Industrial Changes and Multinational Enterprises in Vietnam

- The case of the Red River Delta -

Von der Wirtschaftswissenschaftlichen Fakultät der

Gottfried Wilhelm Leibniz Universität Hannover

zur Erlangung des akademischen Grades

Doktorin der Wirtschaftswissenschaften

- Doctor rerum politicarum –

genehmigte Dissertation

von

Thi Xuan Thu Nguyen, M.Sc.

geboren am 25.11.1985 in Hanoi (Vietnam)

2017

Acknowledgements

Zusammenfassung

Als 1986 Vietnam die Reformation seiner sozialistisch orientierten Marktwirtschaft startete, erkannte die Regierung die besondere Rolle von einheimischen und ausländischen Unternehmen für die Beschleunigung der wirtschaftlichen Entwicklung an. Dementsprechend förderte die vietnamesische Regierung ausländische Investitionen durch eine Reihe von rechtlichen und politischen Maßnahmen. Der Südosten Vietnams und das Delta des Roten Flusses(DRF) sind die beiden wichtigsten wirtschaftlichen Zentren des Landes und dadurch auch der Standort vieler staatlicher Unternehmen – dies gilt sowohl für den Zeitraum vor Doi Moi als auch danach. Gleichzeitig sind sie auch attraktive Regionen für viele multinationale Unternehmen (MNUs). Obwohl der Staat in erheblichem Maße Institutionen fördert, die den Ausbau des privaten Sektors unterstützen, erhalten staatliche Unternehmen nach wie vor eine Vorzugsbehandlung. Daher ist es aufschlussreich zu untersuchen, welchen Anteil MNUs an der industriellen Entwicklung der beiden oben genannten Regionen haben.

Das Ziel dieser Doktorarbeit ist die Darstellung der industriellen Wandlungsprozesse im DRF und dem Südosten unter Einflussnahme der MNUs. Obwohl das DRF längere Zeit unter sozialistischer Planwirtschaft stand als der Südosten und nach wie vor schlechtere Bedingungen für Privatunternehmen bietet als der Südosten, ist zu erwarten, dass der Einfluss von MNUs auf beide Regionen ähnlich ist. Die konkreten Ziele dieser Arbeit sind:

(i) den Fortbestand sowohl MNUs als auch privater einheimischer Unternehmen in Zeiten wirtschaftlichen Wandels im DRF zu untersuchen;

(ii) die Wahl der Standorte von MNUs und ihre Auswirkungen auf industrielle Konzentrationsprozesse im Delta des Roten Flusses und im Südosten zu untersuchen; und

(iii) zu untersuchen, welche Folgen es für inländische Unternehmen hinsichtlich ihres Produktivitätswachstums und von Aufwertungsprozessen hat, wenn sie ein Zulieferer von MNUs sind.

Diese Arbeit nutzt den Mikropaneldatensatz des Zensus' vietnamesischer Unternehmen für den Zeitraum von 16 Jahren, von 2000 bis 2015, sowie die Teilstudie

Zensus 2013 vietnamesischer Unternehmen über das Technologieentwicklungspotenzial des verarbeitenden Gewerbes. Bei der Analyse der dritten Forschungsfrage wurden neben den quantitativen Methoden zusätzlich auch qualitative Methoden angewandt; die Doktorarbeit beruht daher auch auf Tiefeninterviews mit 15 inländischen Zulieferern, drei MNUs und einem Schulungszentrum.

Die Ergebnisse der Doktorarbeit zeigen, dass MNUs und inländische Privatunternehmen seit der industriellen Entwicklung im DRF zunehmend an Bedeutung gewinnen, während der Stellenwert staatlicher Unternehmen sinkt. MNUs haben das Entstehen neuer industrieller Branchen im DRF befördert. Hierzu gehören die Herstellung von Radio- und Fernsehgeräten und Kommunikationsausstattung. Darüber hinaus sind neue Industriestandorte entstanden. Existieren staatliche Unternehmen am gleichen Standort, dann werden die Entwicklung und das Fortbestehen nicht-staatlicher Unternehmen behindert. Entsprechend haben Unternehmen der neu entstandenen Branchen in Provinzen mit einer geringen industriellen Basis eine höhere Wahrscheinlichkeit zu überleben als in Provinzen, die seit der sozialistischen Ära zu einem der wirtschaftlichen Zentren gehören.

Ausländische Investoren müssen, um den angestrebten Gewinn zu erzielen, einerseits die institutionellen Hindernisse umgehen und andererseits aus den Marktchancen den größtmöglichen Nutzen ziehen. Obwohl sich viele staatliche Unternehmen in Hanoi und Ho Chi Minh City, den wirtschaftliche Knotenpunkten des DRF bzw. des Südostens, befinden, entwickeln sich beide Städte dennoch weiter und sind weiterhin als Standort für Firmen attraktiv, da sie als Ballungsräume viele Vorteile bieten. Die Doktorarbeit zeigt in Übereinstimmung mit diesen Ergebnissen auch, dass Bezirke, die weniger staatliche Unternehmen beherbergen und nah bei Hanoi bzw. Ho Chi Minh City liegen, mit größerer Wahrscheinlichkeit als Standort von MNUs gewählt werden. Dies bestätigt die Attraktivität durch Agglomerationseffekten und gleichzeig, dass institutionelle Barrieren vermieden werden. Darüber hinaus zeigt sich bei der Anwendung der Indizes für anhaltende räumliche Konzentration, dass die industrielle Produktion sich in beiden Regionen zunehmend verdichtet. Interessanterweise hat das Vorhandensein von MNUs diese räumlichen Konzentrationsprozesse beschleunigt.

Aufgrund des zunehmenden Aufkommens MNUs ist es wichtig zu analysieren, ob und wenn ja wie inländische Zulieferer von ihrer Verbindung zu MNUs profitieren, um daraus entsprechende politische Maßnahmen ableiten zu können. Wenn man das Wachstum der totalen Faktorproduktivität (TFP) als Anhaltspunkt für die Weiterentwicklung von Unternehmen nimmt, zeigen Analysen anhand von „propensity score matching"-Methoden sowohl für ganz Vietnam als auch für den Südosten, dass Zulieferer höhere TFP-Wachstumsraten aufzeigen als Firmen, die keinen Kontakt zu MNUs haben. Ein anderes Bild zeigt sich jedoch im DFR: Hier zeigen sich bei den TFP-Wachstumsraten keine statistischen Unterschiede zwischen Zulieferern und Firmen, die MNUs nicht beliefern. Die qualitative Analyse, die auf Tiefeninterwies mit inländischen Zulieferern im DFR beruht, zeigt, dass Lieferanten von MNUs nicht automatisch ihre Produktivität verbessern. Es hängt von ihren Absorptionsfähigkeiten ab, ob inländische Zulieferer vollen Nutzen aus ihren Verbindungen zu MNUs ziehen können, insbesondere, wenn es um eingeschränkte und indirekte Auswirkungen geht.

Zusammenfassend lässt sich sagen, dass die Existenz von MNUs den industriellen Wandels im RFD und dem Südosten verursacht hat. Es sind insbesondere neue Branchen entstanden, es wurden neue Arbeitsplätze geschaffen und die räumliche Verdichtung des verarbeitenden Gewerbes hat immer weiter zugenommen. Auf der Mikroebene konnten im Südosten inländische Firmen, die MNUs beliefern, ihr TFP erhöhen, für das RFD lässt sich aufgrund der geringeren Aufnahmekapazität dieser Effekt aber nicht feststellen.

Schlüsselworte: Vietnam, Delta des Roten Flusses, multinationale Unternehmen, regionale Entwicklung, Fortbestehen von Unternehmen, industrielle Konzentration, Standortwahl, Rückwärtsverflechtungen, Spillover-Effekte

Abstract

Since Vietnam started the reformation of its socialist-oriented market economy in 1986 – known as Doi Moi - the government has recognized the crucial role of domestic and foreign firms in accelerating economic development. Accordingly, the Vietnamese government has encouraged foreign investment through a series of laws, policies, and instruments. The Southeast and the Red River Delta (RRD), being the two most important economic centers of Vietnam before and after Doi Moi and thus hosting many state owned enterprises (SOEs) - are still attractive to many manufacturing multinational enterprises (MNEs). It should be noted that even though there has been great effort invested in institutions supporting the private sector, SOEs still enjoy special treatments. Therefore, it is interesting to study the contribution of MNEs to the overall industrial development in both the Southeast and RRD.

The overall objective of this thesis is to assess the industrial changes in the Southeast and RRD as well as the particular role of MNEs therein. However, given that the RRD is still charactericed by remainders of the former central planning economy and provides a less friendly business environment than that of the Southeast, impacts of MNEs on these two regions are expected not to be similar. Accordingly, the specific objectives of the thesis are:

(i) To examine the survival of MNEs and of domestic private firms under the transitional conditions in the RRD;

(ii) To examine the location choice of MNEs and their impact on the industrial concentration trends in the RRD and the Southeast; and,

(iii) To examine whether being a supplier to a MNE matters for the productivity growth of domestic firms, as well as the process upgrading of those firms.

The thesis deploys the micro panel dataset Vietnam Enterprise Census for the duration of 16 continuous years from 2000 to 2015 and the sub-survey of the Vietnam Enterprise Census 2013 on the technology capabilities of manufacturing firms. Additionally, the analysis used to answer the research question for the third objective applies a combination of both quantitative and qualitative methods. Therefore, the thesis incorporates in-depth interviews with 15 domestic suppliers, three MNEs, and one training centre.

The findings of the thesis show that MNEs and domestic private firms have gained increasing importance for the industrial development in the RRD, while SOEs have been losing their significance. MNEs have introduced new industry sectors in the region, such as the manufacturing of radios, televisions, and communication equipment; helping to create emerging industrial sites. However, the presence of SOEs in the same location hinders the development and survival of non-state firms. Similarly, firms in newly introduced industries have a higher likelihood of survival in provinces which have a smaller industrial base, rather than in those centres with a larger industrial base since the previous socialist period.

In order to gain an expected profit, foreign investors on the one hand have to avoid institutional limits and on the other hand take advantage of market opportunities. Even though Hanoi and Ho Chi Minh City - the economic hubs of the RRD and the Southeast, respectively - are home of many SOEs, the positive externalities provided by the large agglomerations of these two cities are still developing and attracting further firms. As a consequence, the thesis finds that districts that have fewer SOEs and are in close proximity with Hanoi and Ho Chi Minh City have a higher probability of being selected as a destination for MNEs investment. This confirms the attraction through agglomeration externalities and at the same avoiding institutional limits. Additionally, by applying the continuous spatial concentration index, it is revealed that industrial production is becoming more concentrated in both regions. Interestingly, the presence of MNEs has accelerated these spatial concentration processes.

With the increasing presence of MNEs, understanding whether and how domestic suppliers benefit from their linkages with MNEs is crucial for policy implications. In terms of business enhancement, represented through total factor productivity (TFP) growth, analysis for all of Vietnam and the Southeast - using the propensity score matching method - shows that suppliers have gained statistically higher TFP growth over non-suppliers. However, the findings for the RRD show a different picture in which the TFP growth of suppliers and non-suppliers are not statistically different. The qualitative analysis based on in-depth interviews with domestic suppliers in the RRD indicates that being a supplier for MNEs does not automatically lead to productivity enhancement. Whether domestic

suppliers can take full advantage of linkages with MNEs, especially in the context of indirect and limited effects from MNEs, depends on their absorptive capacity.

In summary, industrial changes in the RRD and the Southeast have been taking place as a consequence of the presence of MNEs. Particularly, new industries have been introduced, more employment has been created, and the concentration levels of manufacturing industries have increased over time. At the micro level, by being suppliers to MNEs, domestic firms in the Southeast have increased their TFP. However, due to the low absorptive capacity, domestic suppliers in the RRD have not proved to gain a higher TFP growth as compared to other domestic firms.

Keywords: Vietnam, Red River Delta, Multinational Enterprises, regional development, firm survival, industrial concentration, location choice, backward linkages, spillovereffects.

Table of Contents

List of Abbreviations

ADB	Asian Development Bank
AFTA	ASEAN Free Trade Area
ATT	Average Treatment
ASEAN	Association of Southeast Asian Nations
DEA	Data Envelopment Analysis
DO	Duranton and Overman
EG	Ellison and Glaeser
Eqn.	Equation
FDI	Foreign Direct Investment
GSO	General Statistic Office
ISEAS	Institute of Southeast Asia Studies
MI	Malmquist Index
MNE	Multinational Enterprises
MOIT	Ministry of Industry and Trade
PCI	Provincial Competitiveness Index
PSM	Propensity Score Matching
QA	Quality Assurance
QC	Quality Control
R&D	Research and Development
RRD	Red River Delta
SOE	State-owned Enterprise
TFP	Total Factor Productivity
UNCTAD	United Nations Conference on Trade and Development
UNIDO	United Nations Industrial Development Organization
VN Census	Vietnam Enterprise Census
WTO	World Trade Organization

1. Introduction

1.1 Background and Problem Statement

The Vietnamese economy has been in transition from a centrally planned to a socialist market-oriented economy since 1986. In particular, the Vietnamese government recognized the role of multi-ownership structures in order to accelerate the economic development and improve the socioeconomic conditions of the nation. Accordingly, during the course of the government's economic reform (Doi Moi), new economic policies have been introduced to stimulate the presence and growth of domestic private and foreign firms. Realizing the benefits that foreign firms might bring to host countries, Vietnam has actively joined in the competition for foreign direct investment (FDI) with other countries. A law on foreign investment was promulgated in 1987 and subsequently amended five times in 1990, 1992, 1996, 2000, and 2003. The most radical change in the FDI policy was the launch of the Investment Law and the Law on Enterprise in 2005. The aim of these two new laws is to provide a level playing field for firms of all types of ownership and to create freedom of business (ADB 2005). Furthermore, the integration of Vietnam into the global economy through membership of several free trade associations, such as the ASEAN Free Trade Area and Association of Southeast Asian Nations(AFTA and ASEAN) in 1995 and World Trade Organization (WTO) in 2007 (Revilla Diez 2016), has stimulated inward FDIs. As a result, the total number of FDI projects in Vietnam in the period from 2013 to 2015 was about twenty-six times and more than five times higher than that of the period between 1988-1990 and 1998 – 2000 respectively. In 2014 Vietnam became the second most popular FDI destination after China in the Pacific Asia region (Fingar 2015).

Similar to the economic development, according to Perkins and Anh (2010), the industrial development in Vietnam has been influenced by the presence of both privately owned domestic and foreign firms. However, it should be noted that the distribution of manufacturing activities and manufacturing MNEs in Vietnam is uneven across provinces and regions (see more in Table 1 and Figure 1). MNEs are mainly located in the Southeast with Ho Chi Minh as the main economic engine and the RRD located in northern Vietnam with Hanoi as a capital and a political centre of the country. As of December 2014, around

two third of FDI funded manufacturing projects, associated with nearly 60% of the total registered FDI capital, were invested in the Southeast. The RRD was second with nearly 25 % of the total number of manufacturing MNEs in Vietnam. These two regions accounted for about 90 % of the total FDI in Vietnam (author's calculation from VN-Census). Due to its longer exposure to a market economy, the Southeast offers a more market-friendly business environment as compared to the Red River Delta (Tran et al. 2009, Jamieson 1993). According to Steer and Sen (2010), institutions are central to understanding why some regional economies have performed better than others. Therefore, it is plausible that the Southeast has attracted more MNEs than the RRD (Nguyen et al. 2004).

Table 1.1. Regional share of industrial output in % of total industrial output

	2000	2005	2010	2013
Red River Delta	**19.1**	**21.7**	**24**	**29.4**
Northern midlands and mountain areas	2.8	2.5	2.9	2.7
North Central area and Central coastal area	7.3	7	9.4	10.4
Central Highlands	0.9	0.7	0.8	0.7
South East	**54.8**	**55.7**	**50**	**44.3**
Mekong River Delta	10.6	8.8	10.1	9.3
NEC.	4.6	3.6	2.9	3.2
Whole country	**100**	**100**	**100**	**100**

Source: GSO's annual yearbooks

Figure 1.1. Manufacturing MNE distribution in Vietnam
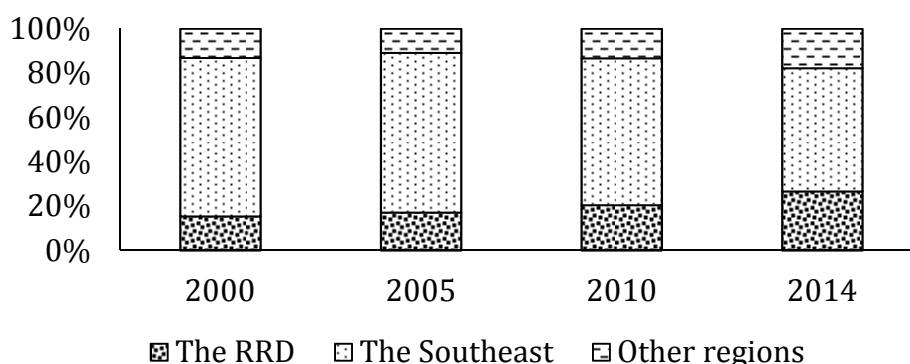
Soure: Author's calculation from VN-Census

While the Vietnamese government has transformed its economy toward a market-based one, the political system remains as it is with little change (Nestor 2007). Therefore, it is reasonable that the Vietnamese government has still remained the leading role of state owned enterprises (SOEs) in the economy (Hoang et al. 2010). Meanwhile, due to the decentralization policies, whereas SOEs have received favors (e.g. easier access to credit or land), many local governments accelerate the development of non-state sectors and compete to attract FDI. Nguyen et al. (2013) proves that it is more difficult for non-state firms to prosper on their own in locations where higher privileges have been granted to SOEs. The economic transformation of the RRD, which was driven by SOEs, is still an ongoing evolution. Therefore, the RRD constitutes an interesting case study on whether the existence of SOEs affects the survival of non-state firms in general and MNEs in particular.

Ishizuka (2010) argues that whereas private firms choose locations that guarantee the highest expected profit, SOEs might take other issues like equity and security into account for deciding places to be located. If the criteria in deciding on investments of MNEs are different from those of SOEs or other domestic firms, the emerging roles of MNEs might influence the spatial concentration patterns. Therefore, it is interesting to examine whether the locational preferences of MNEs in the two most important economic regions, the Southeast and the RRD, are different from those of SOEs. Additionally, the question arises to what extent the presence of MNEs are initiating changes in the spatial industrial structure in the Southeast and the RRD. To date there have been few studies on the impact of locational patterns of MNEs on the spatial concentration process of manufacturing industries in Vietnam. Therefore, this thesis will also shed new light on the contribution of MNEs to the spatial industrial changes in Vietnam.

In order to experience the economic growth induced by FDI, a country or a region must be able to succeed in not only attracting flows of FDI, but also by capturing the spill-over from it. Giroud (2007) emphasizes that the key consequence that MNEs might bring to the host country is the upgrading of suppliers (backward linkages) because the development of supporting industries play a crucial role in generating competiveness of firms and countries. It is widely believed that through different mechanisms (i.e., horizontal, backward, and forward linkages) domestic firms might gain spillovers of technology or

know-how arising from the presence of MNEs (Bloström and Kokko 1998, Dunning and Lundan 2008). However, the available evidence from empirical studies tells a different story; as expected from the theory (Rodrik 1999). In Vietnam, there are few studies covering the issue of backward spillover effects from MNEs on domestic firms. While Nguyen et al. (2005), Le (2008), Nguyen et al. (2008), and Nguyen (2008) show that there are positive spillover effects through backward linkages in manufacturing firms, Giroud (2007) and UNIDO (2011) observe limited linkages and spillovers between MNEs and domestic manufacturers. The mixed results of previous studies might raise the question whether the presence of MNEs automatically lead to the upgrading of domestic suppliers and how domestic suppliers in a developing country, like Vietnam, can absorb the knowledge and know-how from foreign firms.

