บทความวิจัย (ม.ค. – มิ.ย. 2562)

# Technology Transfer derived from Foreign Direct Investment in the Thai Automotive Industry

Ninrane Rintharawatth, National Institute of Development Administration
Faculty of Public Administration, Thailand, E-mail: nattee.ninrane@gmail.com

**Abstract**

Much literature indicates that Foreign Direct Investment (FDI) contributes benefits of technology transfer to the host country, and this study is conducted to investigate whether technology transfer is happening in Thailand or not. The platforms of data collection used for this study are interviews and analysis of the data by qualitative methods. The sampling groups are Tier 1 suppliers of Auto-Parts manufactured in Thailand. The result of this study shows the role Foreign Direct Investment (FDI) plays in the host country as Thailand that FDI does not play an important role for Technology Transfer to Thailand.

**Keywords:** Technology Transfer, Foreign Direct Investment, Thai auto parts manufacturing

**Received:** October 12, 2018, Accepted November 24, 2018

## Introduction

At present governments of most developing countries are trying to attract foreign investors by granting privileges to investors. The objective is to gain capital that may incur from foreign investment in the form of corporate income tax which is taxed both at the company level and the private level (Jorgenson and Yun, 2012) for the development of their countries (Academic Focus, 2014). Therefore, the promotion of foreign direct investment (FDI) has been used to solve financial problems for developing countries. Capital is important to the development of a country, which is used to increase economic capacity and to develop inadequate infrastructure (Velde, 2006). Thus, FDI is a favored form of investment for many countries. Effort has been put forth to encourage foreign investors to invest directly into their countries.

FDI has been increasingly popular since the 19th century, as investors wanted to participate in management to reduce their investment risk (Hymer, 1976) as well as the need for ownership (Dunning, 2001). This has made FDI became more popular than Portfolio investments. Developing countries are beginning to see more and more that FDI is an alternative that can be used in economic development and transition to the new era (OECD, 2002). Both home countries and host countries believe that FDI have positive impacts on development because FDI may contribute to the increase in productivity and technology transfer, which enhances improvement of management skills and knowledge on international

production networks as well as reducing unemployment rate and increasing the opportunity of entering international markets (Caves, 1996).

Thailand is one of the developing countries that promote FDI by granting special privileges to foreign direct investors in order to promote more foreign investment. Thailand has implemented general policies to improve the investment climate as well as using specific policies to create linkages in human resources development to enable foreign investors to effectively contribute to the development of the country (Velde, 2006). FDI in Thailand is promoted through the Board of Investment (BOI), which offers privileges to foreign investors. The rules and regulations of FDI by the BOI grant privileges at different levels in which foreign direct investors can invest a capital of 1 million baht excluding land and working capital. The criteria for approval are that there must be a value added of at least 20% of income except for agricultural, electronics and parts, and metal cutting operations which specified that there must be at least 10% value added of the revenue (Board of Investment, 2017). This study examines the potential technology transfer from FDI in Thailand. This shows whether FDI leads to the transfer of technology, and if the technology is beneficial to local suppliers in Thailand. In what aspect the knowledge from technology transfers is effective and beneficial. How local automotive parts manufacturing companies in Thailand can use the technology transferred to enhance their competitiveness.

**1. FDI Concept**

FDI is the result of changes or development of economic models in both developed and developing countries. FDI is defined in such contexts as an important form of effective international economic system and important to development (OECD, 2002), or FDI is the basis of domestic economic development, especially in developing countries (Denisia, 2010). In the past, portfolio investment was more popular than direct investment until investor behavior has begun to change. Due to the needs to increase security and stability after the investment, investors took over the control of the oversea enterprises themselves. Therefore, the direct investment rate has increased significantly (Hymer, 1976).

**2. Impact from FDI**

The factors of FDI have changed over time. FDI in developing countries has attracted attention from various countries. Governments in different countries are well aware that it is not possible to assume that the effects of FDI will only be either positive or negative (Velde, 2006).

