

**WARSAW SCHOOL OF ECONOMICS
COLLEGIUM OF WORLD ECONOMY**

Agata Wancio

**The impact of foreign direct investment on
innovation of emerging economies: The case of India**

Summary of doctoral dissertation

Supervisor:

Prof. dr hab. Kazimierz Starzyk

Warsaw 2015

Table of contents

Justification for the research problem selection	3
Objective, thesis and hypotheses.....	5
The structure and content of the dissertation	6
Research methods and sources	8
Findings and conclusions	9
The outline of the dissertation.....	15
References (selected publications).....	17

Justification for the research problem selection

Emerging economies, especially those of developing countries status, often place foreign direct investment (FDI) in the centre of their investment policy as they hope that FDI inflows will complement their modest national savings. Besides transferring the capital to the country they expect foreign multinationals enterprises (MNEs) to create new jobs, increase the labour productivity, develop employees' skills, raise budget revenues, stimulate new exports, affect the pattern of production and exports by increasing the share of knowledge- and technology-intensive industries, as well as to become an important source of knowledge and provide an impetus for innovative solutions.

The benefits from the business operations of foreign companies in the national economy, however, do not occur automatically. Moreover, they may lead to some negative externalities. FDI may indeed become an important source of capital, but foreign subsidiaries may also transfer profits to their parent company, which could have a particularly adverse effect on their current performance and further development at the time of a global or regional financial crisis. Instead of creating jobs through *greenfield* projects, they may reduce employment in companies acquired through mergers and acquisitions (M&As). Besides enhancing skills of the local workforce, foreign companies may also cause a "brain drain" effect, stealing the best talents available on the local market by offering higher salaries as compared to domestic companies. The FDI effects are similarly unambiguous for technology transfer and innovation activities, an area of particular importance from the perspective of the long-term sustainable growth of emerging economies.

Foreign direct investment has been identified quite early as a potential channel for technology transfer both in theory and in empirical research (Teece 1977, Griliches 1979, Lall 1985). In addition to its direct effects associated with the transfer of embodied and tacit technology to the host economy, it may also have a broader influence on the innovation of the economy through various interactions involving knowledge diffusion to local companies (Smarzynska-Javorcik 2004, Gorg, Strobl 2005, Moran 2006, Smeets 2008). The FDI-innovation linkage is then a question fairly well established in the theory of international economics and having a striking record in the empirical literature. However, new phenomena and processes occurring in the world economy pose some important questions in this area that remain unanswered and require a further research to explore them.

One of such phenomena is an increasing share of emerging economies in transnational FDI flows. On the one hand, their role as recipients of FDI has been growing steadily, including FDI projects in knowledge- and technology-intensive industries (UNCTAD 2005). A dynamic change in the scale and nature of foreign investors' activities may also entail a change in benefits and risks associated with inward FDI. Moreover, studies

conducted so far have provided mixed results and led to rather varied conclusions with respect to FDI impact on innovation not only in relation to different economies, but also to the same economy. On the other hand, there is observed a growing importance of emerging economies as exporters of capital and as a result a visible acceleration of the internationalization of companies anchored in these economies. Owing to transnational M&As, they come into possession of technology and knowledge that can be transferred to the parent company and other subsidiaries within the group, thus improving their technological capacity and competitiveness. For *greenfield* projects conducted by emerging multinationals, an additional impact could be also made by increasing research and development (R&D) intensity at home in response to the needs of demanding contractors and customers present at the foreign market.

The phenomenon of rapid internationalization of emerging multinationals itself and differences in behaviour between foreign investors from the North and the South have quite a rich record of publications (e.g. Lall 1983, Dunning 1986, Wells 1983, Mathews 2006, Gammeltoft 2008). Some of them refer somehow to the linkage between internationalization and innovation, mostly through examining the so-called strategic assets-seeking investment strategy that is considered to be a source of competitive advantage for "emerging" multinationals acquiring abroad assets such as technology, *know-how*, brands and distribution channels. Most of these studies, however, are either of theoretical nature or focus on the empirical identification of motives lying behind the expansion of these companies (e.g. Cantwell 1989, Dunning 2001, Mathews 2002, Pradhan, Abraham 2005, Berry 2006). Publications oriented to an *ex-post* verification of the extent to which this goal has been achieved and especially to effects of the expansion of emerging multinationals for improving innovation at their home economies are still relatively rare (Pradhan, Singh 2009, Chen, Li, Shapiro 2012). To the best knowledge of the author there is also no published research that adopts an approach allowing to evaluate the internationalization effects of emerging economies in parallel for their inward and outward investment. Thus, it remains an open question which of these two internationalization strategies (active or passive) and under which conditions can lead to a faster technological catch-up and, consequently, to a greater international competitiveness and social well-being.

