

Decomposition of Technical Efficiency and Productivity Growth in Indian Pharmaceutical Industry: A Non-Parametric Analysis

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This paper analyzes the technical efficiency and total factor productivity growth of Indian pharmaceutical sector for the period 1991 to 2011, using Data Envelopment Analysis. Cross sectional data for 30 major Indian pharmaceutical firms have been culled out from the reports of Centre for Monitoring Indian Economy, Economic Survey of India and Annual Survey of Industries. The technical efficiency of 30 major Indian Pharmaceutical firms have been calculated at five points of time, whereas the TFP growth has been calculated four periods. Three inputs have been considered, viz., net fixed assets, raw material and total expenses and one output, i.e., net sales. Average performance of the selected firms was suboptimal and the inefficiencies were enlarged in the post-TRIPS period. Decomposition of total factor productivity growth into efficiency change and technological change reveals that productivity growth was positive in the Pre-TRIPS period, but became negative thereafter. Technological change contributed towards the growth of productivity whereas efficiency change restricted the potential productivity growth. There is a need to reduce the managerial, technical and scale inefficiencies and ensure efficient capacity utilization.

I Introduction

The Indian pharmaceutical industry has flourished in the recent past and become the sunrise sector of Indian economy. It is a success story providing employment and ensuring that essential drugs at affordable prices are available (Richard Gerster 2009). It is at the front in the science-based industries with diversified capabilities and opportunities manufacturing drugs and medicinal products. The Indian industry has a comparative cost advantage over other countries. The production cost here is lowest in the world and is estimated to be 70 per cent less than that of USA and Europe (Greene 2007, Tyagi *et. al.* 2014). At present the Indian industry valued at \$26 billion stands fourteenth in terms of value, third in terms of volume and is growing at 14 per cent per annum. The growth has been driven by high quality and competitively priced exports to both developing

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