CHAPTER 6

SUMMARY AND CONCLUSION

6.1 Research: Issues Addressed in the Study

From the early 1990s, most of the developing nations have opened up their mining sector to the participation of both domestic and foreign private firms with a view to raising the production and boosting the productivity of the mining industry. The participation of private players is expected to increase production and overall productivity of the mining sector through direct and indirect effects. Under direct effects, it is presumed that private firms are more efficient than their public counterparts and their participation will bring in more capital, better technology and superior managerial skills, thus raising the overall productivity of the sector. Under indirect effects, the participation of private players is supposed to increase competition in the sector, while the spread of superior technology leads to an increase in overall productivity. The thinking is that in the face of competitive pressure, inefficient public firms will attempt to raise their productivity levels, at least to be at par with those of efficient private firms, and this will increase the overall productivity of the mining industry.

Liberalisation of mining industry also raises serious apprehension of accentuating environmental degradation and the marginalisation of local communities. Mining
industry is considered to be one of the most polluting industries, especially mining of chromites, coal and uranium. The basic textbook knowledge of public economics and environmental economics tells us that private firms only focus on the maximisation of profit and seldom bother about the environmental health of the mining periphery. The greater participation of private firms in the mining industry therefore amplifies the apprehension of increasing environmental damage.

Mineral extraction also causes displacement of local communities, mostly the indigenous communities who are marginalised both economically and socially (Downing, 2003). There have been serious allegations on the payment of no compensation or much less than the desired level of compensations to the project affected households (Fernades et al., 1997). But is there any difference between the public and private mining firms in providing compensation? Drawing arguments on the line of environmental performance of public and private mining firms we can hypothesise that public firms will provide better compensation (better social compliance) compared to the private mining firms. However, better economic performance of the private mining firms would enable them to provide better compensation.

Keeping in view the above three issues (productivity, environmental performance and social compliance), the present study sought to examine the following questions: i) Are private mining firms more productive (in extraction) than their public-sector counterparts? ii) do public-sector mining firms comply with environmental regulations better than their private counterparts? and iii) do public-sector mining firms provide better compensation than private firms for acquiring private land?

For examining the above research questions, the study focused on the Indian mining industry. To provide a broader canvas, the policy changes that have taken place within the mining industry in the post-liberalisation period were described. The share of mining and quarrying activities in the NSDP of the states and the GDP of the country were then analysed to quantify the contributions of the mining industry to the state and national economies. An analysis was also carried out on the share of royalty in the total revenue receipts of the states. From these analyses, it emerged that although the M&Q sector has
a negligible share (1.98% in 2007-08) in the overall GDP of the country, it has a significant share in the NSDP of Chhattisgarh, Jharkhand, Meghalaya and Orissa. In 2007-08, Chhattisgarh had the highest share from the M&Q sector in its NSDP, 14.43%. All other states recorded less than 10% share of the M&Q sector in their NSDP. Jharkhand ranked second in the contribution of M&Q to its NSDP (8.66%), followed by Meghalaya (8.35%), Orissa (6.39%), Goa (4.13%), Madhya Pradesh (3.90%), Andhra Pradesh (3.56%) and Assam (3.29%). In the contribution of the M&Q sector to revenue, Jharkhand, Chhattisgarh and Orissa ranked among the top three. Jharkhand earned the most from royalty paid by mining firms, followed by Andhra Pradesh, Madhya Pradesh, Chhattisgarh and Orissa. In percentage contribution to the total revenue receipts, Jharkhand headed the list with 12.54%, followed by Chhattisgarh, Orissa and Rajasthan with share of 9.31%, 5.77% and 3.37% respectively.

These positive contributions aside, the mining industry has had a severe negative effect on environmental health and the social fabric of the periphery. Vast stretches of forests have been cleared to give the way to mining operations (CSÉ, 2008). Due to the popularity of open-cast mining, a large number of adivasis have been displaced. Many of them have either not been compensated or inadequately compensated for their economic and social losses (Fernades et al., 1997). One estimate by the government puts the total forest land diverted for mining between 1980 and 2005 at 95,003 ha. Other sources point to a much higher figure. Based on information available from various sources, including the Union Ministry of Environment and Forests (MoEF), the total forest land diverted for mining in India in the 1980-2005 period has been estimated to be as high as 164,610 ha. Even this figure would be higher if it took into account the forest land diverted before 1980 when many coal mines took over vast areas of land—mostly forests.