1.2 Research Objectives

This thesis focuses on the impact of FDI on the changes in the manufacturing industries; with the RRD as the main case study. It addresses the following research objectives:

(1) To examine the survival of MNEs, as well as domestic private firms under the transitional conditions in the RRD;

(2) To examine the location choice of MNEs and their impact on the industrial concentration trends in the RRD and the Southeast of Vietnam; and,

(3) To examine to what extent the presence of MNEs accelerates the productivity growth of domestic suppliers in Vietnam either driven by efficiency gains and/or technological progress.

1.3 Data

This thesis mainly uses the firm-level data from the Vietnam enterprises census (VN-Census) for 16 consecutive years from 2000 to 2015. These compulsory censuses are conducted nationwide by the General Statistics Office (GSO) of Vietnam. The datasets provide comprehensive firm level information about the location at different geographical levels (i.e., commune, district, and province), as well as on business performance (revenue, asset, year of entrance, and year of exit, etc.). Observations with a negative total income,

total asset, and number of employees are omitted. Additionally, a tax code is used to identify firms and merge the datasets into a panel dataset.

The third essay in this thesis also deploys the additional survey of the VN-Census 2013 about the technology capabilities of manufacturing firms. This sub-survey is conducted on a random basis. It provides information on whether firms are suppliers for MNEs or not. Therefore, this data source was merged with the VN-Census 2013 and 2015 to observe the business performance of domestic firms when they become suppliers for MNEs in the RRD. After merging them together the study drops the observations in the sub-survey which started or ended in the period from 2013 to 2015. Based on the methodology used in the thesis a balanced dataset is required.

Lastly, aside from quantitative analysis, the third essay also applies qualitative analysis using 15 in-depth interviews with domestic suppliers of MNEs in the RRD. Interviews were mainly held with business owners of firms and lasted between one to two hours. Interviews covered the following two issues: i) supplier business information (i.e., main product, size, technology, R&D activities, training issues, etc.) and ii) the relationship with foreign investors (i.e., views on the presence of MNEs, supports from MNEs, learning from MNEs, etc.). These 15 suppliers were selected from the sub-survey dataset from 2013. Additionally, the essay uses interviews with three Vietnam-based MNEs and one interview with a training center.

1.4 Methodology

In order to address the research questions the thesis applies descriptive analysis, several econometric models, and a qualitative analysis. First, the descriptive analysis helps to draw a general picture on how inward FDI contribute to the industrial development in the RRD since Doi Moi. Second, the survival model and probit regression are applied to study how foreign firms, as well as domestic firms, survive under the transition conditions in the RRD. Additionally, the survival of firms in the newly introduced manufacturing industries in the region is also examined.

In the second essay, the location choice model is used to see which locational factors at the district level have an impact of the location choice decision of MNEs when they invest in

the RRD and the Southeast. Unlike other studies about the location choice of MNEs in Vietnam, which look at the provincial level, the analysis is conducted at the district level. In order to examine the location choice of foreign firms, following Cheng and Stough (2006), the conditional logit model developed by McFadden (1974) was applied. In the next step, two recently developed and increasingly popular concentration indices - the Duranton and Overman Index or DO index (Duranton and Overman 2005) and the Ellsion and Glaeser Index or EG index (Ellison and Glaeser 1997) - are calculated for manufacturing industries. With an analysis of the EG index it is possible to observe the dynamic changes in the importance of provinces – at the spatial level which is responsible for influencing the institutional quality. By treating space as continuous (Duranton and Overman, 2005), the DO index measures the 'true spatial concentration'. Contrary to studies on industrial concentration in Vietnam, which are based on cross-sectional data and on a provincial level (see. Hamaguchi et al. 2012, Howard et al. 2011), this paper is the first attempt to take advantage of a panel dataset of the VN-Census to capture the evolution of the concentration processes in manufacturing at different spatial levels (i.e., province, district, and communes). In order to examine the influence of FDI on the concentration process in the studied regions, the fixed effect regression is applied with the dependent variables, including concentration indices as suggested by Duranton and Overman (2005). Explanatory variables in the model are the proportion of FDI employment in a given industry and agglomeration effects.

Finally, the third essay combines both qualitative and quantitative methods. Regarding the empirical models, the Malmquist indices (productivity change index) which can be decomposed into the technical progress and the efficiency change are estimated for both domestic suppliers of MNEs and non-suppliers. By using the propensity score matching method, the performance of these two groups presented through the Malmquist indices are compared. In order to explore the quality of the linkages between MNEs and domestic suppliers, which may contribute to the process upgrading, a qualitative analysis with in-depth interviews that includes 15 domestic suppliers from different manufacturing sectors, three MNEs in automotive and electronics sectors, and one training center is deployed.

1.5 Structure of the Dissertation and Results

This thesis is structured into five chapters. The first chapter provides the general introduction for the thesis. Chapters 2 to 4 represent the finding of the specific objectives. Finally, Chapter 5 presents the synthesis.

Table 1.2 provides an overview of all papers included in the thesis.

Table 1.2. List of papers included in the dissertation

Paper title	Authors	Published in/Submitted to/Presented at
Survival of firms under the shadow of the socialist heritage in the Red River Delta in Vietnam since Doi Moi	Thi Xuan Thu Nguyen, Javier Revilla Diez	A part of paper was published in Geographische Rundschau. Presented in Arbeitskreis Südostasien in der Deutschen Gesellschaft für Geographie, Cologne, Germany, 2-3 June, 2014 Accepted for presentation in the Fifth Reading - UNCTAD International Business Conference, Reading, London, 13-14 June, 2015 Working paper at Geographisches Institut, Universität zu Köln
Multinational enterprises and industrial spatial concentration patterns in the Red River Delta and the Southeast Vietnam	Thi Xuan Thu Nguyen, Javier Revilla Diez	Published in *The annals of Regional Science* (2017) 59: 101 Presented in Arbeitskreis Südostasien in der Deutschen Gesellschaft für Geographie, Duisburg, 27 June, 2015 Accepted for presentation in Vietnam Forum 2016 'Vietnam: Thirty years of Doi Moi and beyond', ISEAS, Singapore, 7-8 April, 2016
Less than expected – The minor role of MNEs in upgrading domestic suppliers – The case of Vietnam	Thi Xuan Thu Nguyen, Javier Revilla Diez	Submitted to *International Business Review* Presented in the 2nd Mainz workshop on FDI and Multinational Corporation, Mainz, Germany, November, 2016 Accepted for presentation at the conference of Asian Development Bank "Entrepreneurship, Firm Dynamics, and New Technologies", Manila, Philippine, 9-10 January, 2017. URL: http://k-learn.adb.org/materials/20170109/less-expected-minor-role-mnes-upgrading-domestic-suppliers-case-vietnam

Source: Own presentation

The first paper investigates the contribution of MNEs to the general changes in the manufacturing industries in the Red River Delta since Doi Moi. Additionally, the paper examines the survival of both MNEs and domestic private firms under the shadow of the country's socialist heritage. The paper uses the descriptive analysis, survival and probit models.

The second paper explores the location choice of MNEs in the RRD and the Southeast and makes a comparison of the spatial concentration in manufacturing industries with regard to the influence of MNEs between these two regions. The paper applies the conditional logit model introduced by McFadden (1974) to examine the location choice of MNEs. Furthermore, the EG Index (Ellison and Glaeser 1997) and the DO Index (Duranton and Overman 2005) are used to measure the concentration level of manufacturing industries in the two studied regions. Afterward, a fixed effect regression on concentration indices were run to define the impact of MNEs on the spatial concentration process.

The last paper studies the linkages between MNEs and domestic suppliers in the RRD, as well as examining the impact of MNEs on the process upgrading of domestic suppliers. Both the qualitative analysis with in-depth interviews with suppliers and the quantitative analysis with the Malmquist Indices and the propensity score matching method are used in the paper.

The last part of the thesis presents a synthesis to summarize the studied results, concluding remarks, limitations of the study, and suggests further areas of potential research.

References

Bevan, A., Estrin, S., & Meyer, E. (2004) Foreign investment location and institutional development in transition economies. International Business Review 13:43–64

Blöstrom, M., & Kokko, A. (1998) Multinational Corporations and Spillovers. *Journal of Economic Surveys*, 12(3), pp.247-277

Nguyen, C., Pham, T., Bui, V., & Dapice, D. (2004) Why don't Northern provinces grow faster? *The United Nations Development Programme*

Cheng, S., & Stough, R. (2006) Location decisions of Japanese new manufacturing plants in China: a discrete choice analysis. *Ann Reg Sci* 40:369-387. doi: 10.1007/s00168-005-0052-4

Dunning, J., & Lundan, M. (2008) Multinational Enterprises and the Global Economy. Edward Elgar Publishing Ltd

Duranton, G., & Overman, G. (2005) Testing for Localization: Using Micro-Geographic Data. London: LSE Research online. Available at: http://eprints.lse.ac.uk/archive/00000581

Ellison, G., & Glaeser, L., Kerr R (2010) What Causes Industry Agglomeration ? Evidence from Coagglomeration Patterns. Am Econ Rev 100(3):1195–1213. doi: 10.3386/w13068

Fingar, C. (2015, April 21) Vietnam's inward investment surge – will it last? Financial Times. Retrieved from https://www.ft.com

Giroud, A. (2007) MNEs Vertical Linkages: The Experience of Viet Nam after Malaysia. *International Business Review*, 16(2), pp.159-176.

Hamaguchi, N., Ishizuka, F., & Sakata, S. (2012) Liberalization, Integration, and Industrial Location in Vietnam. In: Kuroiwa (Eds). Economic Integration and the Location of Industries. Palgrave Macmillan, New York, pp 43-87.

Hoang, T,, Wiboonchutikula, P., & Wiboonchutikula, B. (2010) Does Foreign Direct Investment Promote Economic Growth in Vietnam? ASEAN Economic Bulletin 27(3): 295-311

Howard, E., Newman, C., & Thijssen, J. (2011) Are Spatial Networks of Firms Random? Evidence from Vietnam. WIDER Working Paper. No. 2011/87

Ishizuka. (2010). Economic integration and changes in industrial location in Vietnam. In Kuroiwa (Ed.). *Spatial Statistics and Industrial Location in CLMV: An Interim Report*, IDE-JETRO: Chosakenkyu Hokokusho

Jamieson, N.L., 1993. Understanding Vietnam. University of California Press, Berke- ley/Los Angeles/Oxford.

Le, H. (2008) Technology Spillovers from Foreign Direct Investment in Viet Nam: Horizontal or Vertical Spillovers. Viet Nam Development Forum.

McFadden, D. (1974) Conditional Logit Analysis of Qualitative Choice Behavior, In: Zarembka, P. (Eds.), Frontiers in Econometrics, New York: Academic Press

Nguyen, T.V., Le, N., & Bryant, S. (2013). Sub-national institutions, firm strategies, and firm performance: A multilevel study of private manufacturing firms in Vietnam. *Journal of World Business*, 48, 67-76. doi: 10.1016/j.jwb.2012.06.008

Nguyen et al. (2008). Foreign direct investment in Vietnam: is there any evidence of technological spillover effects. *Development and Policies Research Center (Depocen)*. Hanoi

Nguyen, L. (2008) Productivity Spillovers from Foreign Direct Investment: Evidence from Vietnamese Firm Data. School of Commerce, University of South Australia.

Nguyen, T.T. A, Vu, H. , Tran, T., & Nguyen, H. (2005) The Impacts of Foreign Direct Investment on Economic Growth in Viet Nam. Hanoi: Science and Techniques Publishing House

Perkins, D. H., & Anh, V. (2010). Vietnam's Industrial Policy Designing Policies for Sustainable Development, 617, 1–57.

Revilla Diez, J. (2016) Vietnam 30 years after Doi Moi: achievements and challenges. *Zeitschrift für Wirtschaftsgeographie*, 60(3): 121–133

Rodrik, D. (1999) The New Global Economy and Developing Countries: Making Openness Work. Overseas Development Council (Baltimore, MD), Policy Essay No. 24.

Steer, L., &Sen, K. (2008). Informal Institutions in Transition: How Vietnam's Private Sector Boomed without Legal Protection. *IPPG Discussion Papers.*

Tran, T. B., Grafton, R., &Kompas, T. (2009). Institutions matter: The case of Vietnam. *The Journal of Socio-Economics*, *38*(1), 1–12. doi:10.1016/j.socec.2008.05.012

2. Survival of firms under the shadow of the socialist heritage in the Red River Delta in Vietnam since Doi Moi

One part of this chapter is published:

Nguyen Xuan, T., Revilla Diez, J. (2016): Industrieller Strukturwandel im Roten-Fluss-Delta seit Doi Moi. Geographische Rundschau 68 (7-8), 30-35.

Abstract

Although Vietnam's transition from central planning to a socialist-oriented market economy has led to the appearance and expansion of non-state firms, state-owned enterprises (SOEs) remain a pervasive actor of industrial life in the RRD – the political centre of Vietnam. The empirical results shed light on the negative impact of the presence of SOEs on the survival of domestic private and foreign firms in the same locations. In a similar manner, firms in industries which are new to the region have better survival chances in the new industrial sites rather than in centres that have existed since the socialist period.

Keywords: Red River Delta, foreign firms, institutional change, regional development, transition economy, firm survival

JEL classification: R11, P25, F23, L25, L60

2.1 Introduction

According to Rafiqui (2009), institutional change is a fundamental part of economic development. North (1990) considers institutions to be 'rules of the game' which could lead to a permanent change in economic structure and relationships. In the case of a transition economy like Vietnam, changing economic institutions are an integral component of the transformation of the economic system (Perkins and Anh, 2010). The collapse of the Soviet-style economic system triggered a process of economic reform towards a socialist-oriented market economy in Vietnam from the mid-1980s onwards, which is known as Doi Moi. This was followed by the introduction of new industrial policies, allowing the presence of domestic private and foreign enterprises, which have played an increasingly important role in the Vietnamese economy. In 2012, non-state sectors contributed to almost 90% of gross industrial output (GSO, 2012). Additionally, foreign firms have introduced newly emerging industries, such as the manufacture of computer, electronic and optical products, which accounted for 9.12% of gross industrial output in 2012 (GSO, 2012).

It cannot be denied that these new actors have contributed to the economic growth of Vietnam. However, consequences of past policies (Murrell, 2008) since the socialist era could distort these developments (Malesky and London, 2014). As discussed in Hannan and Freeman (1984) besides economic efficiency, institutional conditions influence the success and survival of firms. Vietnams' institutions continue to be partly shaped by the interests of state-owned enterprises (SOEs) (Tran, 2013; Pincus, 2009; Perkins and Anh, 2010), which continue to be beneficiaries rather than engines of economic growth (Malesky and London, 2014). According to Tenev et al. (2003), an institutional framework favouring SOEs restrains the development of non-state firms. However, there is no empirical evidence to date on the performance and survival of firms with regard to their ownership type (Tran, 2013). Because of the decentralisation policies, different Vietnam's regions have reformed at different level. Provinces that favour state ownership tend to emphasise the development of SOEs (Nguyen et al., 2013), while many local governments compete with each other to attract FDI and promote the development of private sectors (Meyer and Nguyen, 2005; Nguyen et al., 2013). Non-state firms in locations with less presence of SOEs

are therefore expected to have a greater likelihood of survival than their counterparts in other locations.

Against this background, this paper aims to examine the survival of non-state firms under the transitional conditions, focusing on the Red River Delta. The RRD1 constitutes an interesting case study as its industrial growth is marked by a significant contrast between the periods before and after Doi Moi. The RRD is the core political and economic region in northern Vietnam, where the planned economy under the socialist regime was established from 1954 until Doi Moi. In comparison with regions in southern Vietnam, the industrial development of the North was much slower in the first few years of Doi Moi. Due to the socialist industrialisation strategy, with its strong emphasis on heavy industry, and the massive destruction of infrastructure during the Vietnam War, the transformation of the industrial sector, which was driven by SOEs, is still ongoing. It is only recently that the RRD has begun to receive more attention from multinational enterprises. Taking advantage of the Vietnam Enterprise Census (VN Census), which was introduced in 2000, the paper addresses four research questions: (1) Which changes in the industrial composition were induced since the introduction of Doi Moi in the Red River Delta (RRD)? (2) Do firms of different ownership types have different chances of survival? (3) To what extent did the presence of SOEs in the same location, among other factors, has had an impact on the survival rate of domestic private and foreign firms? and (4) Where do firms in newly introduced industries survive better?

The following section discusses the institutions in a transition economy and the survival of firms. The third section presents a descriptive analysis of the changes in industrial trajectories in the RRD since Doi Moi. In the fourth section, the dataset used and the survival model are described. The fifth section presents and discusses the survival of domestic and foreign firms in the presence of SOEs as well as the survival of firms in newly introduced industries in the RRD. The sixth section concludes.

---

[1]The Red River Delta is located in northern Vietnam and currently includes 10 provinces: Hanoi, Vinh Phuc, Bac Ninh, Hai Duong, Hai Phong, Hung Yen, Thai Binh, Ha Nam, Nam Dinh and Ninh Binh.

2.2 Literature Review

A great deal of research has been conducted on the growth and survival of firms in developed countries where the economy is market-based and firms are free to allocate their resources and to implement their own competitive strategies (Peng and Heath, 1996; Porter, 1990). Empirical studies on firm survival are usually based on three categories of factors affecting the firm survival rate, namely firm-, industry-, and location-specific factors (Acs et al., 2007). The firm-specific factors include firm size (Mata et al., 1995), post-entry performance (Audretsch and Mahmoon 1995), the timing of entry (Klepper, 2002) and relational capital. Some studies have also identified the role of industry-specific factors, such as the development stage in the life-cycle of an industry (Agarwal and Audretsch, 2001), the technological regime or the presence of economies of scale (Audretsch, 1991) as determinants of firm survival. In contrast, other research focuses on the role of location-specific factors, which include localisation or urbanisation economies (Boschma and Wenting, 2007), economies of scale, the quality of the local labour market and so forth (Acs et al., 2007).

Amongst other factors, Dunning (2004) regards local institutions as a critical success factor for economic activities. Under the market conditions and institutions, there is a selection in which firms with fitter routines will survive and grow while unprofitable ones will contract and could exit the industry (Nelson and Winter, 1982). Institutions consist of both formal and informal rules that could facilitate or constrain economic development (North, 1990; Gertler, 2010). According to Aldrich and Auster (1986), institutions make it easier for firms to access resources, thereby enhancing firms' survival chances. However, for an economy in the initial stages of transition, institutions are often mainly a constraining factor (Smallbone and Welter, 2010). It should be noted that the socialist heritage and the recent transformations in the transition economies present an institutional environment that differs from what developed countries experience (Peng and Heath, 1996). Given this difference, exploring the survival of firms under the transitional institutions will highlight an important facet about firm survival in different institutional environments. Rafiqui (2009) argues that institutional changes are promoted by certain actors who influence the institutional adjustment via their perception, beliefs and

intentions. Continuing government involvement in the economy has characterised many transition economies (Shinkle and Kriauciunas, 2010). For example, empirical evidence on China has shown that SOEs are able to influence the government and receive better treatment than private firms (Du and Mickiewicz, 2015; Hellman et al., 2003).

