large increase in regime security s . This happens sooner if the office rents R are larger, and the decrease in economic development can be discontinuous. Finally, when $I \geq \bar{s}$ and the amount of resources available to the dictator is sufficiently large, the autocrat can secure his political control over the country, and use any subsequent increase in resources for economic development.

The autocrat's office rents R are negatively related to his choice of the level of economic development. In two limiting cases, we obtain the conditions on p and u that are necessary and sufficient for g^* to decrease in I :

Proposition 2 If $g^* \in (0, I)$, then it decreases in the level of office rents R . If $-p''(I)(1-p(I))/p'(I) - p'(I) < 0$, $u(\cdot)$ is not bounded from above, and R is sufficiently high, then g^* decreases in I . If $\lim_{x \rightarrow 0} \frac{p'(x)}{p''(x)} < \frac{u'(I)}{u''(I)}$ and R is sufficiently low, then g^* decreases in I .

As office rents increase, so does investment in regime security, at the expense of economic performance, until eventually almost all state resources are used for the autocrat's political survival. We will have the opposite picture if the office rents are small. When $R < \bar{s}$ (not shown on Figure 1), the autocrat will always choose $g = I$.

3 Discussion

We present a model of a dictator who divides the state's resources between economic development and his political survival, and show that economic resource curse will occur in the absence of institutional constraints

⁷We let $u(x) = x^{0.4}$ and take $p(\cdot)$ as given by (6) with $\bar{s} = 2$ and $\bar{p} = 1$.

on the dictator’s tenure. Future work could test this outcome, comparing the direction of the economy’s response to resource shocks with various (institutional, cultural, or geographic) measures of the country’s resistance to or resentment of prolonged authoritarian rule.

The argument developed in this paper can be extended to the provision of foreign aid and the “technocratic” approach to developmental assistance, where the donor country provides expertise in executing specific economic or social policies, but the local leadership maintains supreme political control. Such an approach to promoting development in non-democracies has been popular among international financial institutions and charity foundations (Easterly, 2014). We predict that such increases in state capacity in non-democracies, without improvement in government accountability, can actually help consolidate autocratic regimes while crowding out economic development.⁸

Appendix

Proof of Proposition 1. Put

$$D(I) = \left. \frac{\partial U}{\partial g} \right|_{g=I} = u'(I) - \frac{\bar{p}}{\bar{s}}(u(I+R) - u(I)).$$

Then, as $u''' > 0$, we have $u'(I+R) + u'(I) > u''(I)R$ and

$$\frac{\partial D(I)}{\partial I} = u''(I) - \frac{\bar{p}}{\bar{s}}(u'(I+R) - u'(I)) < 0.$$

It follows that for every $I \in (\bar{I}, \bar{s})$, we have $D(I) < 0$, and there exists at least one $g \in (0, I)$ that maximizes (2). Take $\tilde{g}(I)$ to be the minimum of all g maximizing the autocrat’s expected payoff. Then, for almost all I , it will be true that $\lim_{I' \rightarrow I^-} \tilde{g}(I') = \lim_{I' \rightarrow I^+} \tilde{g}(I') = \tilde{g}(I)$ and, by implicit function theorem, $\tilde{g}(I)$ will be decreasing at I . **Q.E.D.**

Proof of Proposition 2. We have

$$\frac{\partial^2 U}{\partial R} = u''(g+R)p(I-g) - u'(g+R)p'(I-g) < 0,$$

and, by the implicit function theorem, $\frac{\partial g}{\partial R} < 0$ at $g = g^*$. If $u(\cdot)$ is not bounded from above, then the last summand of (3) tends to $-\infty$ as $R \rightarrow \infty$, while the second summand is bounded; so, we must have $\lim_{R \rightarrow \infty} u'(g^*) = \infty$, or $\lim_{R \rightarrow \infty} g^* = 0$. The condition $-p''(I)(1-p(I))/p'(I) - p'(I) < 0$ is obtained by the substitution of (3) into (5) and letting $u'(g) \rightarrow \infty$. As the first two summands of (3) are positive, we must have $p'(I-g) \rightarrow \infty$ for (3) to hold as $R \rightarrow 0$. The final condition follows from the fact that, as $g \rightarrow I$ and $R \rightarrow 0$, we have $R \frac{\partial^2 U}{\partial I \partial g} \rightarrow -p''(I-g)u'(I) + p'(I-g)u''(I)$. **Q.E.D.**

References

- Acemoglu, Daron and James A Robinson. 2013. *Why nations fail: The origins of power, prosperity, and poverty*. Crown Business.
- Acemoglu, Daron, Suresh Naidu, Pascual Restrepo and James A Robinson. 2014. Democracy does cause growth. Technical report National Bureau of Economic Research.
- Acemoglu, Daron, Thierry Verdier and James A Robinson. 2004. “Kleptocracy And Divide-and-Rule: A Model Of Personal Rule.” *Journal of the European Economic Association* 2(2-3):162–192.
- Andersen, Jørgen Juel and Silje Aslaksen. 2013. “Oil and political survival.” *Journal of Development Economics* 100(1):89–106.

