

The Mining Industry: Undermining the Growth Potential of Mineral-Rich States in India¹

Dr. Shalini Saksena

Abstract-The Indian development process has been skewed with some states making rapid strides towards development, while others have remained chronic under-performers. Economic performance is closely linked to the existence of good institutions and quality of governance by the state. Several factors that determine the political and economic incentives of policy makers to endorse certain kind of growth-generating or potentially growth-retarding policies have been investigated in both theoretical literature and empirical research to study such inter-state differences in growth. Natural resource abundance in general and resource-dependence in particular, is a factor which is not one of the conventionally studied determinants of quality of governance and thus economic growth, which however, may be an important one in a country like India where the distribution of natural resources is highly skewed. This paper focuses on the link between abundance of natural resources and the rate of economic growth in the mineral-rich states of India which is conditioned by the policy choices of the state governments. It aims at investigating the anecdotal evidence of resource curse in some states and determines why some states have managed to break out of it.

Keywords: Economic Growth, Sustainable Development, Resource Curse, India.

I. Introduction

India is blessed with one of the richest mineral reserves in the World. Some of these still remain entirely untapped and can provide a significant boost to the sector with the entry of several new players in the field of exploration and extraction as the National Mineral Policy promises to provide a level playing field to private and foreign investors in this sector. Rapidly growing private sector and massive investments in building infrastructure across the huge country like India are expected to trigger considerable demand for minerals in the near future. Recently, there has also been a significant growth in world demand for minerals, fuelled largely by the growing demand from China and India.

Recent years have seen a mining frenzy in India on the back of burgeoning World demand from countries like China and domestic demand to sustain high growth rates. The increase in global and domestic demand offers a unique opportunity for India. Interestingly, most of

India's mineral deposits are highly concentrated across states with bulk lying in the eastern states of Chhattisgarh, Jharkhand, Orissa and West Bengal (these account for 75% of country's coal, 55% of its iron ore and 60% of its bauxite reserves- CII-McKinsey report).

Concentrated reserves are not a problem per se. The problem arises because of the fatal overlap of such reserves with the country's forests and watersheds. Almost all of India's minerals are in the same regions that hold its greenest forests and most abundant river systems. Further, these lands are largely inhabited by India's poorest and most marginalized people, who depend on the same forests and watersheds for their survival. 40% of the mineral-rich districts in top six mineral producing states are in the grip of the naxalite movement which opposes the lopsided development brought about by mining.

Why does mining result in lop-sided development? Why doesn't resource abundance provide the states/districts an advantage and help

Dr. Shalini Saksena is Associate Professor in Economics, Delhi College of Arts and Commerce, University of Delhi. She obtained her Ph.D in Environmental Economics from Jawaharlal Nehru University and a double Masters from Delhi School of Economics, Delhi University. Her main areas of research interest include Sustainability Accounting, Economics of Natural Resource Depletion, Valuation of Environmental goods and services and Energy Pricing.

boost overall growth? Why have most of the mineral-rich states in India lagged behind in unleashing the true growth potential of their mineral wealth while others have managed to leverage their mineral wealth enough to raise their growth trajectories? This paper tries to answer some of these questions.

II Resource Rent: Appropriation and Reinvestment

In perfectly competitive markets, the market price of a commodity depicts its scarcity value. As the commodity or the resource becomes more and more scarce, its market price increases (even when demand remains constant). The difference between the market price of a commodity and its cost of production, in perfectly competitive markets, is a surplus that represents the inherent value of the commodity or the resource it embodies. This surplus is referred to as Economic-Rent, which when applied to the case of natural resources, is called Resource Rent. Resource rent thus represents the extra economic value accruing to the mining companies/owners over and above the costs of extracting the mineral (including labour cost, depreciation of man-made capital and normal profit. See Appendix I for details on how Resource Rent is estimated for extraction of exhaustible resources). In India, the minerals belong to the State Government of the land where they lie. Thus the surplus from extraction of these resources accrues to the State Governments. The income from such rent can be significant for some states. The mining land is usually leased out to companies, who then pay the state governments for extraction in the form of royalties and other such specific taxes which are imposed with the idea of capturing the resource rent.

