UNIVERSITI PUTRA MALAYSIA

THE IMPACTS OF FOREIGN DIRECT INVESTMENT ON RESEARCH AND DEVELOPMENT AND INCOME INEQUALITY

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Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfillment of the requirement for the degree of Master of Science

THE IMPACTS OF FOREIGN DIRECT INVESTMENT ON RESEARCH AND DEVELOPMENT AND INCOME INEQUALITY

By

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October 2015

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This dissertation consists of two independent essays, both of which are empirical assessments of economic impacts of foreign direct investment.

The first essay investigates the impact of foreign direct investment (FDI) inflows on R&D activities in 48 developing countries, covering the 1996-2013 period. Based on the system Generalized Method of Moment (GMM) approach, our panel data analysis suggests that FDI inflows tend to discourage R&D activities in the host countries. This finding is consistent with the view that competition introduced by FDI encourages local firms to opt for a cheaper way for technology upgrading via imitation. Moreover, there is evidence that R&D activities in developing countries has benefited from imported technologies and stronger legal protection for R&D activities.

The second essay tests the impact of FDI on income inequality in ASEAN-5 countries, namely Indonesia, Malaysia, the Philippines, Singapore, and Thailand. Using the quantile regression methodology and a data set for the 1980-2013 period, the findings reveal that FDI inflows into Indonesia, Malaysia, Singapore and Thailand appear to widen income inequality. In the Philippines, FDI is found to have a reducing effect on income inequality. These findings suggest that countries with different economic environments tend to derive different benefits and costs from FDI inflows.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Master Sains

IMPAK PELABURAN LANGSUNG ASING KEATAS KAJIAN DAN PEMBANGUNAN DAN KETIDAKSEIMBANGAN PENDAPATAN

Oleh

MUHAMMAD FARHAN BIN MAHAMAD ZAKARIA

Oktober 2015

Pengerusi: Wan Azman Saini Wan Ngah, PhD
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Thesis ini mengandungi dua karangan bebas, dimana kedua-duanya merupakan penilaian empirical terhadap impak ekonomi pelaburan langsung asing.

Esei yang pertama mengkaji impak kemasukan pelaburan langsung asing (PLA) ke atas aktiviti R&D di 48 negara sedang membangun, merangkumi tempoh 1996-2013. Berdasarkan kepada kaedah *system Generalized Method of Moment* (GMM), analisis data panel menunjukkan kemasukan PLA tidak menggalakkan aktiviti R&D di negara penerima. Kajian ini selari dengan pandangan bahawa persaingan yang diwujudkan oleh PLA menggalakkan syarikat tempatan untuk menggunakan kaedah yang lebih murah untuk menaik taraf teknologi iaitu melalui kaedah peniruan. Tambahan lagi, terdapat bukti yang menunjukkan kebaikan aktiviti pengimportan teknologi dan pemantapan undang-undang perlindungan kepada aktiviti R&D.

Esei kedua menguji impak pelaburan lansung asing (PLA) ke atas ketidakseimbangan pendapatan dikalangan negara ASEAN-5, iaitu Indonesia, Malaysia, the Filipina, Singapura, dan Thailand. Dengan menggunakan metodologi regresi kuantil dan set data bagi tempoh 1980-2013, hasil kajian menunjukkan bahawa kemasukan PLA ke Indonesia, Malaysia, Singapura dan Thailand mengakibatkan peningkatan jurang ketidakseimbangan pendapatan. Di Filipina, PLA didapati mempunyai kesan pengurangan pada ketidakseimbangan pendapatan. Hasil kajian ini mencadangkan bahawa perbezaan suasana ekonomi berpotensi untuk mewujudkan perbezaan kos dan kebaikan daripada PLA.

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May Allah s.w.t bless all of them with happiness, good health and prosperity in their life here and after. InshaaAllah.

I certify that a Thesis Examination Committee has met on 9th October 2015 to conduct the final examination of Muhammad Farhan bin Mahamad Zakaria on his thesis entitled "Foreign direct investment, research and development, and income inequality" in accordance with the Universities and University Colleges Act 1971 and the Constitution of the Universiti Putra Malaysia [P.U.(A) 106] 15 March 1998. The Committee recommends that the student be awarded the Master Science of Economics.

