Foreign Collaboration in the Public Sector Steel Industry

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Thesis Summary

This study analyses the nature, scope and effect of foreign collaboration in the public sector steel industry from the point of view of building an indigenous technological capability. Indigenous technological capability in steel includes the knowledge and skills required to design and set up a steel plant including the ability to design and manufacture the associated capital goods and engineer the related technological processes. It also includes the knowledge and skills required to adapt and modify imported technology and the potential to generate new technologies.

Given the historically determined, present unequal international division of labour, LDC's have a weak capital goods sector and hence the need to import technology for the design and manufacture of most of the capital goods. In the absence of indigenous technological development, there is the possibility of becoming technologically dependent. The external institutional basis of this dependence is oligopolistic market structures, trans-nationalisation, the patent system and associated licensing, cross-licensing and patent pooling.

Since the mid-fifties, India placed a considerable reliance on Soviet collaboration in establishing steel plants in the public sector. For the first plant (Bhilai, 1.0 MTP), these were elements of genuine technical assistance. However, almost the entire plant was imported from the Soviet Union. In the first expansion of this plant from 1.0 to 2.5 MTPA in the sixties, there was hardly any indigenization. The subsequent plant established with Soviet collaboration at Bokaro allowed for considerable indegenisation of capital equipment with the participation of Soviet collaborated Heavy Engineering Corporation. The Soviets however retained the plant design and engineering portfolio even though there was an Indian firm of engineering consultants in a position to undertake this activity. This was a serious setback to the development of Indian design and engineering. In 1970, the Soviets collaborated in the transfer of technology related to engineering consultancy. This contract was renewed twice, in 1975 and 1980 to enable Soviet participation in the detailed engineering of Bhilai and Bokaro's 4.0 million tonne expansions. While a high degree of indigenization of equipment has been possible in Soviet collaborated projects since the latter half of the sixties, the same is not evident in plant design and engineering.

The Durgapur and Rourkela plants were established in collaboration with a British Consortium of equipment suppliers, ISCON and a combine of Krupp and Demag, IGKD respectively. At Durgapur the main contracts were to be awarded on a turn-key basis to the British Consortium ISCON whereas at Rourkela, loans were explicitly tied to orders from West Germany. The result was tied aid and packaged technology. The capital and equipment cost was higher than the corresponding cost of similar plants in the industrialized countries.

Although the evidence is mixed and there are differences in details, Soviet collaboration has essentially a similar character to Western collaboration.

A study of local R & D shows that there is very little evidence of independent technological development. Genuine attempts at independent technological development do not receive the requisite financial support as is evident from the R & D project on formed coke. There has been very little adaptation of imported technology, one exception being the design of coke ovens. Local R & D suffers from lack of development and tenuous linkages with design and engineering production. A technology policy that favours the liberalization of imports of technology and R & D policy that is geared towards import of a wide range of R & D inputs, including R & D projects in their entirety, may thwart the development of local R & D.

The Indian Steel Industry started out by importing all its technological needs. It has however more or less remained in that position over time as far as the 'core' (that component of the technology over which there is a degree of monopoly or oligopoly) technological needs are concerned. Imported technology has substituted for indigenous technological development instead of being complementary to it.