Mining projects have caused massive displacement of the adivasi population. No systematic data is available on the number of people who have been displaced because of mining projects. The most cited data, provided by Fernades et al. (1997), reveal that between 1950 and 1991, mining projects have displaced around 25.5 lakh people. Significantly, not even 25% of these displaced people have been resettled. These figures only represent the population who were moved out of their lands but do not include the
thousands who were dependent on the land for their livelihoods, or those whose lives were affected due to disruption of water tables, dumping of overburden on fertile agricultural land and destruction of forests. The worst victims of mining projects have been adivasis. Of the total population displaced by various development projects, about 41% are adivasis. In the case of mining projects, about 52% of those displaced are adivasis.

6.2 Methodology Adopted for the Study

Before empirically verifying the three research questions mentioned, we analysed, theoretically, the efficiency, equity and environmental implications of Indian mining laws (Chapter 2). From this analysis, we drew the conclusion that state governments should possess the ownership rights over minerals while the Central government retained the regulatory authority for ensuring the free flow of minerals across states and sectors, safeguarding the environment, securing social welfare, and achieving sustainable development without sacrificing strategic concerns. Nonetheless, local governments can play a crucial role in monitoring mineral production.

The theoretical analysis also provided the rationale for vesting mineral ownership rights in the state governments, and granting permission for extraction to both public and private firms to foster competition and raise productivity of the sector. The review of theoretical literature on the main research questions—whether public and private mining firms perform differently in productivity efficiency, environmental compliance and social compliance—did not provide us with any single conclusion and they were therefore open for empirical investigation.

For examining the first research question, whether firm ownership has any bearing on the productivity of mining firms operating in India, the study used the firm-level data provided by the CMIE in its electronic database, Prowess. Firm-level data at two-digit NIC has been used for the period from 1988-89 to 2005-06. Using an unbalanced panel data set, the study compared (i) TFP levels and the growth rates of public and private firms in the four sectors of the Indian mining industry—metallic, non-metallic, coal and
petroleum; and (ii) TFP levels and growth rates in the pre-liberalisation and post-liberalisation periods.

For examining the second research question, whether firm ownership differentiates the environmental performance of mining firms operating in India, the study focussed on the chromite mining industry. First, a comparison was made, separately, on four indicators—i) quality of mine drainage water; ii) management of overburden; iii) ambient air quality; and iv) quality of drinking water. In the second step, an aggregate environmental performance measure named the multidimensional environmental defiance index was constructed and the environmental performances of public and private firms were compared through a permutation test. On the methodology front, the study offered a new measure to assess the environmental performance in a multidimensional framework, which satisfies the monotonicity property with respect to breadth and intensity of pollution.

For examining the third research question, whether firm ownership differentiates the social compliance of the mining firms, we undertook a case study of the Orissa mining industry. The study used primary data collected from a survey of 69 households that had surrendered their land to public and private mining firms. Through the survey, data were collected on the mode of land transfer (direct purchase, lease and through acquisition by paying compensation), the process of transfer, the nature of compensation, the satisfaction of households with the compensation received, and suggestions to make the compensation package better.

The concept “social compliance” has been defined as the direct and indirect compensation made to, and the facilities provided, for an individual or the community for the direct and indirect economic, social and environmental losses suffered due to the involuntary transfer of property, displacement and damage to the local natural resource base. Mining firms compensated the households in our survey area directly in two ways—cash payment and employment. There were no cases of land-for-land

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27 The methodology has been adopted from the multidimensional poverty literature (Alkire and Foster, 2008)
compensation or house-for-house compensation in this area. Apart from direct compensation to the households, mining firms make public provisions for the communities like supplying drinking water, and improving health and education facilities. Therefore, the study compared both types of compensation.

6.3 Findings of the Study

A comparison of TFP levels of public and private mining firms showed the superiority of private firms in three sectors—metallic, non-metallic and coal—during the entire period of analysis. In the petroleum sector, private firms initially outperformed public firms but eventually TFP levels of public firms exceeded that of private firms. The productivity gap between public and private firms remained highest in the non-metallic sector. Private firms in this sector were almost two times more productive than their public counterparts. Similarly, private firms in the metallic and coal sectors were one and half times more productive than their public counterparts. Competitive pressure through liberalisation has not been able to bridge the productivity gap between public and private firms.

Liberalisation of the mining industry has brought about increased private participation. Consequently, the share of the public sector in the total value of output declined from 91.19% in 1988-89 to 74.61% in 2004-05. Private participation is highest in the non-metallic sector. For example, in 2003-04, the share of the private sector in the value of total limestone production was 93.6%. Between 1988-89 and 2005-06, TFP levels of the mining industry rose by one and half times and, on an average, TFP grew at the rate of 2.52% per annum. However, inter-temporal comparison of TFP growth shows differences in performance in three sub-periods. In the pre-liberalisation period, TFP of the mining industry grew faster than in the post-liberalisation period. While TFP in the pre-liberalisation period grew at the rate of around 4.5% per annum, it slowed down in the first phase of liberalisation, growing only at the rate of 0.94% per annum. However, the momentum of growth bounced back in the second phase of liberalisation and TFP grew at around 3%. On average, TFP growth in the liberalised period (1.91%) was lower compared to the pre-liberalisation period (4.49%).
A comparison between the environmental performances of public and private mining firms in four indicators separately gives inconclusive results. The construction of a single environmental performance measure in the form of the multidimensional environmental defiance index facilitated a better comparison between public and private mining firms. With the help of both unidimensional and multidimensional indices, the study did not find out any significant difference in the environmental performances of public and private mining firms.

