



**KTH Architecture and  
the Built Environment**

# Essays on the Interplay between Multinational Enterprises and Spatial Economies

Simon Falck

Doctoral thesis in  
Infrastructure with specialisation  
in Planning and Implementation

Doctoral thesis  
Royal Institute of Technology (KTH)  
School of Architecture and the Built Environment  
Department of Urban planning and Environment  
Division of Urban and Regional studies  
SE-100 44 Stockholm, Sweden  
<http://www.kth.se>

TRITA SoM 2013-04  
ISSN 1653-6126  
ISNR KTH/SoM/13-04/SE  
ISBN 978-91-7501-763-1

© Simon Falck, 2013  
Printed by USAB, Stockholm

## **ABSTRACT**

This doctoral thesis concerns the interplay between multinational enterprises (MNE) and spatial economies, with an orientation towards the location and spillover effects of inward foreign direct investments (FDI). The thesis consists of four essays that are self-contained studies. The first essay relates to the shift away from FDI in manufacturing to services and examines whether service FDI locates differently from manufacturing FDI. The second essay concerns the relationship between FDI and public incentives and whether investment promotion schemes are useful to attract FDI. The third essay examines the link between human capital and FDI and how different types of skilled workers influence FDI location. Taken together, these three essays examine conditions and factors that determine the location decision of foreign MNEs in the contemporary era of globalisation. The fourth essay examines whether labour mobility is a potential source for spillovers from FDI in a spatial context. Although the latter essay does not provide any final answer to whether spillovers actually arise through this channel, it shows that the potentials for an effect to arise are larger in some regions than others because there are very few or no such knowledge spillover agents in many parts of the country. The thesis concludes by discussing the link between FDI and the policy work on regional development, and some avenues for future studies.

**JEL Classification:** F23, R3, O18, R12, R58

**Keywords:** Multinational Enterprises, Foreign Direct Investment, Firm location, Spillovers, Regional Development Policy and Analysis, Spatial Distributions of Economic Activity, Functional regions, Sweden

## **PREFACE**

The purpose of the cover essay is not only to introduce the reader to the body of literature on MNEs and reasons for studying FDI in Sweden, it is also an attempt to summarize and the most important findings from the four essays that this thesis consists of. The essays are self-contained studies that have been written to be read on their own. It is in these studies where the most important empirical results are found. The cover essay interprets these findings from the point of view of related theory and policy work.

It should be noted that although this thesis contributes with several new insights and empirical results regarding inward FDI in Sweden, large constraints in the accessibility to relevant research infrastructure has reduced many of the initial ambitions, and also ambitions that have come to existence along the way. The present thesis is largely the result of what have been possible to make.

# ACKNOWLEDGEMENTS

This thesis is the result of research undertaken at the Division of Urban and Regional studies at the Royal Institute of Technology (KTH) in Stockholm, Sweden. I would like to express my appreciation to everyone that contributed to the thesis work. Especially to my supervisors Professor Hans Westlund and Professor Folke Snickars who have been important in numerous ways, and naturally, for having provided me the opportunity to complete a PhD. For this, I am truly grateful. Hans is also the co-author of one of the included essays. I also would like to thank associate professor Henrik Blomgren at the Department of Industrial Economics and Management at KTH who has also been part of my studies as an assistant supervisor and discussant.

A special thank goes to everyone who have worked with me or taken time to discuss my essays and different research problems. In particular, Dr Per Thulin who acted as an excellent discussant on my final seminar and has contributed with invaluable inputs for the progress and completion of the thesis. I am also very grateful to Professor Martin Andersson who has provided valuable comments on one of the included essays, to Dr Tom Petersen and Professor Mats Wilhelmsson who have discussed methodological concerns with me and to Dr Elena Rusticelli for irreplaceable perspectives and efforts.

Many thanks to fellow researchers and doctoral candidates at my division for sharing research experiences. I am also grateful to the Swedish Agency for Growth Policy Analysis (Tillväxtanalys) for providing survey data on foreign firms, to Swedish Agency for Economic and Regional Growth (Tillväxtverket) for providing data and expertise on policy programs and research funding, and Statistics Sweden for providing register information and expertise on the pitfalls in Swedish economic data. Among many experiences over these five years, it truly has been rewarding to act as a teacher in different courses at the undergraduate and master level. Thanks for providing me with this experience. Some of my most positive experiences come from participating in several summer schools arranged by the European Regional Science Association (ERSA) and London School of Economics (LSE), and from presenting my work at different scientific conferences, which partly have been made possible through funding from the Swedish Research Council Formas. Other important experiences relate to different studies I have participated in at the Organisation for Economic Co-operation and Development (OECD/GOV), the Swedish Research council (VR), and the Ministry of Enterprise, Energy and Communications (Näringsdepartementet).

It is impossible to ignore the importance of former colleagues and friends. Staffan Larsson who provided me with an internship and later a position as an analyst at 'Nutek', which gave me the opportunity to work together with Sverker Lindblad (who introduced regional development to me), Bo Wictorin, Jörgen Lindell, Lars Werke, among many others. They all have had a great impact on my development and also choice to prioritize research in the field of regional science. I would also like to express my highest gratitude to my girlfriend, friends and family, which have been very important over these relatively intensive years.

# CONTENT

COVER ESSAY .....	7
1. Introduction.....	8
2. Aim and research objectives .....	10
3. Definition of concepts .....	11
4. The study area .....	14
5. Theoretical considerations .....	18
6. Data and quality aspects .....	24
7. Papers.....	26
8. Discussion and future research .....	29
9. References.....	31
ENCLOSED PAPERS .....	35

Paper I: Falck, S. (2013) Location of Foreign Direct Investment in Services: Some Cross-Industrial Evidence from Sweden. *Journal of Regional and Urban Economics*. Forthcoming 2013 (Paper accepted)

Paper II: Falck, S. and Westlund, H. (2013) Regional Grants and FDI Location: Evidence from Swedish Regional Policy Programs 2002-2009. *Published in the Romanian Journal of Regional Science*. Vol. 7, No. 1, 36-68

Paper III: Falck, S. (2013) Human capital and FDI Location: The Swedish experience. *Presented at the Australia New Zealand Regional Science Association International Conference, December, 2012, Wollongong, Australia*

Paper IV: Falck, S. (2013) Spillovers from FDI through Labour Mobility: An Empirical note from Sweden. *Submitted to the International Regional Science Review*

## **COVER ESSAY**

## 1. Introduction

This doctoral thesis concerns the interplay between multinational enterprises (MNE) and spatial economies, with an orientation towards the location and spillover effects of inward foreign direct investments (FDI). The general background is the remarkable growth in the number and importance of MNEs that are central in today's global economy as one of the primary drivers of the flows of investment, trade, and knowledge across national borders, which are the heart of the globalisation process (Jones 2005). The causes of this rapid expansion are typically attributed to changes in technology, greater liberalisation of trade and investment and de-regulation and privatisation of markets (Jones and Wren 2006). The development reflects the importance of having MNEs at the academic and policy agenda (McCann and Acs 2010). Hence, it is not surprising that governments around the world devote considerable efforts to attract FDI with the belief that foreign firms will generate positive externalities and contribute to increase the overall economic development.

For researchers interested in spatial aspects of economic activities, MNEs are of principal interest because they choose to operate in multiple locations separated by national borders and usually also by economic conditions that are not necessarily fixed over time nor equally distributed within a country or region, irrespective of whether the region is a subnational or transnational spatial unit. The principal operational environments of a MNE are (i) the home-economy that contributes to foster cross-border operations, and (ii) foreign host-economies in which the MNE set up affiliates or subsidiaries through foreign direct investment (FDI). This implies that countries and regions around the world are integrated through MNEs that create international flows of capital, information, knowledge, and trade of goods and services. Therefore, it is necessary to understand the problem of where and how the MNE chooses to locate its FDI and how MNEs influence their operational environments and in what situations. For planners and decision makers, it is vital to consider the definition of satisfactory operational environments for MNEs and how they contribute in shaping economic development and prosperity. In general, knowledge on the interplay between MNEs and spatial economies is crucial to advance economic policies and strategic planning tools.

Much research has been devoted to the MNE. The first major conceptual breakthrough was made by Stephen Hymer (1960) whose contribution changed the thinking on international business and brought the MNE on the agenda. The initial research aimed at explaining why MNEs exist, when production operations move from one country to another (Vernon 1966, 1979), how production decisions among MNEs are made (Buckley and Casson 1976, Rugman 1981), and industrial organisation (Caves 1971). Yet, Dunning's (1977, 1980) eclectic paradigm is perhaps the most comprehensive framework. It is known as the (O)wnership-(L)ocation-(I)nternalisation-paradigm and focuses on the nature, role, and behaviour of MNEs and thus why firms engage in FDI. The OLI-paradigm seeks to explain who will undertake FDI, where FDI flows go, and the mode in which international production will take place. The greater the O and I advantages possessed by firms and the more the L advantages of creating, acquiring and exploiting these advantages from a location outside a firm's home country, the more FDI will be undertaken (Dunning and Lundan 2008). The originality of the OLI-paradigm was that it brought existing knowledge together and got recognition

because none of these components alone explains the motives of MNEs. It also contributed to an increasing interest in firm-location interactions (Cantwell 2009).