During the course of Doi Moi, the Vietnamese government introduced new economic policies to accelerate the presence and growth of domestic private and foreign enterprises in Vietnam. However, due to the remains of pre-reform policies and the time required for the economic agents to become accustomed to the new framework conditions, the transition process is still ongoing (Murrell, 2008). In particular, in Vietnam's transformation from a planned economy, with the dominance of state ownership, towards a socialist-oriented market economy, the state continues to have considerable influence in the economy (Pincus, 2015). Steer and Sen (2008) prove that Vietnam's poor score in the Rule of Law Index, which is even lower than that of other countries in East Asia or China, suggests a very influential role of SOEs in shaping institutional conditions in Vietnam. Many studies confirm that SOEs lag behind non-state and foreign firms in terms of job creation and productivity (Tran, 2013; Dapice, 2006; Malesky and London, 2014; Le et al., 2013; Pincus, 2009 & 2015; Pincus et al., 2012). However, as a result of the close ties between the state and SOEs, it is no surprise that SOEs still enjoy a wide range of privileges and survive well (Tran, 2013). As mentioned by Pincus (2015:43), in Vietnam 'the market economy has developed as an extension of the party-state and not in opposition to it as is often supposed'. Because SOEs enjoy preferential access to land, credit and export quotas, fewer of these essential factors are left for the non-state firms, especially domestic private firms (Hakkala and Kokko, 2007). In conclusion, unlike non-state firms in developed countries, those in Vietnam might face obstacles caused by institutions being biased in favour of SOEs. The question arises of how non-state firms survive under these transition conditions. Due to the specific institutional features of Vietnam mentioned above, firm survival in Vietnam is expected to be impacted not only by potential determinants recognised in studies of market economies, such as firm size or locational characteristics, but also by the socialist heritage. In other words, because institutions in Vietnam are still partly shaped by the

interests of SOEs, the presence of SOEs might constrain the survival of domestic private and foreign firms.

It must be noted that in a transition economy the speed of adjustment to a market economy varies (Bevan et al., 2004). In Vietnam, in particular, the Resolution of the 8th meeting of the Central Executive Committee (Term VII) stated that "the authority and responsibility of each level of government must be clearly assigned. Central Government shall resolve the policies at the macro level. Simultaneously, the administrative system is decentralised so as to raise the sense of initiative and responsibility of local government". As a result of the Vietnamese government's emphasis on decentralisation, the survival and growth of non-state firms are influenced by the local institutional conditions. In fact, provinces that favour state ownership tend to encourage the development of SOEs (Nguyen et al., 2013), while many local governments compete with each other to attract FDI and promote the development of the private sector (Meyer and Nguyen, 2005; Nguyen et al., 2013). In locations without reformed institutions, economic activity is subjected to a considerable amount of administrative coordination owing to persistent, residual socialist values (North, 1990; Peng and Heath, 1996). Additionally, less favourable institutional conditions can be characterised by inadequate property rights, the absence of a properly regulated banking system, widespread corruption, imperfect or undeveloped financial markets and weak incentive structures (Dunning, 2004). Firms investing in transition locations are therefore believed to face higher transaction costs and to have lower chances of survival than those in locations with mature markets.

2.3 Changes in industrial development in the Red River Delta since Doi Moi

2.3.1 Institutional changes in Vietnam since Doi Moi

As mentioned in North (1990), it is impossible to understand today's economic performance without knowing the institutional evolution. We therefore trace the main institutional changes in Vietnam since the beginning of Doi Moi in 1986. The renovation policy of Vietnam initiated in 1986 marked the starting point of the transition from a planned economy, with the dominance of state ownership, towards a socialist-oriented market economy (Pincus, 2015). A number of legal frameworks on businesses were

launched and implemented. First, Decrees 2, 28 and 29 - March 1988 of the Council of Ministers clarified that the non-state sector had a right to engage in industrial production. In 1990, the government adopted for the first time the Company Law and the Private Enterprise Law, which officially acknowledged the existence of non-state sectors. The new Law on Enterprises replacing the two above laws came into effect on January 1, 2000. This law helped to remove the constraints for business activities and ensured a more transparent relationship between state and enterprises. Moreover, the procedures for business registration and business establishment were simplified. In developing countries like Vietnam, administrative procedures are fundamental restrictions on establishing new businesses (Thanh and Anh, 2010). The new Law on Enterprises was therefore a breakthrough in institutional reforms. The success of the Law on Enterprises 2000 in reforming the business environment motivated the launch of the Law on Enterprises 2005. The prime purpose of the Law on Enterprises 2005 was to create a level playing field for all enterprises regardless of whether they are state-owned or private. Regarding the investment environment for foreign investors, the Law on Foreign Investment was promulgated in 1987 and subsequently amended four times in 1990, 1992, 1996 and 2000. Finally, the Law on Investment 2005 replaced both the Law on Incentives for Domestic Investment and the Law on Foreign Investment 2000, thereby regulating the investment activities of both domestic and foreign investors in one and the same law. This law put an end to the discrimination between domestic and foreign investors and stresses freedom of business (ADB, 2005).

2.3.2 Regional industrial change in the Red River Delta since Doi Moi

According to Martin and Sunley (2006) and North (1990), the institutional changes encourage the appearance of new actors, thereby fostering structural change. In this section, the contribution of new actors to changes in the industrial composition of the RRD is described. The data used are from the VN Census database of the General Statistics Office (GSO) and the provincial yearbooks of all 10 provinces in the RRD (for a more detailed description of the VN Census, see section 4.1).

(i) The first change is the decreasing role of SOEs and the remarkably increasing role of domestic private and foreign enterprises, in terms of both employment and gross production.

Figure 2.1.Employment and gross production shares by ownership in the RRD, 1985-2012
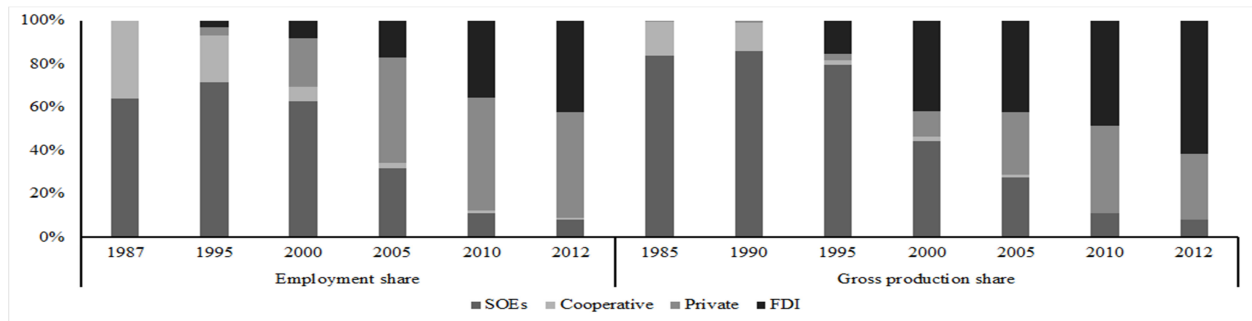
Source: Own calculation using data from the provincial year books

Figure 2.1 shows that in the first years of Doi Moi the economy was still dominated by the state and cooperatives. Following the substantial institutional reform, with the launch of the new Law on Enterprises in 2000, a considerable employment shift from SOEs and cooperatives to domestic private and foreign enterprises can be observed. The trend in the employment share by ownership is similar to the share of gross production. Interestingly, the employment share of domestic private firms has always exceeded that of foreign firms, while their gross production share has been much smaller than that of foreign firms. According to the Asian Development Bank (2005) foreign firms in Vietnam are capital-intensive and their productivity is ten times higher than the national average.

(ii) The second industrial development trend is the spatial deconcentration of employment at both district and provincial level.

Before Doi Moi, the socialist industrialisation strategy in northern Vietnam concentrated the investments in Hanoi, Hai Phong and Nam Dinh. However, the institutional changes have given rise to private firms that are free to choose where to locate (Howard et al., 2011). As a consequence, since Doi Moi new locations have emerged as industrial sites while some old industrial centres have declined in importance.

To demonstrate the deconcentration trend more clearly, spatial concentration Index - Entropy Indexes were calculated for selected years at both district and provincial level. The formula is: $E = \sum_{k=1}^{n} P . log(\frac{1}{P})$. In which P is the employment share of province or district k; n is the total number of geographic units. Maximum entropy will receive the value of log (n) when all provinces have equal shares; and the minimum is equal to 0 if employment in manufacturing is concentrated in one province.

Table 2.1. Entropy indices in the Red River Delta

			2001	2005	2008	2011
Provincial level	n=10	Max = 1	0.72	0.79	0.82	0.86
District level	n=113	Max = 2.05	1.59	1.75	1.78	1.81

Source: Own calculation using data from the VN Census

The increasing entropy indices show that the industrial structure in the RRD has been spatially deconcentrated.

(iii) Finally, new industries are concentrated in non-core regions of the RRD.

Figure 2.2. Employment and gross production shares of selected industries in the RRD, 2000 – 2012
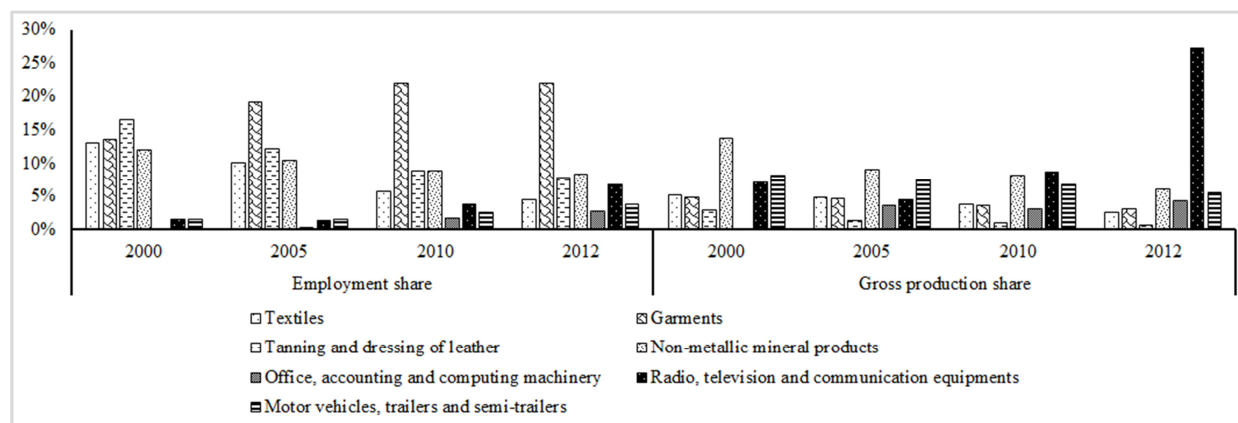
Source:Own calculation using data from the VN Census

Figure 2.2 illustrates that the employment share of industries that were established during the planned economy (henceforth named 'old industries'), such as the tanning and

dressing of leather, textiles, and heavy industry such as other non-metallic mineral products, but with the exception of garments, has declined since 2000. At the same time, the employment share of new industries2, including office, accounting and computing machinery, motor vehicles, trailers and semi-trailers, as well as radio, television and communication equipment (henceforth, named 'newly emerging industries') has increased. Similarly, the contribution of old industries to the gross production of the region has declined over the years, while newly emerging industries have experienced a positive trend, especially the manufacture of radio, television and communication equipment.

Figure 2.3. Gross production share by ownership of old and new industries in the RRD
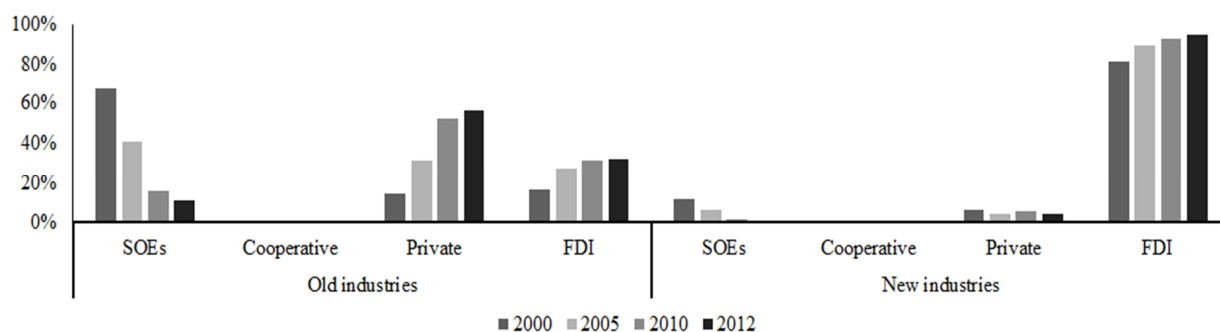
Source: Own calculation using data from the VN Census

As can be seen in figure 2.3, foreign enterprises are active in new sectors. More importantly, although domestic private firms have grown dynamically and overtaken the SOEs in the old sectors, they are still unable to develop in the new sectors. The weaknesses in internal capabilities and external networking have led to a lack of competitive advantages and innovativeness in domestic firms in Vietnam (Tran et al., 2008), impeding their entry into new sectors.

As discussed above, non-state enterprises have been free to make their own location choices since Doi Moi. The question that arises is whether the foreign firms that are responsible for the structural change are locating in the economically strong provinces of the old industrial trajectories or elsewhere.

---

[2] New industries in this paper are industries that emerged in the RRD after Doi Moi

The concentration of the three most important newly emerging manufacturing industries is measured by the Hirschman-Herfindahl index. For industry i, the concentration is calculated as follows: $G_i = \sum_{r=1}^{m}(s_{ir} - x_r)^2$. In which s_{ir} is the employment share of industry i in province r; x_r is the employment share of manufacturing in province r; m is the total number of geographic units. G_i is given the minimum value of 0 when the distribution of the given industry i mirrors that of the industrial structure of the whole region precisely. Alternatively, industry i tends to be more concentrated spatially when Gi is closer to its maximum level of 2.

Table 2.2. Hirschman-Herfindahl index of emerging industries in the RRD, 2000 -2012

Manufacturing industries	2000	2005	2010	2012
Office, Accounting And Computing Machinery	X	0.232	0.238	0.256
Radio, Television And Communication Equipment	0.275	0.184	0.088	0.191
Motor Vehicles, Trailers And Semi-trailers	0.091	0.102	0.066	0.049

Source: Own calculation using data from the VN Census

For the period from 2000 to 2010, Hanoi dominated the gross production of the entire region. However, in 2012, the gross production shares of all manufacturing industries in Hanoi and Bac Ninh were almost the same, accounting for around 30% each. The reason for the sharp increase in gross production in Bac Ninh is the high concentration of the radio, television and communication equipment industry in the province. In 2012, this newly emerging industry contributed up to 81% of the gross production. The establishment of Samsung's large-scale assembly line in Bac Ninh in 2008 was followed by other firms (56 foreign firms out of 63 in 2012) in the same industry, which consequently helped Bac Ninh to develop a cluster-like concentration (Lee and Jung, 2014).

This initial descriptive analysis has shown that since Doi Moi, domestic private and foreign firms have actively contributed to the industrial development of the RRD and have been responsible for a large employment share, the introduction of new manufacturing industries and the emergence of new industrial locations. The following empirical section examines the survival chances of firms with different ownership forms in the period of

2000 – 2012, looks at whether the presence of SOEs has a positive or negative impact on the survival rate of new actors (domestic private firms and foreign firms) and finally explores where firms in new industries have higher survival chances.

2.4. Data description and methodology

2.4.1 Data description

This paper uses firm-level data from the VN Census for 13 consecutive years from 2000 to 2012. These compulsory censuses are conducted nationwide by the General Statistics Office (GSO) of Vietnam. However, private firms with fewer than 10 employees are not fully included in the census but are surveyed on the basis of a random sample. As this research focuses on manufacturing industries, only information about companies in the manufacturing sectors coded from 15 to 36 based on the Vietnam Standard Industrial Classification 1993 was used. Enterprises without a tax code were removed from the dataset, as the tax code is used as an identifier to create a panel dataset. Furthermore, firms with fewer than 10 employees were dropped as it was not possible to observe their development trend due to the sampling method. Our analysis finally comprised 23,476 firms.

2.4.2 Empirical method

According to Essletzbichler and Rigby (2010), regional economic change is driven by competition leading to market selection processes in which new competitors emerge and challenge existing firms. Consequently, efficient firms survive and grow. In the case of Vietnam, where the institutional environment grants special privileges to SOEs, it is assumed that inefficient firms could survive. The establishment of private firms has received considerable support due to policy changes since 2000; however, an institutional framework favouring SOEs has constrained their growth (Tenev et al., 2003). We therefore apply a survival model to compare the survival chances of SOEs and non-state firms in the RRD and to identify locations where both new actors as well as firms in new manufacturing industries can survive better. We evaluate the fit of the Cox regression model with our data by using the Cox-Snell residuals. The hazard function has an approximately exponential distribution with a hazard rate of one. This means that the Cox regression model fits our

data. According to Perkins and Anh (2010), the promulgation of the new Law on Enterprises in 2000 triggered a substantial increase in the number of private firms due to the more predictable and less risky business environment. Thus, 2000-2012 is a suitable period for comparing the performance of firms on a more equal basis, although to some extent the SOEs were still enjoying greater incentives at that time. We estimate a Cox regression to assess the effects of explanatory variables on the survival of firms in the period 2000–2012, which is expressed by the hazard function. The hazard function, h(t), is a rate showing the probability of a firm experiencing an event (death). We tested the proportional hazard assumption of the Cox model in which the proportionality of the hazard of a covariate does not change over time. We ensure that the proportional hazards assumption is not violated.

There are two sets of regression models, as described below.

(i) Set 1: The objective of this part is to examine which ownership form had a higher survival rate in the period 2000-2012. Additionally, the impact of firm size and urbanisation economies on the hazard rate of firms is also considered. Mata et al. (1995) finds that smaller firms are less likely to survive. The number of employees is commonly used to represent establishment size. According to Boschma and Wenting (2007), urbanisation economies may relate to the spatial pattern of industries, because enterprises could take advantage of the availability of human resources, capital, or other inputs. Most importantly, we examine whether firms in locations with a strong presence of SOEs or foreign firms have better or poorer survival chances. As noted in Tran (2013), SOEs were one of the most important factors of the socialist economy in Vietnam. We therefore assume that locations with a strong presence of SOEs have a close relationship with pre-Doi Moi institutions. The model is defined as in Eqn. (1)

$$h(t) = [h_0(t)e]^{(\beta_1 Ownership + \beta_2 size + \beta_3 Urban + \beta_4 logNSOE + \beta_5 logNFDI + \beta_6 c.logNSOE*i.Ownership + \beta_7 c.logFDI*i.Ownership)} \quad (1)$$

For the ownership variable, we distinguish three types of ownership: (i) SOEs, (ii) domestic private firms and (iii) foreign firms.

Firm size is defined by the number of employees based on the UNIDO classification (2011). Firms with a workforce of 10 to 49 employees are micro firms, those with 50 to 99

employees are small firms, medium-sized firms have 100 to 249 employees, and finally firms with more than 249 employees are large firms.

The effect of urbanisation economies on firms' survival chances is measured using the urban and rural district classification, which is based on population density, from the report published by the GSO of Vietnam about the Population and Housing Census in 2009.

The variables logNSOE and logNFDI, represent the density of SOEs and foreign firms and are constructed for each enterpriseas the logarithmic scale of the number of SOEs or foreign firms in the district in which the firm is located. In order to examine the impact of the presence of SOEs or foreign firms on the performance of other different types of firms, we add the interaction variable of logNSOE and logNFDI with type of ownership in the regression model.