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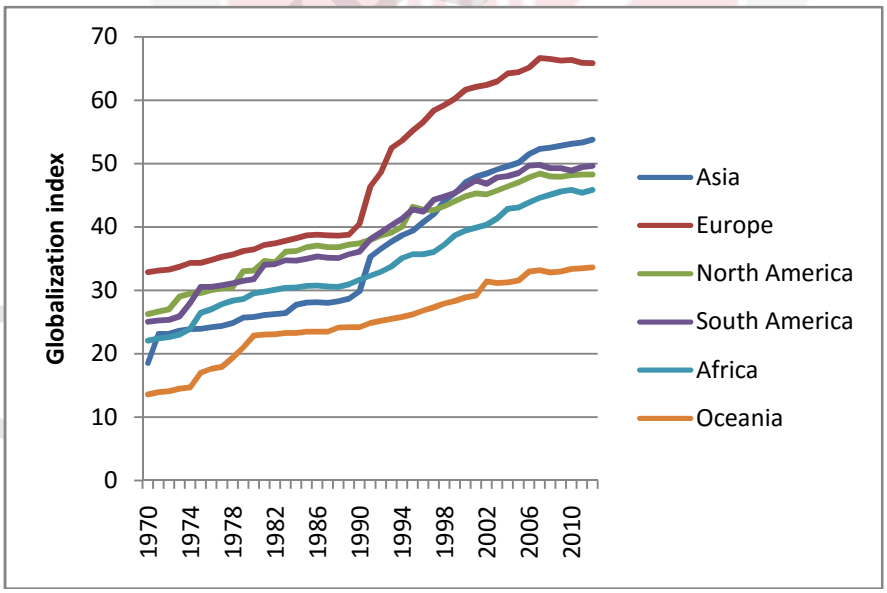
TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

ARDL	Autoregressive Distributed Lag
ASEAN	Association of South East Asian Nations
EU	European Union
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GMM	Generalized Method of Moments
HDI	Human Development Index
HOSS	Heckscher-Ohlin-Stolper-Samuelson
ICT	Information and Communication Technology
IMF	International Monetary Fund
IPR	Intellectual Property Right
ITU	International Telecommunication Union
LDCs	Least Developing Countries
MNCs	Multinational Corporations
OECD	The Organization for Economic Cooperation and Development
OLS	Ordinary Least Squares
QR	Quantile Regression
QRM	Quantile Regression Model
R&D	Research and Development
UIS	UNESCO Institute for Statistics
UN	United Nation
UNCTAD	United Nation Conference on Trade and Development
WTO	World Trade Organization



The globalization can take place via several channels such as foreign direct investment (FDI), trade and labor movement (Kleinert, 2001). Among these channels, FDI appears to be one of the popular channels. IMF (2004) defines FDI as an international investment of a resident in one economy (the direct investor) obtaining a lasting interest in an enterprise resident in another economy (the direct investment enterprise). The lasting interest implies the existence of a long-term relationship between the direct investor and the direct investment enterprise, and a significant degree of influence by the investor on the management of the enterprise. A direct investment relationship is established when the direct investor has acquired 10 percent or more of the ordinary shares or voting power of an enterprise abroad.

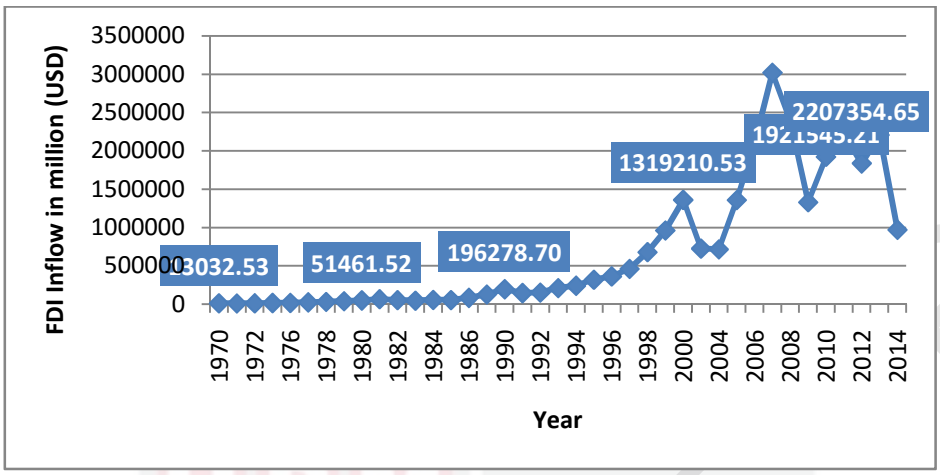
Table 1.1: Changes in national investment policies