What makes this issue particularly interesting and justifies the need for further research on emerging economies' internationalization is the specificity of these economies. It stamps its imprint also on the innovation activity and limits the accuracy of research focused on developed economies. An expected impact of FDI on innovation differs in these two groups of economies due to many factors, including different social and economic conditions. An attempt to examine a linkage in question from the perspective of emerging economies and

their efforts to stimulate innovation-driven development is undertaken by the author and presented hereafter.

India, as a representative of the largest emerging economies, serves as an empirical example for carrying out the research within this dissertation. The country selection is based on several premises. Firstly, India participates in the FDI flows being one of the largest recipients of investment among South countries and an important investor in foreign markets (UNCTAD 2005, 2013). Secondly, India has been classified relatively high in the ranking of competitiveness in the section evaluating innovation (41st in the world, the World Economic Forum 2014), which indicates that the process of innovation-driven development has already taking place there. Thirdly, looking at the technology motive, which is clearly stated in both the policy of attracting FDI into the country and the strategy of indigenous companies' internationalization, along with the industrial pattern of Indian inward and outward FDI (a significant share of technology- and knowledge-intensive activities) suggests that MNEs must have played an important role in this process.

Objective, thesis and hypotheses

The main objective of the dissertation is to examine the impact of the internationalization of emerging economies on their innovation, introducing a distinction between inward FDI (*passive internationalization*) and outward FDI made by companies originated from these economies (*active internationalization*). India, for which this linkage has been verified empirically, is treated then as the host and home economy simultaneously. The definition of innovation adopted by the author covers both the ability and propensity to create and develop innovations that determine innovation expenditure (*innovation input*), as well as innovation activities and their results reflecting that ability (*innovation output*).

The thesis of this paper is a statement that foreign direct investment plays a significant role in the process of transition of emerging economies to the development driven by innovation, with the growing importance of outward investment.

Research hypotheses, related to each of the chapters, have been formulated as follows:

Hypothesis 1: *Emerging economies are characterized by a number of features distinguishing them from both developed economies and developing economies at an early stage of development, and these features to a large extent shape a way by which various determinants, including the internationalization of the economy, affect the innovation activities.*

Hypothesis 2: *Specific conditions of emerging economies have an impact on the scope and nature of the linkage between foreign direct investment and their innovation for both inward and outward FDI.*

Hypothesis 3: *India possesses a majority of the attributes of an emerging economy that lead to the specificity of the innovation development path and influence the scope and nature of the effects caused by factors affecting innovation.*

Hypothesis 4: *The benefits from inward FDI in India have resulted from both – R&D activities of foreign investors and their innovations introduced to the market; however, they have been focused more on serving the local market than on developing technologically advanced solutions for global customers. The important role in enhancing innovation of emerging economies has been played also by the rising overseas expansion of Indian companies, which stimulated them to intensify R&D activities and to work on radical innovations, and consequently led to strengthening their technological advantage.*

The structure and content of the dissertation

The dissertation consists of an introduction, four chapters, summary and conclusions, and a list of references, figures, tables and appendices.

In the first chapter, the theoretical issues related to the concepts of innovation, innovations and innovation potential along with measures capturing innovation of economy are presented, as well as an overview of the factors determining that innovation. As a result of this discussion the author presents her own approach to innovation of the economy and proposes a relevant definition as well as classifications. As such, this chapter is a starting point for further studies in this dissertation. Given that the discussion in the first chapter, as well as throughout the dissertation, is conducted in the context of emerging economies, the author also makes an attempt to determine the meaning of the term “emerging economy”, which is used in the literature inconsistently. The chapter ends with a selection of the features of emerging economies that distinguish them from other economies and determine their specificity in terms of innovation, and thus the potential benefits resulting from their participation in FDI flows.

The second chapter deals with the impact of internationalization of emerging economies in the form of FDI on their innovation. While analysing the above, a distinction between the effects resulted from inward FDI located in emerging economies (*passive internationalization*) and the effects related to the outward FDI undertaken by companies originated from these economies (*active internationalization*) is introduced. Attention is paid to both positive and negative effects related to the participation of these economies in the transnational FDI flows. In the part, devoted to inward FDI, the effects associated with

production first and then R&D activities of foreign investors are analysed. There are also discussed conditions characteristic of both sides – host economy and direct investor, which may facilitate the process of accruing benefits from FDI inflows on the one hand or cause negative externalities on the other hand. In the further part, dedicated to the international expansion of companies from emerging economies, there are classified and discussed factors determining technological and innovation progress through outward FDI performed on mature markets, along with the potential benefits from seeking knowledge abroad and ways of achieving them. Finally, strategies of expansion of transnational firms from emerging economies are discussed under the concept of ownership advantages proposed by Dunning and developed by Mathews. The mentioned discussion focuses on the change in motives lying behind their investments abroad, especially on the process of moving from the strategy of exploiting the investors' own assets and technological advantage to the strategy of benefiting from strategic assets of the acquired companies and thus accelerating the process of technological catch-up.