Additionally, because of the different institutional adjustments since Doi Moi, the analysis examines the same entry cohorts, focusing on which kind of ownership has a better survival rate. Three periods are distinguished according to major institutional changes. The first period is before 2000 when the Law on Incentives for Domestic Investment and the Law on Foreign Investment were launched. The second period is from 2000 to 2005. The introduction of the Law on Investment and the new Law on Enterprises marks the last entry cohort from 2006 until 2012. The last period could be regarded as the most important period for this analysis because the boom in private enterprises accelerated with the launch of the 2005 Law on Enterprises (Perkins and Anh, 2010; Thanh and Anh, 2010). In addition, due to the establishment of conglomerates since 2006, the position of SOEs, which had already been granted advantages in capital and land access previously, was improved. In June 2006, Deputy Prime Minister Nguyen Tan Dung, who had been known to have a close relationship with SOEs, became prime minister, and 'many pro-SOEs policies that resulted in a high investment rate and a large debt have been adopted since then' (Tran, 2013). Malesky and London (2014) consider post-2007 to be the period for the 'return' of SOEs in Vietnam.

Since 2006, the Vietnam Chamber of Commerce and Industry and the U.S. Agency for International Development have cooperated annually to measure the Provincial

Competitiveness Index in Vietnam (PCI). This index reflects 'economic governance areas that affect private sector development. A province that is considered to perform well on the PCI is one that has: 1) low entry costs for business start-up; 2) easy access to land and security of business premises; 3) a transparent business environment and equitable business information; 4) minimal informal charges; 5) limited time requirements for bureaucratic procedures and inspections; 6) limits on the crowding out of private activity from policy biases toward state, foreign, or connected firms; 7) proactive and creative provincial leadership in solving problems for enterprises; 8) developed and high-quality business support services; 9) sound labour training policies; and 10) fair and effective legal procedures for dispute resolution' (Provincial Competitiveness Index website). It is therefore interesting to see whether firms established in provinces with a favourable institutional environment (high PCI index) have higher survival chances. Thus, for the regression model of the last cohort, the PCI index of the province in the entry year of the firm is added as an explanatory variable.

(ii) Set 2:

As shown in the descriptive section above, after Doi Moi, foreign firms introduced several new industries into the RRD. There is a range of cases in which industries emerge outside existing industrial regions or urban centres (Storper and Walker, 1989). This could be the case in the RRD given that the existing industrial centre cannot foster the development of new entrants. It is therefore very interesting to identify locations where firms in these emerging industries can survive well. We run the Cox regression to examine in which provinces the firms in three emerging industries had a better survival rate. The industries examined are (1) office, accounting and computing machinery; (2) radio, television and communication equipment; and (3) motor vehicles, trailers and semi-trailers). In addition, once again the relationship between the presence of state-owned and foreign enterprises and the survival likelihood of firms in these sectors are studied. Therefore, three models for three industries are run and are defined as in Eqn. (2)

$$h(t) = [h_0(t)e]^{(\beta_1 province + \beta_2 logNSOE + \beta_3 logNFDI)} \quad (2)$$

2.5. Emipirical results

2.5.1 Comparison of survival rate by ownership type

Table 2.3. Estimation results of the Cox regression (1)

Variables		Model 1	Model 2	Model 3	Model 4
			Entry before	Entry from 2000-	Entry from 2006 -
		All entries	2000	2005	2012
Ownership	Private	-0.69*** (0.03)	-0.42***(0.11)	-0.568***(0.06)	-0.335(0.26)
	Foreign	-0.7***(0.06)	-0. 46*** (0.42)	-0.823***(0.10)	-1.408**(0.47)
Size	50-99 employees	-0.63***(0.03)	-0.229***(0.06)	-0.622***(0.05)	-0.984***(0.07)
	100 – 249 empl's	-0.72***(0.04)	-0.344***(0.06)	-0.729***(0.06)	-1.245***(0.10)
	> 250 empl's	-1.0***(0.05)	-0.749***(0.06)	-1.09***(0.09)	-1.346***(0.13)
Urbanisation	Rural district	0.036(0.02)	0.059(0.06)	0.101**(0.04)	-0.089* (0.04)
SOE density	logNSOE	-0.1***(0.02)	-0.102***(0.03)	-0.104*(0.05)	-0.139(0.11)
FDI density	logNFDI	0.009(0.02)	-0.025(0.03)	0.029(0.04)	0.042(0.11)
Institutional					
environment	PCI				-0.042***(0.00)
Interaction	ownership*logNSOE				
	Private	0.099***(0.02)	0.127***(0.04)	0.113**(0.05)	0.101(0.11)
	FDI	0.325***(0.05)	0.357***(0.10)	0.355***(0.09)	0.171(0.14)
	ownership*logNFDI				
	Private	0.031(0.02)	0.059(0.04)	-0.034(0.04)	0.169(0.11)
	FDI	-0.208***(0.06)	-0.314**(0.13)	-0.475**(0.10)	0.149(0.15)
	Log likelihood	-106943	-17340	-39194	-39405
	Chi square	1636***	276***	688***	1020***
	N	23476	3547	8028	11901

Standard errors in parentheses

* p<0.05, ** p<0.01, *** p<0.001

The regression results for the first three models show a relatively similar trend. Regarding the survival rates of different types of ownership, SOEs are the omitted reference group. The coefficients of all the remaining ownership types and hazard rates are negative and significant at the level of 0.1%. This implies that the performance of other

ownership types in terms of survival rates is better than SOEs. Theoretically, from an evolutionary perspective, the failure of SOEs shows their lack of fitness with the selection environment. This causes some non-state firms to grow and some SOEs to decline or even exit. However, in fact, since around 2000, many small SOEs have been equitized and privatised. The low survival rate of SOEs in general is therefore reasonable.

With regard to firm size, the regression result indicates that larger firms have a higher survival rate. The most interesting finding from the model is the negative relationship between the presence of SOEs in the same location and the survival of non-state firms. The estimation of the interaction variable between the density of SOEs and type of ownership on the hazard ratio of firms proves that the strong presence of SOEs is related to a lower survival rate of both domestic private and foreign firms. We run the probit regression for domestic private and foreign enterprises to re-examine whether the high density of SOEs in a district has a negative impact on the survival of the other firms in the same district. The model is defined as in Eqn. (3)

$$Y^* = \beta_0 + \beta_1 size + \beta_2 urban + \beta_3 logNSOE \text{ (3)}$$

Y^* is equal to 1 if the non-state enterprise exited the industry before 2012 and Y^* is equal to 0 otherwise. The result is that one unit change in the logNSOE variable increases the probability of non-state firms exiting by 0.057. Meyer and Nguyen (2005) argue that SOEs influence provincial institutions in their own interests. Although all types of ownership are subject to the 2005 Law on Competition, in some locations SOEs are still granted favourable conditions. Contacts with former line ministries and local people's committees are still very important. Nguyen and Freeman (2009) prove empirically that the higher density of SOEs in a province increases favouritism. In contrast, private firms are discriminated against in issues regarding access to land, capital and markets as well as in courts (Pincus et al., 2012)

In contrast, the presence of foreign firms in a district has no statistically significant impact on the hazard ratio of domestic private firms. Although growing rapidly, domestic private firms in Vietnam remain weak, and are not dynamic or competitive (Dapice, 2006; Hakkala and Kokko, 2007). Domestic private firms are not capable of absorbing the

knowledge spillovers from foreign firms or building up technological competences. In consequence, small and medium-sized firms find it difficult to become suppliers in higher value-added supply chains of foreign firms (Dapice, 2006). Our descriptive analysis confirms that domestic firms are not locating where new industries have been introduced by foreign firms.

As can be seen from model 4 in table 2.3, since the introduction of the Law on Investment and the new Law on Enterprises in 2005, the number of entrants, especially private domestic firms, has increased dramatically. However, the result for the period 2006–2012 does not indicate that domestic private firms have a higher survival rate than SOEs as was the case for other cohorts. On the one hand, the privileges granted to SOEs were strengthened during this period (Tran, 2013). On the other hand, domestic private firms faced a number of challenges, such as administrative obstacles or limited access to import resources, credit, capital, land, as well as information on market opportunities, which are vital for a continued expansion (Asian Development Bank, 2005, Malesky and Taussig, 2009). Moreover, the performance of domestic private enterprises in Vietnam was negatively impacted by the world financial crisis from 2007 onwards. During the crisis, SOEs continued to receive preferential access to credit schemes offered by state banks, while insufficient access to capital forced private firms to exit the market. In order to stabilise the economy during the crisis, the Vietnamese government raised interest rates and supplied money. These high interest rates prevent private firms from borrowing the necessary capital for their investment (Tran, 2013).

It is interesting that for the period 2006-2012 firms established in provinces with a higher PCI index have a higher survival likelihood. In other words, the survival chances of firms are higher where a business environment is favourable for the private sector.

2.5.2. Locations of new industries

This section tries to identify the locations preferred by foreign firms introducing new industries to the Red River Delta. The analysis focuses on three industries. Model (1) represents the office, accounting and computing machinery industry, model (2) the radio, television and communication equipment industry, and model (3) the motor vehicles, trailers and semi-trailers industry.

Table 2.4. Estimation results of the Cox regressions (2)

		(1)	(2)	(3)
	Vinh Phuc	.	0.842 (0.50)	0.137 (0.47)
	Bac Ninh	-31.98 (84940060)	-2.013* (0.78)	-0.332 (0.62)
Province	Hai Duong	1.641 (1.02)	-41.02 (297314406)	1.072*** (0.26)
	Hai Phong	0.0774 (0.94)	-0.829 (0.48)	0.152 (0.23)
	Hung Yen	4.119** (1.55)	-41.03 (967480035)	-0.225 (0.55)
SOE density	logNSOE	2.326** (0.82)	0.176 (0.13)	0.303** (0.10)
FDI density	logNFDI	-0.433 (0.56)	-0.265 (0.15)	-0.380*** (0.12)
	Chi-square	21.27***	64.16***	45.89***
	Log likelihood	-70.741808	-663.58007	-797.79332
	N	42	333	304

Standard errors in parentheses

* $p<0.05$, ** $p<0.01$, *** $p<0.001$

Hanoi is the omitted reference group. For the radio, television and communication equipment industry, only Bac Ninh has a negative and significant coefficient. Although Bac Ninh is neither a major industrial region nor an urban centre, this result confirms that this province is the preferred location for this industry in the RRD. As a neighbour of Hanoi, Bac Ninh offers locational advantages for foreign firms. Bac Ninh has been actively improving its business environment and its infrastructure. This is reflected in the PCI Index, where Bac Ninh is one of the most attractive destinations for FDI in Vietnam. In 2008, Samsung invested in this province and has about 60 part suppliers, 55 of which are 100% foreign-owned enterprises (Tuoitrenews, 2013). Together with its suppliers Samsung creates its industrial space in Bac Ninh rather than being 'hostage to the pre-existing spatial distribution of suppliers and buyers' and the institutional setting (Storper and Walker, 1989:70). Having developed almost from scratch, the local production system of the radio, television and communication equipment industry now employs more than 90,000 employees. The industry is developing its own environment. For over 38,000 workers, Samsung provides accommodation in its "technology town" (Tuoitrenews, 2014). Samsung's investment decision and the investment-friendly conditions in Bac Ninh have

helped this province to become the centre of communication equipment manufacturing in Vietnam.

2.6. Conclusion

The introduction of non-state firms after the launch of Doi Moi policies has changed the industrial structure in the Red River Delta. In particular, the SOEs, which were the main actors before the 2000s, have become less important in recent years. Furthermore, the most important locations in the pre-reform era, Hai Phong, Nam Dinh, and especially Hanoi, have lost momentum. However, the transformation in the region is still ongoing and SOEs continue to receive specified incentives in many locations. By applying the survival model, we detect that although the expansion of the private sector can be observed after Doi Moi, domestic private firms cannot be proven empirically to have survived better than SOEs since 2006. As Tran (2013) states, the Vietnamese government has aimed to establish a socialist-oriented market economy where SOEs remain an inescapable feature of the economic landscape (Malesky and London, 2014). Since 2006, support for SOEs has even been expanded (Tran, 2013) while it has been difficult for private firms to gain access to land, credit and other resources which are fundamental for development (Pincus et al. 2012; Thanh and Anh, 2010). As a consequence, competition might be distorted in places that are still locked-in by institutional arrangements that go back to the pre–Doi Moi period. Interestingly, our results from both the Cox regression and the probit regression models reveal that private domestic firms and foreign firms in locations with a strong presence of SOEs have a lower survival rate than in other locations. Similarly, for newly emerging industries where foreign firms are dominant, a higher number of SOEs in a district will decrease the survival likelihood of firms there. This is a reason for a trend in which firms in new industries avoid the traditional industrial locations and locate in places where they have better chances of surviving and developing. One example is Samsung, which introduced the manufacture of radio, television and communication equipment into Bac Ninh – a previously non-industrialised province. These results are in line with the conclusion reached by Martin and Sunley (2006:419) that 'for some years now it has been argued that old industrial regions exert a negative shadow on start-ups in newer sectors, so that 'tomorrow's' industries tend not to emerge in 'yesterday's' regions'.

The findings of this study carry two important policy implications. First, the fact that non-state firms, especially domestic ones, suffer from the presence of SOEs proves that the institutional reforms in Vietnam are not over yet. Discrimination between firms of different ownership forms should be reduced and all firms must be required to operate transparently. SOEs need to be exposed to market competition, and not be granted privileged access to credit and land. Second, the absence of domestic firms in the newly emerging industries should be a concern for policy makers. Policies should be put in place to facilitate and encourage the integration of domestic firms into global value chains as suppliers or partners of foreign firms. A substantial condition for domestic firms being included in the value chains of foreign firms is their ability to provide quality goods at reasonable prices and with timely delivery (Tran, 2013). In order to do this, domestic private firms need support to enhance their technological capabilities.

References

Acs, Z., Armington, C., & Zhang, T. (2007). The determinants of new-firm survival across regional economies: The role of human capital stock and knowledge spill over. *Papers in Regional Science*, 86(3). doi: 10.1111/j.1435-5957.2007.00129.x

Agarwal, R., & Audretsch, D. (2001) Does entry size matter? The impact of the life cycle and technology on firm survival. *Journal of Industrial Economics* 49, 21-43

Aldrich, H., & Auster, E. (1986). Even dwarfs started small: Liabilities of age and size and their strategic implications. In Staw, B. and Cummings, L. (Ed) Research in Organizational Behavior, 8: JAI Press, Greenwich, CT. 165–198.

Asian Development Bank. (2005) Private Sector Assessment in Vietnam

Audretsh, D. (1991) New-firm survival and the technological regime. *Review of Economics and Statistics* 73, 441-450.

Audretsh, D., & Mahmoon, T. (1995). New firm survival: new results using a hazard function. *Review of Economics and Statistics* 77, 97-103.

Beresford, M. (2006). Vietnam: the Transition from Central Planning. In Rodan, G. et al (Ed.) The Political Economy of Southeast Asia: Markets, power and contestation, 3rd edition. Sheck Wah Tong Printing Press Ltd, HongKong

Bevan, A., Estrin, S., & Meyer, K. E. (2004). Foreign investment location and institutional devel- opment in transition economies. *International Business Review* 13, 43–64

Boschma, R., & Wenting, R. (2007). The spatial evolution of the British automobile industry: Does location matter? *Industrial and Corporate Change* 16(2), 213–238. doi:10.1093/icc/dtm004

Boschma, R., & Frenken, K. (2003). Evolutionary economics and industry location, *Review for Regional Research* 23, 183-200.

Buenstorf, G., & Klepper, S. (2009). Heritage and Agglomeration: The Akron Tyre Cluster Revisited. *Economic Journal* 119, 705-733.

Dapice, D. (2006). Fear of Flying: Why is Sustaining Reform so Hard for Vietnam? Paper presented at the 4th High Level Roundtable Meeting – Assistance to the 20-year Review of Doi Moi in Vietnam Project, Hanoi.

Du, J., & Mickiewicz, T. (2015). Subsidies, rent seeking and performance: Being young, small or private in China, *J.Bus. Venturing*. Doi: 10.1016/j.jbusvent.2015.09.001

Dunning, J. H. (2004). Institutional reform, FDI, and European transition economies, In R. Grosse (ED) International Business and Governments in the 21st Century, Cambridge University Press.

Essletzbichler, J., & Rigby, G. (2010). Generalized Darwinism and evolutionary economic geography. In Boschma, R. and Martin, R. (Ed.). Handbook of Evolutionary Economic Geography (pp. 43-61). Cheltenham, UK and Northampton, MA, USA: Edward Elgar.

Gainsborough, M. (2010). Vietnam: Rethinking State. Silkworm Books, Thailand.

Gertler, M. S. (2010). Rules of the Game: The Place of Institutions in Regional Economic Change. *Regional Studies* 44(1), 1–15. doi:10.1080/00343400903389979

GSO (2012). Statistical year book of vietnam 2012. Statistical Publishing House, Vietnam.

Hakkala, K., & Kokko, A. (2007). The state and private sector in Vietnam. Working paper 236.

Hellman, J., JONES, G., & Kaufkmann, D. (2003). Seize the state, seize the day: state capture and influence in transition economies. *J. Comp. Econ*. 31, 751–773.

Howard E., Newman C., & Thijssen J. (2011). Are Spatial Networks of Firms Random? Evidence from Vietnam. WIDER Working Paper. No. 2011/87

Ishizuka, F. (2010). Economic integration and changes in industrial location in Vietnam. In Kuroiwa (Ed.). Spatial Statistics and Industrial Location in CLMV: An Interim Report, IDE-JETRO: Chosakenkyu Hokokusho.

Klepper, S. (2002). Firm survival and the evolution of oligopoly. RAND *Journal of Economics* 33, 37 - 61

Chapter 2. Survival of firms under the shadow of the socialist heritage

Le, H. et al. (2014). Winners and losers in Vietnam equitization programs. *Journal of Policy Modeling* 36(1), 172–184. doi:10.1016/j.jpolmod.2013.10.012

Lee, K., & Jung, M. (2015). Overseas factories, domestic employment, and technological hollowing out: a case study of Samsung's mobile phone business. *Review of World Economics*. doi 10.1007/s10290-015-0219-8

Mackinnon, D., cumbers, A., pike, A., & Birch, K. (2009). Evolution in Economic Geography: Institutions, Regional Adaptation and Political Economy. *Economic Geography* 85(2), 129-150. doi: 10.1111/j.1944-8287.2009.01017.x

Malesky, E., & Taussig, M. (2008). Where Is Credit Due? Legal Institutions, Connections, and the Efficiency of Bank Lending in Vietnam. Journal of Law, Economics, and Organization 25(2), 535–578. doi:10.1093/jleo/ewn011

Malesky, E., Schuler, P., & Tran, A. (2011). Vietnam: Familiar Patterns and New Development Ahead of 11th Party Congress. Southeast Asian Affairs, 337-363.doi: 10.1353/saa.2011.0014

Malesky, E., & London, J. (2014). The Political Economy of Development in China and Vietnam. *Annual Review of Political Science* 17(1), 395–419. doi:10.1146/annurev-polisci-041811-150032

Martin, R., & Sunley, P. (2006). Path dependence and regional economic evolution. *Journal of Economic Geography* 6(4), 395–437. doi:10.1093/jeg/lbl012

MurRell, P. (2008). Institutions and firms in transition economies, in Menard, C. and Shirley, M. (Eds). Handbook of New Institutional Economics, pp. 667-699. Netherland: Springer.

Mata, j., Portugal, P., & Guimaraes, P. (1995). The survival of new plants: start up conditions and post-entry evolution. *International Journal of Industrial Organization* 13, 380-400.

