

# **International Diffusion of Technology in the Manufacturing Industry: Emerging Countries within the EU and Turkey**

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## **Abstract**

The levels of technological development in countries play a key role in explaining the differences between their productivity levels. Technological development may be fostered by production of technology, and design and implementation of effective technology policies. While developed countries generally possess these competences; emerging countries often do not. Hence, they need foreign technology in order to enhance their technological progress. In this regard, the significance of transferring technology from developed countries becomes obvious for emerging countries. This study empirically analyses the impact of international technology diffusion channels on total factor productivity (TFP) growth of the manufacturing industry in emerging countries within the EU and in Turkey. The research aims to contribute to the literature by analysing multiple diffusion channels and by examining the relative impact of these channels on manufacturing TFP growth. The study covers the period from 1994 to 2008, and panel data analysis is used as a methodology. International technology diffusion channels included in the analysis are; foreign R&D spillovers, imports of technology goods, and foreign direct investment (FDI). Human capital, which serves as a proxy for absorptive capacity, is also included in the analysis. Empirical findings indicate that foreign R&D spillovers, imports of technology goods, and human capital have significant and positive impacts on manufacturing TFP growth of the selected countries during the examined period. Among these channels, foreign R&D spillovers have the greatest impact on TFP growth; whereas the imports of technology goods have the least impact. The findings also show that, the impact of foreign R&D spillovers resulting from difficult to imitate research intensive goods imports are significant and positive, whereas foreign R&D spillovers stemming from the imports of easy to imitate research intensive goods have no impact. The estimates also indicate that FDI and domestic R&D spillovers have no effect on manufacturing TFP growth. Finally, it is empirically evidenced that the diffusion mechanism is effective with a time lag on manufacturing TFP growth of the selected countries during the period analysed.

**Keywords:** International technology diffusion, international technology spillovers.