However, the OLI-paradigm has been criticized on a number of fronts. For instance, Jones and Wren (2006) argue that it covers such a range of theories and factors that it is more of a taxonomy rather than a theory of FDI, and should therefore be seen as an analytical framework as opposed to an all-encompassing theory of FDI. Other criticisms relate to the L-component which scholars have started to pay more attention to over the last decades by investigating the spatial behaviour and configuration of MNEs within countries and regions, which the OLI-paradigm neglects. Spatial studies were constrained for a long time because of difficulties in accessing relevant information and the lack of appropriate theory. Indeed, the mainstream theory from international business was simply inadequate for analysing MNE location at the non-national level, and orthodox location theory was unable to deal with the complexities of MNEs, such as issues related to organization and internalization (McCann and Mudambi 2004). The first advancements came in the mid-1980s and were, among others, made by Harrington et al. (1986) who observed that foreign investments were important to certain states in the United States, and suggested the nature and location of cross-border investment flows could be explained by modifying standard models of FDI. Subsequently, a wider access to information as well as theoretical advancements and progress in econometric modelling has spurred a growing interest in the interplay between MNEs and spatial economies, indisputably since the wake of the new economic geography (Krugman 1991, Fujita et al. 1999). This particular literature has largely been focused on different aspects of the location of FDI (Head et al. 1995, Guimarães et al. 2000, Wren and Jones 2010, among others), and, more recently, also on its implications (Driffield 2004, Ewing and Yang 2009, Narula and Driffield 2012, among others).

The present thesis takes its point of departure in the latter strand of literature and the large influx of foreign firms in Sweden in the recent decades. The central purpose is to investigate three specific aspects related to FDI location. The first aspect relates to the shift away from FDI in manufacturing to services and whether service FDI locates differently from manufacturing FDI. The second aspect concerns the relationship between FDI and public incentives and whether investment promotion schemes are useful to attract FDI. The third aspect associates to the link between human capital and FDI and how different types of skilled workers influence location decision of foreign investors. In addition, the thesis also examines whether labour mobility is a potential source of spillovers from FDI in a spatial context.

It is important to emphasize that the thesis concerns both classical and modern aspects of FDI location. The reason for this is that the spatial dimension of FDI is not purely an academic matter but has important implications in economic development work. For instance, if traditional location factors are relevant, policy should operate on these factors in order to attract FDI, and vice versa (Jones and Wren 2006). There are also empirical motivations to not ignore classic aspects, such as whether classical theories can be used to understand contemporary FDI trends. Indeed, more empirical work may shed new light on old truths and contribute to enhance our understanding of which are the dominant influences and in which situations. In addition, previous systematic

analyses made on inward FDI and MNEs/foreign firms in Sweden have largely been focused on analysing the economic impact of FDI on wages, productivity, employment, and innovation (Karpaty 2005, Bandick and Karpaty 2011, Bandick 2011, among others), alternatively examined FDI determinants without analysing its spatial dimension (Karpaty and Poldahl 2006). In comparison, FDI location and regional studies have received little attention.

Moreover, while there is a multitude of empirical studies on the effects of FDI, a less analysed issue concerns the mechanisms through which these spillovers occur, especially spillovers arising through labour mobility. Indeed, this literature typically treats the channels through which these spillover effects work as a black box (Görg and Strobl 2005), and most studies that explicitly consider spillover mechanisms have mainly been focused on backward and forward linkages between firms (Pesola 2011). However, there have been some recent advancements suggesting labour mobility is a channel for spillovers and may have important implications for domestic firms (e.g. Balsvik 2011). Yet, several dimensions remain unexplored. For instance, past research that explicitly address spillovers from FDI that occur through labour mobility have neither paid too much attention to the spatial dimension and extent of this potential spillover channel. All in all, this provides a set of interesting questions that this thesis intends to examine.

The remainder of the cover essay is structured as follows. Section 2 presents the general purpose and research objectives. Section 3 outlines central concepts and definitions. The study area is described in section 4. Section 5 consists of theoretical considerations associated to FDI location and spillovers from FDI. Section 6 describes the data and related quality aspects. The essays are summarized in section 7. A concluding discussion and some ideas for future research are found in section 8.

## **2. Aim and research objectives**

The central purpose of this thesis is to contribute to the understanding of factors determining FDI location and expected benefits arising from the successful attraction of FDI. To achieve this, four research objectives are identified and examined in a set of self-contained studies.

The first objective is to provide cross-industrial evidence to bear on the question whether there is a need to reconsider traditional location factors of MNEs. The background is the shift away from FDI in manufacturing to services (Ramasamy and Yeung 2010) and that prior work is largely focused on FDI in manufacturing production (Arauzo-Carod et al. 2010). In fact, little evidence has so far been provided on the location of service FDI. This casts some doubts on the efficiency of existing FDI location models. The aim of the first essay is to investigate and compare location factors of FDI in manufacturing and service industries, and potential differences stemming from what embodies the operational environments of foreign firms.

The second objective is to examine whether investment promotion schemes are useful to attract FDI. The background is that investment promotion schemes are increasingly seen as an important cornerstone of the industrial policy of most countries and regions (Hogenbirk and Narula 2004). Indeed, governments around the world use public incentives to attract FDI in order to promote

economic development of the nation, its regions and cities (Head et al. 1999). One motive to use public incentives is that foreign firms are influenced by positive externalities (Head et al. 1995) and tend to discriminate areas where such benefits are less likely to arise, which will lead to unbalanced investment patterns. The aim of the second essay is to investigate the extent regional grants influence FDI location.

The third objective is to examine the link between human capital and FDI location. The background is that MNEs undertake a major part of the global investments in research and development and control some of the worlds most advanced technologies (McCann and Acs 2010), which suggests that MNEs should have a large demand for personnel with specialist competence. Although the importance of human capital as a determinant of FDI has already been embodied in theory and in past research (Lucas 1990, Noorbakhsh et al. 2001, among others), few prior studies have presented results on the effects of different types of skilled workers. The aim of the third essay is to examine how different types of skilled workers influence FDI location.

The fourth objective is to provide insights on whether labour mobility is a potential source for spillovers from FDI. The background is the long held view among scholars and policymakers that there exist 'spillovers' from FDI, such as inward FDI generates some form of indirect knowledge or technology transfer from parent to affiliate, and subsequently from affiliate to the local economy (Driffield et al. 2010). Although spillover effects have been examined in a multitude of studies, including the factors determining the existence, dimension, and sign of FDI spillovers, a less analysed issue concerns the mechanisms through which these spillovers occur, and especially labour mobility. The aim of the fourth essay is to provide empirical results on the nature of labour mobility flows between foreign firms and domestic employers in Sweden and to discuss the implications of considering a spatial dimension.

Overall, the thesis is designed to contribute to the academic and public policy work pertaining globalisation, MNEs, economic development, and strategic planning. Improved knowledge on the interplay between MNEs and spatial economies can potentially make a difference between failure and success in promoting economic development.

### **3. Definition of concepts**

To avoid confusion in the use and meaning of central concepts, this chapter presents definitions that may or may not be specific to this thesis. Some limitations in the use of general concepts are highlighted.

The 'multinational enterprise' (MNE) refers to a firm that operates in more than one country, in the sense that it controls operations or income-generating assets in other countries than where it originates. A MNE is owned in a home-country and operates in foreign host-countries through 'affiliates' or 'subsidiaries'.<sup>1</sup> This definition is equivalent to the general work on MNEs (Dunning 2003, Caves 2007). It implies, for instance, that a firm whose sole international involvement is the

---

<sup>1</sup> The difference refers to the degree of ownership that a parent company holds, where an 'affiliate' indicates a minority stake and a 'subsidiary' indicates a majority stake in the ownership of the company

exporting of good or services from its home-economy is not a MNE. The distinct feature of MNEs is that they directly control the deployment of resources in two or more countries, and the distribution of the resulting output generated between these economies. Although there is a long-standing academic discussion on that multinationality should require operations in a minimum number of countries, usually five or six, or that a firm active across borders should be a certain size to be defined as MNEs (Jones 2005), there appears not to be any universal definition that successfully captures all dimensions of MNEs.<sup>2</sup> Yet, for empirical reasons, we must arrive at a working definition.

In the present thesis, the empirical work is made exclusively on a single country (Sweden), why two principal types of MNEs can be distinguished: (i) foreign-owned MNEs with affiliates or subsidiaries in Sweden, and (ii) Swedish-owned MNEs with affiliates or subsidiaries abroad. This thesis only considers foreign-owned MNEs (henceforth: foreign firms), which are the result of inward foreign direct investment (FDI). We follow the international work on MNEs (OECD 2008) and define a foreign firm through the extent of foreign-ownership, implying a firm is considered to be foreign-owned if 50 per cent or more of voice in management is controlled by foreign owners. Since the majority stake in the ownership of the company is foreign owned, technically, the employed samples of foreign firms denotes foreign subsidiaries. It should be clarified that ownership in another country is the result of FDI, which is an international investment that aims to control and own assets in other countries than a firm's home country. More specifically, FDI occurs when a firm from one country buys shares in a firm situated in another, or acquires an existing firm abroad, alternatively establishing a completely new operation abroad. The aim of gaining management control distinguishes FDI from 'foreign portfolio investment' (FPI), which involves the acquisition of foreign securities by individuals or institutions without involving control (Jones 2005). It could be noted that the international work on FDI normally considers a foreign investment as a FDI if it involves 10 per cent or more of voting stock in an enterprise operating in an economy other than that of the investor (UNCTAD 2011).

This implies that our working definition of an MNE is a 'foreign-owned MNE or simply a 'foreign firm' in which 50 per cent or more of voice in management is controlled by foreign owners. This extends the implication of MNEs to also a matter of ownership. This aspect adds complexity into the analysis since FDI may simply be a matter of round-tripping. Round-tripping can be described as a reversed inward FDI, i.e. the return of national capital that escaped abroad, which would result in measures overstating the level of FDI in Sweden. It is difficult to assess the extent of round-tripping as it does not seem to be any universal method to identify and consolidate inward FDI according to its definition. Given that we are investigating different aspects related to the spatial distribution of FDI in Sweden, rather than with the absolute levels of FDI inflows, for analytical reasons, we consider all foreign firms being the result of pure inward FDI. However, since there may be large differences in the scope of a FDI project, a size dimension is added, so that we can identify small, medium and large sized projects. Employment is used as an approximation of size since no monetary

---

<sup>2</sup> See for example Dunning (2003) for a more extensive description of the MNE and firms that are close to the MNE, such as the multi-regional enterprise, the international trading firm, and the national producing firm

information is available in the employed database. A minimum threshold of one employee is used to exclude foreign firms that are assumed to be passive or single entrepreneurs. In addition, a threshold of 5 employees is also applied to exclude micro firms, including family businesses, whose location decisions probably are closer linked to the quality of living rather than business opportunities.