Hartwick's (1977) rule for a sustainable income generation states that the resource rent from extraction of non-renewable resources must be reinvested in other forms of capital (including man-made physical capital such as machinery, physical infrastructure etc., human capital and natural capital) which will enhance the capacity of the economy to produce in future. Government's ability to transform non-

renewable mineral wealth into other forms of productive wealth is the key to sustainable economic development of a country. Thus, sustainable management of natural resources requires an appropriate system of government policies regarding the levying of mining royalties and other related taxes in order to capture these rents, as well as specific policies to guide reinvestment of the revenue from resource rent into building up of productive capacity. The government thus has an important role to play in the management of the resource rent in order to ensure sustainable income generation.

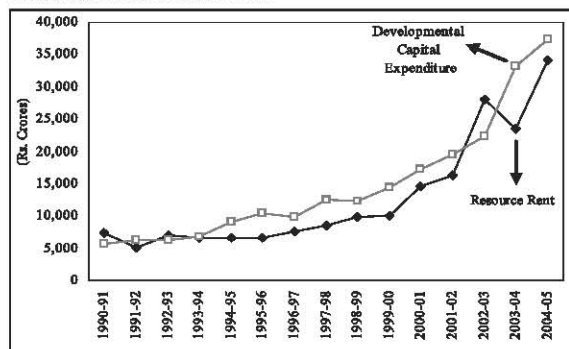
In the case of oil and gas extraction in India, it is found that the rates of royalty and other taxes applicable to extractive industries (which are revised from time to time keeping in mind the current prices, cost of production etc.) have more or less managed to capture all the resource rent generated by the sector during the 1990s (Saksena, 2012). However, in the recent years since 2000/01, the appropriation by the government in the form of royalty payments have fallen short of oil & gas-resource rents, which have soared because of rapid increase in oil prices.

The situation is different in the case of coal extraction industry where the royalty rates and other taxes have been such that the government has never been able to capture all the resource rent generated by the coal industry.² This is a worrying trend in the light of an increase in the number of private and foreign players in the fossil fuel sector over the last couple of years. Rent accruing to private companies and not captured by the government through royalties, may not be reinvested optimally from a social point of view as the private companies may fail to invest in activities with positive social benefits such as public works, infrastructure and basic services such as education and health. Also, there is no guarantee that foreign mining companies will undertake such re-investment of resource rents (not captured by the government) in our country. Government's appropriations falling short of total resource rents generated by the sectors restrict its ability to fund research and developmental activities to enhance the sector's productive capacity.

In India, there are no specific fiscal rules to guide government's management of revenues from minerals or those regarding the reinvestment of royalty proceeds into specific sectors or a dedicated fund for research and development. Government of Botswana (a country heavily dependent on revenues from production and exports of diamonds) follows a formal investment rule (Lange and Wright, 2004) whereby it ensures that all non-investment expenditure by the government is funded out of recurrent revenues (non-mineral revenue). This ensures that mineral revenue is not spent on government consumption. Without a formal rule to this effect, sustainable use of resource rents in India can be roughly inferred from the level of expenditure by the government in different forms of productive capital in the country.

One can look at centre's and states' capital expenditure (developmental: plan and non-plan) as a crude measure of governments' investment in all forms of economic and social capital. One can argue here that not all of the capital expenditure may be as productive, but a comparison of this expenditure with the resource rent generated can provide a crude measure of sustainable / unsustainable level of income generation. Consider only the states that extract oil, natural gas and coal (and earn royalty income).³ Data on developmental capital expenditure is collected for these states, over the period 1990/01 to 2004/05 and plotted versus the resource rent generated by the fossil fuel sector (where the figures for the latter are taken from Saksena, 2012). See figure 1 below.

Fig-1 Rent & Capital Expenditure in States Engaged in Extraction of Fossil Fuels.



Source: Based on data from CMIE, Public Finance (2007) and Saksena (2012)

The total capital expenditure in states extracting fossil fuels has kept pace with the generation of resource rent from extraction. On a countrywide basis, it seems that the government is spending enough in maintaining and building further the income generating capacity of the economy by compensating for the loss of natural capital in the fossil fuel sector. Growth based on depletion of fossil fuel reserves seems sustainable as overall countrywide investment in other forms of capital is compensating in value terms for the depletion of fossil fuel reserves. However, one needs to also look at income from the extraction of other minerals as well and compare it with the extent of government's developmental capital expenditure.

