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STUDIES IN TECHNOLOGY TRANSFER

Selected cases from Argentina, China, South Africa and Taiwan Province of China




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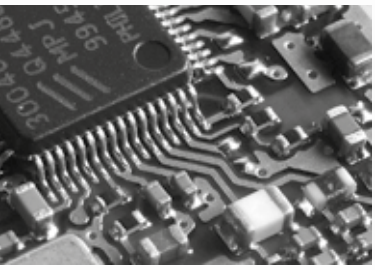


UNCTAD Current Studies on Science, Technology and Innovation. N°7

UNITED NATIONS
New York and Geneva, 2014

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This publication has not been formally edited.

UNCTAD/DTL/STICT/2013/7

UNITED NATIONS PUBLICATION

Preface

This paper builds on ongoing efforts by UNCTAD to investigate the role of the transfer of technology in economic development. It was prepared under UNCTADs mandate to undertake research and analysis in the area of science, technology and innovation (STI) with a focus on making STI capacity an instrument for supporting national development and helping local industry become more competitive, as outlined in the Doha mandate paragraph 56 (p). The paper presents diverse cases which provide contrasting experiences of the role of technology transfer and absorption in the development of four different industries in economies from Africa (South Africa), Asia (Taiwan Province of China and China) and Latin America (Argentina). The issue of technology transfer is of key importance for firms and countries that operate within the technology frontier to build technological and innovation capabilities. These capabilities are critical to enable the upgrading of firms into more complex, skill and knowledge intensive activities, which typically add more value to local production, allow increased productivity and ultimately lead to higher wages, expanding domestic demand and growing economies. The process of upgrading in production is an essential link in the process of building productive capacity and generating structural change as part of the process of economic development.

These studies illustrate the varying approaches that firms and industries in different countries have taken in using international and domestic transfer of technology and combining these transfers with knowledge accumulated through internal effort in order to build stronger capabilities and improve their innovation performance. They also illustrate the substantial variation in policy frameworks, institutional development, levels of policy intervention and underlying strategies implemented by developing-country national and local governments in their quest to promote catch-up with more advanced countries by closing the gaps in scientific, engineering, technological and innovation capabilities and performance.

The paper examines the role of technology transfer in the development of integrated circuits production in Taiwan Province of China, button manufacturing in Qiaotou, China, automobile manufacturing in South Africa and biotechnology development in Argentina. The cases therefore cover high-technology activities (integrated circuits and biotechnology), medium-technology activities (automobiles) and low-technology activities (buttons). It is hoped that this approach illustrates the potential for technology transfer to play a role in activities of widely differing knowledge, technology and skill intensities. These cases represent varying degrees of success in the leveraging of technology transfer and local capability development for industrial development in developing economies. The cases of integrated circuits in Taiwan Province of China and buttons in Qiaotou, China are both highly successful experiences of technological and industrial upgrading that laid the basis for globally competitive industries. In the cases of biotechnology in Argentina and automobiles in South Africa, the results have been more mixed, with slower technological upgrading and a more nuanced picture in terms of the success of industrial upgrading and international competitiveness.

Acknowledgements

This paper was prepared by the Policy Reviews Section of the Science, Technology and ICT Branch of the Division on Technology and Logistics, UNCTAD. The preparation of the paper was overseen by Michael Lim under the direction of Angel Gonzalez-Sanz, with the assistance of Marta Perez Cuso on the case of biotechnology in Argentina. Overall guidance was provided by Mongi Hamdi, head of the Branch, and Anne Miroux, Director of the Division. The case studies were written by Rajah Rasiah (integrated circuits in Taiwan Province of China and buttons in China), Anthony Black (automobile industry in South Africa) and Jorge Niosi (biotechnology in Argentina). The analytical framework is based heavily on an input from Rajah Rasiah.

During the preparation of this report, comments were received from Torbjörn Fredrikson and colleagues from the Intellectual Property Unit of the Division on Investment and Enterprise of UNCTAD.

Desktop publishing was carried out by Nathalie Loriot. The cover was designed by Sophie Combette.

Contents

Boxes

Figures

Tables