The 'spatial economy' refers to the understanding that economic activities take place in space, and may occur at different geographic levels. However, the theoretical underpinning of the spatial aspect of economic activities is so well documented that we need not to deal with it here (Marshall 1920, Krugman 1991, Fujita et al. 1999). As a concept in this thesis, the 'spatial economy' is used interchangeably with 'regional economy' and 'region', and refers to an economic spatial unit at the subnational level. In this thesis, spatial economies are defined as functional local labour market regions (FA-regions), which are predicted travel-to-work areas delimited upon certain assumptions on the extent of economic self-sufficiency of municipalities. The main principle is that people can live and work within these regions without having to spend too long time (<1 hour) in commuting. In practice, 290 municipalities in Sweden are merged into 72 FA-regions. In general, FA-regions reflect the day-to-day economic geography of people and firms over the 2000s (Nutek 2007). Hereafter, FA-regions are referred to as 'regions'.

'Industries' are categories of economic activities that capture economic structures and variations between firms. As a concept, 'industries' is preferred over 'sectors' since the latter emphasises the difference between private and public activities rather than categories of economic activities or firms. There is no single definition of industries that has been accepted as being appropriate for all or even most purposes. Indeed, economic activities may be classified according to the single most important product, alternatively upon the final users or according to firm-ownership, or the type of work done by human in each industry (Illeris 2007). An industrial division founded upon any of these principles may be ambiguous in an analytical context. Firms may produce a range of different products, or sell to both firms and households, and many jobs are not bound to a specific industry. Moreover, ownership tends to be country and time specific. The meaningfulness of any approach to define 'industries' is reduced by heterogeneity or complexity alternatively lack conceptual of relevance. On the other hand, it is neither feasible nor motivated to consider all types of variations since the information about economic activities is limited and many firms are similar in nature. However, in the empirical context of foreign firms the definition of industries is challenging since it depends on the definition of the boundaries of firms. For example, if a manufacturing firm is acquired by a service firm, such as a holding company, it will no longer be classified as a secondary but tertiary economic activity. This thesis uses conventional simplifications of the Swedish Standard Industrial Classification (SNI) which applies when an industrial dimension is considered and is then described.

All in all, these concerns may reduce the precision of the presented results.

## 4. The study area

The study area is Sweden. Sweden is the largest country in Scandinavia with about 9.45 million inhabitants, a gross domestic product (GDP) of \$379.4 billion, and a GDP per capita of \$40600, making Sweden the 22th largest economy and the 13th most productive country per capita in the world in 2011. The economically active population amounts to approximately 5.5 million people, of which 4.2 million were employed and 7 per cent unemployed in 2010.<sup>3</sup> The education level and the R&D intensity are among the highest in the world. The majority of the domestic production is exported, almost 70 per cent of the manufacturing production, mainly to other members of the European Union (EU) and the United States that account for almost 80 per cent of the total export value. Export to China amount to about 3 per cent. The total export value was about 50 per cent of the GDP in 2010.<sup>4</sup>

In 2008, inward FDI flows to Sweden amounted to \$43655 million. It then corresponded to 2.6 per cent of the world total inward FDI, 45 per cent of inward FDI flow to the United Kingdom, almost 9 per cent of inward FDI to the EU and approximately half of inward FDI in Africa. Outward FDI flows from Sweden amounted to \$37351 million in 2008, which then corresponded to 4.5 per cent of the outward FDI flows in the EU and 2 per cent of total in the world.<sup>5</sup> In 2012, the World Bank<sup>6</sup> ranked Sweden as the 8th easiest country to do business in (out of 183 nations) regarding starting a business, registering property, getting credit, protecting investors and enforcing contracts. This makes Sweden's relatively small but well organised and vibrant economy to a highly attractive destination for FDI. It also makes Sweden to an interesting case in point for studying FDI.

In the next, we explore the development of foreign firms in Sweden over the last decades. Since foreign firms are by definition MNEs and ownership in another country is a result of FDI, these results indicate the scope of inward FDI. It is important to remind that Swedish-owned MNEs and outward FDI will not be further discussed or analysed, which however have featured prominently in preceding studies (e.g. Swedenborg 1979, Svensson 1996, Ekholm and Hesselman 2000, Braunerhjelm and Thulin 2009). These studies indicate, for instance, that Sweden has fostered an impressive number of MNEs with large operations abroad, which account for an overwhelming part of the domestic manufacturing production, exports and employment.

### Foreign firms in Sweden

Over the last two decades, there has been a large influx of foreign firms in Sweden that have increased more than fivefold, from 2500 in 1990 to 13500 firms in 2009, which then controlled about 24000 workplaces, of which 60 per cent had one employee or more. The growth accelerated in the mid-1990s and has since then, more or less, been constant. This remarkable development is

---

<sup>3</sup> Sources: Statistics Sweden, International Monetary Fund (IMF)

<sup>4</sup> Source: Statistics Sweden

<sup>5</sup> Sources: Statistics Sweden, International Monetary Fund (IMF), United Nations Conference on Trade and Development (UNCTAD)

<sup>6</sup> World Bank (WB): <http://www.doingbusiness.org/data/exploreeconomies/sweden/>

largely a result of that Swedish firms have become foreign-owned through acquisitions, but is also due many Greenfield investments.

The amount of employees working for foreign firms has increased from about 200000 in the beginning of the 1990s to more than 630000 in 2009, which then corresponded to about every fourth employee in the private sector. In terms of firm size, the 10 largest foreign firms control about every 8th employee of total in foreign firms, and the 100 and 1000 largest foreign firms control approximately 40 per cent and 80 per cent, respectively. This development has made foreign firms important actors in the Swedish economy. In economic terms, foreign firms account for more than one quarter of the Swedish production, one quarter of all investments and more than half of total exports and imports (ITPS 2005). Figure 4.1 illustrates how foreign firms and associated employees developed between 1990 and 2009.

Figure 4.1. Foreign firms and employees, 1990-2009

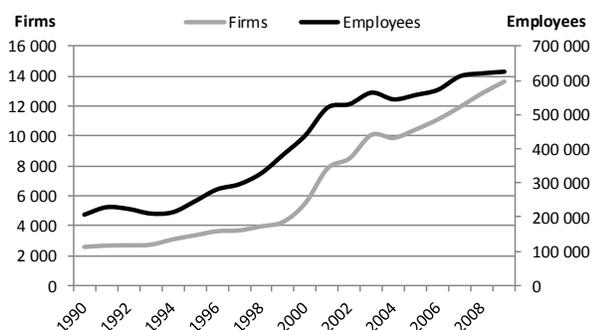


Figure 4.2. Top 10 countries of origin, 1990, 2000, 2009

1990	Share	2000	Share	2009	Share
1 Switzerland	22%	USA	23%	USA	16%
2 Finland	17%	Great Britain	11%	Great Britain	13%
3 USA	13%	Netherlands	10%	Finland	10%
4 Denmark	10%	Finland	10%	Denmark	9%
5 Netherlands	9%	Denmark	9%	Norway	9%
6 Norway	8%	Germany	9%	Germany	9%
7 Great Britain	8%	France	8%	Netherlands	7%
8 Germany	6%	Switzerland	7%	France	7%
9 France	3%	Norway	7%	Luxembourg	7%
10 Japan	1%	Singapore	1%	Switzerland	4%
Top 10	98%	Top 10	95%	Top 10	90%
Home countries	24	Home countries	59	Home countries	73

Note: 10 most important countries of origin in 1990, 2000 and 2009, as share of total employment in foreign firms. Source: Own computation of data from the Swedish Agency for Growth Policy Studies

Figure 4.2 indicates that the number of home-countries has risen from 24 in 1990 to 73 in 2009. We may consider this as a general indication of an increasing global integration of national economies through MNEs. Yet, firms from the 10 most important home-countries accounted for 90 per cent of the total employment in foreign firms in 2009. The corresponding share was 95 per cent in 2000, and 98 per cent in 1990. Most foreign firms have their parent firm in a Western European country or in the United States. Approximately every third firm has a Nordic owner. The three most important home-countries in 2009, in terms of employees, were the United States (16 per cent), Britain (13 per cent) and Finland (10 per cent). In comparison, the BRIC countries jointly accounted for about 0.5 per cent.

A notable feature related to this development is that a significant share of the Swedish employment growth over the 2000s is associated to foreign firms. Despite the fact that they only amount to approximately 5 per cent of the total number of firms in Sweden (with reported payment of salary), the employment in foreign firms increased with 132000 workers between 2002 and 2009, while it was more or less unchanged in Swedish-owned firms and negative in the public sector. Furthermore, a downturn can be observed that began in the initial face of the financial crisis that took off in the end of the 2000s, which overall appears to have had a greater impact on Swedish-owned firms. This downturn appears to have influenced manufacturing and service firms

differently, and had little impact on primary industries, at least in terms of employments. In general, foreign firms in services appear to have been better off over the 2000s. The development in manufacturing was negative for both foreign firms and Swedish-owned firms. Figure 4.3 displays employees by industry for Swedish and foreign firms in 2009, and the corresponding development between 2002 and 2009. Development is described in absolute values or percentage points (pp) when indicated.