Meyer, K., & Nguyen, H. (2005). Foreign Investment Strategies and Sub-national Institutions in Emerging Markets : Evidence from Vietnam

Neffke, F., henning, m., & Boschma, R. (2011). How do regions diversify over time? Industry relatedness and the development of new growth paths in regions. *Economic Geography* 87(3), 237-265. doi: 10.1111/j.1944-8287.2011.01121.x

Nelson, R. R., & Winter, S. G. (1982). An evolutionary theory of economic change. Cambridge, Mass.: Harvard University Press

Nguyen, T., & Freeman, J. (2009). State-owned enterprises in Vietnam: Are they 'crowding out' the private sector? *Post-Communist Econ*, 21, 227–47

Nguyen, T.V., Le, N., & Bryant, S. (2013). Sub-national institutions, firm strategies, and firm performance: A multilevel study of private manufacturing firms in Vietnam. *Journal of World Business*, 48, 67-76. doi: 10.1016/j.jwb.2012.06.008

North, D. C. (Ed.) (1990). Institutions, institutional change and economic performance. Cambridge University Press.

Peng, M.W., & Heath, P. (1996). The growth of the firm in planned economies in transition: institutions, organizations, and strategic choice. *Academy of Management Review* 21, 492–528.

Perkins, D. H., & Anh, V. (2010). Vietnam's Industrial Policy Designing Policies for Sustainable Development, 617, 1–57.

Pincus, J. (2009). Vietnam: Sustaining Growth in Difficult Times. Asean Economic Bulletin, 26(1), 11–24. doi:10.1355/AE26-1B

Pincus, J. (2015). Why Doesn't Vietnam Grow Faster? State Fragmentation and the Limits of Vent for Surplus Growth. *Southeast Asian Economies*, 32(1), 26. doi:10.1355/ae32-1c

Pincus, J., Anh, V., Nghia, P., Wilkinson, B., & Thanh, N. (2012). Structural reform for growth, equity, and national sovereignty. Work. Pap., Kennedy Sch. Gov., Harvard Univ., Cambridge, MA

Porter, M. (1990). The Competitive Advantage of Nations. New York: The Free Press.

Hannan, M., & Freeman, J. (1984). Structural inertia and organizational change. *Amer. Sociological Rev*, 49, 149–164.

Rafiqui, P. (2009) Evolving economic landscapes: why new institutional economics matters for economic geography. *Journal of Economic Geography* 9, 329–353. doi:10.1093/jeg/lbn050

Schumpeter, A. (1942). Capitalism, socialism and democracy. New York: Harper & Row

Shinkle, G.A., & Kriauciunas, A.P. (2010). Institutions, size and age in transition economies: Implications for export growth. Journal of International Business Studies, 41(2), 267 – 286.

Smallbone, D., & Welter, F. (2010). Entrepreneurship and the Role of Government in Post-socialist Economies: Some Institutional Challenges. Historical Social Review, 35(2), 320-333.

Storper, M., & Walker, R. (1989). The capitalist Imperative: Territory, Technology, and Industrial Growth. Oxford: Basil Blackwell Ltd.

Steer, L., & Sen, K. (2008). Informal Institutions in Transition: How Vietnam's Private Sector Boomed without Legal Protection. IPPG Discussion Papers.

Tenev, S., Carlier, A., Chaudry, O., & Nguyen, Q. (2003). Informality and the Playing Field in Vietnam ' s Business Sector Informality and the Playing Field in Vietnam ' s Business Sector. The World Bank and the International Finance Corporation. Washington, D.C.

Thanh, V., & Anh, N. (2010) Institutional changes for private sector development in Vietnam: Experience and Lessons. In Dee, P. Institutions for Economic Reform in Asia, pp. 166-178. New York, NY: Routledge.

Tran, T. B., Grafton, R., & Kompas, T. (2009). Institutions matter: The case of Vietnam. The Journal of Socio-Economics, 38(1), 1–12. doi:10.1016/j.socec.2008.05.012

Tran T. C., Le, S., & Nguyen, A. (2008). Vietnam's Small and Medium Sized Enterprises Development: Characteristics, Constraints and Policy Recommendations. In Lim, H. (Eds), SME in Asia and Globalization, pp.323-364. ERIA Research Project Report 2007-5.

Tran, V. T. (2013). Vietnamese Economy at the Crossroads: New Doi Moi for Sustained Growth. Asian Economic Policy Review, 8, 122 – 143. doi: 10.1111/aepr.12012

Tuoitrenews (2013) Samsung Vietnam uses Korean suppliers as local firms below standard. http://tuoitrenews.vn/business/11689/samsung-vietnam-uses-korean-suppliers-as-local-firms-below-standard. Accessed 4 February 2015

3.Multinational enterprise and industrial spatial concentration patterns in the Red River Delta and Southeast Vietnam

This chapter is published:

4. Less than expected – The minor role of MNEs in upgrading domestic suppliers – the case of Vietnam

This chapter has been submitted to the *International Business Review.*

Abstract

The impact analysis of Foreign Direct Investments (FDIs) on developing countries has captured the attention of many researchers; especially, the link between FDI and domestic firms which is increasingly becoming a point of focus. Amongst the different spillover channels, backward linkages are believed to have a positive impact on upgrading local firms' technological and organizational capabilities. This study, therefore, draws on the backward spillover effects from the supplier perspective based on the Vietnam Enterprise Survey conducted by the General Statistical Office and our in-depth interviews with domestic suppliers. By using the Malmquist Index, we are able to decompose the total factor productivity (TFP) growth into technical progress and efficiency change. The overall analysis for Vietnam using the propensity score matching method shows the positive impact of being a supplier to Multinational Enterprises (MNEs) on the TFP growth and technical progress. However, the finding at the regional level presents a different picture. In contrast to the overall result for Vietnam and the most dynamic region of the country, the Southeast with Ho-Chi-Minh City, our econometric finding for the Red River Delta (RRD) indicates that the TFP growth between suppliers and non-suppliers are not statistically different. Our in-depth interviews with domestic suppliers in the RRD detect that being a supplier is one mode to enhance business performance, but this mode does not always work, particularlyfor firms supplying standardized simple products with low added value. Indeed, effects of MNEs on domestic suppliers in the RRD are much more indirect and limited due to weak technological and absorptive capabilities expressed in low level of R&D activities and human capital.

Chapter 4. Less than expected – The minor role of MNEs in upgrading domestic suppliers

4.1 Introduction

A number of developing and transition economies have given a high priority in their agenda to attract FDIs with the hope that inward FDIs directly or indirectly lead to economic growth. Particularly, FDIs could bring in new technology, new know-how and could help domestic firms to increase their productivity and competitiveness (Javorcik 2004). Unsurprisingly, Vietnam has encouraged foreign firms to invest by offering favorable conditions like fiscal incentives or physical infrastructure (UNIDO 2011).

Theoretically, the presence and entry of MNEs might cause spillover effects through different mechanisms and, as a consequence, the productivity growth of local firms (Bloström and Kokko 1998, Dunning and Lundan 2008). For example, domestic manufacturers may imitate technology or recruit employees trained by foreign firms. Even competitive pressure caused by the presence of MNEs could be seen as a motivation for domestic counterparts to introduce new technology and enhance their competences (Blomström and Kokko 1998). However, in contrast to the belief on the positive spillover effect from FDIs, a range of empirical studies show a conflictingpicture (Rodrik 1999). Studies of Görg and Greenaway (2004) and Javorcik (2004) conclude that there is no strong evidence about a gross positive spillover effect from FDIs. Plausible reasons for the negative spillover effects from MNEs could be the low absorptive capacity of domestic firms or the unwillingness of MNEs to share know-how and technology.

According to Javorcik (2004), while spillovers are more likely to take place in backward linkages in which input of MNEs are from firms in upstream industries, the impact of MNEs on domestic suppliers have not been captured properly. This is also the case in Vietnam where there are few studies covering the issue on backward spillover effects of MNEs on Vietnamese firms. The message from previous studies is that results are mixed. While Nguyen et al. (2005), Le (2008), Nguyen et al. (2008), Nguyen (2008), and Newman et al. (2015) observe positive spillover effects through backward linkages in manufacturing firms, Giroud (2007) and UNIDO (2011) find limited linkages and spillovers between MNEs and domestic manufacturers. The mixed results might imply that being a supplier to MNEs is not a sufficient condition for upgrading. The aim of our paper is to examine to what extent the presence of MNEs accelerates the productivity growth of domestic suppliers in Vietnam either driven by

efficiency gains and/or technological progress. In line with most studies in the field, we take the total factor productivity (TFP) growth as a proxy for the process upgrading of firms. However, by applying the data envelopment analysis (DEA) methodology to estimate Malmquist productivity indices, we can decompose the TFP growth into efficiency change and technical progress. As such, it is possible to explore factors contributing to productivity changes (Färe et al. 1994). Additionally, different from most previous studies which rely on input-output matrices to measure interactions amongst sectors (Javorcik 2004, Godart and Görg 2013), we have data that enables us to recognize an individual firm as a supplier of MNEs or not. Apparently, suppliers who have a direct linkage to MNEs should be influenced by MNEs differently in comparison to non-suppliers. To the best of our knowledge, Javorcik and Spatareanu (2009), Godard and Görg (2013), and Newman et al. (2015) are among the first to carry out quantitative studies on the difference in economic performance between suppliers and non-suppliers of MNEs in the host country. Based on the firm level data for Czech Republic, Javorcik and Spatareanu (2009) find that suppliers are more productive than non-suppliers. Similarly, Newman et al. (2015) find evidence of positive backward spillovers from MNEs to domestic suppliers in Vietnam. In contrast, using a dataset covering more than 1000 firms from 25 emerging economies, Godard and Görg (2013) prove that being a supplier of MNEs does not necessarily automatically help domestic firms to increase their productivity. Only those who get more demanding requirements from MNEs are more likely to gain a higher productivity growth. However, according to Potter et al. (2010), quantitative studies are unable to provide detailed information on the processes through which such spillover effects occur (Potter et al. 2010). Blomström and Kokko (1998) as well as Ivarsson and Alvstam (2005) suggest that a study on the relationship between business performance development of local firms and the presence of MNEs requires both detailed qualitative and quantitative micro data. Therefore, we decided to conduct in-depth face-to-face interviews with 15 domestic suppliers from different manufacturing industries, 3 MNEs from automobile and electronic industries, and 1 training center in the RRD to further support the results of empirical analysis using the Viet Nam Enterprise Survey carried out by the General Statistical Office of Vietnam (GSO).

Focusing on domestic suppliers, our paper assesses the TFP growth as a result of their business interaction with MNEs. We provide answers to two main research questions:

Chapter 4. Less than expected – The minor role of MNEs in upgrading domestic suppliers

(i) Are domestic suppliers of MNEs better off in terms of TFP growth than non-supplying domestic firms? If so, is this result valid throughout Vietnam or are there regional differences?

(ii) What characteristics of domestic suppliers are conducive to productivity enhancement?

Vietnam is an important case for studying the impact of MNEs' backward linkages on local firms' productivity. As an emerging economy Vietnam became the second most popular FDI destination after China in Pacific Asia in 2014 (Fingar 2015). Our empirical analysis for Vietnam as a whole demonstrates a significant difference in the productivity growth between domestic suppliers who have a direct linkage with MNEs and non-suppliers. This is also true for the Southeast Region with Ho-Chi-Minh City as economic center. However, in the Red River Delta, that difference is not statistically significant. Based on in-depth interviews with domestic suppliers, we reveal that in the RRD, effects of MNEs on the productivity upgrading of domestic suppliers are indirect and limited while internal factors like absorptive capacities are more important for the productivity growth.

This paper looks first at the literature about the impacts of MNEs on the productivity and upgrading of domestic suppliers. The next section introduces the applied methodology. Then we examine the empirical evidence of the comparison of TFP growth between suppliers and non-suppliers of MNEs and analyze the competence of domestic suppliers in productivity upgrading. Our final section provides the conclusion and draws some implications for policy.

4.2 MNEs and productivity upgrading of domestic suppliers

FDI has long been considered a major vehicle for technological and managerial knowledge transfer to firms in developing countries (Dunning 1993, Lall 2003, Fu and Gong 2010). These spillovers from foreign firms can lead to productivity growth in local firms (Fu and Gong 2010). Spillovers occur through different channels. For example, local firms imitate the technology, acquire knowledge from MNEs by being in close proximity to MNEs or being their suppliers and/or customers, or by hiring former MNE employees. Even if MNEs invest in labor intensive sectors, they are able to attract better qualified workers and/or train their workers internally so that the workers are better qualified than the average worker. By hiring employees who have worked for MNEs, domestic firms have a chance to inherit knowledge carried by these laborers and therefore could improve the firm productivity (Görg and

Greenaway, 2004). Similarly, Berger and Revilla Diez (2008) and Poole (2013) argue that labor mobility from MNEs to domestic firms could make knowledge and skills spread through the host economy. Former employees of MNEs may also use the practical knowledge acquired to start up their own business (Berger and Revilla Diez 2008). Additionally, the increasing competition caused by the presence of MNEs force local firms to use existing technology and resources more efficiently or introduce new technology (Bloström and Kokko 1998). The increased performance of domestic firms caused by the presence of MNEs in the same sector is referred to as a horizontal spillover. The transfer to the domestic firms in other sectors than that of MNEs is a vertical spillover which includes forward spillovers to buyers of MNEs and backward spillovers to their domestic suppliers (Dunning and Lundan 2008).

Amongst spillover channels, the backward spillover is likely to be most significant because while MNEs are motivated to prevent knowledge leakage to their competitors, MNEs may benefit when their suppliers enhance their productivity, achieve better delivery response, save costs, and improve product quality (Javorcik 2004, Blalock and Simon 2009, Potter et al. 2010). In other words, the backward linkage is more likely to lead to spillovers of expertise and know-how from MNEs to domestic suppliers (Blomström and Kokko 2001, Giroud and Scott-Kennel 2009, Pavlinek and Zizalova 2016). Blalock and Gertler (2009) point out that domestic suppliers who have a strong relationship with MNEs are likely to access crucial information about products, processes, and international standards. In line with this argument, McDermott and Corredoira (2010) as well as Simona and Axele (2011) suggest that the strong linkages between domestic firms and their MNE customers is particularly beneficial for their upgrading. The productivity spillovers through backward linkages could be created in the following cases (Meyer 2004, Javorcik 2004):

(i) MNEs provide assistance in technology, training of employees, finance, management and organization, or purchasing raw material (see more in Table 1);

(ii) MNEs set demanding requirements on product quality and production processes which put pressure on local suppliers to improve the productivity;

(iii) Higher demand on intermediate goods of MNEs could lead supplier benefits from economies of scale.

Table 4.1. Possible assistances provided by MNEs to domestic suppliers

TRANSFERRING TECHNOLOGY
Product technology
Provision of proprietary product know-how
Transfer of product designs and technical specifications
Technical consultations with suppliers to help them master new technologies
Feedback on product performance to help suppliers improve performance
Collaboration in R&D
Process technology
Provision of machinery and equipment to suppliers
Technical support on production planning, quality management, inspection and testing
Visits to supplier facilities to advise in layout, operations and quality
Formation of 'cooperation clubs' for interacting with or among suppliers on technical issues
Assistance to employees setting up their own firm
Organizational and managerial know-how
Assistance with inventory management and the use of just-in-time and other systems
Assistance in implementing quality assurance systems
Introduction to new practices such as network management or financial, purchase and marketing techniques
PROVIDING TRAINING
Training courses for suppliers' personnel
Offering access to internal training programs in affiliates or abroad
Sending teams of experts to suppliers to provide in-plant training
Promotion of cooperative learning among suppliers
SHARING INFORMATION
Informal exchanges of information on business plans and future requirements
Provision of annual purchase orders (for precocious planning)
Provision of market information (particular on foreign markets)
Encouraging suppliers to join business associations
PROVIDING FINANCIAL SUPPORT
Providing special or favorable pricing for suppliers' products
Helping suppliers' cash flow (e.g. through advance purchase and payment etc.)
Longer-term assistance through provision of capital, guarantee for bank loans, leasing, etc.

Source: UNCTAD, 2001: pp.142

Chapter 4. Less than expected – The minor role of MNEs in upgrading domestic suppliers

Even though studies on impacts of MNEs on host countries are plentiful, there is no consensus on the benefits and drawbacks that MNEs bring to domestic firms (for reviews, Blomström and Kokko 2003, and Javorcik 2004). Explanation on the apparent contradictions between empirical results also varies. According to Blostrőm and Kokko (2003) and Görg and Greenway (2004), the technical development level as well as locational characteristics of the host region or country may matter for the occurrence of spillovers. Consequently, differences on the spillover effects of MNEs among countries and regions should be expected (Blostrőn and Kokko 2003). Pavlinek and Zizalova (2016) argue that whether linkages have positive or negative impacts on domestic firms depends on what Cohen and Levinthal (1989) called a firm's 'learning' or 'absorptive' capacity. Blomström and Kokko (2003) conclude from the mixed finding of earlier studies that the motivation and capacity of domestic firms to absorb knowledge and skills are crucial to realize whether domestic firms are able to learn from MNEs or not. Similarly, Fu and Gong (2010) discuss that spillovers do not take place automatically as they require an effective customer-supplier linkage, absorptive capacity and human capital in local firms. As such, absorptive capacity is considered to be crucial for effective technological learning and benefiting from MNEs (Kim 1999, Meyer 2004, Berger 2007). The study of the manufacturing sectors in Venezuela by Aitken and Harrison (1999) finds no evidence of positive spillovers from MNEs due to the limitation on absorptive capacity of domestic firms. Absorptive capacity is conceptualized by Cohen and Levinthal (1989, pp.569) as the ability of firms to 'identify, assimilate and exploit knowledge from the environment'. Therefore, absorptive capacity is strongly related to R&D capabilities of firms which are strengthened by R&D investment (Cohen and Levinthal 1989). For instance, Kathuria (2000) explores that spillovers in India depend largely on the investment level of firms on R&D activities and learning. Absorptive capacity is a multi-dimensional concept (Schmidt 2008) in which its development is determined by various firms' characteristics such as the level of prior related knowledge, organizational factors, intensity of effort, and human capital (Kim 1999, Cohen and Levinthal 1990, van den Bosch et al. 2003, Berger 2007). Concerning the intensity of the effort, the capabilities of managers play a crucial role for devoting resources to R&D activities and absorptive capacity improvement (UNIDO 2014).

4.3 Data and Methodology

4.3.1. Data

In order to address the formulated research questions we apply a mixed method approach, combining quantitative and qualitative analysis. Firstly, this paper utilizes the 2013 and 2015 Viet Nam Enterprise Census Surveys (VN-Census) which were conducted compulsorily and nationwide by GSO. This data covers detailed information at the micro level like type of ownership, business sector, location, level of employment, and business performance. Additionally, we also deploy the sub-survey of the VN-Census 2013 focusing on production technology. This sub-survey is conducted randomly for manufacturing firms. It provides information on whether firms supply to MNEs or not. Therefore, we merge this data source to the VN-Census 2013 and 2015 to observe the business performance of domestic suppliers and non-suppliers of MNEs. After merging, we drop observations in the sub-survey which started or ended in the period from 2013 to 2015 because the estimation of the Malmquist Index using data envelopment analysis (DEA) requires a balanced dataset. The final dataset consists of 5,764 firms.

Even though VN-Census allows us to observe the business performance of firms and identify an individual firm as a supplier to MNEs, it lacks detailed information about the collaboration between MNEs and domestic suppliers as well as necessary characteristics of domestic suppliers in order to understand their absorptive capacity. Then after conducting our quantitative analysis, we recognized that while the presence of MNEs accelerates the TFP growth of domestic suppliers in Vietnam as a whole and the Southeast, it is not the case in the RRD. Therefore, the RRD was chosen as an in-depth case study to understand the unexpected result. In addition to the quantitative analysis the paper draws on face-to-face interviews with 15 domestic suppliers of MNEs, 3 MNEs, and 1 training center in the RRD. We select domestic firms out of the sub-survey of VN-Census 2013 who are identified as suppliers of MNEs. Interviews were hold with business manager or owners of firms and lasted between one to two hours. The interviews cover the following issues: business performance, collaboration with MNEs, technological capabilities, R&D investment, and training.