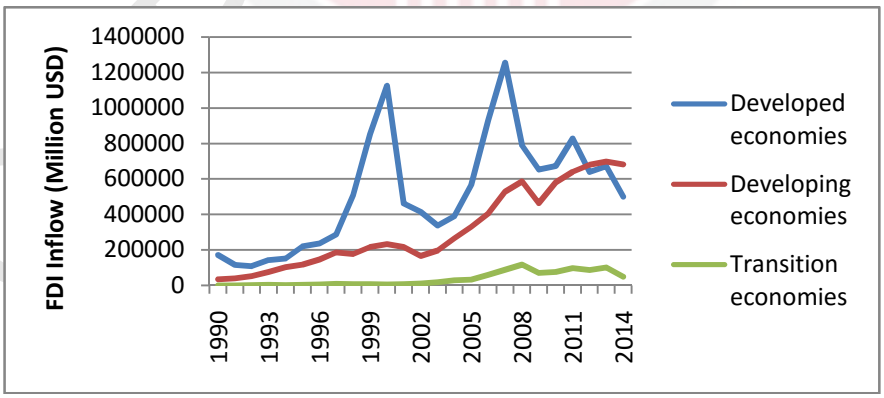
Item	2000	2002	2004	2006	2008	2010	2012	Average
Number of countries that introduced changes	45	43	80	74	41	57	53	56
Number of regulatory changes	81	94	166	132	69	112	86	106
Liberalization/promotion	75	79	144	107	51	75	61	85
Restriction/regulation	5	12	20	25	16	36	20	19

Source: UNCTAD (2013).

The theory predicts that FDI bring tremendous benefits to the host countries and therefore, policies are formulated accordingly to attract more foreign capital. Since the early 1980s, many countries (particularly developing economies) have removed regulations that limit free flow of capital across borders. Table 1.1 provides a summary of the regulatory changes made during 2000-2012 period. The table clearly shows that most of the changes were made to create more favorable environments for MNCs. For instance, an average of 106 changes in FDI laws was made during 2000-2012. Of these changes, 80 per cent were made favorable to FDI. These changes were aimed at providing incentives to foreign investors and creating an environment in which profits are guaranteed, at the same time free from unnecessary risk. These include fiscal incentives (tax and tariff exemption and low corporate tax rates), financial incentives (loan and land subsidies) and others incentives (special economic zones, infrastructure subsidies, R&D subsidies and cutting of red tape).

As a result of active efforts to attract more FDI, it is observed that the amount of foreign investment across the world had tripled since mid-70s. The World Investment Report published in 2014 shows that there is a huge increase in the amount of FDI inflows around the world since 1970. The total FDI inflows were approximately USD 13,032 million in the 1970s and increased to USD 1,3trillions in 2000. In 2013, total FDI inflow rose to USD 2,2trillions . Figure 1.2 provides a summary of world FDI inflows.





The motivation for increasing efforts to attract more FDI is based on the expectation on overall positive impact of FDI resulting from productivity gains, transfers of new technology, the introduction of new processes, management techniques, and know-how in the local market, employees' training and international production networks. Moreover, FDI is viewed as an important source of funds for capital-scarce countries and a booster for economic growth. As FDI become key for the process of economic integration, the competitiveness of firms especially in developing countries are getting more prominent. Thus firms must ensure that they are able to serve good quality products and services which are not only relevant to the needs of the domestic and global market, but also provide it at competitive prices to ensure that they are able to compete with other MNCs. Therefore, the involvement in the research and development (R&D) activities becomes crucial as a way to produce improved and better quality goods. R&D is one of the key elements to enhance production and human development in a country. Through R&D activities, new technologies or techniques can be developed to reduce costs and increase production efficiency. With new technologies, firms are able to produce higher value products and generate more profits. R&D also provides a platform for human capital development through training and improvement in labour skills. Thus it will help to ensure the sustainability of firm in the market. Many policymakers in developing countries view FDI as an important channel for technology transfer from high technology countries into their country. With the present of MNCs in developing countries, it would provide a base for the technology transfer and sharing, and over time it would spillover to the domestic firms through the competition effect, create a forward and backward linkages.

