Firm-Specific Determinants of FDI: An Investigation of the Triad Companies

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ABSTRACT

This study develops and tests several hypotheses regarding the influence and the reliability of a range of variables related to the firm-specific interest of multinational corporations.

This thesis presents an examination of foreign direct investment behaviour of the Triad countries' firms from the firm-specific factors point of view using a large panel data covering 1985-2011. Adopting a firm-specific approach to FDI behaviour, it provides a two-stage analyses to find out (1) the probability of firm characteristics' and firm specific factors' affecting firms' FDI decisions and (2) these factors' role in determining the amount of FDI to be undertaken.

Overall, empirical findings show support for the firm specific assets' significant role in FDI behaviour.

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For any errors or inadequacies that may remain in this work, the responsibility is entirely my own.

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DECLARATION

I certify that this work has not been accepted in substance for any degree, and is not concurrently being submitted for any degree other than that of the Degree of Doctor Philosophy being studied at the University of Greenwich. I also declare that this work is the result of my own investigations except where otherwise stated.

Signed:

Student_____ Date_____

Supervisor_____ Date_____

Abbreviations

CBV/CBT	Competence based view/competence based theory
FDI	Foreign Direct Investment
FSA	Firm specific assets
IMF	International Monetary Fund
IO	Industrial organisation
LDCs	Less developed countries
MNCs	Multinational corporations
OECD	Organisation for Economic Co-operation and Development
OLI	Ownership, location, internalisation
OLI	Ownership, Locational and Internalisation specific advantages
PLC	Product Life Cycle
R&D	Research and Development
TC	Transaction cost
UNCTAD	United Nations Conference on Trade and Development
WTO	World Trade Organisation

Glossary

Comparative Advantage:	Advantage over the others in the production of a good or service, if it can produce at a lower cost than they do.
Competitive Advantage:	Advantage over the others in the production of a good or service due to better management.
Economies of Scale:	Production economies that mean a reduction in long-term average cost as a result of operating on a large scale.
Externalisation:	Benefits from outsourcing.
Foreign Direct Investment:	Lasting interest in an enterprise operating in an economy other than that of the investor, the investor's purpose being to have an effective voice in the management of the enterprise.
Franchising:	A kind of licensing that allows a company to sell another company's products and use its trade name in a specified area.
Globalisation:	The outcome of transnational growth, global standardisation of production, concentration, and centralisation of capital.
Greenfield Investment:	Investment from scratch, setting up own business

	rather than acquisitions or mergers.
Internalisation:	Setting up the business close to the foreign market rather than entering the market through exporting or licensing, in order to reduce the costs of transportation, distributor, middlemen and to take the advantage of local resources.
Liberalisation:	Abolishment or lessening of the governmental controls on foreign trade and investment and allowance of the free market system conditions.
Licensing:	An agreement by which a company allows another to use its intellectual property for payment.
Market Failure:	Existence of imperfections in the market or/and, lack of a market for a specific good or service, or/and externalities because of market's producing social costs.
Market Imperfections:	See structural market imperfections and natural market imperfections (below).
Multinational Corporations:	Firms, which invest around the globe.

Natural Market Imperfections:	Failure of markets to take account of costs and benefits of transactions, which accrue to non-market participants, lack of impetus or innovative of producers to innovate and upgrade resources, and of consumers to demand sophisticated and fault-free products.
Structural Market Imperfections:	Barriers to entry to the market, barriers to trade, possession of proprietary rights, oligopoly and/or monopoly control, restrictive business practices, cartels, and interference with market system by the governments.
Triad:	The three areas of the world, (or poles of economic development) consisting of Japan, Europe, and US with Canada.
Vertical Integration:	A merger of companies at different stages of production, for instance, a merger between the distributor and the manufacturer.

CHAPTER 1. INTRODUCTION

1.0 Introduction

Foreign Direct Investment (FDI) flows around the world have boomed especially after the mid-1980s with the globalisation wave in the world. Foreign direct investment (FDI) activities of the Multinational Corporations (hereafter MNCs) have long been an interest of the economists, business people and academicians as well as the international organisations, such as, International Monetary Fund (IMF), World Bank, The Organisation for Economic Co-operation and Development (OECD), The World Trade Organization (WTO), and International Labour Organization (ILO).

It is beyond doubt that the question of FDI is not so important vis-à-vis other economic realms for a given country but FDI is still a hot issue in global factor endowment mobilisation. Needless to say, factors of production, such as technology and capital are crucial to almost all countries; but especially so to countries in the developing world. It is often argued that FDI increases the level of development in developing countries via technology, management, labour and marketing skills transfers. As far as the global world is concerned, apart from the host countries' structural characters, investor (in the case of FDI most of the investors are MNCs) considerations are of great importance. This study therefore arises out of concern to understand the determining factors of FDI behaviour of the Triad MNCs; because almost three-quarters of the world's FDI stock belongs to the Triad countries. Therefore understanding the Triad FDI behaviour provides an insight into the overseas investment behaviour of the world's largest

corporations. This thesis therefore investigates the factors which attracts foreign investors to invest abroad. In order to develop a sound building block and provide the reader with some of the common insights, a definition of FDI is provided below.

1.1 Definitions of FDI

What constitutes a foreign direct investment entity has been defined differently for balance of payments purposes and for studies of firm behaviour. It has also been defined in different ways by different countries and the definition has changed over time (Lipsey, 2002).

IMF (2009) defines FDI as "A direct investment relationship arises when an investor resident in one economy makes an investment that gives control or a significant degree of influence on the management of an enterprise that is resident in another economy".

OECD (2008) Benchmark Definition objects to provide standards for countries to record FDI flows and publish FDI statistics so that the discrepancies between the reported inflows and outflows of FDI. The newest definition of FDI is stated as "... a category of cross-border investment made by a resident in one economy (the direct investor) with the objective of establishing a lasting interest in an enterprise (the direct investment enterprise) that is resident in an economy other than that of the direct investor (OECD, 2008, p. 10)

In addition, for an enterprise to be considered as an FDI company, it should be either be a subsidiary, in which over 50% of the voting power is held, or associate, in which between 10% and 50% of the voting power is held (by foreign investor),

or be a quasi-corporation such as branch which is effectively 100% owned by their respective parents (ibid: 10).

Simply put, FDI is a tool for serving or entering to foreign markets, with investor's *direct control* over the investment. In fact, this control issue distinguishing FDI from portfolio investment was first ascertained by Stephen Hymer in 1960.