**2.1 Positive Impact of FDI**

Many scholars have identified several positive effects of FDI. In terms of productivity growth, FDI may help to increase productivity (Caves, 1997) or contributes to the transfer of technology by stimulating the flow of superior technology from developed countries (OECD, 2002) through FDI as the main channel for technology transfer (Makki and Somwaru 2004, Caves 1997, Selma 2013 and Malhotra 2014). Even the most important strategy of R & D has been expanded to some developing countries. FDI also helps in the transfer of clean and more environmentally friendly technology (Velde, 2006). In another aspect FDI contributes to the development and human capital (Makki and Somwaru, 2004) or human resources (OECD, 2002) and improves management skills (Cave, 1996) through skill transfer training and transfer of new forms of management, and corporate practices as well as foreign management skills (Selma, 2013).

In the aspect of poverty reduction, FDI has been identified as contributing to poverty reduction in host countries (Velde, 2006) because FDI creates opportunities for employment both directly and indirectly. Direct employment is when a foreign company hires citizens in the host countries which mean that those people in that countries gain income directly from employment. Indirect employment is through the connection with a local company or industry, subcontracting to support foreign businesses, such as providing spare parts or parts to the production of the foreign companies (Selma, 2013). These supply chains extend to creating jobs for companies that have the potential to produce products for the foreign companies. It also opens up the international economic system, such as participation in the global supply chain. Manufactured parts from the host countries have the opportunity for export to other regions and countries through this supply chain. This system has helped developing countries access international markets and technology (OECD, 2002).

In addition, FDI helps create a favorable environment for business competition as FDI contributes to the development of factors of competitive advantage such as helping to strengthen business competitiveness (Selma, 2013). Examples of factors that contribute to business competitiveness include: productivities and costs, because productivities and cost are the indicators of business efficiency. If domestic companies have high business competitiveness, they will develop and also be part of the growth of the income and economy of a country. As stated in the literature of endogenous growth, FDI induces a shift towards productivity which is important for long-term economic growth due to the fact that this economic growth spreads locally. For example, in Singapore and Ireland, where countries have high local capabilities, due to improvements from FDI. Local suppliers have become global exporters and

also benefited most from direct investment in the long run. Without the increase in capacity or local links, which is a chain of value, these countries may benefit in the long term from FDI far less than it should be (Velde, 2006). However, it can still be said that FDI has a part in creating opportunities for domestic entrepreneurs (Albulescu and Tamasila, 2014). In his article, Makki and Somwaru (2004) concluded that FDI and trade led to economic growth in developing countries. FDI can increase economic growth by increasing the number of inputs, recapitalization or employment directly and/or indirectly, resulting from being a local supplier (OECD, 2002). It also helps to create new domestic companies, which are part of economic growth (Malhotra, 2014) and expansion.

**2.2 Negative Impact of FDI**

Although FDI has a number of positive effects on development, it is likely that there would be negative impacts on local companies. The factors related to the negative impact of FDI, which can be found in the literature review include: (1) trade deficit whether it is the transfer of money back to the home country or importing raw materials from abroad, which affects the balance sheet in the host country (Selma, 2013) as the existing FDI may avoid tariff restrictions that can be used to develop a host country (Velde, 2006). In the case of Serbia, which supports FDI in non-exchangeable sectors such as banking, insurance, telecommunication, real estate and retail, FDI has had a negative impact on the country in terms of development as the country does not gain the knowledge of increasing productivity and technology, and also resulted in a trade deficit because there is no export (Dimitrijevic et all, 2012). (2) Lack of political rights due to the dependence on foreign economies, which leads to the lack of political freedom (OECD, 2002), and receiving financial help may cause a loss of sovereignty and many other possible consequences (Selma, 2013). (3) Some host countries are not ready for technological development. Therefore some of the expected benefits may become non-existent (OECD, 2002). (4) Environmental impacts may occur if the law of pollution control in that country is not sufficiently tight (OECD, 2002). (5) From the fact that profits of FDI have been transferred back to the home country, the host country cannot reap the full benefits of FDI (OECD, 2002).