In the third chapter, the author tries to assess the innovation of the Indian economy using the methodological assumptions proposed in the first chapter. The analysis starts from evaluating the technological and innovation potential as well as India's innovation position. The set of traditional innovation indicators is expanded by measures used less frequently (e.g. average relative citation, trademarks, balance in the transnational transfer of intellectual property rights) in order to obtain a possibly complete picture of different innovation aspects and dimensions in India, and then enriched by references to the specificity of emerging economies. While discussing various measures of innovation, the logic presented in the first chapter is applied. It means that all indicators are dividing into three basic groups: ones reflecting availability of resources available for innovation, ones related to resources engaged in the innovation process and ones presenting innovation performance. Such an analysis, focused mainly on innovation from the perspective of international competitiveness, is complemented by a dimension equally important for emerging economies, i.e. through the prism of local conditions and needs of the Indian economy and society, which is expressed in a concept of innovation known as "frugal". While discussing the above, there is also made an attempt to demonstrate that India displays most of the features characteristic of an emerging economy that constitute of a specific path of innovation-driven development.

The fourth chapter, using the example of the Indian economy, attempts to verify empirically the impact of internationalization of emerging economies in the form of FDI on their innovation. Firstly, the analysis of FDI inflows at the country level is presented with a special emphasis on the aspects of significant importance for assessing the FDI impact on innovation such as the industrial pattern of FDI and countries of investors' origin. Next, a

detailed analysis of R&D activities of foreign investors in India is presented. It is aimed at determining the place of India in the R&D network of transnational corporations and at identifying motives for locating R&D activities in the country. A qualitative description of the R&D projects performed in foreign R&D centres in India helps to answer questions about the type and sophistication of works carried out in those centres as well as the geographical scope, technological advancement and novelty of solutions designed and developed there. Then, Indian investment abroad is investigated. The analysis is focused primarily on these FDI characteristics which seem to be the most important in terms of potential effects for innovation of the home economy. Finally, a statistical verification of the impact of internationalization of the Indian economy through FDI on its innovation is conducted. To make this happen, the companies were divided into three distinct groups (foreign investors present in India, Indian companies present on foreign markets and Indian companies with only domestic operations) and relevant measures of their innovation activities are used. The author supports the view that innovation activity of companies is the ultimate expression of the innovation of the economy since companies are those entities which implement new ideas and solutions to the market. Their innovation output includes innovative efforts of the other actors of the innovation system which are the government and scientific-research institutions. In turn, a poor performance of companies reflects to a certain extent weaknesses that reside in this system.

The dissertation ends with a summary section, which shortly discusses findings reported throughout the chapters and formulates conclusions regarding the effects of internationalization of emerging economies through FDI for their innovation. Additionally, the author suggests possible directions for further studies in this field as well as potential benefits of such research for economic practice, especially for building the strategy for development driven by innovation.

Research methods and sources

In the dissertation, a few quantitative and qualitative methods are applied. The first of them is an analytical-descriptive method, which was used for classifying innovations and determinants of innovation among other things. It is complemented by a statistical-descriptive method applied to the analysis of empirical material. In addition, a comparative method is used, especially for the evaluation of India's position in the field of innovation in comparison to selected emerging economies.

The dissertation also applies the computer assisted telephone interview method (CATI) with the use of a questionnaire prepared by the author. The survey covers innovation activities of indigenous companies and foreign investors present in India in 2008-2010. The

collected data are then used in econometric modelling, which is based on three models: probit, tobit and Heckman selection. They form together the so-called CDM model (the name comes from the names of researchers who have proposed and developed this model, i.e. Crépon, Duguet and Mairesse), which has been used so far mainly for examining the linkage between FDI and companies' innovation in developed countries. The author makes an effort to adjust this model to the situation of emerging economies, trying to overcome the limitations resulting from the incomparably worse availability of statistical data for those countries. She also includes to the equations variables reflecting the specific conditions of emerging economies, which are skipped in the study of highly developed economies due to different level of institutional development. To operationalize the remaining variables, data from the CMIE Prowess database, collecting economic and financial information on companies operating in India, are used.

To sum up on information sources, the dissertation uses primary data collected during interviews, secondary data from various databases (i.a. World Bank, OECD, UNCTAD, WIPO, CMIE, the US Bureau of Economic Analysis, Ministry of Commerce and Industry of India, Ministry of Science and Technology of India, Ministry of Human Resource Development of India, Ministry of Home Affairs of India) and individual financial statements of companies, as well as processed data collected by other authors and published in various publications.