1.2 Classification of FDI Activities

In light of the definitions above, FDI can be classified according to direction, form of business set up, and investor perspectives. Direction refers to the investment localisation (home country and host country perspectives, i.e. inward and outward investment). Form of business refers to FDI being a greenfield investment, a merger and/or an acquisition (M&A) and an international joint venture. As for the investor perspective, FDI is classified as a horizontal, conglomerate or vertical investment. ***Horizontal FDI*** refers to MNCs entering foreign countries to produce the same products as at home. ***Conglomerate*** *FDI* means that the MNCs produce goods that are not manufactured at home, and *vertical FDI* occurs when MNCs produces intermediate goods either forward or backward in the supply stream (Caves, 1971).

FDI is categorised into four types according to the motives of international production. These are: natural resource-seeking, market-seeking, efficiency-seeking, and strategic asset-seeking FDI. The main motive in the *resource-seeking FDI* is cost reduction, and securing supplies of raw materials, while *market-seeking FDI* focuses on market characteristics, such as market size and

avoiding barriers to international trade. Among the latter two types, *efficiency-seeking FDI*s strive to improve the efficiency and competitiveness of the company in such ways as increasing productivity and acquiring new technologies. Lastly, *strategic asset-seeking FDIs* aim to establish, sustain and improve the competitiveness of firms in the international arena[1] (Frost, 2001).

Next chapter will explore FDI related theories in order to find out how these classifications were established and what determines FDI.

1.3 Objectives, Scope and Focus of the Thesis

The main objective of this study is to identify and empirically examine the firm-specific determinants of Triad FDI, i.e. FDI from the supply-side. Decisive factors resulting in the variances of FDI inflows at the country-of-origin and sectorial scales will be examined with relative econometric models. Although there are a few studies comparing the Triad poles' FDI flows, they restrict attention to the differences or similarities in FDI behaviour with the host country locational determinants. Such as, host country economic, political, infrastructural, and social structures. In other words, they try to evaluate "pull" factors or "demand-side" of the FDI. Using more recent data, this thesis examines the multivariate character of target investor companies. The result of this analysis is to increases knowledge on the determinants of FDI in terms of firm strategic considerations.

[1] For more information on these factors, see for example Makino et al. (2002).

1.4 Research Question

What are the firm-specific factors that determine FDI involvements of the Triad firms?

The research question, namely the firm-specific factors of Triad FDI flows, raised in this thesis is important because of manifold reasons.

First, this study seeks to fill a gap in the FDI literature by adding up the firm-specific determinants of FDI with a global perspective. In my limited literature review, I did not come across a single study which is not country specific. Therefore understanding firm-specific motives in a larger scale is important.

Second, the Triad countries comprising European Union, Japan and North America are still the key players in the world economy as explored in chapter 3. Thus analysing Triad behaviour could add some in-depth analyses of the world trends.

Third, although the theoretical background to the firm-specific assets dates back to the late 1950s, much of the empirical work on FDI focuses on the locational factors (section 2.7) with few exceptions.

Fourth, macro-economic theories assume homogeneity of endowments among firms and industries while firm-specific approaches (realistically) take firms as heterogeneously endowed organisations.

Last but not the least, this study assesses the explanatory power of the competence-based framework with additional control variables.

1.5 Research Approach

This research relies on the secondary sources primarily obtained from Worldscope database, company annual reports, along with stock exchange filings of the companies in order to find out:

FDI data on the global and source country level,

Level of oligopolistic power of the firms,

Power of intangible assets,

Effects of excess profits

The research is designed to use the quantitative approach. The statistical analyses are employed in to examine the effects the different types of firm specific advantages in FDI decisions. This involves the use of cross-sectional, fixed effect and random effect estimators to test the firm factors. The data are obtained from Thomson Worldscope, However, in order to avoid inconsistency with the data and missing values, a great number of companies' annual reports have also been used to prepare a good and valuable dataset.

1.6 Novelties and Contribution

This thesis contributes to the understanding of how firm specific characteristics affect FDI involvement, and to our knowledge of Triad's role in world FDI.

The study provides the opportunity for the theories to be tested in Triad's FDI. This contributes to the body of knowledge for world FDI. Currently, to the best of my knowledge, the role of firm-specific characteristics in FDI decisions in a global scale has not been studied yet.

In addition to the contribution to the literature, this research uses a new dataset to investigate FDI. In order to increase the reliability and validity of this research, the independent variables have been broadened to include several factors such as, market power intangible assets, market power, productivity and technology that influence FDI. Prevailing studies revealing the Triad FDI is mostly focused on locational (mainly host country) determinants while this study uses firm-specific factors.

1.7 Structure of the Thesis

This thesis consists of an Introduction and five chapters.

Chapter 1, *'Introduction'* presents some definitions of foreign direct investment, and the scope in defining foreign direct investment (FDI) and multinational companies (MNC).

Chapter 2, '*FDI Trends and Triad* briefly discusses the role of Triad in the world economy with a special emphasis on the FDI flows from the Triad in terms of historical evaluation together with geographic and sectorial dispersion.

Chapter 3, '*Theoretical Review* provides a literature review centred on the firm-specific assets as motivators of FDI.

Chapter 4, '*Research Framework'* reviews the empirical work in the literature, classifies the firm and firm-home region-industry specific factors affecting FDI involvement of the firms. It provides the research design, the data mining procedure, the sample, and hypotheses to be tested, the variables. In addition, it provides the model estimation to test the hypotheses.

Chapter 5, *'Empirical Evidence'* provides descriptive and analytical statistics, and tests used in this thesis and provide discussion on the findings.

Chapter 6, *'Summary and Conclusions'* draws the summary of the whole study, makes statements related to the empirical results, and draw inference for the future.

The remainder of this thesis is organized as follows. The second section briefly provides definition of FDI. The third section presents a general view on FDI classifications and fourth section briefly reviews FDI theories. The last section presents a summary of the whole chapter.

CHAPTER 2. FDI TRENDS AND THE TRIAD

2.0 Introduction

This chapter provides background information on world-wide trends, developments, fluctuations, geographical, and industrial allocation of FDIs, since it is important to understand why firms choose one country or region over another. Specific attention is paid to the triad countries, since they hold more than three quarters of the world FDI flows (both as investor and host countries).

Although the division of world FDI into poor and rich or, alternatively, least developed, developing, emerging, developed countries, etc., it seems useful in many ways that the nature of FDI flows and their connections are better understood within a conceptual framework of the three 'poles' of world economic growth. These poles are, Japan, Western Europe, and, US with Canada. These relations are known as the Triad.

