

The double curse of innovations in resource-rich autocracies

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Extended annotation

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The “resource curse” literature is blooming, and its very name is telling of the main conclusion: on average, abundance of natural resources negatively affects economic development (the term was coined by Auty [1]). The widespread explanation is that large reserves of natural resources provide opportunities and incentives to economic and political actors for rent-seeking, hence for diverting limited budgets from productive activities. One of the most productive activities today is innovation. Given that technological innovations are responsible for as much as 80% of economic growth [2] and that the world is at the dawn of the Fourth Industrial Revolution [3], this question is worth answering on its own. However, to the best of our knowledge, **none of the previous works evaluated the impact of natural resources on technological innovations**. In this paper we bridge the gap, arguing that **natural resources indeed have a nefarious effect upon technological development, but only in politically authoritarian settings**. We call it a double curse of innovations.

The resource curse argument was put forward in the seminal paper by Sachs and Werner [4], who dubbed this phenomenon a natural resource curse. We follow suit and define the resource curse in its broadest sense as “the perverse effects of a country’s natural resource wealth on its economic, social, or political well-being.” ([5]:2). However, neither theoretical mechanism of this argument nor the existing empirical evidence is conclusive. History provides opposing examples of the influence of natural resources on economic development, which hints at the conditional nature of the effect. Indeed, the recent surveys of the resource curse literature argue that the evidence in favor of the existence of the resource curse is weak and inconclusive [6,7].

We provide yet another potential channel of influence, which has been overlooked in the literature so far. We believe that there are important theoretical reasons for why the abundance of natural resources should exert an especially pernicious impact upon a specific

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economic activity – technological innovations. In line with the most recent evidence on the resource curse, the effect is indirect. **We argue that, ceteris paribus, the abundance of natural resources negatively affects technological innovations, but only in countries with authoritarian regimes.** The causal mechanism heavily draws upon Baumol’s famous argument that entrepreneurs’ choice between productive, e.g., innovative, and unproductive, e.g., rent-seeking, activities depends on the rules of the game. Defining the rules of the game is nothing else but the primary task of the political market [7]. Thus, the institutional nature of the political regime heavily determines whether natural resources turn out to be a blessing or a curse for technological innovations.

To test the proposed logic we use econometric analysis. To explore the influence of natural resources on innovations mediated by the political regime, we employ a time-series cross-section (TSCS) data from 1980 to 2010. The dataset contains 1727 observations for 115 countries. Our **dependent variable** is technological innovations (measured through the number of patents granted by the WIPO) while main **independent variables** are natural resources rents as well as political regime. The provided model is testing using **two-ways fixed effects regression analysis.**

Empirically, we demonstrate that resource curse is indeed not inevitable, and whether natural resources are a blessing or a curse for technological innovations depends heavily on the political rules of the game. The results are robust to different measures of political institutions, rents of natural resources, and various model specifications. Our results bear important **predictions and policy consequences,** especially in the era of the demise of a dig-and-deliver model, when the success of the natural resources industry and business largely depend on the quantity and quality of the reserves.

The novelty of our research is three-fold. First, this is the only paper that assesses the impact of natural resources on technological innovations. We believe this is an important separate research question for two reasons. As mentioned above, innovations are responsible for the lion’s share of economic development. Equally importantly, the natural resources industry itself is becoming technology intensive, and this is where its competitive advantage will lie in the upcoming years [8]. Second, the paper is pioneering in that it combines the resource curse thesis with a powerful theory that authoritarian institutions are often harmful for innovative activities. In this sense, technological innovations are double-cursed in resource-rich autocracies: the pernicious effects come both from the abundance of natural resources and ill-suited political institutional rules. Third, this is one of the few empirical papers that takes into account political institutions as rules of the game. Most scholars that study the conditional

effect of natural resources on economic development use indicators of institutional quality such as corruption or “good governance” that are arguably outcomes of the existing political institutions, rather than institutions *per se*.

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