The study revealed that a majority of households were dissatisfied with the compensation received from both public and private mining firms. A simple comparison of the percentage of households that received jobs by transferring their land to public and private mining firms showed a moderate difference. Of the households that transferred their land to public-sector mining firms, 56% received jobs as compensation; whereas only 50% of the households that transferred their land to private sector mining firms received jobs as compensation. Nonetheless, the difference between the public and private sectors in providing jobs as compensation was not significant in our regression exercise. Therefore, the study concludes that there is no significant difference between the social compliance of public and private mining firms.

The overall dissatisfaction with the compensation packages could be viewed as a policy and regulatory failure. As pointed out in most of the literature on displacement, the current compensation policy takes into account only direct economic losses of PAPs. Indirect economic losses caused by the environmental degradation and damage to the social fabric are seldom compensated for. For marginal land-owners and adivasis, such costs are enormous. The surveyed households reported serious productivity loss in agriculture, loss of forest resources, and loss of pastures and public land, which was often used for agriculture. These losses of households were not compensated for. Households and mining firms reported that the compensation package was determined only on the basis of the total area of land surrendered; hence only the direct economic loss caused to the tenants. Households that did not surrender their land; but were affected by environmental and social damages, were not compensated. Discussions in the mining region with households that had not surrendered their land revealed the uncompensated
damage that had resulted from the acquisition of common pool resources and the negative externalities of mining operations. This remained the same for both public-sector and private-sector mining firms. Keeping in view the growing demand for minerals, the study suggests for a paradigm shift has to take place in the current compensation policy.

6.4 Policy Implications

In this study, we intended to examine the veracity of three common notions. They were, i) whether liberalisation of the mining industry will raise the output and overall productivity level; ii) whether more participation of private firms will accentuate environmental damage; and iii) whether more participation of private firms will aggravate social damage. With these questions in mind, we compared the performances of public and private mining firms in Indian context. Therefore, from our empirical analysis, we can draw some policy implications. Nevertheless, we must acknowledge that the policy inference drawn from this study should only be viewed as indicative for the simple reason that it is not too comprehensive. The basic goal of this study has been to develop and apply the most suitable analytical and methodological frameworks to examine some popular notions on the performances of public- and private-sector mining firms.

The study establishes that private-sector mining firms are significantly more productive than public-sector mining firms. On environmental and social compliance, there is no significant difference between public and private mining firms. Both public and private mining firms have failed equally in environmental and social compliance. Nonetheless, we shall refrain from providing any specific conclusion on whether liberalisation of the mining industry will have a positive or negative impact on aggregate social welfare. To address this question, we need to examine several other questions like the revenue implications of privatisation and the resource allocation of the government. The redistributive policy of the government in areas such as taxation and public expenditure in the mining areas will have a large bearing on social welfare. From reports of rampant corruption indulged in by private mining firms, one would have serious doubts about the merits of productivity gains from more private-sector participation.
The non-compliance of both public and private mining firms with environmental regulations and social obligations points to the palpable failure of the government regulatory mechanism. Therefore, further attempts should be made to explore the causes of regulation failure so that all loopholes can be plugged.

Similarly, further research needs to be undertaken to explore the determinants of differences in the productivity of public and private mining firms. In this regard, a close enquiry into the rise in productivity of public-sector petroleum-extracting firms may provide some useful insights.

6.4 Limitations of the Study

In spite of the significant contribution, the present study makes towards understanding the differences between the performances of public- and private-sector mining firms in productivity, environmental compliance and social compliance, we do acknowledge a few limitations. However, for several reasons, these limitations of the study are beyond the scope of easy rectification.

The study faced serious constraints in the availability of data. A major problem related to data on the mining sector is the regulated price in the coal and petroleum sectors. Nonetheless, the significance of the study is not undermined because we refrain from comparing the productivity across sectors. Rather, the study strictly focuses on a comparison of public and private firms within the same sector. Assuming that the value of output produced by both public- and private-sector firms are expressed in the same unit, the significance of the comparison is not diminished.

Within productivity estimation, the measurement of capital and the measures to address the endogeneity problem remain highly disputed (Griliches and Mairesse, 1998; OECD, 2001; OECD, 2001a). One could only find solace by acknowledging that all the estimation methodologies have one problem or the other.