The main characteristics of these three poles are: closer intra-regional relationship between Japan and the 'tiger' economies in the eastern pole, the deepening and widening of Europe, and the Free Trade Agreement in the American zone. Although there is a great deal of economic relationship between the three poles, within-pole links are deepening and more satellites are joining in.

In the macro-economic framework, FDI is the specific form (long-term interest with at least 10% of the foreign investors' share, as defined on page 2) of the flow across borders which is measured in Balance of Payments (BOP) statistics. However, BOP may not be an efficient measure since it records only the financial capital which is transferred across nations, but cannot measure, such assets as,

technology which is transferred to the host nations, or the land and fixed assets purchased in the host countries (Lipsey, 2001).

In addition to the individual countries' disseminations on their BOPs, several data sources exist on FDI (such as, World Bank, IMF, OECD, Eurostat, and UNCTAD). Albeit with the international effort, discrepancy between data from these sources still exists. What is more, as Dunning & Lundan (2008, p. 10) argue this data is characterised by "fragmentary, variable in quantity and rarely comparable between countries, industries and firms, or over time".

OECD Benchmark Definition (OECD, 2008)-first introduced in 1983-and IMF (2009) BOP Manual (first introduced in 1993) provides detailed definition of FDI, its forms and guidelines on how to record FDI flows for host and home countries. However, "they offer limited insight on the real economic role played by foreign affiliates in the host economy. For example, if a foreign affiliate finances its investment with the local borrowing, it is not recorded as FDI in BOP (Fujita, 2008, p. 109).

When analysing cross-country FDI flows, two terms are usually involved: *inflows* representing from recipient (host) countries, and *outflows* that is FDI leaving a nation to be invested in outside the country. Therefore, inflows and outflows in the world as a whole must be equal, for any one nation, this is not necessarily the case when a number of countries are involved. The differences in inflows and outflows values are sometimes tremendous. UNCTAD (2011, p. 6) list the reasons for this discrepancy as: inconsistencies in the data collection and reporting methods of different countries, the changing nature and the increasing

sophistication of FDI-related transactions, blurring of the distinction between FDI transactions with "portfolio-like behaviour" and portfolio investment, including hot money, the increasing volatility in exchange rates which makes FDI reporting accuracy a victim of the global crisis. While BOP has shortcomings, probably they are the only option for macro-analysis of FDI because of their wide coverage of countries and availability. This study also relies on FDI figures derived from BOP statistics by the World Bank and UNCTAD annual reports[2] and online database since they provide a wide range of the countries and time series variables on FDI and FDI-related data.

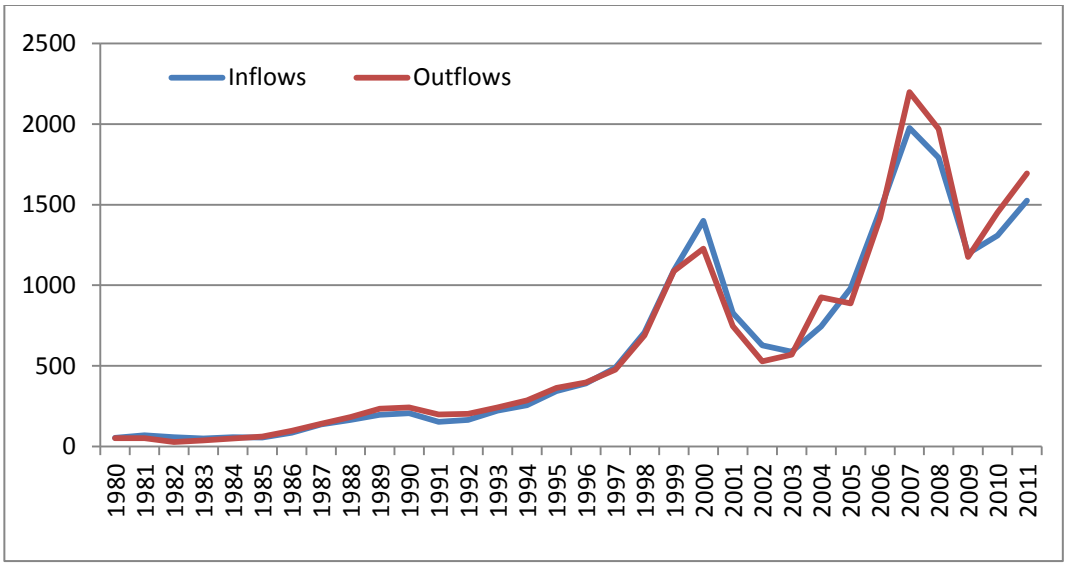
2.1 General Trends

In this section, two main indicators are utilised: FDI stocks and flows. With regards to FDI stock, data indicate the structure of FDI while FDI inflows reflect the current strength of the locational advantages of the host countries and outflows indicate the strength of the ownership advantages (UNCTAD, 1995:12).

The level and composition of FDI has changed markedly over time. As Figure 2.1 illustrates, the second half of the 1980s witnessed a rapid growth in FDI flows. The year 1983 was the turning point. The global growth rate of FDI rose to 36.2% during the 1983-1989 from almost no growth during the 1980-83.

[2] UNCTAD publishes annual reports on world FDI which is called UNWIR since 1991 with a specific theme in each volume while World Bank covers few countries that UNCTAD generalizes.

Figure 2.1 FDI inflows and outflows (1980-2011)



Note: Billion US $ at current prices and current exchange rates.

Source: Based on UNCTAD (2012) database

The "big five" systemic financial crises[3] (Reinhart & Rogoff, 2009) and the global slowdowns in 1975, 1982, 1991 and 2001 (Freund, 2009) led to major decreases in economic performance world-wide and thus affected FDI inflows adversely. Developing countries are more prone to these crises; however, since FDI is a "long-term" involvement with facilities in the host countries, it is reasonable to assume that FDI flows will not circulate as fast as other (capital) flows. In other words, when there is an economic hiccup in host economies, a portfolio investor can easily reverse his/her investment from this country while it is more difficult for a direct investor to do this for the fixed investment. Developing countries

[3] Spain (1977), Norway (1987), Finland (1991), Sweden (1991), and Japan (1992)

faced several downturns as a result of the debt crisis. For instance, in Latin America in the 1980s, the Mexican balance of payments crisis of 1994, the East Asia crisis of 1997, and the Russian Federation crisis of 1998. Analysing FDI behaviour during the first three crises, Lipsey (2001) points out that during the 1994 Mexican crises, although FDI flows fell by 15%, it recovered in three years whereas portfolio investment decreased by 75%. Focusing on US FDI in Latin America and Asia, he finds that FDI firms focus on exports rather than serving for domestic markets during the crises.