Findings and conclusions

Specific conditions of emerging economies can shape a way by which FDI affects the economies and societies of the South. As a result the effects resulting from these interactions may differ in comparison with highly developed economies. It also applies to the impact of FDI on various aspects and dimensions of innovation, and consequently to their role in stimulating innovation-driven development. This innovation-related specificity may be presented as a set of the following characteristics:

- ❖ on supply side of the innovation process: technological backwardness, a relatively small expenditure on R&D, the growing role in “talent production” in the global economy, the demographic advantage, different pattern of R&D activities as compared to the North economies (the predominance of developmental works) and thus a need to move up along the R&D chain (to applied research);
- ❖ on demand side of the innovation process: a relatively large and rapidly growing domestic market, an emerging middle class, different demand structure than in developed countries;
- ❖ related to an environment: low or moderate level of socio-economic development and as a result a specific philosophy towards innovation, institutional constraints (weak protection

of intellectual property rights and overregulation of the economy), ambition to join the group of world innovation leaders.

Due to the specific socio-economic conditions of emerging economies and thereby different needs and capabilities, an expected impact of FDI on their innovation is different than in the other two groups of economies, i.e. developed economies and developing countries at an early stage of development. This leads to a need to go beyond international competitiveness in studies dedicated to emerging economies. Given that innovation should ultimately support quality of life and social well-being, emerging economies have been somehow forced to take matters into their own hands since solutions for the rich consumers on the North have not been able to meet the challenges faced by the South. In result, a concept of frugal innovation has been developed and widely applied in business practice in India and other emerging markets. Frugal solutions are new products mostly targeted at a local or regional market, actually not going beyond developing countries. However, they are important for raising the standard of living in that part of the world as well as for creating market opportunities and source of growth for companies recognising those needs. Eventually, they may also affect innovation at the regional or global level, although the initial impetus for them comes from local conditions and needs. The development of such innovations may also be affected by foreign investors; however, the outcome of such an activity is difficult to capture in the statistics, hence there is a need for conducting a broader research of a qualitative nature.

Given the above, the assessment of innovation of the Indian economy, which constitutes the starting point for the verification of the impact of scale and nature of FDI on innovation in emerging economies, is carried out in two dimensions - from the point of view of the countries of the North (a traditional approach that perceives innovation as a tool of gaining a competitive advantage on a global scale) as well as from the point of view of countries of the South (a frugal approach to innovation that is through the prism of the conditions and needs of emerging economies). The former enables to capture different aspects of India's innovation by means of different indicators of innovation and compare them with the performance of other countries. The latter shows the specificity of emerging economies in the innovation area. Together they allow to confirm the hypothesis that India displays most of the specific futures of emerging economies mentioned above, which to a large extent determine a way by which FDI affects innovation activities and performance.

The author has identified three dimensions of developing and functioning of frugal innovations in India. The first is the local one since such innovations play a vital role in raising living standard of local people and in promoting social inclusion. Second, India, having a capacity for becoming a centre of frugal innovation, may support a process of

improving living conditions also in other countries in the South by serving bottom-of-the-pyramid consumers and those being currently outside the pyramid. Thirdly, India may also play an important role in adopting a different approach to innovation in the North, where the philosophy of "more for more" starts to be outdated and insufficient.

While assessing the innovation of India from an international competitiveness point of view, a steady improvement in human capital-related indicators of quantitative nature has been found; however, attention has been also drawn to a low quality of teaching at different levels of education and a shortage in talent pool with regard to the market needs. India faces also a relatively small number of R&D personnel, particularly in relation to the country's demographic potential and respective results achieved by remaining BRIC economies. India notes a relatively low R&D intensity (less than 1% of GDP); however, since several years there has been observed a dynamic growth of Indian R&D expenditure in nominal terms. It represents a small part of all innovation-related expenditures, which are dominated by investment in machinery and equipment. As a particularly positive trend is acknowledged a gradual change in the institutional pattern of R&D funding that is an increasing share of the enterprise sector.

When it comes to indicators of innovation output, India performs well in terms of a number of scientific papers and their citation frequency. In turn, the number of international patent applications under the PCT procedure was quite low; although India reached a visible specialization in a few disciplines such as organic chemistry, pharmaceuticals and biotechnology, medical equipment and computer technology. A large number of registered trademarks, a large share of services in knowledge-intensive production and a particularly high share of technical knowledge-intensive services in service exports indicate an important role of the service sector in introducing and developing innovative solutions. In turn, the share of high and medium-high technology in exports did not exceed 30% in any given year. A merchandise pattern of high-tech exports was, as for emerging economies, rather untypical with a dominant share of pharmaceuticals and intermediate goods.

An analysis of the foreign investors operations in India suggests that in spite of the rise in FDI inflows the level of internationalization of production activities remains relatively low as compared to other emerging economies. India is also characterized by a low degree of internationalization of R&D activities, which translates into a low share of foreign enterprises in funding R&D expenditure.

Although India is particularly well known for FDI in services attracted by cost arbitrage, in fact its industrial pattern of FDI inflow is diversified. Nearly half of all investment has been located in manufacturing sector, with a high share of technology- and knowledge-intensive industries such as pharmaceuticals, automotive and electronics. There is

also taken place a gradual qualitative change in the service sector itself, that is a transition to the services of higher value added, which is reflected in a growing interest of foreign companies in investing into research, testing and technical services.