Figure 4.3. Employees (1000s) in Swedish and foreign firms in 2009, and development 2002-2009, by industry

Industry	Year 2009		Industry share		Development 2002-2009		Industry share	
	Total empl. (1000s)	Share in foreign firms	Swedish firms	Foreign firms	Total empl. (1000s)	Share in foreign	Swedish firms	Foreign firms
Primary	45	5%	2%	0.3%	4	-0.4 pp	0.2 pp	0 pp
Secondary	832	30%	28%	37%	-80	1 pp	-3 pp	-2 pp
Tertiary	1 901	22%	70%	62%	210	6 pp	3 pp	22 pp
Private sector	2 777	24%	2 120	657	133	4 pp	1	132
Unknown	5		4	1	-6		-5	-1
Public sector	1 250				-31			
Total	4 032		2 124	658	96		-4	132

Source: Own computation of data from Statistics Sweden. Minor deviations exist in the number of employees between the data reported above from the Swedish Agency for Growth Policy Studies and the data reported from Statistics Sweden. These deviations are a consequence for how the data have been extracted and defined by Statistics Sweden. The deviations amount in total to approximately 25000 employees, with a surplus in the data from Statistics Sweden

We may consider this development from at least three perspectives. First, the development is a result of growing domestic firms that have been efficient in transforming into foreign firms, i.e. change country of ownership. If this is done for financial reasons, the development may simply signal capital flight, suggesting the increasing number of foreign firms is a result of round-tripping investments. Second, the development indicates that foreign firms have been efficient in acquiring relatively productive and growing firms. However, recent research indicates that relatively high productivity among foreign firms in Sweden cannot be explained by acquisitions of the most productive firms (Bandick and Karpaty 2011). Third, an increased foreign ownership has resulted in increased employment and productivity. This in line with research showing that foreign acquisitions in Sweden generally implies increased productivity, wages, employment, and knowledge intensity (Heyman and Norbäck 2012). Several other studies show similar results (Oulton 1998, Doms and Jensen 1998, Conyon et al. 1999, Girma et al. 1999, among others). We may also consult MNE theory (Caves 2007, Dunning and Lundan 2008) to interpret this development, suggesting that foreign firms have been successful in utilizing the advantages that motivate their multinationality and make them relatively competitive. These advantages intend to compensate for disadvantages that could arise when establishing abroad, and may, for instance, relate to a particularly competitive product, knowledge, production process, or that foreign firms have access to greater markets and capital.

All in all, it seems that the overall experience of an increasing number of foreign firms in Sweden is generally positive. However, it should be noted that too much foreign ownership of firms may imply a political concern, especially in industries of strategic importance.

## Spatial distribution of foreign firms within Sweden

The spatial distribution of foreign firms in Sweden is described in figure 4.4 and 4.5. However, before we comment this, it should be mentioned that Sweden has three metropolitan regions (Stockholm, Göteborg, Malmö) in which approximately half of the Swedish population reside, which account for approximately 60 per cent of the national output. Since most people and firms are located in the south part of the country, the northern part is sparsely populated with relatively few economic activities that largely are situated on the east coast. Although this description is broad, it reflects the spatial distribution of foreign firms in Sweden. Indeed, there are foreign firms operating in each of the 72 regions but about 60 per cent are situated in the metropolitan regions. This level is 10 per cent higher than for firms in Sweden in general, suggesting the implications of hosting foreign firms primarily accrue to the metropolitan areas.

Figure 4.4. Foreign ratio, 2009

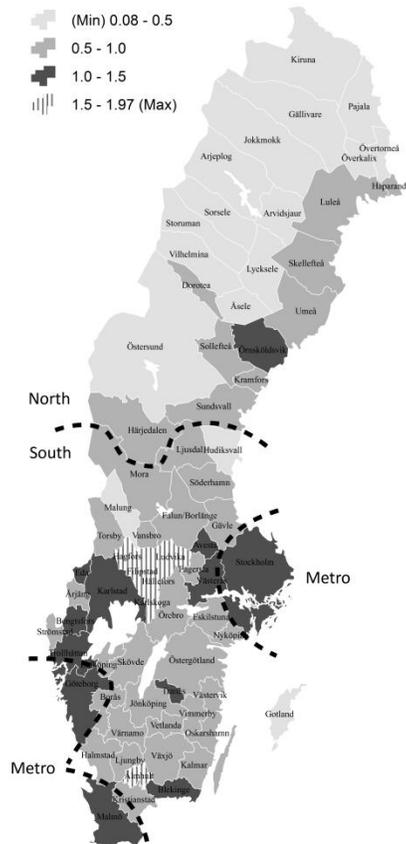
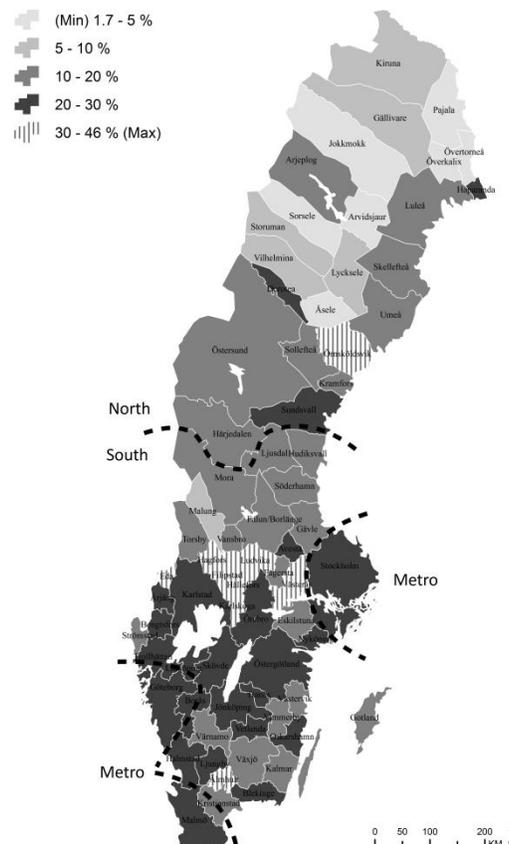


Figure 4.5. Foreign penetration, 2009



Source: Own computation of data from the Swedish Agency for Growth Policy Studies and Statistics Sweden

The spatial distribution of foreign firms can be examined using a ratio, computed as the regional share of employees in foreign firms to the regional share of the national economy (wage sums). The foreign ratio is displayed in figure 4.4 and indicates the importance of foreign firms in each region. A ratio less than 1 implies relatively few foreign firms, and vice versa. Employment is used instead of the number of firms (workplaces) as it better reflect the scope of foreign firms. 18 regions have a

ratio greater than 1. These are mainly small regions situated on the boarder to Norway or in the mid-central inlands, and the metropolitan regions. Regions in the northern inlands have the lowest ratios, while the highest ratio is in Älmhult, which is a small remote region in the southern Sweden where the foreign-owned home products company IKEA is originated. The foreign ratio can be considered as a general indication of regional attractiveness of FDI, but should be interpreted with caution. Partly because the absolute numbers of foreign firms is very small in several regions that appear relatively attractive.

Another approach to examine the spatial distribution of foreign firms is to consider the share of employees in foreign firms of the total private sector employment. This indicates the overall foreign penetration per region and is illustrated in figure 4.5, showing that most regions in the north have a level less than 20 per cent, while the level is greater than 20 per cent in basically all southern regions. The highest level is in Älmhult (46 per cent) and the lowest is in Åsele (1.7 per cent), which is a small remote region in the northern inlands. The spatial distribution of foreign firms is interesting because it raises questions related to what explains FDI decisions and what the resulting implications of these decisions are. One of the objectives of the models developed in this thesis is to identify reasons for differences in observed FDI patterns.

## **5. Theoretical considerations**

The thesis consists of four essays that all take departure from a joint set of questions derived mainly from outside the mainstream literature on MNEs, i.e. international business literature. It is necessary to explain the underlying reasons for this. Our theoretical approach is largely given by that the thesis deals with determinants of inward FDI within a single country. This reduces the appropriateness of mainstream frameworks designed to explain FDI decisions (e.g. the OLI-paradigm) and its implications. In the next, we discuss this, followed by a review of FDI determinants and spillover channels.

### **A hierarchical perspective on FDI decisions**

There is a burgeoning literature on FDI decisions and the resulting aggregate investment patterns across the world. This relates to a long-standing academic discussion on what the determinants of FDI really consists of, how to measure them, and in what situations they are relevant (for a review, see e.g. Blonigen 2005). Predictions are typically based upon differences in factor endowments, market opportunities, exchange rates, taxes, tariffs and non-tariffs, which are assumed to influence the firm to invest abroad and consequently the resulting magnitude and direction of FDI.

Nevertheless, it appears that there is no all-encompassing theory on FDI decision but a variety of theoretical models (for a review of nine different models on FDI, see e.g. Faeth 2008). The suitability of a theory or model may depend on the context in which it is applied, including the level of technology of firms and home/host-economies, and the institutional and operational (spatial) environment.

To illustrate the latter, we may consider a situation where firms employ a sequential decision-making process and, for instance, first choose a host-nation on the basis of one set of factors, and

then a host-region within that nation on the basis of another set of attributes. Here, the first set of factors relates to the institutional environment in the nation, such as tax-levels and barriers to trade, while the second set of factors relates to the operational environment in the region in which firms invests and are active, such as, production costs, market potentials, and externalities arising from proximity. In the current era of globalisation, however, it has become central to also consider the multilateral (institutional) environment and thus the role of super-regions, which poses an additional dimension.

