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Resource blessing, revenue curse? Domestic revenue effort in resource-rich countries

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ABSTRACT

This paper uses a newly constructed revenue dataset of 35 resource-rich countries for the period 1992–2009 to analyze the impact of expanding resource revenues on different types of domestic (non resource) tax revenues. Overall, we find a statistically significant negative relationship between resource revenues and total domestic (non resource) revenues, including for the major tax components. For each additional percentage point of GDP in resource revenues, there is a reduction in domestic (non resource) revenues of about 0.3 percentage points of GDP. We find this primarily occurs through reduced effort on taxes on goods and services—in particular, the VAT—followed by a smaller negative impact on income and trade taxes.

1. Introduction

In recent years, studies have empirically analyzed the impact of resource wealth on a country's total domestic (non resource) revenue. Bornhost et al. (2009) find an offset of about 20% between government revenues from hydrocarbon (oil and gas) and other domestic tax revenues for a panel of 30 hydrocarbon producing countries.[1] This paper uses a unique dataset to extend the foregoing analysis by assessing the potential impact of resource revenues on different types of non resource domestic taxes.

Many arguments have been put forward in favor of a well-diversified domestic (non resource) tax base. Besides the fact that natural resources are expected to be exhausted in the foreseeable future in many countries, resource revenues tend to be highly volatile and in the absence of an appropriate fiscal framework, this volatility is transmitted to the budget (Daniel et al., 2013). In addition, the quality of public services and trust in government improves with rising domestic tax effort (Bergman, 2002; Leite and Weidmann, 1999). Also with low or no domestic taxation, the incentive for the public scrutiny of government operations peters out[2] (Collier, 2006; Levi, 1988; Moore, 1998, 2007), with empirical evidence suggesting that countries with a heavy dependence on resource revenues are less democratic (Ross, 2001), witness higher levels of corruption (Treisman, 2007), and have strong incentives to weaken their tax systems[3] (Knack, 2009).

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[1] More recently, Ossowski and Gonzales (2012) and Thomas and Treviño (2013) find a similar result for 15 Latin American and Caribbean countries, and for 20 sub-Saharan African resource-rich countries, respectively.

[2] A similar argument has been put forward to explain a negative relationship between foreign aid and revenue effort (Bauer, 1976). Gupta et al. (2004) and Benedek et al. (2014) have provided empirical evidence supporting this negative relationship, in particular in countries with weak institutions and high corruption.

[3] The evidence suggests that countries rich in natural resources exhibit a sharp deterioration in their tax administration capacity, adopt extensive, ad hoc tax exemptions, and apply their tax laws in a discretionary manner (Knack, 2009).

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Because of substantial resource revenues, however, one could argue that resource-rich countries should redesign their tax systems—for instance by lowering distortionary tax rates—to help promote private sector activity and thereby, economic growth.[4] Recent work based on OECD countries suggests a growth-hierarchy among taxes. Arnold et al. (2011) and OECD (2010) argue in favor of broad-based consumption taxes, and particularly the VAT, for not discouraging savings and investment. Income taxes are believed to have the most adverse effects on growth as they interfere directly with economic decisions—in particular, labor force participation. Within income taxes, corporate taxes are typically seen as the most harmful to growth primarily because they discourage capital accumulation and productivity improvements, while introducing a bias toward the use of debt finance (Keen et al., 2010). However, corporate income taxes that focus on excess returns or rents can be non-distorting, particularly in resource-rich economies (Land, 2010). Consistent with this hierarchy, Acosta-Ormaechea and Yoo (2012) find strong evidence that indirect taxes are friendlier than direct taxes for long-term growth.

Identifying the differential effect of resource revenue on different components of non resource revenues—direct versus indirect taxes, income taxes versus consumption or trade taxes—is thus an important first step toward understanding weaknesses in the tax system of a resource-rich country, and can provide a useful input into the design of a growth-friendly tax policy and administration reform.

Surprisingly, this question has received almost no systematic empirical attention, with the exception of a recent paper by James (2013) on US states that analyzes the impact of resource revenue on income tax revenue—besides total tax revenue—and finds an offset of about 12% on income tax revenue for each percentage point increase in resource revenue.

One reason why empirical work in this area has remained limited is due to the relative scarcity of reliable data on non resource tax revenues and its components. While disaggregating resource revenues from non resource revenue is challenging in itself, the task is even more difficult when non resource taxes have to be disaggregated into different components. The problem arises from the way taxes are compiled and reported, making it difficult to extract the share of tax revenue that comes from resource activities. Resource companies are a major contributor to the corporate income tax, but to derive the non resource share of the corporate tax revenue, an adjustment of these revenues is required. Similar difficulties arise when trade taxes include revenues from commodity exports. In this paper, we construct a database for 35 resource-rich countries during 1992–2009 that not only disaggregates data between resource and non resource revenues but also disaggregates non resource revenues into its different components.

Overall, our results corroborate earlier findings with respect to the impact of natural resource revenues on total domestic (non resource) revenue, with an estimated offset of about 30%. Results by type of taxes confirm the differential effect of resource taxation on different components of non resource taxation and suggest that increased availability of natural resource revenues tends to offset more those domestic tax revenues that are considered to be best suited to foster economic growth. We find a large and robust negative impact of natural resource revenues on taxes on goods and services—in particular on the VAT—while a more modest impact, though still negative and significant, is found on corporate income tax and trade taxes. Our results are robust to the inclusion of control variables, the exclusion of outliers, and alternative estimation methodologies, addressing in particular concerns related to the endogeneity of resource revenue in our estimations.

The rest of the paper is organized as follows. Section 2 sets out the empirical approach, and describes the dataset in more detail. The main empirical results are presented in Section 3, with further analysis for the purpose of additional robustness performed in Section 4. Section 5 summarizes the results and evaluates their policy relevance.

2. Methodology and data

2.1. Empirical specification

To empirically test how resource revenues may affect non resource domestic tax revenue (and its main components), we model domestic non resource tax revenues as a function of resource revenues, both in relation to GDP, and a set of control variables in *X*. This leads to an estimating equation of the following form:

$$T_{it} = \alpha_i + \beta_1 R_{it} + \beta_2 X_{it} + \mu_t + \varepsilon_{it} \quad (1)$$

where the dependent variable *T* in Eq.(1) is domestic non resource tax revenues, expressed relative to GDP; and *R* is government revenues from natural resources, also expressed relative to GDP, while $i = 1,\ldots,N$ and $t = 1,\ldots,L$ are respectively country- and time-indicators (so that α_i and μ_t are country- and time-specific effects). Eq. (1) is regressed separately for total tax revenues (*TAX*) as well as revenues from taxes on goods and services (*G&S*), the value-added tax (VAT), tax on corporate profits (CIT), the personal income tax (PIT), and tax on international transactions (*TRADE*). The coefficient β_1 indicates the marginal effect of an additional percentage point of government revenues from natural resources on the non resource revenue effort.

The control variables are drawn from previous studies that analyzed the determinants of the tax ratio (Ghura, 1998) and tax effort (see, for example, Sen Gupta, 2007; Baunsgaard and Keen, 2010; Pessino and Fenochietto, 2010). In particular, a proxy for the development of the economy, measured as the log of GDP per capita, is expected to be positively associated with non resource tax revenues, in reflection of growing demand for public services with rising income per capita, and because of a higher degree of

[4] The relationship between resource abundance and economic growth has been analyzed in, for example, Sachs and Warner (1995); Brunnschweiler (2008); and Davis (2011).