III. Resource Curse in Mineral-Rich States in India

The analysis of resource rents remains incomplete without the mention of the possibility of the resource-curse phenomenon operating in some of the mineral rich states in India. The resource-curse or the paradox of plenty refers to the observation that countries / states that are richly endowed with and heavily dependent on natural resources, do not see the abundance translate in to prosperity and higher economic growth (true of many African countries richly endowed with fossil fuels and the rarest of minerals). The abundance of these free gifts of nature means easy money, which in many cases, corrupts and encourages wasteful spending. Larger the resource rents, stronger are the incentives to the governments, extraction companies and other interest groups to gain control over them. This often results in weakening of the Institutional framework that regulates the management and use of public funds. The 'Curse' works by undermining the quality of governing Institutions. It manifests in slower economic growth, higher risk of violent conflicts and more severe poverty. Anecdotal evidence suggests the prevalence of this paradox across Indian states as well (see figure 2). States like Jharkhand, Orissa and Chhattisgarh, which are the richest states in terms of mineral deposits and have more than 9% of their GDP from the mining sector, have not been able to tap this

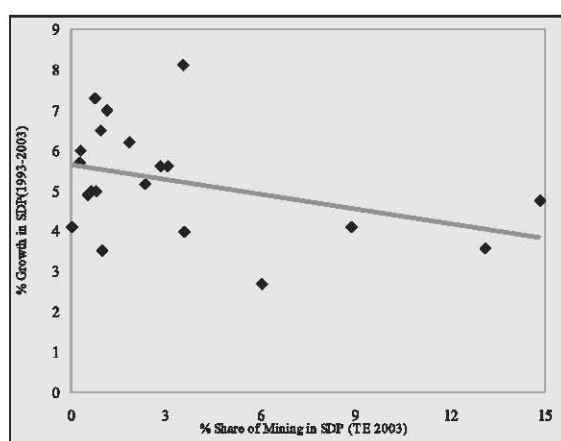
potential and their average growth rate remains below the national average.

However, there are also the mineral rich states like Andhra Pradesh, Maharashtra, Karnataka and Goa, which have witnessed impressive growth over the years, representing exceptions to the resource-curse phenomena. In order to understand why the curse remains limited to certain states, it is important to see how the curse casts its spell.

Mineral wealth is highly concentrated in a few states in India with bulk lying in the eastern states of Chhattisgarh, Jharkhand and Orissa (which account for 70% of country's coal, 55% of its iron ore and 60% of its bauxite reserves (CII-McKinsey, 2005).⁴ See table 3 below.

Resource rents represent windfall gains and such easy money encourages wasteful spending. State governments own mineral reserves⁵ and they earn resource rents from their exploitation. Resource rents captured via royalties and other specific levies⁶ ease their budget constraint. In some states, revenues from mineral royalties are significant (see table 4).

Figure 2: Evidence of Resource Curse in India



Note: 1. States with mining sector's GDP share of more than 2% in GDP have been labeled in the graph above. These include in ascending order of the share of mining in GDP: Uttarakhand, Rajasthan, Andhra Pradesh, Madhya Pradesh, Assam, Orissa, Chhattisgarh and Jharkhand. Y-axis depicts the trend growth in GDP over 1993 to 2003. X-axis measures the average share of mining GDP in overall GDP over the

period 2001 to 2003 (triennium ending 2003).

2. The downward sloping line in bold depicts the trend-line.

Source: CMIE, National Income Statistics, 2007.

Table 3: Concentration of Mineral Reserves in India

Mineral	3 Eastern States*	WB	UP	AP	KAR	MP	MAH	GUJ	RAJ
Coal	70	11		7		8	4		
Iron Ore	55			7	41				
Bauxite	60		6	21					6
Manganese	35				29	10			
Chromite	98				1				
Lead & Zinc				1			2		90

Note * Includes Jharkhand, Orissa and Chhattisgarh. The other states include West Bengal, Uttar Pradesh, Andhra Pradesh, Karnataka, Madhya Pradesh, Maharashtra, Gujarat and Rajasthan.