It is commonly acknowledged that the 2008 crisis was the worst since World War II. As Figure 2.1 illustrates, although global foreign direct investment inflows reached a historical record of around 1.98 trillion USD with a four-year continuous increase up to 2007, it dropped dramatically by 9.35% in 2008 and by a further 33.10% in 2009. The 2008 crisis is associated with a downturn in stock markets, production, access to financial sources, production and international trade, and global FDI inflows. The reason for this decrease is that because the crises influenced developed countries, the outflows from these countries declined intensely.

Among major sources, the EU recorded the highest decline in FDI outflows in 2009 with 58.9% followed by Japan (41.65%), emerging economies (35%), and North America (14%). Although subsequent years witnessed increases in FDI flows, 2010 and 2011 saw slow recovery, where flows did not reach the levels seen in 2006. By, 2010 total FDI flows were similar to those for 2006 for in Japan, EU and North America, while EU outflows did not reach the 2005's magnitude.

The share of EEs in world FDI outflows was o 1.40 % in 1987. This increased to 6.83 in 1997 and reached 7.61 in 2010 almost double Japan's share. The increase in EEs' share can be partly attributed to outflow falls from developed countries. Table 3.1 below reveals the relative position of emerging economies (EEs) as a source of FDI. It shows that a big rise in outward FDI from these countries from the late 1980s. Generally, the outward flows from EEs are observed in three waves. The first occurred between the 1960s and the mid-1980s, the second becoming important over the period between the late 1980s until the mid-1990s and the third becoming important from the late 1990s. Each of these flows are characterised by different themes according to major investor countries, types, motivations, destinations and trade orientations (Rasiah, et al., 2010). For a developing country, the main argument is that the home country uses FDI in order to trade with a third country, taking advantage of the factor endowment in a host country, to increase its exports. Ultimately, this, contributes to the host country's economic development. This argument is central to theoretical aim of bringing trade and FDI together conceptually. It can be assumed that MNCs investing in a country will take a keen interest in that country's development.

The existing literature on EEs' outward FDI also reveal that FDI from these countries do not lie within the usual theories to explain firms' motivation for FDI. Firms from these countries might not have the ownership advantages, resources or capabilities that developed countries have (Aykut & Goldstein, 2006; Goldstein, 2009). This is in line with Blomström et al. (1994) late catcher concept which divide developing countries into two groups: For poorer countries, they reject comparison with European history of 'late developers' who may catch up faster.

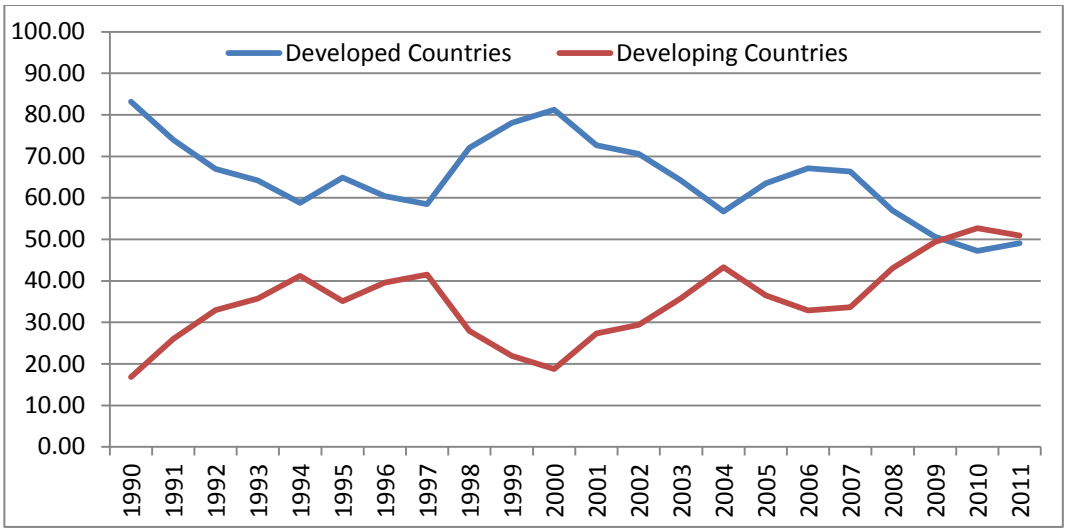
The historical example is former West Germany, which grew faster than the UK. For the better-off group, they agree with Kuznets (Kuznets, 1973) that there is a lagged relationship between growth and capital investment. Thus, placing developed countries' or the early investors' FDI in the same category with the late developers' might not produce rational results.

Since the focus of this thesis is mainly ownership, advantages together with resources and capabilities frameworks, it attributes specific attention on the developed countries' outflows and its main agenda is the concept of the developed countries' firms.

2.1 Regional Distribution of FDI

FDI has been highly concentrated both in terms of host and home countries/regions. The uneven distribution of inflows between industrialised and developing countries is extremely glaring. Figure 2.2 below shows that in general, the bulk of FDI continued to be held in developed countries until 2009. The gap between developed and developing countries' share was the largest in 2000 with 81.25 and 18.75%, respectively while the share in developed countries declined from 83.16% in 1990 to 56.72% in 2004, and 47.26% in 2010, but with a small increase in 2011.

Figure2.2 FDI Inflows: Developing and Developed Countries 1980-2011



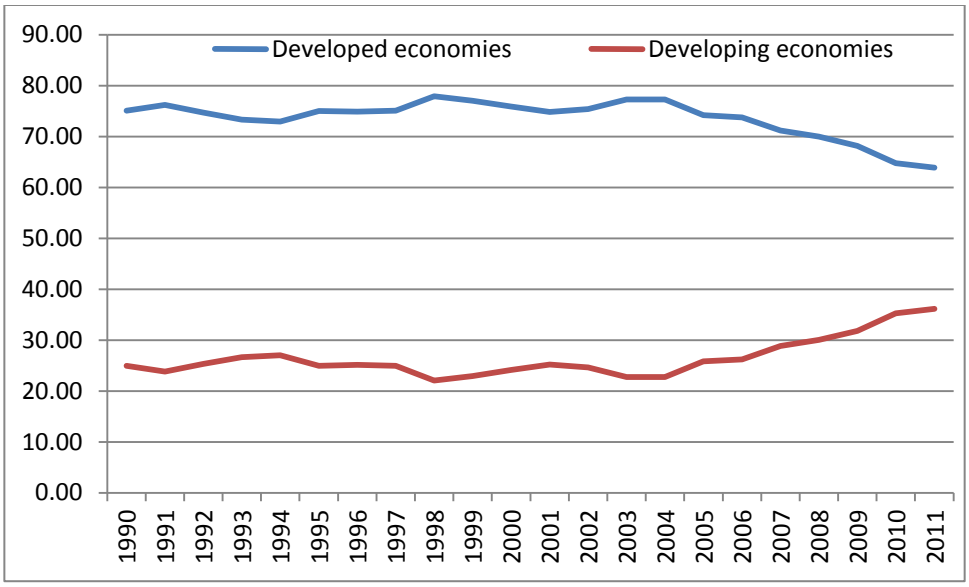
Note: Developing countries' inflows include economies in transition.