An analysis of the R&D activities of foreign investors in India shows a large variation of R&D centres controlled by them, which carries certain consequences for innovation of the Indian economy. The strength and character of their impact on innovation in the host economy largely depends on the motives driving the decision on locating a R&D unit and the place of India in the global innovation strategy of a given investor. The author distinguishes three main types of foreign R&D centres located in India depending on the dominant investment strategy: one making use of arbitrage in labour costs, one associated with meeting the demand of the local market and one focused on access to local talents. Although there was no a hard rule, the tasks of strategic importance aimed at a global market were carried out usually in the centres of the third type representing a minority among all centres. Two other types of R&D projects were rather of supportive nature (and served the needs of the global customer) or performed more sophisticated work but on products aimed at the local/regional market. The above affects thus the internal R&D pattern which shows a clear advantage of developmental works over applied research.

The expansion of Indian companies has accelerated admittedly a decade ago; however, Indian investment abroad is still relatively modest as compared to other emerging economies, especially China. At the same time it is observed an interesting trend with regard to outward FDI that is an increasing role of Indian investment targeted at seeking and taking over strategic assets, such as an access to new product lines, technological *know-how*, global portfolio of intangible assets, and highly skilled workers. Among the industries of the greatest interest of Indian investors were those considered the most advanced in terms of technology, i.e. pharmaceuticals, transport equipment, electronics, IT services and telecommunication. Such undertakings were conducted mainly in highly developed economies, which are regarded as more technologically and organizationally advanced as well as characterized by more matured consumer market owing to more demanding and educated consumers.

The econometric verification of the linkage between the internationalization of companies in the form of FDI and their innovation has not confirmed a positive impact of foreign capital neither on the likelihood of incurring R&D expenditures in the company nor on the intensity of these expenditures. At the same time it has confirmed a statistically significant positive impact of the FD inflow (foreign ownership in the ownership structure) on the probability of introducing innovations, however only for product innovation (not for process innovation). It allows to believe that these innovations were based more on developmental works than on advanced research or resulted from technology and knowledge

transfer (or ready-made solutions) from abroad. This conclusion appears to be fairly consistent with the results obtained in the equation of R&D expenditure, which suggested a lack of foreign investors' supremacy in terms of R&D intensity.

On these grounds, however, it would be unfounded to come to the conclusion that foreign investors have made no difference to R&D performance in India or more general – in emerging economies, especially when taking into account the results of qualitative research regarding their R&D operations in India. The estimates obtained in the selection and R&D intensity equations show primarily that foreign ownership was not a differentiating factor neither for the propensity of incurring R&D expenditures nor for the intensity of such expenditures. A similar result was reported by other researchers employing CDM model with regard to highly developed countries. A rationale behind this similarity may, however, differ in those two groups of economies, and many factors indicate that this might be the case. A detailed qualitative analysis of R&D activities of foreign investors in India showed that the majority of R&D projects carried out in India by the world leading innovators did not require a significant spending. It can be assumed that similar behaviour is typical also of other foreign investors conducting R&D projects in India. A relatively low capital intensity of R&D activities, being a consequence of low technological advancement of these works and their character as well as a definite place of India in the innovation strategy of the investor, stemmed to some extent from the mentioned specificity of emerging market. The last one, firstly, has a limited ability to innovate because of scarce resources, and secondly, creates a demand for a particular type of innovation.

Moreover, it can be assumed that a greater activity of foreign investors in introducing product innovations to the market as compared to Indian companies was beneficial for the development of innovation in the Indian economy. In this way foreign companies created a stimulating environment for the emergence of demonstration and competition effects, although such benefits, as shown in the second chapter, do not occur automatically. A confirmation of these and other types of *spillover* effects would require additional research.

For outward FDI of Indian companies a different result is achieved – their foreign expansion market had a positive impact on the R&D intensity, but did not influence the propensity to engage in R&D activity measured as the probability of incurring R&D expenditure. There was also no significant impact of overseas expansion of Indian companies on their propensity to innovate in both product and process innovation. A lack of statistically verified impact does not mean, however, that the presence of Indian companies in overseas markets did not affect innovative activities in the country. This influence might occur, for example, in terms of a number of new innovations implemented or qualitative changes (e.g. a transition from local to global innovation and from incremental to radical innovation).

The results may be particularly important for emerging economies, whose expectations towards foreign investors and their beneficial effects on the innovation of the economy are higher than in developed countries. This issue becomes even more interesting when compared with the estimation results for the impact of overseas expansion of Indian investors on the innovation of their home economy. The obtained estimates confirmed a positive impact of this form of internationalization on their R&D intensity. In the light of the discussion in chapter two, it seems reasonable to assume that the active internationalization of Indian MNEs positively affects their innovation. An absorption of technology and knowledge acquired by Indian investors through transnational M&As (*brownfield* investments) or through interactions with highly innovative environment in host country (*greenfield* investments), and then their further transfer to the parent company and other subsidiaries in the country of origin, required increased R&D expenditure. They might have been also stimulated to undertake intensified R&D efforts by a global innovators presence itself since MNEs from the North tend to undertake activities of higher intensity of technology and knowledge at home rather than in their foreign subsidiaries located in emerging economies. It is associated with potentially greater *spillover* effects through forward and backward linkages, as well as with stronger demonstration and competition effects.

