

5/10/09

## **MANAGING NATURAL RESOURCE BOOMS<sup>1</sup>**

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<sup>1</sup> Contribution to 'Oxford Companion to the Economics of Africa'. This research was supported by the BP-funded Oxford Centre for the Analysis of Resource Rich Economies.

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## **Introduction**

Endowments of non-renewable natural resources are unevenly scattered across Africa<sup>3</sup>. Thirteen African economies are classified as ‘resource rich’;<sup>4</sup> in eight of these natural resources revenues account for more than 80% of export earnings, and in seven more than 50% of government revenue.<sup>5</sup> African oil exports were worth approximately \$50bn per annum between 2000 and 2005, a similar magnitude to aid flows, although virtually all these earnings accrued to countries with population totalling 250 million, less than one third of Africa’s total. Amongst the resource rich is one of the world’s best performing economies (Botswana) and several of its worst performing (Sierra Leone, Nigeria). Econometric studies suggest that, on average, resource booms are short-lived with negative long run effects (Collier and Goderis 2008). They establish that the effects of resources depend critically on the quality of governance, having a negative impact on countries with governance indicators at levels commonly found in Africa. The quality of governance itself can be eroded by resource wealth, creating vicious circles of mis-management and, in the worst cases, conflict. There is a large and well-surveyed literature on the resource curse (for a survey see van der Ploeg 2008) and this article focuses on discussing three aspects of Africa’s experience with resource revenues, and three policy implications for future resource management.

### **Lost opportunities.**

The record of Africa’s management of its natural resource endowment has, by and large, been one of lost opportunities.

### ***Under-exploited:***

Africa’s natural resource endowment is less thoroughly prospected and exploited than that of other regions. The stock of undiscovered resources is, necessarily, unknown, but pointers indicate that most of Africa’s natural resources are yet to be developed. Estimates based on World Bank (2006) suggest that sub-soil assets per square kilometre in Africa are just 20% of those remaining in OECD countries, this most likely reflecting a failure of discovery rather than geological bad luck. The rate of discoveries points to the same conclusion; proven oil

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<sup>3</sup> Africa means Sub-Saharan Africa throughout.

<sup>4</sup> We focus on non-renewable natural resources, ie hydrocarbons and minerals.

<sup>5</sup> IMF (2007)

reserves worldwide increased by 87% between 1980 and 2008, while in Africa they increased by 225%; for natural gas corresponding figures are 125% and 333% (BP 2009). The rate of discovery in Africa is accelerating with recent hydrocarbon discoveries in Uganda and across the coast of West Africa. These figures indicate past failure to attract exploration and development, and point to the likelihood that natural resources will be of increasing importance to Africa in coming decades.

### ***Rent capture and rent seeking***

Throughout Africa sub-soil assets are the property of the state whose responsibility it is to design and implement fiscal regimes which capture a substantial fraction of resource rents for public use. The design of such regimes is complex since they have the dual objectives of collecting rent and creating incentives for prospecting and development. They have to be implemented in environments in which the state typically has little information about the resource, and in which potential investors are exposed to risk from future changes in government policy and regime change.

How successful have African governments been in capturing the rent? There are notorious cases where contract terms have not been advantageous (eg the 0.8% copper royalty on Zambian copper, see Adam and Musonda 2009)). Hydro-carbon contracts have generally been better, and average effective tax rates are high (Angola 95%, Nigeria 72%, see Daniels 2009). The Botswana government is estimated to take about 75% of diamond mining profits (IMF 2007).

The main way in which rents have been diverted away from government and citizens has been through corruption, theft, and dissipation on rent seeking activities. Estimates for Nigeria suggest that direct theft of oil ('bunkering') is running at several billion dollars per year, and cumulative historical theft of resource revenues is many times this. A recent study of Cameroon 1977-2000 (Gauthier and Zeufack 2009) finds that a sizeable portion of oil rent (67%) was captured by the state, but only 39% of government oil revenues between were transferred to the budget. The remaining 61% are unaccounted for.

Rent seeking activity has proliferated, ranging from the wasteful (diversion of entrepreneurial skills into rent seeking activities) to the damaging (undermining governance) and the dangerous. There is evidence that corruption is positively associated with resource rents (Bhattacharyya and Hodler 2009). Both the probability of civil conflict commencing and the duration of conflict are positively linked to resource booms (Besley and Persson

2008, Collier et al 2009a). Resource wealth creates both the incentive to try and take over the state and, in some cases, the means to finance insurgency.