Source: Based on data from UNCTAD (2012) database

Since 2009 the share of total outflows in developing countries almost reached that of developed countries and exceeded it in 2010 and 2011. However, inward FDI stocks present a different picture. Figure 2.3 reveals that share of inflow stocks for developing countries' rose by more than 10% over the years and reached 36.12% in 2011, almost half of that for developed countries.

The disparity between developed and undeveloped countries is strongest in 1998 with 22.07% developing countries' shares in the world and 77.93% in the developed countries. Although developing world seems to have improve its share in terms of FDI stocks from 2004; however, the largest share of stock (63.88% in 2011) is hosted in developed countries.

Figure 2.3 FDI Inflow Stocks in Developed and Developing Countries

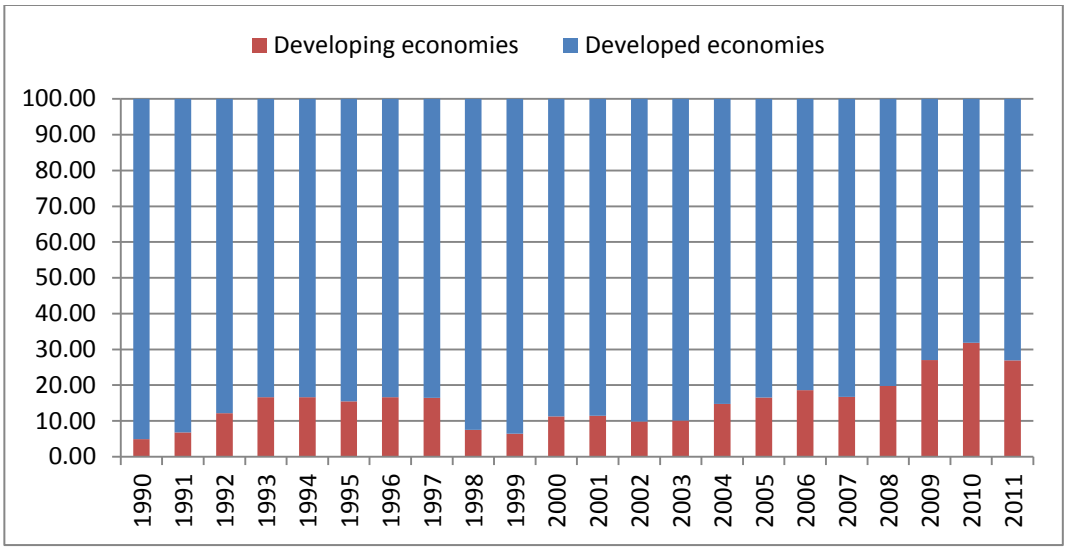


Note: Developing countries' inflows include economies in transition.

Source: Based on data from UNCTAD (2012) database

In terms of outflows, develop countries remain at the forefront with Europe being the biggest supplier of FDI. As Figure 2.4 below displays, almost three quarters of world FDI flows originate from developed nations, of which more than three quarters originates from Western Europe (EU-15, Iceland, Norway, and Switzerland), North America (USA with Canada) and Japan.

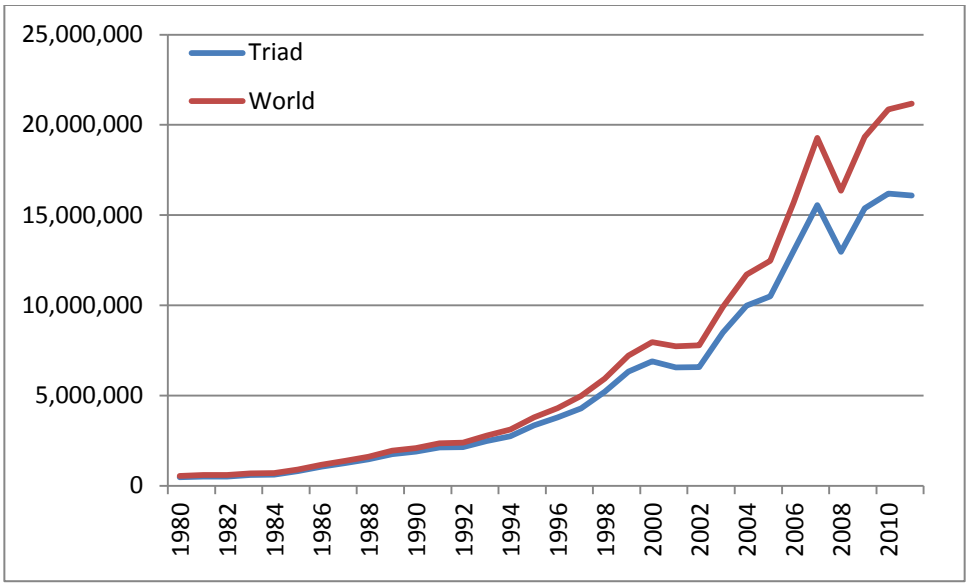
Figure 2.4 FDI Outflows: Developed and Developing Countries



Source: UNCTAD (2012)

Ten countries whose FDI stocks exceeds 1% from 1980 - 2011 are United Kingdom, France, Belgium, Germany, Spain, Netherlands, Switzerland, Sweden, Italy, and Ireland. The share of total global outward FDI stock for these countries is 32% on average during that period. Among developed countries, the United Kingdom and France are the largest hosts followed by Germany. In fact, by 2011, more than 40% of outward FDI stocks originate from four major sources, the United States, the United Kingdom, Germany and France (UNCTAD, 2012). The majority of FDI in developed countries is concentrated in the hands of a very few countries, such as the G8 (a definition of these countries are presented in Appendix A1). These eight countries virtually hosted almost half of the world FDI stocks over the years. In 1999, the share of G8 FDI stock reached a peak of 61%, but it has declined since then, and by of 2011, the G8 share of G8 dropped to just over 39%.

