Blog

Forecasting revenues from extractive industries

Information asymmetries and other disadvantages of host governments

by Alan R. Roe

In the first part of this blog, Alan R. Roe (/node/13579) writes about the difficulties governments face in predicting revenues from extractive industries. Read part two here (/node/155717) .

Countries endowed with rich mineral or oil and gas resources have many competing uses for the revenues that arise from the production of those resources. Decisions need to be made about how best to use these government revenues, taking into account the complex life cycles of most extractives projects and the long-term nature of the revenue streams that governments can expect. Thirty years is not an uncommon time horizon for gold and copper mining, and some iron ore concessions in, for example, Brazil have lives of more than 100 years.

Practical planning, policy-making and budgeting over such long periods, however, have to rely on revenue projections — which are hugely complicated by two main factors. First, at the time when many extractive resources are discovered and licenses for their exploitation are granted, there is often great uncertainty about (a) the magnitudes of the resource and, so, the associated government revenues, as well as (b) the time profile of the production that will follow, including even the start date of production. For example, the large gas finds in the Indian Ocean around Tanzania were known in some detail as far back as 2011, but most major international oil companies — such as British Gas Group (recently acquired by Royal Dutch Shell) and Statoil — will now not make their final investment decisions until sometime after 2018, and will not produce gas until 2022 at the earliest.

Second, it is an unavoidable feature of every type of extractives resource that they suffer from potentially high levels of price volatility which they can command on world markets. In this sense the task of projecting revenues is inherently difficult.

The commercial mining and oil and gas companies will invariably have their own very detailed planning models. These models will be based on information that

gives them a distinct head start as compared to government planners: specifically detailed technical information about the physical attributes of their resource and what is involved in producing it. The forward-looking data in these models will typically extend out to the later years of the life of the mine (or oil well) and will provide explicit detail about the levels of tax and other payments to government that will arise each year. These projections do of course use explicit assumptions about future commodity prices and production costs as well as the rates and the structure of the taxes that will be levied by governments.

Governments cannot be expected to have anything comparable with the same level of detailed information or foresight. Although governments are charged with making wise long-term decisions, they typically do this on the basis of seriously incomplete or unreliable partial sources of information. When this informational deficit is superimposed on the normal election-influenced messiness and short-termism of much government planning, it is easy to see why governments can, and do, slip up in planning the optimal use of their extractive revenues. Even a well-developed medium-term framework typically covers only 3–5 years.

The case of Ghana's Jubilee Field

A good example of the problem that this asymmetry of information can have comes from Ghana, which began oil production from its Jubilee Field in 2010. From 2011 onwards, the government assumed substantial receipts from corporation tax within the annual budget — yet the first payments did not actually arrive until 2013.

Several things seem to have gone wrong with the government planning for their future revenues:

- companies were utilising a provision within the tax code to offset profits against their initial capital costs, which the government did not seem fully to anticipate
- early hikes in government wages and other recurrent expenditures in partial anticipation of the oil boom quickly caused these additional outlays to exceed additional oil revenues
- the political spend around the 2012 election exacerbated the problem
- and new sovereign borrowing on unfavourable terms was perhaps premature; it raised interest costs without boosting investment and growth (see Bawumia and Halland 2017 (/node/149635)).

Not all of these errors can be ascribed to informational failures, but the information deficit almost certainly contributed to them. In the second part of this blog (/node/155717) , I discuss what we know about these failures and what can be done.

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Context

PROJECT

Extractives for development (E4D) (/project/extractives-development-e4d) is part of Macro-economic management (M-EM) (/project/macro-economic-management-m-em)

KEYWORDS

EXTRACTIVE INDUSTRIES (/?F%5B%5D=FIELD_LOC1%253ANAME%3AEXTRACTIVE%20INDUSTRIES)

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