The benefits from operations performed abroad by emerging MNEs might thereby outweigh those associated with the activity of foreign investors in emerging economies. Therefore, an expansion on mature markets may prove to be a faster and more efficient way of technological catch-up and competitiveness' improvement for companies from emerging economies than benefiting from the potential *spillover* effects related to the presence of foreign investors from the North on a given emerging market. Consequently, a strategy to support the expansion of domestic enterprises to mature foreign markets may turn out to be a more effective tool of intensifying R&D efforts and accelerating technological and innovation progress in emerging economies than a strategy of attracting FDI to the country, although the latter may also benefit innovation process, which has been already presented.

Given the above, this dissertation, in the author's humble opinion, can make a contribution to the development of economic sciences in the field of international economics, development economics and international management in both the theoretical and methodological dimension as well as empirical one. It formulates a proposition of a new paradigm in terms of building by emerging economies a strategy for innovation-driven development through their parallel active and passive internationalization. Both foreign investors in the country and indigenous companies investing abroad have an important role to play in this process.

The outline of the dissertation

List of abbreviations
List of tables
List of boxes
List of figures
List of appendices

Introductory

CHAPTER I

INNOVATION OF ECONOMY AND ITS DETERMINANTS - THEORETICAL ASPECTS

- 1.1. Basic concepts and classifications
 - 1.1.1. Innovation of economy – an attempt to define
 - 1.1.2. Innovation of economy – macro and micro perspective
 - 1.1.3. Innovation potential and technological potential
 - 1.1.4. Definition and types of innovations
 - 1.1.5. The economic dimension of innovation
- 1.2. Determinants of innovation of economy
- 1.3. Methods of measuring innovation of economy
- 1.4. Innovation of emerging economies
 - 1.4.1. The term of "emerging economy"
 - 1.4.2. The specificity of emerging economies in the field of innovation
- 1.5. Summary

CHAPTER II

IMPACT OF FOREIGN DIRECT INVESTMENT ON INNOVATION OF ECONOMY IN THE LIGHT OF THEORY AND EMPIRICAL RESEARCH

- 2.1. The impact of FDI on innovation in emerging economies
 - 2.1.1. Production and services activities of investors
 - 2.1.1.1. The effects of direct influence
 - 2.1.1.2. The effects of indirect influence (*spillover* effects)
 - 2.1.2. Reserch and development activities of investors
 - 2.1.2.1. The effects of direct influence
 - 2.1.2.2. The effects of indirect influence
 - 2.1.3. Determining factors of technology transfer and knowledge diffusion effects
 - 2.1.3.1. Factors characteristic of host economy
 - 2.1.3.2. Factors characteristic of investor
- 2.2. The role of foreign expansion of companies from emerging economies in improving innovation of home economy
 - 2.2.1. Strengthening the technological advantage by investing in foreign markets - the potential benefits
 - 2.2.1.1. Expansion abroad aimed at acquiring technology and knowledge - leaders and laggards
 - 2.2.1.2. Factors affecting technological progress of laggrads through outward FDI
 - 2.2.1.3. The benefits from seeking knowledge abroad and ways of achieving them
 - 2.2.2. Strategic assets as a motive for the expansion of companies from emerging economies
- 2.3. Summary

CHAPTER III

INNOVATION OF INDIAN ECONOMY FROM INTERNATIONAL AND NATIONAL PERSPECTIVE

- 3.1. Availability of resources for innovation
 - 3.1.1. Availability of human resources

- 3.1.2. Availability of financial resources
- 3.1.3. Availability of physical resources
- 3.2. Resources engaged in innovation process
 - 3.2.1. Human resources
 - 3.2.2. Financial resources and their allocation
- 3.3. Results of innovative activities
 - 3.3.1. Number of scientific papers and frequency of citations
 - 3.3.2. Patents and trademarks
 - 3.3.3. Technology- and knowledge-intensive production
 - 3.3.4. Trade in high-tech products
 - 3.3.5. Trade in knowledge-intensive services
 - 3.3.6. Balance in the international transfer of intellectual property rights
 - 3.3.7. Changes in productivity
 - 3.3.8. Innovation index of the Indian economy
- 3.4. The specificity of India in the field of innovation: frugal innovations
- 3.5. Summary