Figure 2.5 The Triad in the World



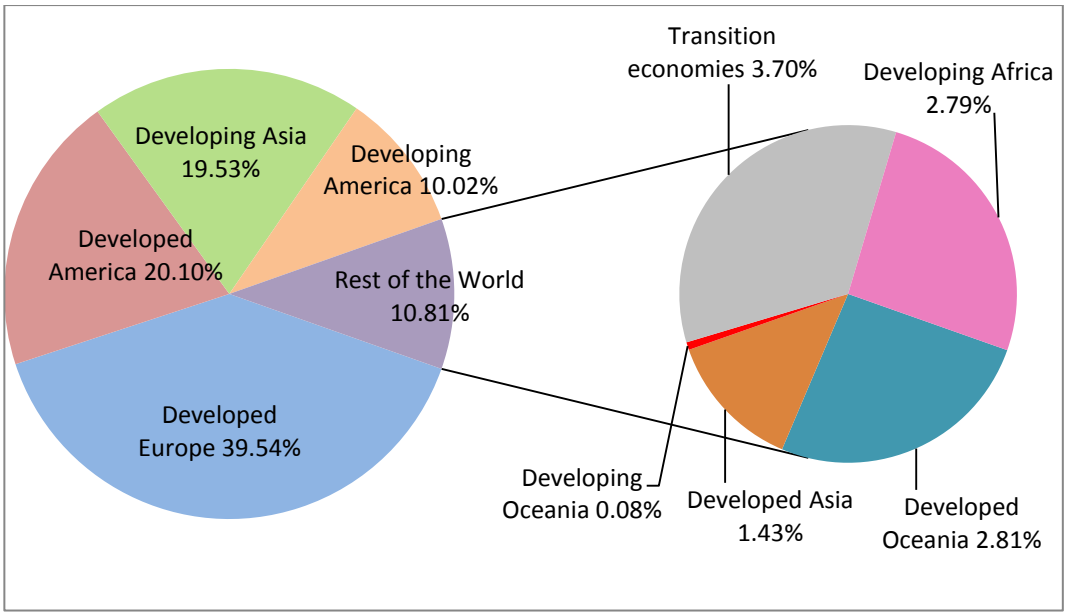
Source: Calculated from UNCTAD (2012).

Figure 2.5 shows that until the late 1990s, the triad was the home for almost all global outward FDI stocks. For 1980-1999, average triad outward FDI stock was 88.49%, 84.35% for the period 2000-2007, and 78.12% during the period 2008-2011. 2008 saw a downturn, and is often assumed to be connected to 2008 global financial crises in developed countries and is expected to recover again. On average, triad's outward FDI was 86.16% of the world FDI during 1980-2011.

Within the developing world, FDI inflows are also uneven. Africa only 5.88% of FDI stocks in 1980, vi with a steep decline until 1991, and a gradual decline thereafter until 2011 when it reached 2.79%. However, in the developed countries, America maintained an average of 6.42% during 1980-1990 and 6.38% from 1991-2000. The developed countries FDI stock was stagnant in 2006 and

2007 at 6.68% while the last 4 years witnessed steady increase. Among the developing countries, Asia (including China, Hong Kong and Macao SARs of China) hosted 19.53% of world FDI stocks and 60.24% of the developing countries' share. However, there was a sharp decrease in FDI stocks held in China from 26% of the world stocks in 1980 to 9.14 in 2011.

Figure 2.6 Regional distribution of Inward FDI Stocks as of 2011



Source: Based on data from UNCTAD (2012) database

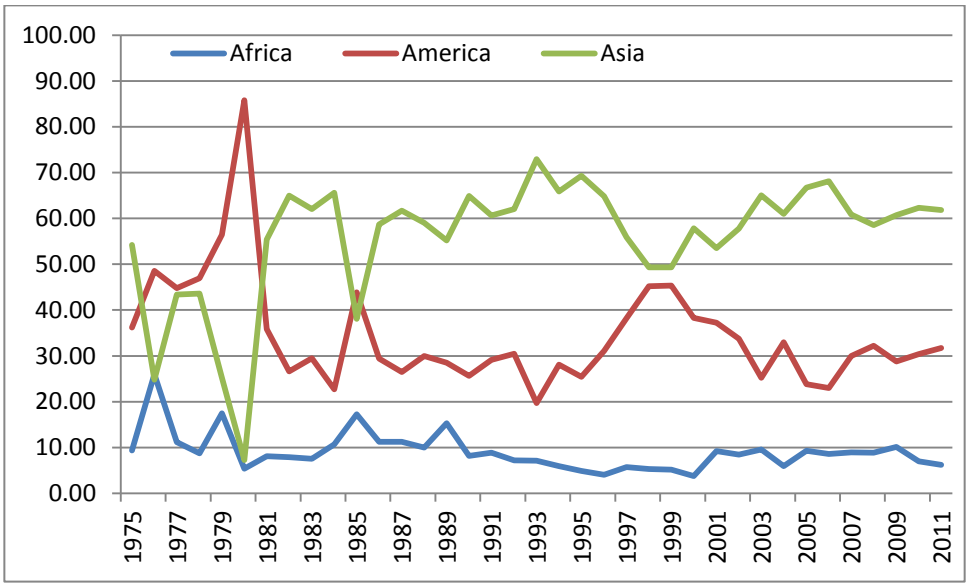
However, much of the FDI occurring in China and Hong Kong is assumed to be round-tripping in nature, and it is difficult to distinguish their real value. For this reason, some studies concentrate only on FDI to and from China and Hong Kong[4],

[4] For an excellent analyses of China's inward and outward FDI, see for example Buckley (2010, pp. 79-362)

and some others exclude them from their analyses all together (Zhou & Lall, 2005).

While FDI flows in developing countries' are catching up; and even exceeded those of the developed world in 2010 and 2011, the case for FDI stocks is different: since stocks accumulate the historical investments, the share of the developing countries is relatively smaller than the developed countries.

Figure 2.7 Share of FDI Inflows amongst the Developing Countries



Source: Based on data from UNCTAD (2012) database

Figure 2.7 shows that in 1980, most of the FDI (85.79%) in developing countries went to Americas. Asia, which is a late-catcher-upper in terms of FDI inflows is now the major destination of FDI flows.

To sum up, given the special case of China-Hong Kong FDI, most of the inward FDI originates from developed countries (mostly the triad nations) to other developed countries albeit with the new (third) wave from the emerging countries. On the other hand, the round-tripping and efficiency-market-natural resource seeking FDI should be analysed in other frameworks rather than the ownership or competence based theories. Since the main interest of this study is firm-specific motivations for initial FDI decisions, the special case of the aforementioned FDI is beyond the scope of this thesis.