Indeed, although most studies on FDI decisions tend to ignore the existence of an underlying hierarchical structure, there are research which have considered that there may be some truth in this (e.g. Mucchielli and Puech 2004, Mataloni 2007, Basile et al. 2009). For instance, in the case of FDI in the European Union (EU), Basile et al. (2009) argue that considering the process of European integration, regions can be expected to compete with other regions both within and across national boundaries for the attraction of FDI. However, they show that country boundaries (largely) do not matter in determining FDI, and that foreign investors tend to consider regions across countries in Europe as closer substitutes than regions within national boundaries. They argue that MNEs perceive the EU as a relatively (although not completely) integrated area, rather than as a collection of independent countries, and that regions compete with other regions within the EU to attract FDI.

The increasingly important role of super-regions (such as the EU) and regional trade and investment agreements (Walter and Sen 2009) raise a number of questions regarding the appropriateness of FDI theories that ignore the multilateral environment. In addition, firm-specific assets have become more mobile across national boundaries (Dunning 1998), which introduces further complexities into the analysis of FDI decision and its implications. McCann and Mudambi (2004) argue that in view of these changes, the traditional approach of using the OLI-framework is no longer appropriate for discussing the spatial behaviour of MNEs. Particularly since it is inadequate for analysing the spatial behaviour of MNEs at the regional level, irrespective of whether the "region" is a sub-national spatial unit, or a trans-national spatial unit such as in the case of some EU regions.

Overall, this suggests that our perspective of examining FDI decisions within a single country is a rather narrow approach and that we need to consult an alternative strand of literature. This implies we will be unable to explain why, when and how MNEs invest in Sweden, in relation to other countries, and discuss factors at the supranational and national level assumed to determine FDI decisions and the resulting number of FDI projects. Nor will we be able to discuss the spatial configuration of MNEs, which is an increasingly important aspect of globalisation. Obviously, these are significant drawbacks of the present work. On the other hand, there are several positive aspects of studying FDI within a single country. For instance, detailed information is more available for a single country than across countries, and we can consider different types of related policies in a joint context without considering institutional differences across countries. All in all, this suggests that we need to consider theories associated to the link between FDI and the operational (spatial)

environment in which firms invest and are active. In practice, we will consider location determinants of FDI and spillover channels in a spatial context.

## Determinants of FDI location

Location determinants are factors capturing different aspects of the operational environments in which foreign investors invest. Hence, these are factors assumed to attract foreign firms and define what makes locations attractive to invest in. Many researchers have hypothesized and provided evidence on what these factors consist of, how to measure them, and when they are relevant. This section reviews factors emphasised by related theory and prior empirical work. To ease this review, we follow Hayter (1997) and group factors into three different categories: neoclassical, institutional, behavioural. A principal difference is that the neoclassical and institutional categories consist of factors that are external to firms, while the behavioural category consists of factors that are internal.

*Figure 5.1 Determinants of FDI location, by category and type*

Category	Factor	Description
Neoclassical	Market	- Local market size and strength - Potentials in adjacent markets
	Labour market	- Availability, cost and quality of labourers - Regulation and unionisation
	Agglomeration	- Urbanization economies - Localization economies - Foreign agglomeration
	Infrastructure	- Accessibility to transport infrastructure - Accessibility to communication infrastructure
	Research and Development	- R&D facilities - R&D intensity
	Geography	- Distance to home-market - Distance to urban areas or business districts - Shared country borders
	Operating costs and assets	- Utilities - Land - Energy
	Prospects	- Economic development - Social and economic depression
Institutional	Policy incentives	- Inward investment promotion programs - Firm grants (general and specific) - Foreign trade zones
	Regulation and taxes	- Local regulations and laws - Corporate tax and tax on labour - Business climate
Behavioural	Firm characteristics	- Firm size - Technology level - Pre-establishment advantages

*Source: Own compilation of information from Jones and Wren (2006), and Arauzo-Carod et al. (2010)*

There is no intention to be comprehensive regarding all potential location factors or absolute in the view of which category or type a factor should be grouped.<sup>7</sup> Instead, the review rests largely upon preceding work by Jones and Wren (2006) and Arauzo-Carod et al. (2010), who summarize factors that featured prominently in prior FDI location work. These factors are summarized in figure 5.1.

This thesis focuses on neoclassical and institutional factors. Although behavioural factors are not a concern here they are important to mention since they may as well influence FDI decisions. Overall, studying determinants and implications of FDI is relevant as they indicate how different economic features contribute in shaping satisfying FDI environments.

### *Neoclassical factors*

The neoclassical category contains demand and supply factors upon which rational and perfectly informed firms make optimal choices on the grounds of profit maximizing or cost minimizing strategies. These are probably the most studied type of factors, and typically relate to market size, labour market traits, agglomeration economies, and infrastructure.

Access to sizeable markets is an obvious attraction factor to foreign firms that wish to maximize the returns of their investments. Market factors are expected to have a positive effect as market potentials within the country will attract market seeking investors that have outgrown their own domestic market and wish to expand into greater sales or market shares. Labour market traits relate to the availability, cost and quality of workers. The interpretation of their influence is not straightforward since firms may prioritise the cost of labour rather than the quality, and vice versa. Other relevant labour market factors are regulation and unionisation which for which the interpretation is not straightforward. Strong unionisation may indicate relatively high wages and strict rules on firms such as “hire and fire”, leading to reduced attraction level. Alternatively, it indicates stability and a productive workforce which should be positive.

Agglomeration theory suggests that firms may benefit from geographical proximity to other firms through availability to market information, networking with local suppliers, skilled labour pool, and technology transfers (Marshall 1920, Krugman 1991, Fujita et al. 1999). The economies arise are classified as intra-industry localisation economies, and inter-industry urbanisation economies. In addition, there is also a tendency among foreign firms to co-locate, which Basile (2004) suggests is a consequence of foreign investors having less initial knowledge about potential host-economies suggesting co-location is a risk reducing behaviour.

Furthermore, infrastructure encompasses the state of transport and communication networks and is regarded as an enabler of globalisation as it facilitates trade, face-to-face contact, management control and communication with suppliers and purchasers (McCann and Shefer 2004). Naturally, also other factors related to revenues and costs may be important, such as access to research facilities, geographical distances, cost of land and services, and prospects.

---

<sup>7</sup> There are many different potential ways to categorize location factors. Another categorization could for example consider a physical group and a human and economic group, and subgroups within each of these categories. Alternatively, groups could be created upon the type of FDI: resource seeking, market seeking, efficiency seeking, strategic asset seeking

### *Institutional Factors*

The institutional category extends the neoclassical category and takes the public policy perspective suggesting economic development can be promoted through different public incentives. Factors in this category generally relate to different public incentives and may take the form of promotion programs, regulation, and tax incentives that are implemented at the regional or local level. The idea is to influence the location decision of firms by making certain areas more attractive for investments by offsetting some cost- or disadvantages associated to those areas. Such incentives are typically used to promote development in areas identified in need of assistance to develop.

The relevance of such policy incentives depends on a range of factors, including on how the policy scheme is organised. For instance, a tax may or may not be specific for a region and promotional policies can therefore offset each other why their impact often appears small (Head et al. 1999). In general, the desired effect from public promotion policies is complex to interpret, as a policy may possibly be efficient to attract FDI, but which in turn may contribute to an economically less beneficial location of firms within the country. Hence, such policy incentives may result in a non-optimal distribution of economic activities.

### *Behavioural Factors*

The behavioural category includes factors related to the investing firm, such as firm size, technology level, and pre-establishment advantages. Behavioural factors have been much less studied in comparison to neoclassical and institutional factors, which nevertheless are important as they relate to the individual characteristics of firms. Indeed, a foreign firm may choose to reinvest in the same area and therefore be willing to accept relatively high costs to benefit from prior experiences, capital and assets, which can be considered as pre-establishment advantages. Alternatively, firms that are relatively technology intensive may prefer locating in metropolitan areas because they are more likely to find suitable workers there, and are thus also willing to accept higher rents and compensation.

## Channels for spillovers from FDI

A strong motivation to promote FDI is the possible existence of productivity spillovers, which may occur through indirect transfers of knowledge or technology from parent to affiliate, and subsequently from a foreign affiliate to domestic firms, and in turn the local economy (Driffield et al. 2010). Thus, spillovers are implications that may arise from FDI. Yet, although there is a multitude of studies on the effects from FDI, the literature on the spillovers from MNEs<sup>8</sup> often treats the channels through which these spillover effects work as a black box (Görg and Strobl 2005). Nevertheless, several researchers have discussed potential channels for spillovers and thus what the sources of productivity gains may consist of. This section largely rests upon prior work by Görg and Greenaway (2004) and Crespo and Fontoura (2007) and reviews five different potential

---

<sup>8</sup> The theoretical literature on spillover effects (e.g. Fosfuri et al. 2001) emphasizes the importance of MNEs, rather than nationality (foreign/domestic firms). However, several empirical contributions have interpreted this as also the importance of foreign firms (e.g. Pesola 2011)

channels. The channels are summarized in figure 5.2. Most prior empirical work that explicitly considered spillover channels has mainly been focused on backward and forward linkages between firms (Pesola 2011). This thesis focuses on labour mobility.

*Figure 5.2. Potential channels for spillovers from FDI*

Channel	Sources of productivity gains
Demonstration/imitation	Encouragement and adoption of new technology, production methods, management practices, and marketing technology.
Labour mobility	Skill acquisition by hiring of workers with skills and experiences from MNEs/foreign firms. Tacit knowledge.
Exports	Exposure to technology frontier, networks, infrastructure and knowledge of foreign markets. Scale economies.
Competition	Faster adoption of new technology and reduction in inefficiency.
Backward and forward linkages	Relationships that domestic firms establish in local markets as suppliers to foreign firms (backward linkages) or as customers of intermediate inputs produced by MNEs/foreign firms (forward linkages).