4.3.2. Methodology

Our analysis is conducted through the following steps:

(i) Firstly, we estimate the TFP growth (Malmquist index) using DEA and decompose it into technical progress and efficiency change;

(ii) Then, we apply the propensity score matching method to compare the TFP growth and its decomposed components between domestic suppliers and non-suppliers of MNEs;

(iii) Finally, the interviews will be used to explore the extent of backward linkages and absorptive capacity of domestic suppliers in more detail.

Total factor productivity growth estimation using the Malmquist productivity Index

The Malmquist productivity index (MI) is one of the important indices for estimating the relative productivity change of observations over time. Following the methodology of Färe et al. (1994), we combine input and output information of observations for both time t and t+1 to specify whether the TFP change is driven by technical progress (Techch) or efficiency change (Effch). Technical progress is caused by technological innovation, technology diffusion, and the introduction of new machines whilst the better management of production processes, resource allocation, and scale efficiency lead to efficiency change (UNIDO 2014).

TFP growth is given by a geometric mean of two Malmquist productivity indices and estimated based on the ratios of distance functions of observation at time t and t + 1. Färe et al. (1994) specify the Malmquist TFP growth index as follow:

$$M_0(x^{t+1}, y^{t+1}, x^t, y^t) = \left[\left(\frac{D_0^t(x_0^{t+1}, y_0^{t+1})}{D_0^t(x_0^t, y_0^t)} \right) \left(\frac{D_0^{t+1}(x_0^{t+1}, y_0^{t+1})}{D_0^{t+1}(x_0^t, y_0^t)} \right) \right]^{\frac{1}{2}}$$

When M_0 equals to 1 that means no change in productivity from t to t+1. M_0>1 indicate productivity growth and M_0<1 shows the opposite trend.

The Malmquist index could be decomposed into technical progress and efficiency change. In particular, the change in the distance that the observed production is far from the maximum potential production is efficiency change. Technical change is measured by shifts in the technological frontier. As such, an equivalent way of showing M_0 is:

$$M_0(x^{t+1}, y^{t+1}, x^t, y^t) = \frac{D_0^{t+1}(x^{t+1}, y^{t+1})}{D_0^t(x^t, y^t)} * \left[\left(\frac{D_0^t(x^{t+1}, y^{t+1})}{D_0^{t+1}(x^{t+1}, y^{t+1})} \right) \left(\frac{D_0^t(x^t, y^t)}{D_0^{t+1}(x^t, y^t)} \right) \right]^{\frac{1}{2}}$$

Where efficiency change $= \frac{D_0^{t+1}(x^{t+1}, y^{t+1})}{D_0^t(x^t, y^t)}$

And technical change $= \left[\left(\frac{D_0^t(x^{t+1}, y^{t+1})}{D_0^{t+1}(x^{t+1}, y^{t+1})} \right) \left(\frac{D_0^t(x^t, y^t)}{D_0^{t+1}(x^t, y^t)} \right) \right]^{\frac{1}{2}}$

Similar to M_0, the value of efficiency change or technical change larger than 1 means improvement, while the value less than 1 shows deterioration in performance. It should be noted that these components of Malmquist indices may move in opposite directions. For instance, a Malmquist index greater than 1 may have a technical change less than 1 and an efficiency change greater than 1.

Like Färe et al. (1994) we measure Malmquist indices using non-parametric programming methods. The input for our model includes the number of employees, capital (net fixed assets), and intermediate cost. The output is the total firm output.

Propensity score matching

The average treatment effect on being a supplier of MNEs follows the model of Heckman and Navarro-Lozano (2004):

$$ATT = E(Y_{1i} - Y_{0i}) | D = 1) = E(Y_{1i} | D = 1) - E(Y_{0i} | D = 1)$$

in which ATT denotes the average treatment effect on the treated, which measures the impact of being a supplier of MNEs on the TFP growth of domestic firms. D is a binary dummy variable which is equal to 1 if a firm is a supplier of MNEs in 2013 and 0 if otherwise. Y_{1i} and Y_{0i} are outcomes of firm i in the case of being a supplier and not being a supplier respectively. Nonetheless, we are not able to measure the outcome of a supplier in case it was not a supplier($Y_{0i} | D = 1$). Our solution is to apply PSM which is introduced by Rosenbaum and Rubin (1983). The propensity score matching allows us to form matched sets of treated and untreated observations which have a similar value of the propensity score (Rosenbaum and Rubin 1983). In our paper, the treated groups are firms which are suppliers of MNEs and the untreated groups are non-suppliers. Then, the effect of treatment (hereafter it is being a supplier of MNEs) on outcomes (hereafter are TFP growth, technical progress, and efficiency change) is estimated by comparing outcomes directly between treated and untreated

observations (Greenland, Pearl, and Robins 1999). By doing so, we can observe whether the firms in two groups who share the similar characteristic in 2013 would enhance their TFP differently or not.

Characteristic variables we use to estimate the propensity score are: firm size, TFP in 2013[3], training for employees, presence of MNEs in a given district, proportion of MNEs' employees in a given industry. We include the density of MNEs in the district as well as a proportion of MNEs' employees in a given industry into the model to control for spillovers caused by the geographical proximity or the competition with MNEs. We apply nearest neighborhood and the Kernel matching method to estimate the difference in outcome between being suppliers of MNEs and not.

Analysis of the interviews

We follow the principles of qualitative content analysis suggested by Schreier (2013). The data was coded through coding guidelines with terms derived from the theoretical framework (Schreier 2013) based on the possible supports of MNEs to domestic suppliers (UNCTAD 2001), backward spillovers (Dunning and Lundan 2008), and absorptive capacity of firms (Cohen and Levinthal 1990). In order to explore supports from MNEs and the extent of backward linkages, we identify the following aspects: (i) supports of MNEs to domestic suppliers, and (ii) sources for the new technology and knowledge of domestic suppliers. Regarding absorptive capacity of domestic firms, we cover these issues: firm specific (i) technological capabilities, (ii) R&D activities, and (iii) human resource policies. These firms are from different manufacturing sectors and produce different kinds of products, like shell transformers, threaded connectors, jigs and molds, packaging foam, or plastic products. Almost all firms are small and medium sized, except for two firms each with a total of around 400 employees. The overview of 15 interviewed domestic firms and the summary of the interview results are presented in Appendices 1 and 2 respectively.

4.4 Some characteristics of the industrial development in the Red River Delta and the Southeast

Since the start of a market-oriented economic reform (Doi Moi) in 1986, the Vietnamese government has attempted to attract FDI through a series of laws, policies and instruments.

---

[3] TFP of firms is estimated through a method proposed by Levinsohnand Petrin (2003)

As a consequence, the inward FDI into Vietnam has increased dramatically and by 2011 there had been 13600 FDI projects (UNIDO 2011). The geographical distribution of FDI projects, especially manufacturing ones, is highly concentrated in the Southeast region and the Red River Delta. In 2015, the Southeast and the RRD accounted for 45% and 27% respectively of FDI manufacturing employees in Vietnam (see more in Figure 4.1). The better economic development and the higher attractiveness to MNEs of the Southeast compared to the RRD and other regions in Vietnam is widely explained by its more market-friendly business environment due to its longer exposure to the market economy until the reunification of Vietnam in 1975 (Cung et al. 2004).

Figure 4.1. Industrial development by regions in Vietnam, 2000-2015
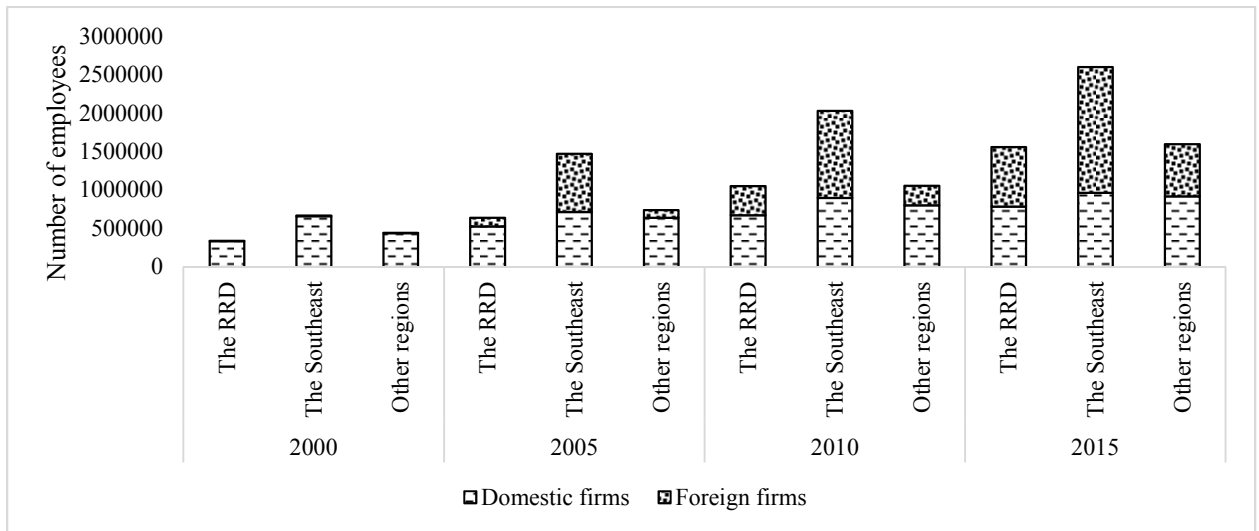
Source: Author's calculation based on VN-Census

Additionally, before Doi Moi, the light industries predominated in the Southeast while the Red River Delta was strongly focusing on heavy industry (McCarty 1993). These different historical trajectories have still some weight. As can be seen in Table 4.1, the heavy industries like the manufacturing of non-metallic mineral products with the dominance of domestic firms have retained their importance in the industrial development of the Red River Delta. Additionally, recent years are marked by the emergence of the high technology industry, the manufacturing of radio, television and communication equipment, introduced overwhelmingly by MNEs. In the meanwhile, Table 4.2 indicates that the Southeast has continued to focus on the light industries like manufacturing of wearing apparel or tanning

and dressing of leather which account for more than 50% of manufacturing MNE employees in 2015.

Table 4.2. Most important manufacturing industries in the RRD, 2000 - 2015

Year	Manufacturing sector	Total number of employees	Industrial composition	Share of domestic firm employment	Share of MNE employment
2015	Wearing apparel	376010	24%	47%	53%
	Radio, television and communication equipment	180311	12%	4%	96%
	Tanning and dressing of leather	121280	8%	54%	46%
	Non-metallic mineral products	99701	6%	88%	12%
2010	Wearing Apparel	224308	21%	48%	52%
	Tanning and dressing of leather	90606	9%	70%	30%
	Other non-metallic mineral products	90960	9%	91%	9%
	Other transport equipment	78912	8%	50%	50%
2005	Wearing apparel	122017	19%	74%	26%
	Tanning and dressing of leather	77833	12%	89%	11%
	Textiles	64539	10%	89%	11%
	Non-metallic mineral products	66613	10%	93%	7%
2000	Tanning and dressing of leather	55796	17%	100%	0%
	Wearing apparel	47025	14%	100%	0%
	Textiles	45232	13%	100%	0%
	Non-metallic mineral products	40443	12%	100%	0%

Source: Author's calculation based on VN-Census

Table 4.3. Most important manufacturing industries in the Southeast, 2000 - 2015

Year	Business sector	Total number of employees	Industrial composition	Share of domestic firm employment	MNE employment share
2015	Tanning and dressing of leather	651491	25%	82%	18%
	Wearing apparel	519720	20%	64%	36%
	Furniture	313919	12%	64%	36%
	Food products and beverages	190033	7%	36%	64%
2010	Tanning and dressing of leather	442229	22%	75%	25%
	Wearing apparel	408350	20%	59%	41%
	Furniture	232715	11%	61%	39%
	Food products and beverages	166777	8%	32%	68%
2005	Tanning and dressing of leather	395905	27%	69%	31%
	Wearing apparel	270768	18%	51%	49%
	Food products and beverages	140197	10%	25%	75%
	Furniture	131379	9%	62%	38%
2000	Tanning and dressing of leather	189805	28%	0%	100%
	Wearing apparel	120138	18%	3%	97%
	Food products and beverages	78208	12%	2%	98%
	Textiles	49509	7%	0%	100%

Source: Author's calculation based on VN-Census

4.5 Total factor productivity growth of domestic suppliers of MNEs versus other non-suppliers

The descriptive results presented in Table 2 show that in general domestic firms increase their TFP. This means that for a given level of input, domestic firms are able to produce more output in 2015 than in 2013. Regarding technical change, the relative high value indicates that domestic firms experience technical progress. Actually, almost all manufacturing firms in our dataset are in low-value added sectors. Berger and Revilla Diez (2008) argue that suppliers from developing countries are normally labor intensive; therefore, they tend and need to increase their basic technological capabilities before conducting profound R&D activities and innovation. Following on, we expect that the observed technical progress in domestic firms might be based on the focus of firms in introducing new machines rather than innovations in order to improve the business performance. Relative to efficiency change, the mean values of both supplier and non-supplier groups which are less than 1 suggest the worsening of the efficiency.

While the mean levels of TFP growth, efficiency change, and technical progress of supplier groups in the whole of Vietnam as well as in the Southeast are higher than of the non-suppliers, in the Red River Delta non-suppliers experience a higher TFP growth. From this preliminary result, it is expected that spillover effects from MNEs to domestic firms are different amongst regions. The longer experience with light industries might help firms in the Southeast gain more benefits from the presence of MNEs in the region that are also mainly in light industries. Additionally, an interesting question arises whether being a supplier of foreign investors really helps domestic firms to gain the competitive advantages against non-suppliers firms. The following analysis based on the propensity score matching method partly reveals an answer to this question. Results for the propensity score matching quality test for both before and after matching are presented in Appendices 3-5. The low value of Pseudo and mean standardized bias, the high bias reduction as well as the insignificant p-values of the likelihood ration test after matching indicate the balance in the distribution of covariates between two studied groups (Shiferaw et al. 2014).

Table 4.4. Description of outcome and matching variables

(Mean value)	The whole of Vietnam			The Southeast			The RRD		
	Full sample	Suppliers of MNEs	Non-suppliers	Full sample	Suppliers of MNEs	Non-suppliers	Full sample	Suppliers of MNEs	Non-suppliers
Output variables									
TFP at the year 2013	2.1465	2.4403	2.0936	2.4176	2.6538	2.3432	1.9821	2.2301	1.9267
TFP growth	1.7914	2.2625	1.7067	2.5691	3.0697	2.4115	1.2735	1.2940	1.2689
Efficiency change	0.4611	0.5216	0.4503	0.5851	0.6826	0.5543	0.3390	0.2770	0.3528
Technical progress	4.7871	5.1564	4.7207	4.8378	4.9306	4.8087	5.0797	5.5786	4.9682
Firm characteristics									
Firm size (number of employees)	236.14	338.6	204.71	323.39	343.84	310.3	200.27	281.87	176.97
Training for new employees (0 – No, 1 –Yes)	0.41	0.56	0.36	0.50	0.57	0.45	0.44	0.59	0.39
Location characteristics									
Logarithm of FDI employees in the district	3.3249	4.1314	3.0770	4.5989	4.7510	4.5016	3.2847	3.6665	3.2039
Proportion of FDI employees in a given industry	0.3607	0.4256	0.3407	0.4381	0.4594	0.4245	0.3832	0.4133	0.3747
	5764	**1353**	**4411**	**1835**	**716**	**1119**	**1927**	**428**	**1499**

Source: Author's calculation based on an additional survey of VN-Census 2013

Table 4.5. Average treatment effects: Propensity score matching, Vietnam

Outcome variables	Matching algorithm	Suppliers	Non-suppliers	Difference in average outcome	S.E.	T-stat
Technical change	NNM	5.1713	4.8281	0.3432	0.1243	2.76
	Kernel	5.1713	4.8087	0.3626	0.0928	3.91
Efficiency change	NNM	0.5211	0.4260	0.0951	0.1069	0.89
	Kernel	0.5211	0.4490	0.0721	0.0680	1.06
TFP growth	NNM	2.2673	1.6002	0.6670	0.3021	2.21
	Kernel	2.2673	1.7834	0.4839	0.2765	2.89

NNM: Nearest-Neighborhood Matching

Kernel: Kernel Matching

Table 4.6. Average treatment effects: Propensity score matching, the Southeast

Outcome variables	Matching algorithm	Suppliers	Non-suppliers	Difference in average outcome	S.E.	T-stat
Technical change	NNM	4.9306	4.5960	0.3346	0.1908	2.75
	Kernel	4.9306	4.7365	0.1940	0.1403	2.38
Efficiency change	NNM	0.6826	0.5496	0.1329	0.1524	0.87
	Kernel	0.6826	0.5510	0.1315	0.1415	0.93
TFP growth	NNM	3.0697	2.1884	0.8812	0.6765	2.30
	Kernel	3.0697	2.3701	0.6996	0.6436	2.09

NNM: Nearest-Neighborhood Matching

Kernel: Kernel Matching

Table 4.7. Average treatment effects: Propensity score matching, the Red River Delta

Outcome variables	Matching algorithm	Suppliers	Non-suppliers	Difference in average outcome	S.E.	T-stat
Technical change	NNM	5.5947	4.9733	0.6213	0.2297	2.70
	Kernel	5.5929	5.1018	0.4910	0.1594	3.08
Efficiency change	NNM	0.2730	0.5097	-0.2367	0.2501	-0.95
	Kernel	0.2737	0.3559	-0.0822	0.0562	-1.46
TFP growth	NNM	1.2898	1.4423	-0.1525	0.3396	-0.45
	Kernel	1.2924	1.2663	0.0260	0.1955	0.13

NNM: Nearest-Neighborhood Matching

Kernel: Kernel Matching

Tables 4.5, 4.6, and 4.7 present the average treatment effects estimated by nearest neighboring matching and Kernel matching methods for whole Vietnam, the Southeast, and the RRD respectively. For Vietnam as a whole and the Southeast (Tables 4.5and 4.6), there is a significant difference in the TFP growth and the technical change between domestic suppliers of MNEs and non-suppliers. In other words, being a supplier to MNEs has a positive impact on the TFP growth and the technical progress of domestic firms. Apparently, the overall result and the result for the Southeast confirm the theoretical expectation that suppliers of MNEs should have a better chance to approach new know-how and technology and are more productive than non-suppliers as a consequence. However, it should be noted that the efficiency change of suppliers in our study is not statistically different from that of non-suppliers.

Contrastingly, in the RRD the supplier group has not proved to gain a higher TFP growth even though their technical change is significantly higher. This insignificant difference in TFP growth might indicate that the suppliers are not more efficient than other local firms. Nonetheless, we should read this result with care. It could be the case that being a supplier of MNEs does not automatically lead to an increase in productivity as noted in the study by Godart and Görg (2013). But alternatively, another case could be that under the pressure of competing and catching up (Berger and Revilla Diez 2006) with firms which are already suppliers of MNEs, non-suppliers try to improve their performance by applying new technology and enhance their efficiency. Regardless of the explanation we use, it is necessary to discover to what extent the linkage with MNEs contributes to the productivity upgrading of firms and why domestic suppliers of MNEs in the RRD are not that efficient. The analysis of in-depth interviews with suppliers of MNEs in the RRD in the following section enables us to give an appropriate answer.

4.6 Knowledge transfer channels and competences of domestic suppliers

This section provides a qualitative analysis on knowledge transfer channels between domestic firms and their foreign firm customers, and on absorptive capacity of domestic suppliers in the RRD.