2.2 Sectorial Composition

To begin with, historical data on FDI sectorial composition is scarce. Therefore, this section depends mainly on available data for developed countries. Thus, most of the figures below are extracted from several international organisations, such as, UNCTAD and OECD online statistics which comprises mostly of developed countries' records.

On a broad concept, there are three main sectors: primary, secondary, and tertiary. The primary sector includes, agricultural activities (including hunting, fishery and forestry), mining and quarrying. Secondary sector is manufacturing, and tertiary sector deals with services.

In the case of primary and secondary sectors, the output is tradable and transferrable while most of the services are non-tradable, such as financial services and requires closeness to the customers. Given the basic nature of the sectors, it is reasonable to expect service firms to ultimately move towards its

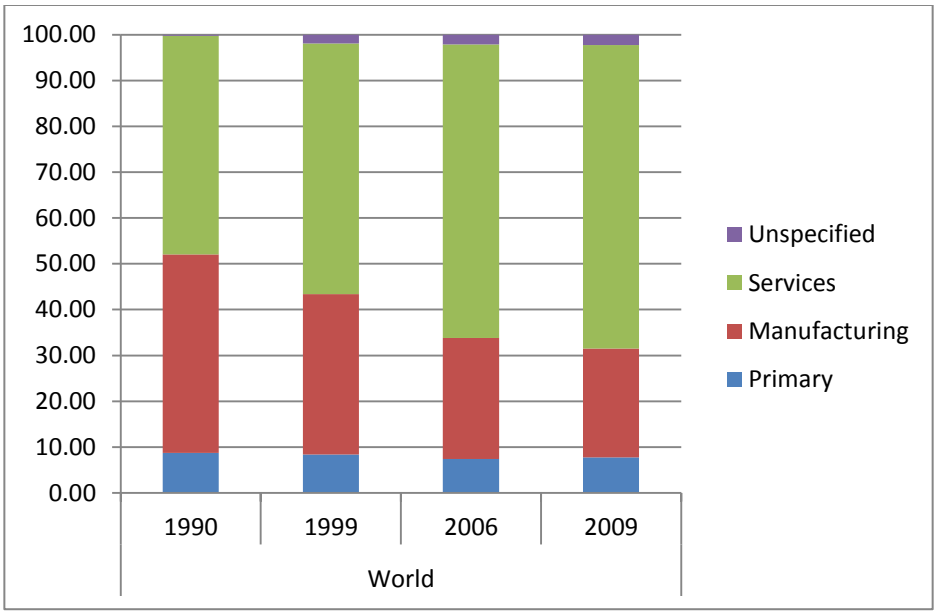
customers, while those in the manufacturing and primary sectors have other options, such as inter-firm trade.

Historically, FDI has contributed to all three economic sectors (primary[5], manufacturing, and services). Before 1980s FDI was concentrated in raw materials and resource-based manufacturing. However, since the 1990s, it is concentrated mainly in services and technology-intensive production (UNCTC, 1991, p. 15). During the 1990s, global FDI flows in services have increased and have started to surpass those in the manufacturing and natural resources sector. This strong shift towards FDI service flows is also reflected in outward FDI stock composition. By 1990, services accounted for 47.41% of FDI stocks, while the manufacturing and primary sector accounted for 43.5% and 8.8% respectively (Figure 2.8).

Sectorial distribution of FDI has been very uneven: primary sectors received only a minimal amount of FDI with around 8% stocks compared to the manufacturing sector's share which has increased from around a quarter in the 1990s to 43.5% in 2009

[5] Includes two sub-sector: Mining, quarrying and petroleum, i.e. natural resources extraction and agriculture (including forestry, hunting and fishing)

Figure 2.8 Global FDI Outward Stocks by Sectorial Composition



Source: Calculated from UNCTAD World Investment Reports 1993, 2004, 2008, 2011 and OECD (2012).

The share of agriculture and mining sectors in FDI stocks accounts only for 7.77 percent of total FDI stocks, whereas the manufacturing and services sectors' shares are 23.72 and 66.21 percent respectively (as of 2009). Within the primary sector, natural resources dominate more than 95% of outward FDI stock in all years. In the manufacturing sector, chemicals and chemical products, food, beverages, tobacco, motor vehicles, and other transport equipment and electrical and electronic equipment production receive almost half of world FDI stocks. Publishing, printing and reproduction of recorded media receive the least amount.

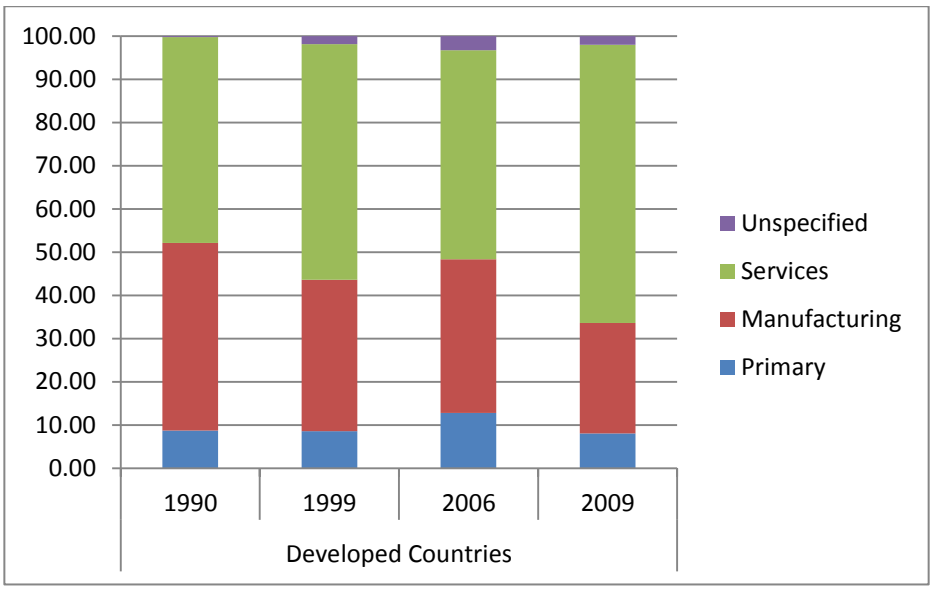
Service FDI is concentrated on four sub-sectors: finance, business activities, trade and transport, storage and communications. These four accounted for more than

80% of total services FDI during 1990 - 2006 and 90.5% in 2009. Finance has been the most favoured sub-sector in services with around half of total service FDI in 1990 and 1999, and 40% of in 2009.