**3. Technology and Technology Transfer**

Technology can identify in many aspects. Technology consists of objects that have been produced as devices with the purpose of increasing human capabilities or allowing humans to perform tasks that they cannot do (Grubler, 2003) or technology as the integration of any tool or technique, any

product or process, physical devices or methods of doing or doing by potential human beings to expand ideas. In this aspect, technology is viewed as a hardware or physical product. On the contrary, technology can be described as the knowledge or know-how that is used to address the ability of organizations to support products and services to achieve their goals (Gunsel, 2015). Technology has become necessary to development in the age of globalization. However, technology development requires a high budget for research and development. In developing countries, there is a need for technology development, but not enough capital, therefore developing countries need transfer technology from developed countries to make advancement in their countries. Mostly technology is related to more than one section and may interact with other sections as part of a shared system (Jafarieh, 2001). There are many types of technology, including technology related to the product, the processes related to technology and technology related to management. Each type has different meanings; (1) Product technology refers to the knowledge that is used to produce any kind of product, 2) Process-related technologies consist of the knowledge used in the production process, organization of production information and operation of the machine, and 3) Technology related to management is the knowledge of technology used in business operations (Khan, 2011). Technology is the driving force of three major phenomena: (1) Increased efficiency may reduce pollution to the environment. (2) Reduce the use of raw materials by increasing the precision of production, such as reducing the opportunity of waste and increase the lifetime of a product (3) Reduce waste that needs to be eliminated by matching supply and demand more effectively. Although technology is a valuable asset for performance and growth, technology can worsen the situation of inequality. This is because not every company and every country would be able to receive and use the same level of technology, especially in medium and small business. Therefore, the transfer of knowledge and innovation must occur in other sectors as well not only just in the network of customers and suppliers. Information dissemination is possible through the use of institutional structures and organizations existing in the country. When these innovative management systems improve, every sector will be able to access to knowledge based technology resources and the size of the company is no longer a problem. (Kearney et al., 2017)

**Aims**

To study whether local automotive parts manufacturing companies in Thailand have received technology transfer from Car Maker companies. If the local automotive parts manufacturing companies

have received technology transfer, what types of technology local companies have received from the Car Makers? And, whether the nature of the companies affect the technology transfer.

**Methods**

This research used qualitative methods to conduct this study. The population is the private local auto parts manufacturers in Tier 1 who manufacture and assemble automotive parts by delivery directly to Car Makers. In Tier 1 ‘s companies can be categorized into 4 groups which are companies with 100% foreign shareholders, joint venture companies with more than 50% foreign shareholders, joint venture companies with at least 50% Thai shareholders and companies with 100% Thai shareholders. In this research, the researcher chose to study only Tier 1 joint venture companies with at least 50% Thai shareholders and companies with 100% Thai shareholders. Companies with 100% foreign shareholders, joint venture companies with more than 50% foreign shareholders are not included in the research because this research emphasized local business.

The interviews in this research, the researcher conducted face-to-face interviews and interview via telephone. For face to face interviews, the researcher conducted interviews with executives from Tier 1 which were owned by 100% Thai shareholders and joint ventures with at least 50% Thai shareholders. The interviewees were either the owners of the companies or senior executives who involved in management in all departments of the company or Human Resource managers who took responsibility of employees in all units of the organizations. For telephone interviews, the researcher conducted interviews with employees of companies in Tier 1 which were 100% owned by Thais shareholders and the other were joint ventures with at least 50 % Thai shareholders. Interviewees were staff members in the Human Resource or Engineering department. The nature of the interviews was similar to the face to face interviews. The telephone interviews were conducted to compare the answers and responses of the employees to those of the executives.

**Results & Discussion**

This conclusion is to answer the questions as to whether Car Makers, which make foreign direct investment in Thailand, contribute to technology transfer among the domestic automotive parts manufacturers. If technology transfer has occurred, what types of technology have been transferred? If the technologies transferred are effective, how possible it is for the local auto parts manufacturers to

enhance their development and create new corporate strategies to promote sustainable development from these technologies.

