



Natural resources: A curse on education spending?



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HIGHLIGHTS

- We use a panel dataset of 140 countries covering the period from 1995 to 2009.
- We find an inverse relationship between resource dependence and education spending.
- The effect of resource dependence is robust to controlling for several covariates.
- Indirect effects through a decline in accountability and the service industry.
- This curse mainly stems from point-source resource dependence.

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ABSTRACT

In line with the rising interest in harnessing natural resource revenues for economic and human development through productive government investments, this paper aims to address an important blind spot in our understanding of the “resource curse” by contributing innovative insights on how natural resource wealth impacts government priorities and expenditure practices. Using a large panel dataset of 140 countries covering the period from 1995 to 2009, we find an adverse effect of resource dependence on public education expenditures relative to GDP that is robust to controlling for a range of additional covariates. Furthermore, our findings indicate that this resource curse effect on the government prioritization of education mainly stems from point-source natural resources. These results are of particular importance for the sustainable management of natural resource wealth in developing countries, as they could achieve especially high returns by investing resource revenues in public goods such as education. While this paper underlines the importance of institutions and government accountability, our findings also raise questions on the role of the private sector as a partner in development, as the extractives industry could consider increasing funding for education through Corporate Social Responsibility (CSR) initiatives.

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1. Introduction

While in theory natural resource wealth provides a valuable source of revenues that could spur economic development, a large and buoyant literature documents the puzzling paradox that resource-rich countries seem to experience slower growth than their resource-poor counterparts. As will become apparent throughout the discussion of the relevant literature, the debate on the existence of this so called “resource curse” however, remains far from settled.

In addition, it has been noted that a large number of resource-rich countries appear to have human development indicators far below the levels that would be predicted on the basis of their

income. Most resource-rich countries in Africa for example continue to have high levels of adult illiteracy and low levels of enrolment and school completion (Africa Progress Panel, 2013). Take for example the Central African Republic, a country that despite being endowed with high-value natural resources including diamonds and gold, is characterized by one of the lowest levels of human development in the world (United Nations Development Programme, 2014). The country has been riddled by conflict and political turmoil, and continuously performs well below regional averages with regards to education indicators, which at least in part can be attributed to the educational system’s extremely meagre budget even relative to the of income (World Bank, 2015). These findings give rise to the idea that the resource curse extends beyond its hypothesized adverse impact on economic growth. In order to enable the population in resource-rich countries to benefit from their vast natural resource endowments, understanding

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the intricate dynamics of the resource curse from a broader point of view is therefore of the utmost importance.

This paper will contribute to the literature by providing innovative insights into the impact of natural resource wealth on government prioritization of human capital building. We focus on education as there is an increasing consensus on the importance of human capital formation for securing sustainable economic growth (Bassanini and Scarpetta, 2002). Mankiw et al. (1992) show that augmenting the Solow model with human capital accumulation generates much better results. Education in turn, is a crucial determinant of human capital and therefore an important driver of economic growth (Barro, 2001; Barro and Lee, 1994; Cohen and Soto, 2007; Hanushek and Woessmann, 2007; Seetanah, 2009). Moreover, it has been argued that clear linkages exist between education and the reduction of poverty and inequality (Abdullah et al., 2013; Gregorio and Lee, 2002; Tanzi and Chu, 1998). Education has also been found to positively impact health outcomes and healthy behaviour (Conti et al., 2010). Finally, Bravo-Ortega and De Gregorio (2005) find that high levels of human capital, measured as the average years of schooling among the population aged 25 and above, have allowed some resource-rich countries to escape the resource curse.

The particular emphasis on public education investments in resource-rich countries, derives from the idea that natural resource revenues could be harnessed for faster economic growth and improved human development through productive government spending. Collier et al. (2010) for example state that the pressing need for tangible and intangible assets that are public goods in many resource-rich developing countries calls for increased public investment, especially in education. Moreover, several studies have found encouraging results with regards to the effectiveness of public spending on education. Using data from a sample of developing and transition countries, Gupta et al. (2002) and Baldacci et al. (2003) find that increases in government education spending are associated with improvements in both access to and attainment in schools and even health status. Jung and Thorbecke (2003) confirm the growth-promoting benefits of public education expenditures in Tanzania and Zambia and highlight its effectiveness in alleviating poverty. Blankenau et al. (2007) and Bose et al. (2007) conclude that contrary to other government outlays, education expenditures are significantly associated with growth in developed and developing countries respectively. Baldacci et al. (2008) find that education spending positively affects education capital which in turn contributes to economic growth in developing countries. These findings are replicated for a sample of OECD countries by Beraldo et al. (2009) who additionally find that the impact of public education expenditures is larger compared to private spending.

