

## **SESSION 4.3 (MANUFACTURING ISSUES & SUSTAINABLE DEVELOPMENT)**

### **Whether FDI or Exports enhance Innovation : Evidence from Indian Manufacturing firms**

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**Abstract:** The economic reforms of 1991 have introduced a heavy amount of FDI inflows into the manufacturing sector of Indian economy. However, for the invention of new techniques and skills, there is a great need to invest on R&D, requires a huge amount of capital, which can be available through FDI inflows. The manufacturing sector depends on both. Technology has been imported in heavy amount after the implementation of liberalization policies. Therefore, the present study intends to know whether FDI contributes to the Indian manufacturing sector through R&D or not. The average growth of the manufacturing sector in India (7.93 per cent) has been found considerably higher during the second decade of reforms (2001-2012) as compared to first decade reforms (1991-2000). In context of this, the present study has tried to examine the trends and patterns of FDI and R&D in Indian manufacturing firms during during second decade of reforms (2001-12) and also, to analyze the impact of FDI, exports on R&D in manufacturing firms of India through fixed effect model. The results asserts that R&D has significantly impacted by the import of capital goods, foreign equity, disembodied technology and export intensity during the second decade of liberalization period. The present study suggests that greater approvals for foreign capital inflows are required in India, for enhancing the R&D in the manufacturing sector. There must be an appropriate coordination between public and private sector, which can improve the R&D expenditure of manufacturing firms of India.

## **Diffusion of Computer-Numerically Controlled Machine Tools in India**

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**Abstract:** Given the globalized economic order, achieving a high order of growth by industrialization has been a priority for the developing countries. In which, diffusion of technology have its own important role in contributing to economic growth. This study deals with the impact of liberalization on the diffusion of Computer Numerically Controlled Machine Tool (CNCMT) technology in its embodied form during the pre and post economic liberalization period. Apart from the 'net addition' and 'relative stock' methods, Ray's method is chiefly used to measure the extent of diffusion of CNCMT in India. It is found that liberalization has favoured the diffusion of CNCMT technology. However, the increasing share of the imports contributing to the increasing diffusion of CNCMT technology is noticed since 2000-01. Unlike in the past, the spread of CNCMT technology among the small scale industries after 2000-02 marks the beginning of a new dimension in the diffusion of CNCMT technology in India as it further widens the scope of CNCMT technology becoming available to a range of small scale industries in the near future but compromising with employment aspects. To this extent, it may also be viewed as a failure in fulfilling the United Nation's Sustainable Development Goals (SDGs) of achieving inclusive development.

### **Impact of FDI on incumbent innovation: Intra and inter-industry effects**

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phd12116101@iiti.ac.in; <sup>b</sup> Assistant Professor, School of Humanities and Social Sciences, IIT Indore, India.

**Abstract:** It is often believed that transfer of technology and know-how resulting from Foreign Direct Investment (FDI) goes beyond the actual projects undertaken by foreign investors and, spills over to domestic firms affecting their knowledge base and productivity. This paper is an endeavour to investigate the existence of spillovers and their impact on the innovative performance of domestic firms active in the manufacturing sector of India. By employing data on FDI by industry and merging it with information on time-variant buyer-supplier linkages obtained from a series of national input outputs tables, the study develops intra-industry and inter-industry measures to capture the effects of FDI on innovation performance of the incumbent firms' active in the same sector as the MNC and in upstream and downstream sectors. The econometric analysis after accounting for

endogeneity issues reveals that FDI has a moderate impact on innovative performance of firms residing in identical industries. However, impact on the innovative performance of firms in supplying sectors appears to be statistically strong.

## **Does foreign ownership matter in the technological capability of firms? Evidence from Indian manufacturing industry**

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**Abstract:** This paper seeks to contribute to the debate related to industrial technological capability building in association with economic liberalization policies adopted by many countries since the early 1990s. We investigate the technological capability building in a transitional economy from ownership perspective by examining the impact of foreign equity participation on the technological capability of firms in selected Indian manufacturing industries during the high growth period of 2001-2007. Using panel data of 731 firms, this study makes two major contributions to the existing knowledge. Firstly, we focus on a wider range of firms' technological capabilities rather than just on R&D as used in previous studies. Secondly, we utilize the variations in foreign equity participation to capture the extent to which foreign ownership or control affect the technological capability of firms rather than a dummy variable classification of foreign and domestic ownership. The study observed that foreign ownership plays an important role in the technological capability of firms. Our findings also support the internalization theory that higher the degree of foreign ownership, the more technology intensive the firm will be, since the foreign partner gets larger control on firm's operations. This study indicates that, given the importance of technology on economic growth and the contribution to productivity and export, the government's policy initiatives to encourage foreign equity participation in Indian manufacturing actually contributes to the technological capability of the firms.

## **Indian Ayurvedic Medicine Industry at a crossroads: exploring technological capabilities in the post-WTO policy regime**

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