4.6.1 Knowledge transfer channels from MNEs to domestic suppliers

Most of the interviewed firms argue that the presence of MNEs brings business opportunities to them. Nevertheless, when coming up to the issue of collaboration with MNEs, only two firms receive direct support with finance and training. One of them (firm A) which supplies shell transformers receives financial support from its main MNE customer (around 1% of sales contract). This amount must be used to reinvest in technology in firm A and this firm has to submit the audited balance sheet to its customer at the end of the financial year. Additionally, the customer forces firm A to train employees who are involved in producing the product supplied to the customer. The revenue from the main MNE customer accounts for 25% of firm A's revenue. Almost all other firms report that in order to meet the requirements from the MNE customers, they have to upgrade technology themselves without support from MNEs. Corresponding to this finding, most interviewed firms are limited to simple manufacturing and provide standardized products like plastic components for car or gearbox parts based on detailed customer specifications. The production of simple standardized products does not require cutting-edge technology. According to De Gregorio and Lee (1998), spillovers take place if there is a sufficiently small technology gap and a sufficiently high human capital stock. Additionally, a closer look at the additional survey of the VN-Census 2013 shows that less than 10% of foreign investors in the RRD have a local procurement. This could mean that the integration of MNEs with domestic firms in the RRD seems to still be very limited regarding both the product and the number of suppliers. In other words, for high value added intermediates, MNEs have a demand on imported products and products supplied by Vietnam-based foreign suppliers instead of input supplied by Vietnamese firms. The interviewed managers from leading MNEs confirm that their firms only purchase simple products with low value added from local suppliers. They explained that they fail to find suitable domestic suppliers because they produce highly-specialized products which require a very high quality. This generally makes it difficult for domestic suppliers to benefit from potential economies of scale (Aitken and Harrison 1991, Bloström and Kokko 1998) which are important contributions to the efficiency gains of firms. This could partly explain our empirical finding

that the efficiency change of both domestic suppliers and non-suppliers of MNEs was worsening (see Table 2).

Despite the limited direct support, it cannot be denied that some domestic suppliers can still learn from MNE customers about technology, quality management methods, or working skills and attitude through visiting and observing MNE customers (four cases). Additionally, the domestic suppliers can recruit employees who used to work for their MNEs customers or other MNEs in the same sectors (one case). Those who do not receive direct or indirect assistance from MNE customers learn about new technologies through joining technological exhibitions, taking part in short courses, and visiting suppliers abroad. Amongst these firms, the director of firm B actively acquires knowledge about production technology and management skills by attending short courses and exhibitions in Japan, Singapore, and China. Unsurprisingly, firm B has observed a TFP growth and increased its number of employees over the years from 8 when it was established in 1999 to more than 400 in 2013. Another example is firm C where a director had been working in Japan and Vietnam-based Japanese firms before establishing his own company. He applied acquired business knowledge and technology in his own firm, and one of the customers is his former Japanese employer in Vietnam. 10 years after the establishment of his firm in 2005, it has increased the number of employees from 10 to 130. Based on these success stories of two domestic suppliers we argue that the source of new technology and knowledge is not limited to MNEs if domestic suppliers and their managers devote effort in upgrading their productivity. In addition, two directors said that they visit their customers' factory quite often, but they could not apply or imitate the technology applied in the MNEs. This implies that domestic firms cannot depend solely on MNE technology for their own technological upgrading and that their endogenous competence is more important (Fu and Gong, 2011). However, due to demanding requirements of MNE customers on quality standards, delivery, or production organization, many interviewed firms have been motivated to upgrade machines or adapt with new management methods, therefore backward linkages are still expected to be very important (Berger and Revilla Diez 2008), but not effective yet.

4.6.2 Absorptive capacity of domestic suppliers

Indeed, the presence of linkages between MNEs and their suppliers is a necessary condition for the occurrence of spillovers, but they are not sufficient to guarantee the spillovers (Görg and Greenway 2004, Pavlinek and Zizalova 2016) as well as the productivity upgrading of domestic suppliers. The development of domestic suppliers depends much on their absorptive capacity (Görg and Greenway 2004). Through our interviews, we recognize that because of the difference in their engagement in innovation or human capital development strategy some suppliers have been able to benefit from direct and indirect spillovers while others have not.

In general, our interviews with suppliers of MNEs in the RRD reveal that while investment on updated machines is taking place, engagement in R&D activities is rare and few resources are devoted to innovation. This is in line with our expectation based on the quantitative analysis that the technical progress of domestic firms we observed is limited to the introduction of new machines rather than own innovation. Additionally, only four out of fifteen interviewed firms consider skills and qualifications of labor to be important criteria in their recruitment policies. The reasons given by these firms for this approach are twofold. On one hand, some managers state that the supply of skilled labor is short due to the low quality of the education system in Vietnam (Wrana and Revilla Diez, 2016) and that skilled labor is attracted by MNEs who offer much better working conditions and higher salaries. Therefore, they focus on internal training for employees after recruitment, and some firms make use of external training courses in Vietnam or abroad. It is in line with the report of MOIT and UNIDO (2011) that many firms have to retrain their workers at high cost because the level of skills produced by Vietnam's current educational and vocational training system is inadequate. On the other hand, several firms argue that their products are simple and standardized so it is not necessary to hire highly skilled or qualified workers. Especially for firms with declining TFP, training activities do not seem to be given the proper attention.

Along with the low quality of employment in interviewed firms, their application of quality management systems remains relatively limited. Several firms said that it is difficult

for them to engage comprehensively in management methods like 5S4 or Kaizen5 because their employees are locked in unprofessional working routines. One director explained that he faced difficulties in applying 5S in his firms because it was difficult for him to change the mindset of his employees. Noticeably, firms that face difficulties in applying international standard management methods normally do not have R&D activities and do not invest much on training. Surprisingly, these directors acknowledge the low quality level of their human capital but through our interview we do not see their endeavors or motivation to change the situation. Our interview with a manager from a foreign firm also reveals this fact. He said that '*We provide domestic suppliers training on quality management issues. However, for Vietnamese enterprises they understand, but it is not easy for them to apply*'.In his opinion, the difference in culture hinders domestic suppliers from the implementation of the management methods from developed countries. He mentioned that '*For managers who receive trainings, they understand and can adapt but it is very hard for them to change their employees'.* One training center which works closely with foreign firms to provide training courses about Kaizen for domestic firms shares the same view. After every course, they conduct a survey to evaluate the implementation of Kaizen in the firms of the participants. They also send an expert from the foreign firm to consult them on how to implement Kaizen. However, after many training courses, they conclude that some managers learn and know about these advanced management methods but they do not apply to their firms.

We introduce a simplified classification of interviewed firms based on their TFP changes and their linkages with MNE customers. (i) Type 1 firms have TFP increase. They receive limited or no support from MNE customers. (ii) Type 2 firms are supported by MNE customers and experience a modest TFP growth. (iii) Type 3 firms experience TFP decline. They do not receive support from MNEs customers at all. Among our 15 interviewed domestic suppliers, 9 firms belong to Group 1, only 1 firm is from Type 2, and 5 firms are Type 3. In general, firms from Type 1 are more active in training and R&D activities than firms in Types 2 and 3.

---

[4] 5S are techniques which help to increase the efficiency of firm
[5] Kaizen is a Japanese word for improvement. It is a method of performance improvement in a company.

Chapter 4. Less than expected – The minor role of MNEs in upgrading domestic suppliers

In order to deeply explore the characteristics which enable domestic suppliers to gain a better performance and to see whether the direct support from MNEs matters to firms in the RRD or not, we choose the extreme examples (four firms A, C, D, and E) from these three types of firms to carry out a comparative analysis. They are referred to as follows:

- Firm A produces shell transformers. For almost ten years, annually it has received financial support from its main MNE customer. The TFP change of this firm is around the mean level of the RRD. Its resources are devoted to training and R&D activities are limited.

- Firm C produces jigs and molds. It does not receive any support from MNE customer. TFP change of this firm is the second highest amongst interviewed firms. The firm is active in R&D activities as well as enhancing the quality of its labor force.

- Firm D produces engine pylons. It receives limited training support from MNE customers. TFP change of this firm is the highest amongst interviewed firms. Similar to firm C, firm D has paid attention to R&D and human resources.

- Firm E produces packaging foam. It receives no support from MNE customers. Its TFP change is the worst amongst interviewed firms. This firm does not pay attention to R&D nor training for employees.

Table 8. Characteristic of selected domestic suppliers

	Highest TFP growth		Strong support from MNEs	Negative TFP change
	Firm D	**Firm C**	**Firm A**	**Firm E**
TFP change	1.67	1.59	1.081	0.335
Number of employees	65	130	166	100
Products supplied	Engine pylons	Jigs and mold	Shell transformer	Packaging foam
Support from MNE customer	Yes	No	Yes	No
- Finance	No	No	Yes	No
- Technology	No	No	Yes	No
- Training	Yes	No	Yes	No
Invest on new machines	Yes	Yes	Yes	Yes
Introduce new product	Yes	Yes	No	No
Innovation activities				
- R&D department	Yes	Yes	No	No
- R&D activities	Yes	Yes	No	No
- R&D partner outside	No	No	No	No
Human capital development				
- Internal training	Yes	Yes	Yes *	Yes
- External training in Vietnam	Yes	Yes	No	No
- External training abroad	No	Yes	No	No
- Recruitment strategy	Experienced workers in MNEs	Experienced workers	x	x
Quality management systems	Yes	Yes	Yes*	No

: as a requirement of MNE customer

As can be seen from Table 8, even though firm A gets direct support from its main MNE customer, its TFP change (1.081) is lower than the average value of domestic suppliers in the RRD (1.273). The two highest TFP growth firms (firm C and firm D) amongst the interviewed ones have received limited or no direct support or knowledge transfer from MNE customers. Both firms have introduced new products. One factor that explains the different growth patterns amongst these firms is the difference in how active they are in increasing their absorptive capacity. Actually, both firm C and firm D pay attention to R&D by establishing R&D departments and on training programs for their employees. They are the only two firms in our interviews which have a R&D department. Our finding is in line

with the survey performed by NASATI in Vietnam in 2008 that Vietnamese firms devote minimal resources to R&D and innovation. The low level of R&D suggests a low absorptive capacity of firms (UNIDO 2014). Without R&D activities, it seems plausible that firm A simply follows the instructions of its main customer and is not able to create its own know-how. This prevents firm A from benefitting from direct spillover and makes it dependent on its main customer. The director of firm A also said that they only provide training to workers who are involved in production supplied to its main customer and implement quality management systems for a workshop producing these products. If a firm depends heavily on its main customers for information and upgrading assistance, it is more likely to be locked into the relationships and in danger of being replaced by the emerging lower-cost rivals (Humphrey 2003). In contrast, firm D has a short term plan to export its products, and firm C has diversified its product portfolio and started producing precise components. The investment in R&D partly allows both firm C and firm D to develop independently and supply to different MNEs.

Additionally, we also observe a notable difference in the human capital development strategy amongst these firms. Firm C and firm D put a lot of effort in recruiting and training employees. For instance, firm C not only provides internal and external training courses to all employees but also sends key staff to short courses about QC (Quality Control) and QA (Quality Assurance) in Japan. In the case of firm D, over and above training courses its recruitment strategy gives a higher priority to people who have working experience in foreign firms like Samsung, ABB, or Canon. As such, these employees might introduce new technology or working skills to these two firms on one hand and might help to increase their absorptive capacity on the other hand. This provides an interesting example that MNEs which have a superior ability to attract highly skilled workers seem to impede knowledge flows via labor mobility. Apart from this, they endeavor to create favorable working conditions to attract and keep high skilled labor. In contrast, similar to some other interviewed domestic suppliers, firm A complains that they lost many qualified and skilled workers. It seems that these firms have no proper solutions to this brain drain issue and they have to accept this fact. That is one reason why firm A only chooses loyal employees to involve in the production of product supplied to its main customers and provide training

courses for them. For firm E and some other firms who have no demand for highly skilled workers, they do not face the issue of brain drain. In their opinion, their employees have no chance to be recruited by MNEs because they lack of many skills and qualifications normally required by MNEs. One director said '*There are only few employees moving to other firms. My firm is a Vietnamese firm so that we can understand Vietnamese workers. In my firm, the working time is more flexible than foreign firms. For example, when you work for foreign firms, you must come to work in time. However, in my firm, it is still fine if employees come to work late. We do not have a great working condition but we provide flexible working time'*. Actually, the lack of skilled labor and the inappropriate working attitude and routine of labor hinder the benefit of domestic suppliers from new technology and business knowledge. As a consequence, they fail to enhance their productivity. For instance, firm E has upgraded the technology through investment on the updated machines, but failed to apply quality management programs or management methods due to the limited absorptive capacity.

In short, the qualitative analysis shows that almost all firms state the need to invest on more updated machines to be more competitive and meet requirements of MNEs, but few of them pay attention to human capital or R&D activities which might help domestic suppliers to have more effective production. This is a reason why we observe the technical progress due to the new machines but the efficiency decline of domestic firms in our quantitative analysis. Our observation about the low absorptive capacity of domestic suppliers is consistent with the argument of Arnold et al. (2000) and Berger and Revilla Diez (2008) that most small and medium size enterprises face difficulties to acquire technician and craft skills and capabilities for technology absorption. As one of the exceptions, one interviewee stated that '*Our technical staff must be very innovative and we have conducted some R&D activities. Therefore, we can take full advantage of the current technologies while still supply the quality products to the customers'*. Actually, this firm (firm L) currently lacks of capital to enhance its production facilities and equip the updated machines in all their workshops. For the long-term development, they have been upgrading technology gradually and have a long-term plan to improve the infrastructure. However, with the special efforts for R&D, training activities, and following the management methods

from Japan, they still meet the requirements of MNEs and gain TFP. There is a separate department in firm L for quality control and how to apply 5S and Kaizen. The responsibility of this department is to make sure that everybody in the firm follows 5S, Kaizen, and ISO. Besides the two success stories of firm C and firm D, the stable development of firm L could also provide a useful example for other small and medium size Vietnamese firms that also have limited capital.

4.7 Conclusions and policy implications

The number of MNEs investing in Vietnam has been increasing over the years. Accordingly, domestic firms might have a chance to become suppliers of MNEs and acquire access to the state of art technology and know-how of foreign firms. As a consequence, firms that are chosen to be suppliers are expected to enhance their productivity. This expectation is valid for Vietnam in general and for the Southeast region in particular. However, it is necessary to note that the TFP growth of domestic firms comes from technical change rather than efficiency change. It might indicate that if domestic firms pay more attention to their production management improvements, resource allocation, or economies of scale, they are more likely to gain a higher TFP.

Contrastingly, our empirical analysis for the RRD shows that there is no significant difference in the TFP growth between domestic suppliers and non-suppliers of MNEs. This finding partly implies that domestic suppliers do not always benefit from the presence of MNEs. The explanation for this fact, based on our in-depth interviews with domestic suppliers, is twofold. Firstly, due to the 'lock-in' into the simple standardized production, domestic suppliers do not seem to receive strong support from MNE customers. Secondly, low absorptive capacity hinders many domestic suppliers in achieving productivity gains.

All in all, being a supplier of MNEs might bring domestic firms the opportunity to enhance their business performance. However, while linkages with MNEs are important for domestic firms, they are by no means decisive. Whether domestic firms can take full advantage of this chance or not, especially in developing countries like Vietnam where the effects from MNEs are indirect and limited, depends on the internal competence of firms. The most striking feature of domestic suppliers in the RRD is their weak absorptive

capacity. Therefore, in order to gain the TFP growth, domestic firms should not only invest in updated machines, but also make an effort to enhance their absorptive capacity.

In order to profit from MNEs' presence the question is how to acquire the potential benefits to upgrade the productivity as well as upgrade to higher stages in the value chain of MNEs. Our finding draws two important implications for policy makers. Firstly, since the absorptive capacity of domestic firms is considered the main driver, we highlight the need to invest not only in the basic education, but also in higher level education and technical training based on industry demands. Secondly, there should be programs to raise the awareness of domestic firms about the importance of R&D and innovation to create their own know-how. To do so, it requires a strong linkage between higher education and vocational training centers, government research institutes, and firms. In parallel, similar to other Asian countries like Singapore, South Korea, Taiwan, Thailand, or Malaysia, the Vietnamese government should provide incentives to encourage endogenous technology upgrading and R&D activities in domestic firms.

Of course, our paper is not without limitations. Our quantitative micro data only covers a period of three years while the learning process might take time. Therefore, we hope that in the next few years the same data is available for the following period of time so that we are able to conduct similar research over a longer period. Additionally, the future research might further examine indirect spillover channels from MNEs such as labor mobility from MNEs to domestic firms or spin-offs.

References

Aitken, B J., & Harrison, A E.(1999) Do Domestic Firms Benefit from Direct Foreign Investment? Evidence from Venezuela. *American Economic Review*, 89(3), pp.605-18

Arnold E, Bell M, Bessant J, Brimble P, (2000) Enhancing policy and institutional support for industrial technology development in Thailand – the overall policy framework and the development of the industrial innovation system. Science and Technology Policy Research, Washington DC.

Berger, M. & Revilla Diez, J. (2006) Technological Capabilities and Innovation in Southeast Asia: Results from Innovation Surveys in Singapore, Penang and Bangkok. *Science, Technology & Society*, 11(1), pp. 109-148.

Berger, M. & Revilla Diez, J. (2008) Can host innovation systems in late industrializing countries benefit from the presence of transnational corporations? Insights from Thailand's Manufacturing Industries. *European Planning Studies*, 16 (8).

Blalock, G., & Gertler, P. J. (2009). How firm capabilities affect who benefits from foreign technology. *Journal of Development Economics*, 90(2), pp.192–199.

Blalock, G., & Simon, D. H. (2009). Do all firms benefit equally from downstream FDI?, The moderating effect of local suppliers' capabilities on productivity gains. *Journal of International Business Studies*, 40, 1095–1112

Blöstrom, M., & Kokko, A. (1998) Multinational Corporations and Spillovers. *Journal of Economic Surveys*, 12(3), pp.247-277

Cohen, W., & Levinthal, D. (1989). Innovation and learning: Two faces of R&D. *Economic Journal*, 99(397), pp.569–596.

Cohen, W., & Levinthal, D. (1990). Absorptive capacity: A new perspective on learning and Innovation. *Administrative Science Quarterly*, 35(1), Special Issue: Technology, Organizations, and Innovation, pp. 128-152.

Cung N, Tuan P, Van B, Dapice D (2004) Why don't Northern provinces grow faster? The United Nation Development Programme

Dunning, J. (1993) Multinational Enterprise and the Global Economy. Wokingham, UK: Addison- Wesley

Dunning, J., & Lundan, M. (2008) Multinational Enterprises and the Global Economy. Edward Elgar Publishing Ltd

Färe, R., Grosskopt, S., Lindgren, B., and Roos, P. (1994) Productivitiy changes in Swedish pharamacies 1980-1989: a non-parametric Malmquist approach. *Journal of Productivity Analysis*, 3(1-2), pp.85-101

Fingar, C. (2015, April 21) Vietnam's inward investment surge – will it last? Financial Times. Retrieved from https://www.ft.com

Fu, X., & Gong, Y. (2011) Indigenous and Foreign Innovation Efforts and Drivers of Technological Upgrading: Evidence from China. *World Development*, 39(7), pp.1213–1225.

Giroud, A. (2007) MNEs Vertical Linkages: The Experience of Viet Nam after Malaysia. *International Business Review*, 16(2), pp.159-176.

Greenland, S., Pearl, J., & Robins, J. M. (1999). Causal diagrams for epidemiologic research. Epidemiology, 10, pp.37–48

Godard, O., & Görg, H. (2013) Suppliers of multinationals and the forced linkage effect: Evidence from firm level data. *Journal of Economic Behaviour & Organization*, 94, pp.393-404

Görg, H., & Greenaway, D. (2004) Much Ado about Nothing? Do Domestic Firms Really Benefit from Foreign Direct Investment? *World Bank Research Observer*, 2004, 19, pp. 171-197.