There are two arguments that support the possible effects of FDI on R&D activities in developing countries. First, the presence of MNCs in the developing countries may increase competition in the domestic market and adds pressure to local firms to provide better products and services and therefore, local firms are encouraged to take part in R&D activities. Secondly, in order for MNCs to survive in domestic markets, they have to produce reliable goods and services. To remain competitive, they also have to introduce and develop their products through R&D that suit local needs. However due to limitation in term of innovative capability and technology absorption, they tend to imitate the imported product.

In the early 80s until mid of 90s East Asian countries show a miracle growth performance. It is accounted that most of ASEAN countries progressed at a growth rate of about 8% per year during that period (World Bank, 2001). One of the contributing factors for this success is due to globalization as most of ASEAN had liberalized their economy. As a globalization take places, it has built a set of prospect especially for large firms around the world to reach out unchartered market where firms are looking for economies that offer opportunities like low-wage-labor, low tax payments, as well as other transaction cost (Celik and Baldes, 2010). The creation of free trade area which reduce tariff has encouraged more trade activities among the countries involved and thus exerting competitive pressure on domestic firms as they need to compete in order to capture the market share at lowest cost. Accordingly, one can say that trade liberalization bring low-cost product from developed countries, in which making consumer of developing countries better off as they have more purchasing power.

Although most of the Southeast Asian countries show a fast growth in economic development and FDI inflows, the benefits are found to be unevenly distributed (Chongvilaivan, 2013). Accordingly, although FDI were look as an important tools for gaining the capital funds and technology enhancing, however the benefit might be benefited certain group of peoples. For examples, the existence of MNCs in a sector that utilizes high skilled workers would demand for high skilled workers to work with them. A high skilled worker is associated with high income while low skilled workers are associated with low income received. Therefore to attract and retain high skilled workers, MNCs would utilize their superior in term of capital funds to offered higher wages to high skilled workers and thus create a gap between high skilled and low skilled workers and vice versa. Therefore it is important to observe the effect at low and high income level as it would provides a better picture on the mechanism of FDI in creating an income inequality in one country.

Observing the past trend in income inequality since the late 1980s, most of the Southeast Asian countries show an increase in income inequality, except the Philippines and Thailand. Although the aftermath of the Asian financial crisis showed a reduction in income inequality in most Southeast Asian countries, but it did not last long. There was a fluctuation in income inequality in Indonesia, followed by an increasing trend in the period 2002 to 2005. Meanwhile, Thailand has continuously experienced a widening income inequality after the crisis and Malaysia show an increase beginning 2005. In addition, the recent data published by the World Bank on income distribution reveals that Malaysia has the most uneven income distribution compared to other neighbouring countries in the region, with a 46.21 percent income inequality. Current Gini coefficient recorded at Indonesia is 35.57 per cent, Malaysia 46.26 per cent, the Philippines 43.04 per cent, Singapore 35.45 per cent and Thailand 39.26 percent (World Bank, 2013). Therefore, this research is conducted to close the gap on the issues surrounding the link between FDI, R&D and income inequality. Specifically, the purpose of this study is to:

1) Examine the determinants of R&D investment in developing countries, focusing on the role of FDI as a source of technology.
2) Examine the impact of FDI inflows on income inequality in ASEAN-5 countries.

The first objective is assessed using a generalized method of moment (GMM) panel estimator. This methodological procedure is chosen as it is able to control for country-specific effects and also dynamic effects induced by the inclusion of lag dependent variable. It is also able to overcome the problem of endogeneity. Meanwhile, the second objective is examined using quantile regression methods. This methodological approach is used to capture and assess the effect of FDI on each point of the income distribution (i.e. quantile).This method provides a pragmatic approach to understand the different impact of FDI and trade openness on income distribution.

The thesis is organized into five chapters. Chapter one provides a brief introduction to the research. Chapter two review past literature on the issue covering both theoretical and empirical perspectives. Chapter three discusses the methodology and empirical

results for a study on the impact of FDI on R&D activities in developing countries. Chapter four highlights the methodology approach and present the empirical results obtained for the second objective which focuses on the impact of FDI on income inequality in ASEAN-5 countries. Finally, chapter 5 concludes and presents some policy implications of the findings.

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