



# Economic reform and productivity growth in Indian manufacturing industries: an interaction of technical change and scale economies

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## Abstract

This paper studies the effects of the economic reforms of 1991 on the Indian manufacturing industries. A translog cost function was used to analyze the production structure in terms of biased technical change and economies of scale. A panel consisting of 121 Indian manufacturing industries from 1981 to 1998 was used in our estimation. We have shown that key industries have experienced capital-using technical change, and the scale effects have been exploited more intensively since the 1991 economic reforms. We also observe total factor productivity (TFP) improvements for most of the industries after the 1991 reform initiatives, which support the evidence of improvements in economic efficiency in key Indian manufacturing industries.

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## 1. Introduction

At the time of independence in 1947, India's main industrial policy was import-substitution strategy of development. India's industrial policies were designed to protect its

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domestic industries through import tariffs and infant industry subsidies. The principal instruments used were an elaborate industrial licensing scheme under the Industries Development and Regulation Act (IDRA) of 1951 and a protective foreign trade regime. It controlled not only entry into an industry and capacity expansion, but also technology output mix and import content. Concentration of economic power was within the control of Monopolistic and Restrictive Trade Practices (MRTP) Act of 1970, and the foreign Exchange Regulation Act (FERA) of 1973 was used to regulate foreign investment in India. This period also witnessed considerable expansion of public sector enterprises (PSUs) either through nationalization or setting up of new enterprises.

While these policies enabled India to develop a widely based industrial structure, and technical and professional manpower, they were allowed to continue for too long, that led to considerable inefficiency in the industrial sector (Bhagwati and Desai, 1970). Bhagwati and Srinivasan (1975) concluded that the Indian foreign trade regime, along with the industrial licensing policy which eliminated all forms of competition, had adversely affected incentives to reduce costs and prevented improvements in product quality, design, and technology. Wolf (1982) noted that by international standards, the industries in India were fragmented into many relatively small firms hindering exploitation of scale economies and product development. He attributed the key cause of the above inefficiencies to policies relating to industrial licensing and imports. Bhagwati (1998), Jha (1976, pp. 99–106), and Ahluwalia (1985) have also derived the similar conclusions.

The above suggests that while the import substitution strategy achieved limited success in creating a self-reliant economy, it grossly underemphasized the importance of efficient use of resources, particularly of labor and capital. The performance of public sector enterprises has proved to be considerably below expectations due to the over centralization of power for decision making concerning investment, mandating formal and informal distributional channels, limited managerial and multidimensional objectives. As a result, autonomy and commercial viability of trade and commerce suffered. Because the home market was well protected, the domestic enterprises were not compelled to improve efficiency in use of factor inputs and in improving quality of their products. The New Industrial Policy (NIP) of 1991 has been a key element of India's objective of integrating with the world economy in a market consistent manner and enhancing efficiency and growth rate.

Accordingly, the New Industrial Policy (NIP) of 1991 is outward-oriented and represents a major paradigm shift. The key elements of the NIP are the abolition of licensing of capital goods, reduced list of industries to be reserved for the public sector, increasing foreign equity ownerships in domestic industries, private investment in infrastructure, freer import of capital goods, reduced tariff for consumer goods, deregulation in small-scale industrial units, and allowing greater inflow as well as outflow of foreign investments. These elements aim to enhance productivity and efficiency in Indian industries by increasing competition, creating level playing field among public, private and foreign businesses, and generating an environment which is conducive for technological growth.

Several recent studies have attempted to empirically estimate the differences in outcomes of post- and preliberalization policies on the Indian manufacturing industries. Ahluwalia (1991) estimated the annual TFP from 1960 to 1986 and showed that there was an increase in total factor productivity (TFP) growth in the late 1970s, the initial period of

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