In line with the rising interest in innovative ways to convert natural resource wealth into economic and human development and a particular focus in the role of government spending (e.g. African Development Bank, Bill & Melinda Gates Foundation, 2015), this paper thus aims to address an important blind spot in our understanding of the “resource curse” by contributing insights on how resource wealth impacts government expenditure practices. Though several papers have focused on the relationship between natural and human capital (Gylfason, 2001; Stijns, 2006), to our knowledge, this paper provides the first in-depth empirical analysis of the impact of natural resource wealth on public education expenditures over time. By concentrating on the effect of natural resource wealth on public spending, rather than overarching development or more specifically education outcomes, we avoid capturing factors that are beyond policy makers' control and are able to directly measure to what extent governments in resource-rich countries are committed to building human capital. Using a large panel dataset of 140 countries covering the period

from 1995 to 2009, we find that natural resource dependence is associated with lower public education expenditures relative to GDP. This resource curse effect remains significant even after controlling for several additional factors that have been found to play an important role in explaining public education spending patterns. The results in our paper further demonstrate that this specific resource curse effect differs according to the type of natural resources. In particular, the dependence on point-source natural resources, with concentrated production and revenue patterns, rather than diffuse natural resources appears to impede government investment in education.

The remainder of this paper is organized as follows; the resource curse literature is discussed in Section 2. We describe the model, variables and hypotheses in Section 3. Next, Section 4 presents the empirical strategy and data. Finally, we discuss the results and provide an extension focusing on the difference between point-source and diffuse natural resources in Section 4 and Section 5 concludes.

2. The natural resource curse: Revisiting the literature

The link between natural resource endowments and economic growth was first investigated in light of the contrasting growth experiences of several East Asian countries compared to much of Latin America and Sub-Saharan Africa. Auty (1993) introduced the phrase “resource curse” to refer to the paradox that natural resource wealth appears to generate poor economic growth rather than prosperity. This hypothesis was confirmed empirically by Sachs and Warner (1995, 1997, 2001), who show a significant and robust inverse relationship between the share of natural resource exports in GDP and economic growth. Their results have been replicated by Davis (2013) and elaborated by numerous other scholars. Auty (2001) for example finds that per capita income grows slower in countries with abundant natural resources. Bravo-Ortega and De Gregorio (2005) conclude that natural resources have a positive effect on income, but a negative effect on its growth rate. Papyrakis and Gerlagh (2004) distinguish between the direct and indirect effects of natural resource abundance on growth. They find that while the former are positive, they are outweighed by the indirect negative effects. Arezki and van der Ploeg (2007) on the contrary conclude that both direct and indirect effects of natural resource dependence on growth are negative. Collier and Goderis (2007) also report strong evidence of a resource curse on growth. The authors disentangle the dynamics of the curse and find that while positive in the short run, the long term effects of commodity price booms are negative. The existence of a resource curse on economic growth however is not undisputed. Ding and Field (2005) and Brunnschweiler and Bulte (2008) for example conclude that natural resource wealth has no or even a positive impact on growth. Lederman and Maloney (2008: 32) similarly conclude that “the evidence in support of the curse is weak at best”.

While early explanations focused largely on economic mechanisms such as commodity price and exchange rate fluctuations and the associated “Dutch Disease” (e.g. Sachs and Warner, 1995), a different strand of the literature considers the political and institutional foundations of the resource curse. Leite and Weidmann (1999) and several other scholars (Bhattacharyya and Hodler, 2010; Robinson et al., 2006; Torvik, 2002) demonstrate the interrelationships between natural resources, rent-seeking and economic growth.

As there is large variation between resource-rich countries, several scholars have favoured conditional versions of the resource curse (Dunning, 2005). Mehlum et al. (2006) show that the institutional quality determines whether countries are susceptible to

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