*Source: Own compilation of information from Görg and Greenaway (2004), and Crespo and Fontoura (2007)*

The first and perhaps the most evident channel is demonstration or imitation by MNEs (hereinafter: foreign firms). This channel relates to the introduction of a new technology which may be too expensive and risky to undertake by domestic firms. However, if a new technology is used by a foreign firm, domestic firms may be encouraged to adopt it. Different types of technologies may spill over from the foreign firm, such as production methods, management practices and marketing technology. Labour mobility is the second channel and concerns inter-firm mobility of workers switching from foreign firms to domestic firms, alternatively starting up new enterprises. The idea is that a domestic firm will benefit from hiring workers with skills and experiences from foreign firms that they assume will contribute to increased productivity if applied in the environment of the domestic firm.

The third channel relates to exports and suggest that the presence of foreign firms can influence the export capacity of domestic firms, such as the domestic firms can copy the export process of foreign firms, which may reduce the entry costs into foreign markets associated with the establishment of distribution networks, transport infrastructures or knowledge of customers' tastes in foreign markets. The fourth channel, competition, implies that domestic firms have to improve their own performance to compete successfully with more productive foreign firms. Even if domestic firms are unable to imitate technology of the foreign firm, competition from foreign firm puts pressure on them to use existing resources and technology more efficiently, and even adopt new technologies.

The fifth channel concerns backward and forward linkages. Backward linkages refers to relationships that domestic firms establish in local markets as suppliers to foreign firms, such as that the foreign firm may benefit domestic suppliers if it increases demand for local inputs, or provide technical support for the improvement of the quality of a good, or for the introduction of innovations. Forward linkages refer to domestic firms as customers, and are observed in the foreign

firm's supply of higher quality inputs and/or lower price to domestic producers of end-user consumer goods.

Although these channels signal positive effects from FDI, it should be mentioned that also a number of potentially negative effects may arise through these channels, such as that foreign firms may attract the best workers from domestic firms by offering a higher compensation. Alternatively, increased competitions from foreign firms may imply a significant loss in market shares for domestic firms. Moreover, it may be difficult to distinguish between these potential channels for spillovers, especially in an empirical context, since several of the channels generally refer to learning processes and competition.

## **6. Data and quality aspects**

This thesis exclusively considers secondary data. Microdata on foreign firms collected from the Swedish Agency for Growth Policy Analysis, which are used to examine the nature of foreign firms/establishments. Other data are register information from Statistics Sweden, project-level information on regional grants from the Swedish Agency for Economic and Regional Growth, and information on transport distances from the Swedish Agency for Growth Policy Analysis. This information is used to estimate different economic attributes of the regions. The data including some quality aspects are reviewed in this chapter.

### **Data on foreign firms in Sweden**

A micro-database on foreign firms has been constructed upon the Swedish Agency for Growth Policy Analysis' annual survey on foreign firms in Sweden (Tillväxtanalys 2010). In this survey, a firm is considered to be foreign if 50 per cent or more of voice in management is controlled by foreign owners. Firms are included in the survey if they are defined as economically active, registered for VAT, and/or registered as an employer, and/or registered as firm in the VAT exempt business, parent firm which is not registered for VAT or as an employer but has an active subsidiary, or are firms of economic importance. The survey relates to conditions on the last day in each year and provides information at the firm- and workplace-level. Among the data included are year of establishment, industry, entry mode, country of origin, employees, and location. The database contains information on all known foreign firms and workplaces operating in Sweden since 1990.

The survey traces foreign firms through scrutinizing corporate records and other appropriate information, such as media reporting. This implies there may be a difference in when a foreign firm entered in survey and when it in effect was established in Sweden. A year-to-year change in the population of foreign firms may be due to several different reasons, for instance: change of ownership in existing local firms, establishment of completely new operating facilities, discovery of omitted foreign firms with operations in Sweden, or change in foreign-nationalities. The survey has been modified several times since it was introduced in 1990. For example, a different definition of what an economically active foreign firm is was used in the survey year 2003. The new definition resulted in an increasing number of firms that year, mainly small firms with few or no employees. However, this modification did not have a significant effect on the number of employees in foreign

firms. An important modification took place in 2001 when entry mode was introduced. Since foreign firms are by definition MNEs, and ownership in another country is a result of FDI, this particular information enables analysis of different types of FDI. More specifically, the information on entry mode is interesting in the present context as only Greenfield investments requires an explicit location decision while other types of FDI such as mergers and acquisitions (M&As), joint ventures, and plant expansions may not (Guimarães et al. 2000). Moreover, the industrial classification of firms has been upgraded from SNI92 to SNI2002 to SNI2007 according to the definitions of Statistics Sweden. Introducing new classifications and aspects into time series complicate analysis and comparisons over time.

The database suffers from several weaknesses because the survey information is not always complete. Potentially, this challenges the precision of the reporting and sometimes also to draw well-supported conclusions. For example, two types of information are provided regarding when a foreign firm was first observed: the year a foreign firm entered in survey, and the year of establishment in Sweden. Since these two years are not necessarily interchangeable, a problem occurs if the latter information is not reported. Omitting observations that lack information on the year of establishment would bias an entry mode-specific analysis on foreign establishments. A systematic procedure is applied to estimate the number of foreign establishments per year and period. This procedure implies if the year of establishment is not specified, then the year firms entered the survey will be used as establishment year. This approach is not ideal and is likely to cause some time-related biases and add complexity into the analyses. However, the assessment is that such time-specific-errors are not a major concern for the econometric results. This is because the empirical work mainly rests upon samples of foreign establishments over medium-to-long time periods that in turn relate to initial economic conditions in the regions. Most attributes used to denote these conditions do not change rapidly over time.

Another quality aspect is that the information at the firm-level and work-place level are integrated and used conjointly. This is not ideal, but unavoidable, since some information is either firm-specific or workplace-specific. For instance, entry mode is reported at the firm-level while location is reported at the workplace-level. Consequently, without merging these data it is not possible to study any spatial aspect of different types of FDI. A related challenge is that the information on entry mode is reported constant over time. A bias occurs, for instance, if a foreign firm that first entered Sweden through establishing a new operating facility and subsequently acquires local firms. All related FDI-ventures will thus be reported as the result of Greenfield investments. Yet, only the first venture should be classified as a Greenfield investment. Thus, once entry mode is considered the quality of the reporting is likely to be reduced.

Many attempts have been made to correct for possible biases. However, the issues raised here are so complex that a solution is beyond scope of the data on foreign firms accessible in this thesis. It could be mentioned that the quality, precision and included dimensions of all reported results would most likely improve considerably if existing national registers on firms, workplaces, and economic operations, would be integrated in a longitudinal database and used conjointly to analyse MNEs and FDI in Sweden. Unfortunately, these registers have not been accessible in this thesis.

## Data on economic structures and conditions

These data are referred to as regional-specific information and are used to estimate and model different economic structures and conditions of the 72 regions.

Standardised data on various economic structures and conditions are collected from Statistics Sweden. Among the data included are statistics on demographics, education, employment, occupation, wage sums, gross domestic product (GDP), and so forth. These are official statistics following standard classifications and definitions regarding education (SUN2000), industries (SNI92/NACE Rev. 1, SNI2002/NACE Rev 1.1, SNI2007/NACE Rev. 2), occupations (SSYK96/ISCO-88), and regions (municipalities, counties, functional local labour market regions). The quality of these data is given by the registers and collection procedures of Statistics Sweden. These data are used throughout the thesis.

Project-level information on regional grants is collected from Swedish Agency for Economic and Regional growth (Tillväxtverket). Information regarding all applied and approved grants is included regarding six types of grants that are available to firms operating in Sweden: transport allowance, investment support, business development support, employment support, investment support of commercial services, research and development grant to promote innovations. There are several issues related to these data especially regarding the link to foreign firms, which is carefully described in essay (II) II where this information is used.

Travel data have been collected from the Swedish Agency for Growth Policy Analysis advanced information system, PinPoint Sweden, which contains detailed information on population and traffic networks including speed limits on all significant roads throughout Sweden. Using real road distances, this information is used to compute traveling time between the main population centres across Sweden. The main population centre is the most populous city, and generally refers to a principal city or town. Population centres are identified using data on urban population from Statistics Sweden. Shortest traveling distance is the distance in minutes by road according to given speed limits (conditions in November 2011). These data are used throughout the thesis.

## 7. Papers

The thesis consists of four essays that are self-contained studies. The first three studies concern determinants of FDI location, while the fourth study concerns spillover effects from FDI. The results in the first three essays are made on different samples of FDI.

The first essay (I) relates to the shift away from FDI in manufacturing to services and examines whether service FDI locates differently from manufacturing FDI. This study provides cross-industrial evidence on FDI location. It utilizes micro data on foreign firms to explore and analyse FDI made in Swedish manufacturing and service industries. The study develops a FDI location model and tests the influence of traditional location factors related to market size, agglomeration economies, transport infrastructure, cost and quality of workers. Negative binomial regression results indicate that agglomeration, in the form of economic diversity, is the only factor efficient to explain FDI

decisions in both manufacturing and service industries. This result suggests, for instance, that knowledge spillovers are crucial in today's global economy. Moreover, the study also finds that the quality of workers and prior FDI decisions are important. The latter result suggests that foreign firms mimic each other's location decisions as this provides some comfort due to the relative risk of investing abroad. All in all, it seems that in the present case, the indicate location factors are more relevant for service FDI in comparison to manufacturing FDI.

Although the main contribution of essay (I) is comparative cross-industrial evidence of traditional FDI location determinants, the explorative results are very detailed and provides a relatively good understanding of the spatial distribution of FDI across Sweden, indicating large variations in the attractiveness of regions. These results show, for instance, that FDI projects are highly concentrated to the metropolitan regions, particularly FDI in business services where 86 per cent of all foreign establishments are made in the metropolitan regions. In general, foreign investors appear to have a strong preference for business opportunities provided in relatively large regions. Another result is that the typical project appears to be a medium-size service FDI. In comparison, most prior FDI location work typically considers relatively large scale FDI projects in manufacturing production.