Source: CII-McKinsey (2005)

Table 4: Revenue from Royalty as a percentage of Total Revenue Receipts of the State Government (TE 2004)

State	(%)
Jharkhand	12 to 14
Chhattisgarh	10 to 12
Orissa	5 to 6

Source: Planning Commission (2006), GOI; CMIE, Public Finance, 2007

The state governments find themselves under considerable pressure to spend mineral revenues on current consumption rather than to reinvest them. This is particularly true of low-income states where many basic needs remain unmet, and rent-seeking behaviour by individuals and interest groups may be especially difficult to resist. This often results in weakening of the institutional framework that regulates the management and use of public funds. The quality

of governing institutions which facilitate rent appropriation is undermined. Larger the resource rents, stronger are the incentives to gain control over them by the government, extraction companies and other interest groups.⁷

Thus, the inter-state difference in economic performance of resource-rich states in India can be explained via the interplay between resource rents and the quality of governance and institutions. Natural resources are 'governance intensive' assets. Good governance and strong institutional framework are crucial to transform this resource abundance into good economic performance. Responsible governments undertake reinvestment of resource rents such that depletion of mineral assets is offset by increase in other forms of capital. Corrupt governments undertake spending in wasteful but politically important projects (often by dismantling institutional safeguards). There is enough evidence to depict that the resource curse afflicts only those countries / states that have weak institutions and poor governance (Mehlum et al. 2006, Harford and Klein 2005, Sala-i-Martin and Subramanian 2004, Isham et al. 2005 and Hodler 2006). Damania and Gupta's empirical analysis (mimeo, no date) across 15 Indian states over the period 1985-2000 predicts that political accountability plays a key role in determining the structure and efficiency of institutions and policy choices in Indian states. The results confirm that states with high resource rents and low levels of political accountability are predicted to have weaker institutions and experience lower levels of development.

Without undertaking the empirical exercise of studying the relationship between economic performance of resource-rich states in India and the quality of governance in these states, this study contends that economic performance of resource-rich states will be directly linked to the pursuit of the sustainable resource accounting rule of reinvestment of resource rents in order to achieve sustainable growth. As per this rule, the states that have managed to do so have achieved significant growth while others have drained their natural resource base without compensating for the decline in their asset base. A careful study

of state-wise total developmental capital expenditure by the government among the resource-rich states makes it clear that such expenditure has not compensated for the depletion of natural resources in some states.

Planning Commission (2006: National Mineral Policy) gives royalty accruals on minerals in states with significant mining activities for the years 2002 to 2004. See table 5. The report notes that these accruals have been increasing over the years even in constant prices.

Table 5: Royalty Accruals on Minerals in States with Significant Mining Activities (Rs. Crores)

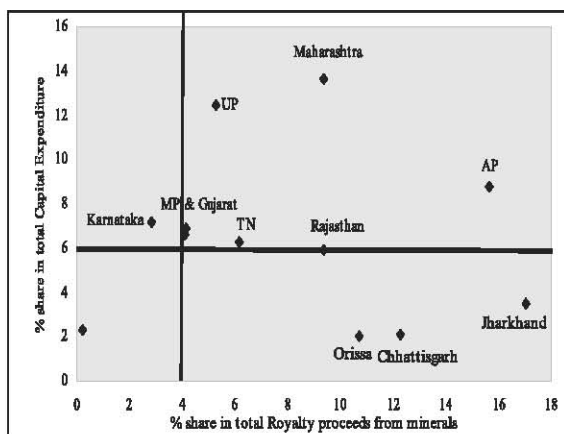
States	2002-03	2003-04	2004-05
Jharkhand	798	900	916
Andhra Pradesh	770	767	865
Chhattisgarh	552	637	695
Orissa	441	547	664
Rajasthan	400	458	590
Maharashtra	401	476	568
Tamil Nadu	297	325	325
Uttar Pradesh	262	254	292
Gujarat	173	218	239
Karnataka	84	144	211
Haryana	118	77	93
Uttarakhand	23	31	36
Goa	15	18	17
Assam	9	13	13
Kerala	2	10	13
Madhya Pradesh	591	10	13

Source: Planning Commission (2006)

In order to investigate the extent of reinvestment of royalty revenues across the mining states, the developmental capital expenditure in these mineral rich states for the years 2002 to 2004 are taken. Each state's average share in total mineral

royalty (aggregated over the number of states given in table 5) is then plotted against the state's average share in total developmental capital expenditure undertaken by the central and state governments together at all India level (all averaged over the years 2002, 2003 and 2004). See figure 3 below for the trend that explains the prevalence of resource curse in some of the mineral rich states. These are the states that have not been investing enough in other forms of social and economic capital. In particular, the result is very clear for the three eastern states that contribute the largest share in total mineral royalty income of the government but have a relatively small share in the total developmental capital expenditure of the government.