CHAPTER IV

THE ROLE OF FDI IN DEVELOPMENT DRIVEN BY INNOVATIONS - AN EMPIRICAL ANALYSIS FOR THE CASE OF INDIA

- 4.1. Production and service activities of foreign investors
 - 4.1.1. Motives for attracting FDI
 - 4.1.2. Magnitude and growth of inward FDI
 - 4.1.3. Industry pattern
 - 4.1.4. Country of origin
 - 4.1.5. The government policy towards inward FDI
- 4.2. Research and development activities of foreign investors
 - 4.2.1. The share of foreign investors in financing R&D
 - 4.2.2. Sector and industry pattern of R&D projects
 - 4.2.3. India's place in R&D strategies of foreign investors
- 4.3. The expansion of Indian companies on foreign markets in search of innovation sources
 - 4.3.1. Motives for expansion
 - 4.3.2. Magnitude and growth of outward FDI
 - 4.3.3. Industry pattern
 - 4.3.4. Geographical directions of expansion
 - 4.3.5. The government policy towards outward FDI
- 4.4. Impact of FDI on companies' innovation activities – analysis with use of an econometric model
 - 4.4.1. Data and description of the sample
 - 4.4.2. Model specification
 - 4.4.2.1. Justification for the model selection and its characteristic
 - 4.4.2.2. Research hypotheses
 - 4.4.2.3. Set of dependant and independant variables
 - 4.4.3. Description and analysis of parameters' estimation for equations in econometric model
- 4.5. Summary

Summary and conclusions: attempt to outline a new paradigm in terms of building strategy for innovation-driven development through a parallel active and passive internationalization

References

References (selected publications)

- Almeida P., Kogut B., *Localization of knowledge and the mobility of engineers in regional networks*, "Management Science", 1999, 45(7), pp. 905–917.
- Berry H., *Leaders, laggards, and the pursuit of foreign knowledge*, "Strategic Management Journal", 2006, 27 (2), pp. 151–168.
- Beule F. De, Bulcke D. Van Den, *Locational determinants of outward foreign direct Investment: an analysis of Chinese and Indian greenfield investments*, „Transnational Corporations”, 2012, 21(1), pp. 1–34.
- Blomström M., Kokko A., *Multinational corporations and spillovers*, "Journal of Economic Surveys", 1998, 12, pp. 247–277.
- Cantwell J., *Technological innovation and multinational corporations*, Blackwell, Oxford and Cambridge 1989.
- Chen V.Z., Li J., Shapiro D.M., *International reverse spillover effects on parent firms: Evidences from emerging-market MNEs in developed markets*, "European Management Journal", 2012, 30, pp. 204–218.
- Cohen, W., Levinthal D., *Innovation and Learning: Two Faces of R&D*, "Economic Journal", 1989, 99(397), s. 569–596.
- Collins D., *The BRIC States and Outward Foreign Direct Investment*, Oxford University Press, Oxford 2013.
- Drelich-Skulska B., *Narodowy system innowacji w Indiach na tle rozwoju gospodarczego kraju na przełomie XX i XXI wieku*, „Finanse, Rynki Finansowe, Ubezpieczenia”, Uniwersytet Szczeciński, 2013, 57, pp. 539–558.
- Driffield N., Munday M., Roberts A., *Foreign Direct Investment, Transactions Linkages, and the Performance of the Domestic Sector*, "International Journal of the Economics of Business", 2002, 9(3), pp. 335–351.
- Dunning J.H., *The Investment Development and Third World Multinationals*, in: *Multinationals from the South: New Actors in the International Economy*, K.M. Khan (ed.), Pinter Publishers, London 1986.
- Dunning J.H., *The eclectic (OLI) paradigm of international production: Past, present and future*, "International Journal of the Economics of Business", 2001, 8 (2), pp. 173–190.
- Falvey R., Foster N., Memedovic O., *The Role of Intellectual Property Rights in Technology Transfer and Economic Growth: Theory and Evidence*, "Working Papers", UNIDO, Vienna 2006.
- Fors G., *Utilization of R&D Results in the Home and Foreign Plants of Multinationals*, "Journal of Industrial Economics", 1997, 45(3), pp. 341–358.
- Gammeltoft P., *Emerging multinationals: outward FDI from the BRICS countries*, „International Journal of Technology and Globalization”, 2008, 4 (1), pp. 5–22.
- Gorg H., Strobl E., *Spillover from Foreign Firms through Worker Mobility: An Empirical Investigation*, "Scandinavian Journal of Economics", 2005, 107 (4), pp. 693–709.
- Gorynia M., *Strategie zagranicznej ekspansji przedsiębiorstw*, PWE, Warsaw 2007.
- Griffith R., Redding S., Simpson H., *Foreign ownership and productivity: new evidence from the service sector and the R&D lab*, „Oxford Review of Economic Policy”, 2004, 20(3), pp. 440–456.
- Griliches Z., *Issues in assessing the contribution of research and development to productivity growth*, "Bell Journal of Economics", 1979, 10 (1), pp. 92–116.
- Jasiński A.H., *Innowacje i transfer techniki w procesie transformacji*, Difin, Warsaw 2006.
- Kaplinsky R., *Schumacher meets Schumpeter: Appropriate technology below the radar*, "Research Policy", 2011, 40, s. 193–203.
- Kugler M., *Spillovers from foreign direct investment: Within or between industries?*, "Journal of Development Economics", 2006, 80, pp. 444–77.
- Lall S., *Multinationals, Technology and Exports*, Macmillan, London 1985.
- Lall S., *The new multinationals: The spread of third world enterprises*, Wiley, New York 1983.