The second essay (II) concerns the relationship between FDI and public incentives and whether investment promotion schemes are useful to attract FDI. This study (co-authored with Hans Westlund) first shows that regional grants make up a central part of the Swedish regional policy and state expenditures that explicitly addresses regional development. It argues that, although Sweden has not made inward FDI to an important target in its regional development policy, regional grants can be considered as a form of investment incentive available to attract FDI. A conditional logit model is used to assess how different location factors, including grants, have influenced FDI location. Our main finding is that there is no evidence of a robust relationship between grants and the location of FDI. However, a statistically significant effect is found for investment support and transport allowance, which are grants that aims at promoting development in designated areas. Yet, this effect appears relatively small in relation to other location attributes, especially to factors related to agglomeration economies. The study does not find any major differences in what determines FDI location across different entry modes (FDI made as M&As and Greenfield investments).

A notable finding in essay (II) is that the influence of the local market size increases dramatically if only non-metropolitan establishments are considered, while the influence of market accessibility within the country remains at a similar level. This is interpreted as an indication of foreign establishments in non-metropolitan areas are mainly market-seeking investments for which the domestic market potentials are of relatively large importance. This may have important implications for the assumed benefits from attracting FDI. The results also show that foreign investors are influenced by previous foreign investors and that this particularly applies to Greenfield investments and larger FDI projects. This may signal a risk-reducing behaviour caused by unfamiliarity of locations or competition between foreign investors. A suggestion is that future work on FDI could be better aligned with regional policy work, which may be a plausible route to

promote economic development. This may lead towards opportunities to achieve a more balanced economic development, particularly in deprived regions that may find it easier to attract investments from foreign firms rather than local firms. However, this approach is not without controversy.

The third essay (III) examines how different types of skilled workers influence FDI location. It focuses on FDI in high technology industries and knowledge based services and the influence of variety of highly skilled workers. It develops a FDI location model and investigates the influence of knowledge and skills that are of strategic importance to a firm (firm-specific human capital) and for the understanding of the industry setting or domain in which a firm has its core competitiveness (industry-specific human capital). In addition, it also examines the importance of capabilities that relate to a profession or field of knowledge (occupational-specific human capital). The latter is the most general of these three types because occupational-specific human capital applies across a variety of industry and firm settings, while workers with firm-specific or industry-specific human capital may find it more difficult to transfer their knowledge and skills because it may be ingrained in a particular field and can therefore not easily (if at all) be transferred and replanted elsewhere in a meaningful way.

Conditional logit results indicate that all types of human capital are important but that occupational-specific human capital appears to be the key in attracting foreign firms in knowledge intensive production. The results confirm the importance of human capital but also suggest that foreign investors are primarily interested in highly skilled professionals (experts). Indeed, regions with a greater proportion of professionals in their area seem to be more attractive to foreign firms. Apart from the relatively ease in finding competent workers, this may also be an indication of that foreign firms choose to locate in these areas because they may obtain valuable information from other firms through these professionals who are likely to be knowledge spillover agents. Other results largely uphold the basic tenets and empirical results in prior FDI location work.

The fourth essay (IV) discusses whether labour mobility is a potential source for spillovers from FDI and the implication of a spatial context. A spillover effect may arise when employees acquire some specific knowledge from experiencing work in foreign firms and bring this knowledge with them to benefit their new employer when they change job, alternatively start up a new firm. The study emphasizes the importance of studying spillover effects at some appropriate spatial level because it is at that level where this type of knowledge transfers take place and local conditions may influence the nature and extent of spillovers occurring through this channel. Although this study does not provide any final answer to whether spillovers actually have arisen through this channel, it shows that the potentials for an effect to arise are larger in some regions than others because there are few or no such knowledge spillover agents in many parts of the country.

Indeed, although there is a substantial amount of potential knowledge spillover agents in several regions, they typically amount to less than 100 workers and are sometimes non-existent. Moreover, the study also shows that the spatial extent of spillovers is rarely local (i.e. within functional local labour market regions), but inter-regional and often include neighbouring regions

on 60 minutes travelling distance, or more. Such results may have important theoretical and empirical implications. They could also be useful in designing future studies on spillover effects from FDI through labour mobility and in discussing the expected spatial effects and importance of FDI. The study points out that many questions are still unanswered and that there is a need for more work on spillovers from FDI.

## **8. Discussion and future research**

Studying globalisation in its different forms has for decades been an important part of understanding economic development. However, few debates have proved to be so complex, contentious, long lasting and crossed so many academic fields as the discussion on the nature and importance of FDI and thereof MNEs. Overall, there appears to be no final answer to the question on how important FDI and the resulting global network links through MNEs are. Only that MNEs contribute to integrate countries around the world and that FDI is one of the most central economic aspects in contemporary times.

This thesis contributes to the growing body of knowledge on MNEs through a series of self-contained studies that identify determinants of FDI decisions and spillover effects arising through labour mobility in Sweden. The main findings are that FDI location is a result of a complex mix of influences from a number of sources, in particular market potentials, agglomeration economies, prior FDI decisions, infrastructure, and human capital, especially the accessibility to highly skilled professionals whose knowledge and skills stretches across firm and industry boundaries. Another finding is that the spatial dimension may have important implications for whether spillover effects can be expected to arise through labour mobility.

It appears possible to influence FDI decisions through policy incentives. However, to promote increased dispersal of economic activities is not necessarily without controversy, at least not from the perspective of (economic) optimal location of firms and spatial spillover effects from FDI. For instance, although a policy may possibly be efficient to influence FDI decisions it may result in an economically less beneficial location of firms within the country. Furthermore, it also appears unlikely to expect spillover effects from FDI in many assisted areas, at least not scalable knowledge spillover effects arising through labour mobility from foreign firms. There are, however, several other potential channels through which spillover effect may arise, but which still are largely unexplored at the regional level. Thus, there is a need for more research that can enhance the understanding of the regional effects from FDI and whether policy instruments should be used to promote FDI.

Several issues are left for future studies. For instance, the applied FDI location models neither control for spatial heterogeneity nor spatial dependence. Since standard models do not account for the nature of spatial data, it would be interesting to find out the effects of this. In sum, spatial heterogeneity suggests lack in consistency over space of the estimated relationships. Spatial dependence may take the form of a spatial lag, suggesting interdependences between FDI decisions in alternate (adjacent) destinations, and spatial error, suggesting interdependences between alternate (adjacent) destinations (Elhorst 2010). If interdependences between potential

destinations are significant this should have implications for both the empirical results and theories on FDI decisions.<sup>9</sup> Moreover, none of the included studies consider time effects. This is interesting because a dynamic component could enhance the understanding of what determines the timing of FDI decisions. Other important issues are organisational aspects and the resulting spatial configuration of MNEs, and when spillover agents move from a MNE/foreign firm to a domestic firm including the influence of individual/ firm characteristics and local factors.

---

<sup>9</sup> For instance, Coughlin and Segev (2000) find a positive spatial lag coefficient in the case of China which they attribute agglomeration economies.

## 9. References

- Arauzo-Carod, J.M., Liviano-Solis, D. Manjon-Antolin, M. (2010) Empirical Studies in Industrial Location - An Assessment of their Methods and Results. *Journal of Regional Science*. Vol. 50. No. 3. 685–711
- Balsvik, R. (2011) Is Labor Mobility a Channel for Spillovers from Multinationals? Evidence from Norwegian Manufacturing. *Review of Economics and Statistics*, 93, 285-297
- Bandick, R. (2011) Foreign Acquisition, Wages and Productivity. *The World Economy*, Vol. 34, Issue 6, 931-951
- Bandick, R., Karpaty, P. (2011) Employment effects of foreign acquisition. *International Review of Economics and Finance* 20, 211–224
- Barrios S., Görg, H., Strobl, E. (2006) Multinationals' Location Choice, Agglomeration Economies, and Public Incentives. *International Regional Science Review* 29, 81-107
- Basile, R. (2004) Acquisition versus Greenfield investment. The location of foreign manufacturers in Italy. *Regional Science and Urban Economics* 34, 3–25
- Basile, R., Castellani, D., Zanfei, A. (2009) National boundaries and the location of multinational firms in Europe. *Papers in Regional Science*, Vol. 88 No. 4. 733-748
- Blonigen, B, A. (2005) A review of the empirical literature on FDI determinants. *Atlantic Economic Journal*, 33, 383–403
- Braunerhjelm, P., Thulin. P. (2009) Agglomeration, Relative Wage Costs and Foreign Direct Investment: Evidence from Swedish MNCs 1974-1998. *Journal of Industry, Competition and Trade* 9, 197-217
- Buckley, P. J. Casson, M.C. (1976), *The Future of the Multinational Enterprise* (London: Macmillan)
- Cantwell, J. (2009) Location and the Multinational Enterprise. *Journal of International Business Studies* 40, 35–41
- Caves, R.E. (1971) International Corporations: The Industrial Economics of Foreign Investment. *Economica*, 38 (February), 1-27
- Caves, R.E. (2007) *Multinational Enterprise and Economic Analysis*. Cambridge University Press
- Conyon, M., Girma, S., Thompson, S., Wright, P. (1999) The Impact of Foreign Acquisition on Wages and Productivity in the UK, Centre for Research on Globalisation and Labour Markets, Research Paper 99/8
- Coughlin, C.C., Segev, E. (2000) Foreign Direct Investment in China: A Spatial Econometric Study. *The World Economy* 23 (1), 1-23
- Doms, M.E., Jensen, J.B. (1998) Comparing Wages, Skills, and Productivity between Domestically and Foreign-Owned Manufacturing Establishments in the United States, NBER Chapters, in: *Geography and Ownership as Bases for Economic Accounting*, 235-258 National Bureau of Economic Research, Inc
- Driffield, N. (2004) Regional Policy and Spillovers from FDI in the UK. *Annals of Regional Science*, 38, 579-594
- Driffield, N., Love, J.H., Menghinello, S. (2010) The multinational enterprise as a source of international knowledge flows: Direct evidence from Italy. *Journal of International Business Studies* 41(2), 350–359
- Dunning, J. H. (1977) Trade, Location of Economic Activity and the MNE: In Search for an Eclectic Approach, in Ohlin, B., Hesselborn, P.O., and Wijkman, P.M. (eds), *The International Allocation of Economic Activity* (London: Macmillan), 395–418
- Dunning, J.H. (1980) Towards an Eclectic Theory of International Production: Some Empirical Tests, *Journal of International Business Studies* 11, 9–31
- Dunning, J.H. (1998) Location and the Multinational Enterprise: A Neglected Factor? *Journal of International Business Studies*, Vol. 29, No. 1 (1st Qtr.), 45-66
- Dunning, J.H. (2003) *Economic Analysis and Multinational Enterprise*. Routledge
- Dunning, J.H., Lundan, S.M. (2008) *Multinational Enterprises and the Global Economy*. Second Edition. Cheltenham: Edward Elgar