⁸Previous literature indicated that a source of poor economic performance in authoritarian regimes can be the promotion of people to top administrative positions on the basis of loyalty, with competence being a secondary or even an undesired trait (Egorov and Sonin, 2011; Zakharov, 2016). With this respect, the argument here is different: The promotion of a competent person can have an adverse effect as well, because the autocrat can use it as an opportunity to increase the security of his regime without sacrificing too much of economic growth.

- Arezki, Rabah and Frederick Van der Ploeg. 2011. "Do natural resources depress income per capita?" *Review of Development Economics* 15(3):504–521.
- Besley, Timothy and Torsten Persson. 2011. "The logic of political violence." *The quarterly journal of economics* 126(3):1411–1445.
- Brooker, Paul. 2013. *Non-democratic regimes*. Palgrave Macmillan.
- Caselli, Francesco and Andrea Tesei. 2016. "Resource windfalls, political regimes, and political stability." *Review of Economics and Statistics* 98(3):573–590.
- Caselli, Francesco and Tom Cunningham. 2009. "Leader behaviour and the natural resource curse." *Oxford Economic Papers* 61(4):628–650.
- Cuaresma, Jesus Crespo, Harald Oberhofer and Paul A Raschky. 2011. "Oil and the duration of dictatorships." *Public Choice* 148(3-4):505–530.
- Easterly, William. 2014. *The tyranny of experts: Economists, dictators, and the forgotten rights of the poor*. Basic Books.
- Egorov, Georgy and Konstantin Sonin. 2011. "Dictators and their viziers: Endogenizing the loyalty–competence trade-off." *Journal of the European Economic Association* 9(5):903–930.
- Egorov, Georgy, Sergei Guriev and Konstantin Sonin. 2009. "Why resource-poor dictators allow freer media: A theory and evidence from panel data." *American political science Review* 103(4):645–668.
- Escribà-Folch, Abel. 2013. "Accountable for what? Regime types, performance, and the fate of outgoing dictators, 1946–2004." *Democratization* 20(1):160–185.
- Mehlum, Halvor, Karl Moene and Ragnar Torvik. 2006. "Institutions and the resource curse." *The economic journal* 116(508):1–20.
- Noussair, Charles N, Stefan T Trautmann and Gijs Van de Kuilen. 2013. "Higher order risk attitudes, demographics, and financial decisions." *Review of Economic Studies* 81(1):325–355.
- Ongba, Luc Désiré. 2009. "On the duration of political power in Africa: the role of oil rents." *Comparative Political Studies* 42(3):416–436.
- Robinson, James A, Ragnar Torvik and Thierry Verdier. 2006. "Political foundations of the resource curse." *Journal of development Economics* 79(2):447–468.
- Ross, Michael L. 2001. "Does oil hinder democracy?" *World politics* 53(3):325–361.
- Ross, Michael L. 2015. "What have we learned about the resource curse?" *Annual Review of Political Science* 18:239–259.
- Tornell, Aaron and Philip R Lane. 1999. "The voracity effect." *american economic review* 89(1):22–46.
- Tsui, Kevin K. 2010. "Resource curse, political entry, and deadweight costs." *Economics & Politics* 22(3):471–497.
- Van der Ploeg, Frederick. 2011. "Natural resources: curse or blessing?" *Journal of Economic Literature* 49(2):366–420.
- Wiens, David, Paul Poast and William Roberts Clark. 2014. "The political resource curse: an empirical re-evaluation." *Political Research Quarterly* 67(4):783–794.
- Wright, Joseph, Erica Frantz and Barbara Geddes. 2015. "Oil and autocratic regime survival." *British Journal of Political Science* 45(2):287–306.
- Zakharov, Alexei V. 2016. "The Loyalty-Competence Trade-Off in Dictatorships and Outside Options for Subordinates." *The Journal of Politics* 78(2):457–466.