GSO (2013) Statistical Year Book of Vietnam. Statistical Publishing House

Hatani, F. (2009) The logic of spillover interception: the impact of global supply chains in China. *Journal of World Business*, 44, pp.158–166.

Ivarsson, I., & Alvstam, C.G. (2005) The effect of spatial proximity on technology transfer from TNCs to local suppliers in developing countries: The case of AB Volvo in Asia and Latin America. *Economic Geography*, 81(1), pp.83-111.

Javorcik, B. S. (2004) Does foreign direct investment increase the productivity of domestic firms? In search of spillovers through backward linkages. *American Economic Review*, 94, pp.605–627.

Javorcik, B., & Spatareanu, M. (2009) Tough love: do Czech suppliers learn from their relationships with multinationals. *Scandinavian Journal or Economics*, 111, pp.811-833

Kathuria, V. (2000) Productivity Spillovers form Technology Transfer to Indian. *Journal of International Development*, 12, pp.343-369

Kim, L. (1999) Building, technological capability for industrialization: analytical frameworks and Korea's experience. *Industrial and Corporate Change*, 8(1), pp.111-36

Lall, S. (2003). Foreign direct investment, technology development and competitiveness: Issues and evidence. In S. Lall, & S. Urata (Eds.), *Competitiveness, FDI and Technological Activity in East Asia*. Chel- tenham, UK: Association with the World Bank, Edward Elgar.

Le, H. (2008) Technology Spillovers from Foreign Direct Investment in Viet Nam: Horizontal or Vertical Spillovers. Viet Nam Development Forum.

Levinsohn, J. & Petrin, A. (2003) Estimating production functions using inputs to control for unobservable. *The Review of Economics Studies*, 70, pp.317–342.

McCarty, A. (1993) Industrial Renovation in Vietnam 1988 – 1991. In Than, M., & Tan, J. (Eds). *Vietnam's dilemmas and options. The challenge of economic transition in the 1990s*. Institutes of Southeast Asian Studies.

McDermott, G. A., & Corredoira, R. (2010). Network composition, collaborative ties, and upgrading in emerging-market firms: Lessons from the Argentine autoparts sector. *Journal of International Business Studies*, 41(2), pp.308–329

Meyer, K. E. (2004). Perspectives on multinational enterprises in emerging economies. *Journal of International Business Studies*, 35(4), pp.259–276.

MOIT & UNIDO (2011) Vietnam Industrial Competitiveness Report 2011.

Newman, C., Rand J., Tablot, Th., & Tarp, F. (2015) Technology transfer, foreign investment and productivity spillovers. *European Economic Review*, 76, pp.168-187.

Nguyen et al. (2008). Foreign direct investment in Vietnam: is there any evidence of technological spillover effects. *Development and Policies Research Center (Depocen)*. Hanoi

Nguyen, L. (2008) Productivity Spillovers from Foreign Direct Investment: Evidence from Vietnamese Firm Data. School of Commerce, University of South Australia.

Nguyen, T.T. A, Vu, H. , Tran, T., & Nguyen, H. (2005) The Impacts of Foreign Direct Investment on Economic Growth in Viet Nam. Hanoi: Science and Techniques Publishing House

Pavlínek, P. & Žížalová, P. (2016) Linkages and spillovers in global production networks: firm-level analysis of the Czech automotive industry. *Journal of Economic Geography*, 16(2), pp.331–363.

Poole, J. (2013) Knowledge transfer from Multinationals to domestic firms: Evidence from worker mobility. *The Review of Economics and Statistics*, 95(2), pp.393-406

Revilla Diez, J. & Kiese, M. (2006) Scaling Innovation in Southeast Asia: Empirical Evidence from Singapore, Penang (Malaysia) and Bangkok. *Regional Studies,* 40(9), pp.1005-1023.

Schmidt, T. (2008). Absorptive capacity—One size fits all? A firm-level analysis of absorptive capacity for different kinds of knowledge. *Managerial and Decision Economics*, 31(1), 1–18.

Schreier (2013) Qualitative Content Analysis. In Flick, U. (Eds) Qualitative Data Analysis, Sages Publications Ltd.

Shiferaw, B., Kassie, M., Jaleta, M. and Yirga, C. (2014) Adoption of improved wheat varieties and impacts on household food security in Ethiopia. *Food Policy*, 44, pp. 272– 284

Simona, G.-L. & Axèle, G. (2012) Knowledge Transfer from TNCs and Upgrading of Domestic Firms: The Polish Automotive Sector. *World Development*, 40(4), pp.796–807.

Rosenbaum, P. R., & Rubin, D. B. (1983) The central role of the propensity score in observational studies for causal effects. *Biometrika*, 70, pp.41–55

Rodrik, D. (1999) The New Global Economy and Developing Countries: Making Openness Work. Overseas Development Council (Baltimore, MD), Policy Essay No. 24.

UNIDO (2011) Vietnam Industrial Investment Report 2011

UNCTAD (2001) World Investment Report 2001 – Promoting Linkages. United Nations Conference on Trade and Development, Genf.

Van den Bosch, FAJ, Wijk, Rv and Volberda, HW 2003. Absorptive capacity: Antecedents, Models and Outcomes, *ERIM Report series research in Management*, Rotterdam.

Walkenhorst, P. (2000) Foreign Direct Investment, Technological Spillovers and Agricultural Transition in Central Europe. *Post Communist Economies*, 12(1), March 2000, pp. 61-74.

Wrana, J. & Revilla Diez, J. (2016) Can Multinational Enterprises Introduce New Institutions to Host Countries? Geographische Zeitschrift, 104, 2016/3, pp. 158–182

Appendices

Appendix 1. An overview of interviewed domestic suppliers

Code	Products	TFP change	Firm size	R&D Department	Support from MNEs	Qualitative management system
A	Shell transformers	1.08	166	No	Finance	Yes
B	Steel products	1.22	420	No	No	Yes
C	Jigs and mold	1.59	130	Yes	No	Yes
D	Engine pylons	1.67	65	Yes	Training	Yes
E	Packaging foam	0.36	100	No	No	No
F	steel boxes	0.93	401	No	No	Yes
G	wheel blocks	1.03	120	No	No	Yes
H	metal products	0.96	23	No	No	No
I	metal products	0.68	48	No	No	No
J	industrial fans components	1.15	35	No	No	No
K	Threaded connectors	1.34	140	No	No	Yes
M	Plastic products	1.23	301	No	No	Yes
L	gearbox parts	1.75	75	No	No	Yes
N	Pressure equipment	0.30	40	No	No	Yes
O	Steel plating	1.24	46	No	No	Yes

Appendix 2. Summary of in-depth interviews

	TFP Growth (Total: 10 firms)	TFP Decline (Total: 5 firms)
Direct support from MNEs	2	0
Introduce new products	2	1
External training	7	1
No training activities	0	2
Demand on high skilled workers	4	0
R&D department	2	0
R&D activities	6	1
R&D partner outside	0	0
Invest on updated machines	10	2
Apply quality management system	7	2

Appendix 3. Propensity score matching: quality test, the Red River Delta

Matching algorithm	Pseudo R^2 before matching	Pseudo R^2 after matching	LR X^2 (p-value) before matching	LR X^2 (p-value) after matching	Mean standardized bias before matching	Mean standardized bias after matching	Total % |bias| reduction
NNM	0.102	0.003	638.40 (p=0.000)	10.54 (p=0.61)	36.1	4.9	70
Kernel	0.102	0.001	638.40 (p=0.000)	5.35 (p=0.374)	36.1	2.8	74

NNM: Nearest-Neighborhood Matching

Kernel: Kernel Matching

Appendix 4. Propensity score matching: quality test, the Southeast

Matching algorithm	Pseudo R^2 before matching	Pseudo R^2 after matching	LR X^2 (p-value) before matching	LR X^2 (p-value) after matching	Mean standardized bias before matching	Mean standardized bias after matching	Total % |bias| reduction
NNM	0.031	0.001	76.49 (p=0.000)	1.43 (p=0.656)	20.9	2.4	36
Kernel	0.031	0.001	76.49 (p=0.000)	1.51 (p=0.912)	20.9	2.5	36

NNM: Nearest-Neighborhood Matching

Kernel: Kernel Matching

Appendix 5. Propensity score matching: quality test, the Red River Delta

Matching algorithm	Pseudo R^2 before matching	Pseudo R^2 after matching	LR X^2 (p-value) before matching	LR X^2 (p-value) after matching	Mean standardized bias before matching	Mean standardized bias after matching	Total % |bias| reduction
NNM	0.054	0.005	61.94 (p=0.000)	3.28 (p=0.656)	25.2	5.9	40
Kernel	0.054	0.001	61.94 (p=0.000)	0.49 (p=0.993)	25.2	2	53

NNM: Nearest-Neighborhood Matching

Kernel: Kernel   Matching

5. Synthesis

5.1. Summary

The thesis uses a Vietnam Enterprise Census dataset for 16 consecutive years (2000 to 2015) that was conducted by the General Statistic Office of Vietnam. The tax codes are used to merge these data sets into a panel data set. Additionally, the study also deploys an additional survey on the technology application of firms of VN-Census 2013, as well as in-depth interviews with 15 domestic suppliers, the MNEs, and one training center in the RRD. The results from the study are summarized below.

The first paper describes changes in the industrial structure in the RRD since Doi Moi with the presence of MNEs and examines the survival of both MNEs and domestic firms in the face of the transition conditions. The introduction of private firms in general and MNEs in particular has created jobs and brought new industry sectors into the market, such as the manufacturing of communication equipment into new industrial sites in the region. SOEs, which were the main actors before the 2000s, have become less important in recent years. Additionally, industrial locations in the pre-Doi Moi period, such as, Hanoi, Hai Phong, and Nam Dinh, have been losing their importance. However, the transformation process is not over yet and SOEs still receive specific privileges as seen through easier access to credit or land in many locations. As a consequence, the empirical results from both the survival (Cox regression) and the probit regression models show that FDI enterprises in locations with a high presence of SOEs have a lower survival rate as compared to those in other locations. This might be due to the distorted competition in places that are still locked-in by institutional arrangements tracing back to the pre–Doi Moi period. Similarly, for newly emerging industries where MNEs are dominant, the relationship between the number of SOEs in the district and the survival rate of firms in these industries are negative.

The second paper examines the location choice of MNEs and the impacts of their presence on the spatial concentration process of manufacturing industries in the RRD and the Southeast area. In line with the findings of the first paper, for both studied regions, the

results of the location choice model show that a district with a stronger presence of SOEs has a smaller likelihood of being selected as a location by MNEs. Especially in the RRD, foreign firms on the one hand tend to avoid locations and provinces which are still dominated by a high presence of SOEs and prefer to be close to Hanoi – the economic hub of the region. Consequently, it is proved by the analysis of the EG index, a discrete spatial concentration index at the provincial level, that while manufacturing activities are still concentrated in the traditional industrial provinces in the Southeast, firms in the RRD tend to move to non-industrialized provinces, but nearby existing industrial areas. However, when deploying the DO index, which is estimated based on the empirical distribution of the distance across firms, manufacturing industries in both the RRD and the Southeast have shown to be more spatially concentrated over the years. Additionally, a fixed effect regression model shows a negative relationship between the presence of MNEs and the EG index in the RRD. This confirms the idea that industries with a strong presence of MNEs seem to disperse into areas with no industrial history. At the same time, however, the presence of MNEs has strengthened the spatial industrial concentration process (reflected in the DO index) in both of the studied regions.

Theoretically, the stronger presence of MNEs in the region might bring a higher chance for domestic firms to be a supplier in the MNEs supply chain system and as a result require access to the state of the art technology and the know-how of foreign firms. Therefore, the third paper investigates the impact of MNEs on the business enhancement of domestic suppliers and explores striking characteristics for the upgrading process. The TFP growth of firms which is considered a proxy for the business development is decomposed into technical progress and efficiency change by the means of the Malmquist Index. The analysis through the propensity score matching method for the whole of Vietnam and the Southeast region shows that being a supplier to MNEs is statistically related to the TFP growth of firms. In contrast, in the RRD, domestic suppliers do not gain a higher TFP growth than those of non-suppliers. The qualitative analysis helps to provide an answer for the subordinate roles of MNEs in the TFP upgrading of domestic suppliers in the RRD. Firstly, almost all domestic suppliers provide standardized and low value-added products to MNEs. As a consequence, they are not likely to receive direct support such as, finance, training and

or technology upgrading from MNE customers. Secondly, due to minor resources devoted to training or R&D activities, the majority of the domestic suppliers are unable to absorb new knowledge and know-how from their customers. It should also be noted that being a supplier is not a unique mode to enhance business performance, but firms can enhance their productivity and competitiveness through investment on updated machines and technology, human capital, and or innovation activities at the same time.

5.2. Conclusion and Policy Recommendations

The following conclusion and policy recommendations are drawn from the findings of this thesis. The macro-level findings suggest that the presence of MNEs may create employment, introduce new industries, or enhance agglomeration economies. However, the micro level analysis shows that benefits from being suppliers of MNEs to the upgrading of domestic firms should not be assumed as a matter of course if the region does not provide appropriate institutions for a level playing field and if domestic firms are not active in absorptive capacity enhancement.

The first essay concludes that during the course of Doi Moi, MNEs and domestic private firms have actively contributed to the industrial economy of the RRD where remains of the former central planning economy still exist, expressed by a high presence of SOEs. The survival of both foreign firms and private domestic firms are constrained by the presence of SOEs which implies that Vietnam needs further institutional reforms. In other words, the economic transition process of Vietnam is not complete as the appropriate institutions for an efficient market economy are not yet in place. A more level playing field should be created in which all firms must be required to operate transparently. Despite the existence of laws with the objective to put an end to the discrimination regarding types of ownership, SOEs are in fact being granted privileged access to credit and land. In addition, the presence of MNEs in the RRD have introduced new high technology industries into newly industrial sites in the region. Unfortunately, in these industries there is an absence of Vietnamese firms. Therefore, incentives to encourage start-ups and R&D activities should be provided.

Second, the analysis of the spatial dynamics of manufacturing in the RRD and the Southeast in the second essay confirms that MNEs are increasing spatial concentration

trends in Vietnam. It could be advantageous for domestic firms to gain benefits from agglomeration economies like labour pooling or spill overs from MNEs. However, how domestic firms successfully gain advantages from the presence of MNEs in their region depends on the quality of linkages between MNEs and domestic firms; especially in the absorptive capacity of domestic firms.

The third essay finds that the linkages between MNEs and domestic suppliers are weak. More importantly, even though domestic firms have been aware of the need to increase technological capabilities in order to be a supplier to MNEs, they have devoted limited resources to human capital and R&D activities. The research suggests that being a supplier of MNEs is only one mode to enhance business performance, but this mode does not always work, especially for firms in a developing country such as Vietnam. Thus, firms should rely on their internal factors like R&D activities or human capital. This fact leads to an important implication for policy makers. The Vietnamese government should pay more attention to higher level education and technical training based on industry demands. In parallel, the linkages between higher education and vocational training centers, government research institutes, and firms should be more effective.

Even though one should not underestimate the benefits that the agglomeration economies can bring to the regional economic development or business chances for domestic firms, policy makers should be aware of spatial disparities. As proved in the second essay, industrial production is becoming even more concentrated, thus enlarging amongst provinces and regions. An increasing number of firms, whether domestic or foreign, as well as migrant flows from rural areas, are still adding to the positive externalities. However, an over-agglomeration could harm the dynamics of the RRD, as well as the Southeast and lead to diseconomies of agglomeration. More so than before, an upgrading of technological capabilities is needed, as wages are already rising. In this sense, the RRD and the Southeast clearly has to prioritize its role as a center of innovation and education. As such, there would be a hope that Vietnamese firms can join in the global value chains of MNEs.

Finally, the weak linkages between MNEs and domestic firms and the limited upgrading of MNEs' suppliers suggest another policy implication for FDI attraction. Under the

optimistic view that MNEs - 'technologically advanced customers' (Revilla Diez and Kiese 2006) - bring new technology, know-how, management methods, and jobs or an increase of the average labor skill level, Vietnam should still attract FDI, but cannot attract FDI at any price. The Vietnamese government should provide further incentives to FDI which have the potential to introduce new know-how and technology. Additionally, given that cheap labor is not a competitiveness in the long run, the attraction for labor-intensive projects should be limited.

5.3. Limitations of the Study and Further Research Needs

This section discusses the limitations of this thesis and proposes recommendations for future research.

One of the objectives of the first essay is to examine the survival of firms of varying types of ownership. It should be noted that due to the privatization program in Vietnam since 1988, a number of SOEs have been equitized and have become private firms. To some extent, these firms might still have linkages with the authorities or their directors could be directors of SOEs from the past. Therefore, it is better to distinguish firms that are 100% private from equitized firms of SOEs. However, the dataset used in the thesis does not allow for a clear distinction; therefore, the analysis is limited to three types of ownership structures: domestic private firms, SOEs, and foreign firms. Additionally, because the essay engages in the institutional constraints in Vietnam, that hinder the survival and the development of firms, the spread of the shadow economy should be considered. According to Tran and Stantarelli (2013), even though entrepreneurial activities have been recognized as a main driver for the economic growth in Vietnam, entrepreneurship has not gained the desired results. The reason lies in the institutional constraints inherited from the communist political system: complex administrative regulations, excessive bureaucracy, and or the high costs of doing business with the private sector. The author acknowledges that despite the current laws that are aimed at promoting a fair playing field for all enterprises, regardless whether they are state-owned or private, there is still a "cozy" business relationship between SOEs and local state authorities. However, it is not easy to measure the size of the shadow economy. Therefore, only a brief discussion on this issue is added into the literature discussion of the thesis.

Chapter 5. Synthesis

The second essay endeavors to apply the most recent concentration index (DO Index) to measure the spatial concentration of manufacturing firms. This index treats space as continuous and minimizes border effects. However, due to the lack of data about the coordinates for each firm, the paper uses the coordinates of communes (the smallest geographical unit in the dataset) to determine where firms are located. Additionally, even though it is acknowledged that both motives of foreign production and location factors contribute to the location decision of MNEs, the thesis is unable to take the investment motivation of MNEs into account as the data has its limitations. Therefore, in order to deepen the understanding for the location choice of MNEs it is proposed that the future research on the location of MNEs should be based on both a detailed qualitative and quantitative micro data approach.

In contrast to the two previous essays, the third study combines both quantitative and qualitative analyses. However, the final essay is not without its own limitations. In order to examine whether the presence of MNEs really helps to upgrade the productivity of domestic firms or not, the propensity score matching method is used in the quantitative analysis. The dataset used to recognize if an individual firm is a supplier or not is limited to the sub-survey of VN-Census 2013. The results might be more robust if the exact information is available of the year when a domestic firm becomes a supplier. Additionally, the study only covers a three year period while the learning and upgrade processes might take longer in time. It would be beneficial to conduct similar research for a longer period of time. In the study in-depth interviews with domestic suppliers were used to explore the process in which spillovers from MNEs to domestic suppliers as well as upgrade of domestic firms occur. Future research based on the perspectives of both direct and indirect (i.e., labor mobility or spin-off) spillover channels will provide a better understanding of linkages between foreign and domestic firms.

References

Revilla Diez, J. & Kiese, M. (2006) Scaling Innovation in Southeast Asia: Empirical Evidence from Singapore, Penang (Malaysia) and Bangkok. *Regional Studies*, 40(9), pp.1005-1023.

Tran, H. & Stantarelli, E. (2013) Capital constraints and the performance of entrepreneurial firms in Vietnam. Working paper in the Rimini Center for Economic Analysis.