- Ekholm, K., Hesselman, M. (2000) The Foreign Operations of Swedish Manufacturing Firms: Evidence from a Survey of Swedish Multinationals 1998. Working Paper No. 540
- Elhorst, J.P (2010) Applied Spatial Econometrics: Raising the Bar, *Spatial Economic Analysis*, 5: 1, 9 - 28
- Ewing, B.T., Yang, B. (2009) The Differential Growth Effect of FDI across US Regions. *International Economic Journal*, 23:4, 511-525
- Faeth, I. (2008) Determinants of Foreign Direct Investment. A tale of Nine Theoretical Models. *Journal of Economic Surveys* , Vol. 23, No. 1, 165–196
- Fosfuri, A., Motta, M., Rønde, T. (2001) Foreign direct investment and spillovers through workers' mobility. *Journal of International Economics*. Vol. 53, Issue 1, 205–222
- Fujita M., Krugman, P., Venables, A.J. (1999) *The Spatial Economy: Cities, Regions, and International Trade*. Cambridge, MA: MIT Press
- Girma, S., Greenway, D., Wakelin, K. (1999) Wages, Productivity and Foreign Ownership in UK Manufacturing, Centre for Research on Globalisation and Labour Markets
- Guimarães P., Figueiredo, O., Woodward, D. (2000) Agglomeration and the Location of Foreign Direct Investment in Portugal. *Journal of Urban Economics* 47, 115-135
- Görg, H., Greenaway, D. (2004) Much Ado about Nothing? Do Domestic Firms Really Benefit from Foreign Direct Investment? *The World Bank Observer*. Vol. 19. No. 2, 171-197
- Görg, H., Strobl, E. (2005) Spillovers from Foreign Firms through Worker Mobility: An Empirical Investigation. *Scandinavian Journal of Economics* 107(4), 693–709
- Harrington, JW. Burns, Jr. K, Cheung, M. (1986) Market-Oriented Foreign Investment and Regional Development: Canadian Companies in Western New York. *Economic Geography*, Vol. 62, No. 2 (Apr., 1986), pp. 155-166
- Harris, R. (2009) Spillover and Backward Linkage Effects of FDI. Empirical Evidence for the UK. *Spatial Economics Research Centre discussion paper 16*. London School of Economics. March 2009
- Hayter, R. (1997) *The Dynamics of Industrial Location. The Factory, the Firm and the Production System*. Chichester, United Kingdom. Wiley
- Head C, K., Ries, J, C., Swenson, D, L. (1995) Agglomeration benefits and location choice. Evidence from Japanese manufacturing investments in the United States. *Journal of International Economics* 38, 223-247
- Head, C.K., Ries, J.C., Swenson, D.L. (1999) Attracting foreign manufacturing: investment promotion and agglomeration. *Regional Science and Urban Economics* 29, 197–218
- Heyman, F., Norbäck, P-J. (2012) Utlandsägande och utländska uppköp: Vilken betydelse har huvudägarens hemvist? Arbetsrapport på uppdrag åt Näringsdepartementet. Utkast. Version från 2012-08-31. Institutet för Näringslivsforskning (IFN)
- Hogenbirk, A., Narula, R. (2004) Location and agglomeration of FDI in The Netherlands - implications for policy. MERIT-Infonomics Research Memorandum series. 2004-006
- Hymer, S.H. (1960) *The International Operations of National Firms: A Study of Direct Foreign Investment*. PhD Dissertation. Published posthumously. The MIT Press, 1976. Cambridge, Mass. MIT Press (Doctoral dissertation, MIT, 1970)
- Illeris, S. (2007) The Nature of Services. 19-33. In Bryson, JR. and Daniels, PW. (Eds) *The Handbook of Service Industries*. Edward Elgar. United Kingdom
- ITPS (2005) Utlandsägda företag - Ekonomiska uppgifter 2003. Institutet för tillväxtpolitiska studier. S2005-003
- Jones, G. (2005) *Multinationals and Global Capitalism: From the Nineteenth to the Twenty-First Century*. Oxford: Oxford University Press
- Jones, J., Wren, C. (2006) *Foreign Direct Investment and the Regional Economy*. Brookfield, VT, USA: Ashgate Publishing Group

Karpaty, P. (2005) Does Foreign Ownership Matter? Multinational Firms, Productivity and Spillovers. Doctoral Dissertation. Örebro Studies in Economics 8. Örebro

Karpaty, P., Poldahl, A. (2006) The Determinants of FDI Flows. Evidence from Swedish Manufacturing and service sector. Conference paper. The Swedish Network for European Studies in Economics and Business

Krugman, P. (1991) Increasing returns and economic geography. *Journal of Political Economy* 99, 483-499

Lucas, R.E. (1990) Why doesn't capital flow from rich to poor countries? *American Economic Review* 80, 92-96

Marshall, A. (1920) *Principles of economics*, 8th ed. Macmillan, London

Mataloni, R. J. (2007) Do U.S. Multinationals Engage In Sequential Choice? Evidence from New Manufacturing Operations in Europe. U.S. Bureau of Economic Analysis. Prepared for the OECD Committee on Industry, Innovation and Entrepreneurship, Working Party on Globalisation of Industry. Paris, France, November 14-15, 2007

McCann, P., Acs, Z.J. (2010) Globalization: Countries, Cities and Multinationals. *Regional Studies*, 1-16, First published on: 09 October 2010 (iFirst)

McCann, P., Mudambi, R. (2004) The location behaviour of the Multinational enterprise: Some analytical issues. *Growth and Change*. Vol. 35 No. 4 (Fall 2004), 491-524

McCann, P., Shefer, D. (2004) Location, Agglomeration, and Infrastructure. *Papers in Regional Science*. 83, 177-196

Mucchielli J.-L., Puech, F. (2004), Globalization, Agglomeration and FDI Location: The case of French firms in Europe, in *Multinational Firm's Location and Economic Geography*, T. Mayer et J.-L. Mucchielli (Ed.), Edward Elgar Publishing, 35-58

Narula, R., Driffield, N. (2012) Does FDI Cause Development - The Ambiguity of the Evidence and Why it Matters. Special Debate Section. *European Journal of Development Research* (2012) 24

Noorbakhsh, F., Paloni, A., Youssef, A. (2001) Human Capital and FDI Inflows to Developing Countries - New Empirical Evidence. *World Development*, Vol. 29, No. 9, 1593-1610

Nutek (2007) Regioner och arbetsmarknad. Metoder för regionindelningar utifrån arbetsmarknadens funktionssätt. Verket för Näringslivsutveckling. Info 078-2007

OECD (2008) OECD Benchmark Definition of Foreign Direct Investment. Fourth Edition 2008. Organisation for Economic Co-operation and Development

Oulton, N. (1998) Labour Productivity and Foreign Ownership in the UK. NIESR Discussion Paper no. 143

Pesola, H. (2011) Labour Mobility and Returns to Experience in Foreign Firms. *Scandinavian Journal of Economics* 113(3), 637-664

Ramasamy, B., Yeung, M. (2010) The Determinants of Foreign Direct Investment in Services. *The World Economy* (2010), 573-596

Rugman, A. M. (1981), *Inside the Multinationals: The Economics of Internal Markets* (New York: Columbia University Press)

Svensson, R. (1996) Foreign activities of Swedish multinational corporations. Doctoral thesis. Uppsala University

Swedenborg, B. (1979) The multinational operations of Swedish firms: an analysis of determinants and effects. Stockholm: Industrial institute for economic and social research

Tillväxtanalys (2010) Utländska företag 2009. Sveriges officiella statistik. Myndigheten för tillväxtpolitiska utvärderingar och analyser. 2010:04

Vernon, R. (1966) International Investment and International Trade in the Product Cycle, *Quarterly Journal of Economics*, 80, 190-207

Vernon, R. (1979), 'The Product Cycle Hypothesis in the New International Environment', *Oxford Bulletin of Economics and Statistics*, 41, 255-67

UNCTAD (2011) World Investment Report. Non-equity Modes of International Production and Development: United Nation Conference on Trade and Development

Walter, A., Sen, G. (2009) *Analyzing the Global Political Economy*. Princeton University Press  
Wren, C., Jones, J. (2010) Assessing the Regional Impact of Grants on FDI location. Evidence from UK regional policy. *Journal of Regional Science*, Vol. 51, No. 3, 497–517

## **ENCLOSED PAPERS**