### ***Saving and investing***

Revenue from depletable natural resources is inherently time limited and is volatile, varying with commodity prices. A substantial fraction of resource rents should therefore be saved and invested. The record has generally been poor. Overall savings rates in resource rich African economies have been low, and *genuine* savings (savings adjusted for depletion of resources and other changes in natural wealth) have frequently been negative, for Nigeria estimated at *minus* 34% of GNI (World Bank 2006). Similarly, for domestic investment; African resource producers have generally not had higher rates of capital formation than other countries, with the exception of Botswana (averaging 33% of GDP since 1990) and Equatorial Guinea, where rates of over 50% reflect oil sector investments in an otherwise tiny economy.

Further evidence comes from studies of the response of government spending to oil revenues received. The correlation between government expenditure and the world oil price (1970-2008) is more than 80% for eight African countries studied by York and Zhan (2009). In the recent boom (2006-08) five of these countries saw larger proportionate increases in current government spending than in oil revenues. In five of the countries the non-oil fiscal balance deteriorated as oil revenues surged, but in only three did the growth of government capital spending exceed the growth in oil revenues.

### **Managing natural resource booms.**

The lessons of the past point to three policy recommendations for future booms.

#### ***Transparency and governance***

The root cause of many of the lost opportunities is poor governance. Problems are deep-seated but several measures can be taken to improve governance failures in the resource sector. The first is to improve transparency, making the sector more open to public and parliamentary scrutiny. For example, competitive auctions to award exploration and production contracts are more transparent than are negotiated deals and can also improve the contract terms the government gets. Greater transparency makes participation more attractive

to investors, increasing the rate of prospecting and development. The flow of funds between producers and government should be subject to the principles of the Extractive Industries Transparency Initiative, which commit signatories to publish audited accounts of resource revenues paid by companies and received by government. The regulatory structure for the resource sector needs to follow international best practise with a clear assignment of responsibilities. This applies to National Oil Companies, many of which have operated without proper scrutiny, have engaged in wasteful quasi-fiscal activities, and have been vulnerable to theft and corruption.

### ***Saving and investing***

The objective is to use resource revenues to achieve a sustained increase in incomes and consumption in society. To achieve this, society has to choose how much to save or consume, and how to allocate savings between domestic investment and foreign asset accumulation (or debt reduction).<sup>6</sup>

Past saving from resource revenues has been much lower than is needed to meet the objective of sustained increases in incomes. Savings need to be increased, while at the same time recognising that taking some current consumption from resource revenues is appropriate in a low income society in which there are urgent needs for poverty reduction. Future generations will be richer than the current generation, so arguing that savings should rise to the level where all generations benefit equally (the permanent income hypothesis) is inappropriate. Furthermore, some expenditures that are classified as current – health and education – raise human capital and should be classified as investment for these purposes.

What assets should be purchased with revenue that is saved? Low income societies are capital scarce, so the priority should be to build domestic capital stock, rather than accumulate foreign assets. The argument is reinforced by the presence of unemployed labour and the need to turn resource wealth into income from employment rather than rent on foreign assets. This suggests that long term foreign asset accumulation in Sovereign Wealth Funds should not be a priority for low income countries. However, use of overseas funds (or accumulation of foreign exchange reserves) as a temporary cushion is desirable in two sorts of circumstances. One is to smooth the volatility of revenues associates with price instability. The other is during an adjustment period when attempts to scale up investment are hampered

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<sup>6</sup> See Collier et al (2009b)

by absorption problems. While absorption problems are addressed some funds should be ‘parked’ abroad until they can be best used.

### ***Diversification and economic growth***

While government controls some investment choices, the ultimate investment response needs to come from the private sector. Resource revenues provide a way to stimulate private investment, although government control is generally indirect, through spending, tax, and debt/ asset management choices.

The first channel of influence is through public investments that are complementary with (raise the productivity of) private investments. Africa’s shortage of infrastructure is well documented and resource revenues provide an opportunity to overcome this. The second channel is through increasing the availability of funds for private investment. Lower government domestic debt can spur commercial banks to lend to the private sector (rather than just to government). Government can lend directly, although the historical record of development banks is poor. Or government can make tax reductions or ‘citizen dividend’ payments to citizens, although there is no guarantee that these funds will be invested rather than consumed. A further route is for government to pursue an active investment policy targeting industrial or agricultural sectors. This often appears attractive, particularly in resource related activities. In upstream sectors there are likely to be prospects for increasing local participation. Downstream processing offers fewer possibilities since the technology of processing industries – such as petro-chemicals – are out of line with the comparative advantage of African countries. The over-arching criterion that must apply to such targeted policies is that activities must be credibly expected to attain commercial viability, without which they are a continuing drain on public funds and can be a source of value reduction not value added.

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