

Exploring the Dissemination Mechanisms of Environmental Innovations across Developing Nations: The Role of Innovative Performance and Absorptive Capacity

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Abstract

Environmental regulations have played a central role in inducing technological innovations in developed nations. However in the case of developing nations the pace of adoption and development of such innovations has been rather slow. In order to explore the innovation dissemination mechanisms we first analyze the impact of environmental regulations on innovations related to environmental management (air pollution abatement, water pollution abatement and waste management) in selected developed and developing nations (Japan, USA, Germany, China, Korea and Mexico) by conducting statistical analysis on patent applications. The paper then identifies potential knowledge diffusion across developing nations by looking at claimed priorities or inventions with high value as well as the development of indigenous innovations in developing nations. The results of the analysis suggest that patent applications in developed countries were high but without significant increase in number. To a certain level rapidly developing nations in Asia have experienced a significant increase of environmental patent activity. It seems that the dissemination of patents have also helped the development of indigenous innovations. The paper then analyzes the dynamics of innovative and absorptive capabilities and found that the convergence is more notorious in Asian countries. Another important factor for the dissemination could be the level of international trade. In this aspect the development of an indigenous capacity to adapt and replicate innovations first and then to develop own domestic technologies later seem to be an important factor. Finally the study found that a potential factor to explain countries shift from absorptive stage to innovative stage seems to be the return to investment in human capital as proven by the case of Korea. In this regard the development of an indigenous capacity to adapt and replicate innovations first and then to develop own domestic technologies later seem to be an important factor.