In the comparative study of the environmental performance, there are serious constraints in the data available. The study relied on the data of one mining sector (chromite) and
carried out its analysis with the help of data for 10 mining firms. Although, on the methodological front, the problem of comparison using a small sample size has been addressed by undertaking a permutation test, the other problems associated with a small sample remain. Data on the environmental performance of a higher number of firms will have definite merits compared to a small data set.

The study faced similar problems related to data in the comparison of social compliance as well. Data on social compliance has been gathered through interviews with the heads of the households that surrendered their land to the mining firms. Due to the large gap in time between land acquisition and compensation payment, and our survey, there is the threat of memory loss. This was clearly observed in the responses on the land acquisition process. However, to keep the analysis more objective, the study relied on definite variables, namely, job compensation. One could expect a certain degree of subjectivity in the responses of households’ satisfaction with the overall compensation (direct and public facilities), and the main inferences of our study have been drawn primarily from the objective variables.

6.5 Issues for Further Research

To arrive at the larger welfare implications of liberalisation in the mining industry, a large number of other questions—such as the revenue implications of extractive firm ownership and redistributive mechanism of the government—need to be addressed before drawing any definite conclusion. In the following section, we outline a few research questions which need further investigations.

6.5.1 Revenue Implications

The government’s revenue collection would vary because of two primary reasons—(i) the ownership of mining firms and (ii) Centre-state relations. In the first part, we shall discuss the differential revenue implications due to ownership. Next, we shall elaborate on the revenue implications of Centre-state relationship.
6.5.1.1 Firm Ownership and Revenue Implications

Ownership of mining firms by the private- and public-sector has different revenue implications. In the case of government ownership of mining firms, their entire profits would go to the public exchequer, whereas in the case of private ownership, the government can only collect royalty, various fees and taxes. However, the inefficiency of public-sector mining firms can sometimes lead to losses and hence a net loss to the public exchequer. On the other side, private-sector firms can evade taxes by several means. Under-reporting the quantity of mineral extracted or sold, under-reporting the price\(^2\) (in the case of ad valorem tax) and bribing regulatory officials are some of these. Anecdotal evidence (discussions with mining officials) shows that private firms under-report the price of minerals (around 40% of the actual price) to the Indian Bureau of Mines to evade tax. In response to this illicit practice, the government imposes tax on a 10% higher price than the reported price. Similarly, due to weak monitoring, private mining firms under-report the quantity of minerals exploited. Recent reports of mining scams in Andhra Pradesh, Karnataka and Orissa indicate both regulatory failure and the rent-seeking activities of private mining firms.

The government could think of retaining the ownership of mining firms and undertaking adequate measures to improve their efficiency. One way of increasing the efficiency of public-sector firms would be granting them more autonomy and linking the salaries of managers to profits. A recent move of the United Progressive Alliance Government to provide more autonomy to public-sector firms by categorising them as "Maharatnas" is noteworthy in this respect. The Indian experience shows that state-owned (both state and Central government) mining firms have reported reasonable profit levels. Therefore the issue needs systematic investigation before any definite conclusions are made.

6.5.1.2 Centre-State Relations and Revenue Implications

This study has argued for the state ownership of mineral resources. It has also been pointed out that Central government regulates mineral production by giving the final

\(^2\) See Business Standard (2011)
approval and determining royalty rates. However, due to faulty policy measures, royalty has been a major cause of revenue loss. The MMDR Act 1957 empowers the Central government to determine rates of royalty for different minerals and these are to be uniformly applicable in all states. The rates are revised by the Central government after a specific time period. To minimise the uncertainty due to revision of royalty, the MMDR Act 1957 provides for revising the rates once in three years. The Central government sets up a study group comprising representatives of state governments and the mining industry to revise royalty rates. Past experience shows that the royalty rates have not been revised in a timely manner and caused huge revenue losses to the state exchequers. From time to time, various states have attempted to collect extra revenue by levying different cesses and fees. However, this has been contested in the apex court. In this context, it is imperative to understand the legitimacy of a uniform royalty rate across states. Das (2009) provides a detailed account of the faulty regulatory mechanism, which impedes the revenue collection of state governments, and calls for providing enough elbow room to state government to determine the royalty rates. Nonetheless, the issue needs further investigation.

6.5.2 Determinants of performance difference

The study has attempted to explore whether there are differences between the performances of public and private mining firms but has not been able to provide any definite reason for such differences. Further studies should be undertaken for explaining such differences. What are the possible sources of such difference—management, technology, or capital constraint? The sources of differences would be different for different indicators—productivity, environmental performance and social compliance. Systematic investigations on these issues should be carried out to explore the causes of such failures.