Figure 3: State-wise Resource Rent and its Reinvestment



Source: Based on data from Planning Commission (2006), National Mineral Policy, GOI and CMIE, Public Finance, 2007

Conclusion

The above analysis highlights at least one more crucial determinant of growth in the mineral rich states, i.e. reinvestment by the government to compensate for the loss in productive capacity of the mining sector in the state. Since extraction of natural resources is not explicitly accounted for and in our national accounts, the rapid drain of natural wealth goes unnoticed. Proper accounting for resource wealth in states and across the country will turn resources into a blessing for both institutional and economic development.

Endnotes

1. An earlier version of this paper was presented at the International Journal of Arts & Sciences (IJAS) conference for academic disciplines, held in Vienna, Austria, 1st to 5th of April 2012, organized by Central Connecticut State University, United States.

2. Coal royalty rates are based on fixed amount per tonne of dispatch and not on an ad-valorem basis though there is pressure on the government to shift to the latter. Although coal royalty rates have increased in terms of amount, they have decreased by 13 to 25% between 1991 and 2001 when converted to ad-valorem basis (CSE, 2008).

3. Includes Arunachal Pradesh, Assam, Andhra Pradesh, Jharkhand, Gujarat, Chhattisgarh, Orissa, Rajasthan, Tamil Nadu, Tripura, Uttar Pradesh and West Bengal. Offshore reserves belong to the central government.

4. "Turning the minerals and metals potential of eastern India into a goldmine", 2005, A CII_McKinsey Report, India.

5. Among fossil fuel minerals, off-shore oil and gas reserves are directly owned by the Central Government.

6. Mineral extraction is undertaken and controlled by the central government, even though the state governments are the legal owners of mineral resources. The state governments receive royalties from the central government.

7. For example, the famous coal mafia in India headed by the industry's trade union leadership that first emerged in Dhanbad Jharkhand and it engages in pilferages and sale of coal on the black market, inflated or fictitious supply expenses, falsified worker contracts and the expropriation and leasing-out of government land regularly.

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Appendix I-Estimation of Net Resource Rent

In order to estimate the contribution of mineral resources in actual value-added, one has to first separate the contribution of the concerned mineral resource per se to the total 'price' of the marketed mineral product, from the contribution of other factors of production. The price of a unit of resource in a perfectly competitive set-up includes the cost of all goods and services used in its production (exploration, extraction and development activities), which includes labour cost, cost of all invested capital in mining and also a return to the resource in ground (called resource rent). In order to determine the return to the resource in ground, one can deduct from the market value of the resource all variable costs to obtain a figure for gross rent, which represents returns to the resource in ground as well as the capitalized value of investments in mining. Thus, gross rent accruing to the mineral sector includes (i) resource rent accruing exclusively to the resource in ground, and (ii) return on the invested capital in the mining sector. Rent accruing to invested capital includes both, the depreciation allowance and a normal return to invested capital (valued at a rate of return, which depicts its opportunity cost). The best way to determine the return on invested capital in mining would be to observe market prices for these transactions. Net resource rent (known more popularly as the "Hotelling Rent") is then estimated as a residual when the return on invested capital in mining is deducted from gross rent. Hotelling Rent represents the true (scarcity) price/value of the resource in place, which is used in constructing the asset accounts in monetary terms.

Net resource rent (R) = Net operating surplus (NOS)
plus Royalty and other specific taxes (T)
less the return to fixed capital (K)

where K = net stock of fixed capital = rate of return to fixed capital

NOS = Net Operating Surplus = Value of Production less Operating Costs

Operating Costs = Total raw material cost + energy cost + compensation of employees + consumption of fixed capital + other operating costs