In terms of technology transfer, there were some technology being transferred and only to some companies. The results of the interview showed that the companies in the sample group received technology transfer in the areas of product and management but not in the area of process-related technology.

Based on the different characteristics of the companies, it can be concluded that the differences in proportion of Thai shareholders between the joint ventures and the wholly owned Thai companies does not affect the technology transfer from Car Makers. The results from the interviews showed that the different nature of the companies between joint ventures with more than 50% Thai shareholders and the companies with 100% Thai shareholders was not related to technology transfer from Car Makers.

Therefore, FDI is a way to increase competitiveness of developed countries. FDI may provide the potential benefits of technology transfer but not all companies that make direct investments abroad would provide benefit in terms of technology transfer. This is because technology transfer depends on many factors and whether the company may already have the knowledge of the technology required, the nature of the operation and the different policies of each company. This leads to different value added approaches. Nevertheless, FDI has stimulated the need of development in local companies due to the changing marketing style. This is part of the reason that encourages the companies in Thailand to continuously develop. Technology is one of the factors that enhance the competitiveness and increase the value of the product as well as may reduce the severity of price competition. Therefore companies with their own technology would be competitive as well as would be able to avoid the severe price competition. This encourages businesses in Thailand to develop more.

**References**

Albulescu, C., Tamasila, M. (2014). The impact of FDI on entrepreneurship in the European Countries. Procedia - Social and Behavioral Sciences 124 (2014) 219 – 228.

Board of Investment. (2017). www.boi.go.th. Bangkok. Thailand.

Caves, R. E. (1996). Multinational Enterprise and Economic Analysis. 2nd edition, London, Cambridge University Press.

Caves, R. E. (1997). Industrial organization and new findings on the turnover and mobility of firms. Discussion Paper No. 1808. Harvard Institute of Economic Research. Harvard University. Cambridge, Massachusetts 02138.

Denisia, V., (2010). Foreign Direct Investment Theories: An Overview of the Main FDI Theories. Academy of Economic Studies. European Journal of interdisciplinary Studies. Volume 2. Issue 2. December 2010.

Dimitrijevic et all,. (2012). The Impact of FDI on the Transitional Economy in Serbia – Changes and Challenges. Acta Polytechnica Hungarica. Vol. 9. No. 3. 2012.

Dunning, J. H. (2001). The Eclectic (OLI) Paradigm of International Production: Past, Presnt and Future. Int. J. of the Economics of Business. Vol. 8. No. 2, 2001, pp. 173-190.

Grubler. A. (2003). Technology and Global Change. Cambridge University Press.

Gunsel, A. (2015). Research on Effectiveness of Technology Transfer from a Knowledge Based Perspective. Procedia - Social and Behavioral Sciences. Volume 207. 20 October 2015. Pages 777 – 785.

Hymer, S. H. (1976). The International Operations of National Firms: A Study of Direct Foreign Investment. The MIT Press. Cambridge, Massachusetts.

Jafarieh, H. (2001). Technology Transfer to Developing Countries: A Quantitative Approach. Technology, Information, Management and Economics (T.I.M.E.) Research Institute.

Jorgenson, D., Yun, K. (2012): Taxation, Efficiency, and Economic Growth. Handbook of Computable General Equilibrium Modeling.

Kearney et al,. (2017). Technology and Innovation for the Future of Production: Accelerating Value Creation. World Economic Forum. Switzerland.

Khan, S. A. (2011). Technology Transfer Effectiveness through International Joint Ventures (IJVs) to Their Component Suppliers: A Study of the Automotive Industry of Pakistan.

Malhotra, B. (2014). Foreign Direct Investment: Impact on Indian Economy. Global Journal of Business Management and Information Technology. Research India Publications. ISSN 2278-3679. Volume 4. Number 1. Page 17-23.

Makki, S. M., Somwaru A. (2004). Impact of Foreign Direct Investment and trade on Economic Growth: Evidence from Developing Countries. American Journal of Agricultural Economics. February 2004.