- Luo Y., Tung R.L., *International expansion of emerging market enterprises: a springboard perspective*, "Journal of International Business Studies", 2007, 38(4), pp. 481–498.
- Mathews J., *Competitive advantages of the latecomer firm: a resource-based account of industrial catch-up strategies*, "Asia Pacific Journal of Management", 2002, 19 (4), pp. 467–488.
- Mathews J., *Dragon multinationals: New players in 21st century globalization*, "Asia Pacific Journal of Management", 2006, 23 (1), pp. 5–27.
- Moran T.H., *Harnessing Foreign Direct Investment for Development: Policies for Developed and Developing Countries*, Center for Global Development, Washington 2006.
- Patibandla M, Petersen B., *Role of transnational corporations in the evolution of a high-tech industry: The case of India's software industry*, "World Development", 2002, 30(9), pp. 1561–1577.
- Planning Commission, *Twelfth Five Year Plan (2012–2017): Social Sectors*, Vol. III, Government of India, New Delhi 2012.
- Pradhan J.P., Abraham V., *Overseas Mergers and Acquisitions by Indian Enterprises: Patterns and Motivations*, "Indian Journal of Economics", 2005.
- Pradhan J.P., Singh N., *Outward FDI and Knowledge Flows: A Study of the Indian Automotive Sector*, "International Journal of Institutions and Economics", 2009, 1 (1), s. 155–186.
- Ramamurti R., *What is really different about emerging market multinationals?*, "Global Strategy Journal", 2012, 2, s. 41–47.
- Smarzyńska-Javorcik B., *Does foreign direct investment increase the productivity of domestic firms? In search of spillover through backward linkages*, "The American Economic Review", 2004, 94 (3), pp. 605–627.
- Smeets R., *Collecting the pieces of the FDI knowledge spillover puzzle*, "The World Bank Research Observer", 2008, 23 (2), s. 107–138.
- Sporek T., *Rosnące znaczenie krajów BRIC*, in: *Trendy rozwojowe w gospodarce światowej*, M. Bartosik-Purgat, J. Schroeder (ed.), Wydawnictwo EU w Poznaniu, Poznań 2013, pp. 152–161.
- Starzyk K., *Bezpośrednie inwestycje zagraniczne a transfer technologii w procesie transformacji gospodarczej*, in: *Bezpośrednie inwestycje zagraniczne w Polsce*, Z. Olesiński (ed.), PWE, Warszawa 1998.
- Stiebale J., Reize F., *The Impact of FDI through Mergers and Acquisitions on Innovation in Target Firms*, "International Journal of Industrial Organization", 2011, 29(2), pp. 155–167.
- Taylor H., Nolke A., *Global players from India: A political economy perspective*, in: K.P. Sauvant, G. McAllister, W.A. Maschek (ed.), *Foreign Direct Investments from Emerging Markets: The Challenges Ahead*, Palgrave Macmillan, New York 2010, pp. 145–171.
- Teece D.J., *Technology transfer by multinational firms: The resource cost of transferring technological know-how*, "The Economic Journal", 1977, 87, pp. 242–261.
- The Economist, *Schumpeter: Frugal innovation lives on*, "The Economist", 24 January 2015, 414 (8922), p. 60.
- UNCTAD, *World Investment Report 2005: Transnational Corporations and the Internationalization of R&D*, New York and Geneva, 2005.
- UNCTAD, *World Investment Report 2013: Global Value Chains: Investment and Trade for Development*, New York-Geneva, June 2013.
- Wancio A., *Instytucjonalne determinanty rozwoju innowacyjności gospodarki Indii*, in: *W kierunku nowego ładu gospodarczego - rola Azji w XXI wieku*, J. Marszałek-Kawa, R. Gawłowski (ed.), Wydawnictwo Adam Marszałek, Toruń 2014, pp. 401–426.
- Wancio A., *Klimat inwestycyjny w Indiach*, "Management and Business Administration. Central Europe", 2012, 20(1), pp. 2–20.
- Wells L.T., *Third World Multinationals: The Rise of Foreign Investments from Developing Countries*, MIT Press, Cambridge 1983.
- Weresa M., *Polityka innowacyjna*, PWN, Warsaw 2014.
- World Economic Forum, *The Global Competitiveness Report 2013-2014*, 2013, <http://www.weforum.org/reports/global-competitiveness-report-2013-2014>