The sectorial composition of outward FDI among the developed and developing countries is also different from each other. As Figure 2.8 reveals, the share of manufacturing and primary sectors of developed countries FDI is strikingly higher than that of the developing countries.

In 1990, the share of the service sectors was almost equal among developed and developing countries. Developing countries' outward FDI stocks peaked in 2006 at 83.6% and declined to 79.6% in 2010.

Figure 2.9 Developed and Developing Countries' FDI Outward Stocks



Source: Calculated from UNCTAD World Investment Reports 1993, 2004, 2008, 2011 and OECD (2012).

However, this data should be interpreted carefully because it includes holding companies' capital which is very dominant in especially China-Hong Kong bilateral FDI.

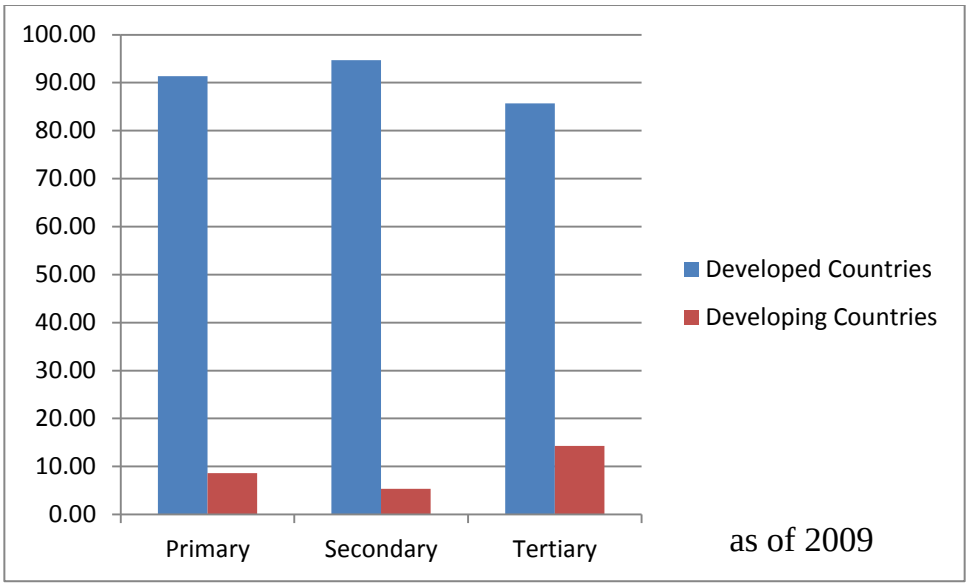
Developing countries differ from developed ones in terms of sub-sectorial composition of the secondary sector. While on average 11.4% of the secondary data is missing in terms of its distribution among the sub-sectors, this amount is 62% for developing countries. The rest is distributed as follows. In 1990 textiles, clothing and leather, wood and wood products, rubber and plastic products and non-metallic mineral products shared almost half of the primary sector FDI while electrical and electronic equipment, chemicals and chemical products, metal and metal products and textiles, clothing and leather were most favoured sub-sectors in developing countries' outward FDI stocks in 1999 and 2006. Similarly, by the end of 2009, a quarter of developing countries' FDI stocks was concentrated on electrical and electronic equipment, motor vehicles and other transport equipment, textiles, clothing and leather and metal and metal products with 61.4% remaining in unspecified category.

Considering the above features one may comment that world FDI flows direct from the developed countries to (mostly) other developed ones. Though in nominal terms developing countries seem to be catching up with the advanced countries, the lack of the efficient data hampers such a statement categorically. When sectorial distribution of outward FDI considered, all sectors' have been dominated by the developed countries, though developing countries' share is

increasing more slowly. In 1990, 98.4% of the outward FDI in primary sector belonged to developed countries but developing countries increased their share to 8.6% in 2009.

As for the manufacturing FDI, 99% of the stocks belonged to developed countries while it decreased to 94.7% in 2009. In services sector, developing countries are more active with their share being soared from 1.2% in 1990 to 14.3% in 2006 but continued the same rate in 2009, too.

Figure 2.10 Sectorial Distribution of Outward FDI Stocks



Source: As Figures 2.7 and 2.8 and UNCTAD (2011)

In light of the above trends, one may safely conclude that although developing countries are increasing their inward and outward FDI flows FDI is still a developed country phenomenon.

One must hasten to add that the above data, used as part of an exploratory study, is based on the nominal values. An in-depth empirical research might provide at least some greater insights. However, the aim of this section is not to base its findings on an investigation of the reasons behind macroeconomic factors, but rather to enable the researcher to find basis for the sample selection in the microeconometric research.

2.3 The Triad Concept

There are several approaches for grouping countries. Some of these are, geographical, cultural, institutional and economical. In the area of multinationals, economic dimension is the most focused one since the operations of multinationals heavily rely on the firms' home and host countries' economic relations (Rugman & Verbeke, 2004a). Among the economical groupings, UNCTAD (2012a) for example categorise countries according to their income levels, as developed-developing-least developed countries, according to their trade/monetary groupings, e.g. EU, ASEAN, NAFTA, G20, G77, etc. World Bank (2012a) classifies its member countries according to their income level as: low-income economies, lower-middle-income economies, upper-middle-income economies, high-income economies, and high-income OECD members.

Although the division of world FDI into poor and rich or, alternatively, least developed, developing and developed countries, is useful in many ways, it seems

that the nature of FDI flows and their connections are better understood within a conceptual framework of the three 'poles' of world economic growth. These poles evolved through time as, Japan (with South East Asia), Western Europe (with European Union), and, US with Canada (with Latin America). These relations are known as the Triad.

The Triad concept was introduced by Ohmae (1985) in his landmark book *Triad Power: The Coming Shape of Global Competition*. These poles share common features as per capita discretionary income (high purchasing power), sophisticated customers (effective demand), thus innovativeness of these regions and, the paramount of the FDI relation among these regions (Ohmae, 1985; 1986). In the earlier forms, the (core) triad was defined as Europe, Japan and USA. According to the concept there are "core" countries in the centre (usually the technology and capital abundant country) and their (trade and investment) peripheries connected to them. Ohmae, using the absolute amount of trade between the countries and regions as a yardstick states that the periphery of US is Latin America, Japan's Asia and Europe's[6] is Africa (Ohmae, 1985, pp. 121-122)The central features of the core triad is: The rapid economic growth and closer intra-regional relationship between Japan and the 'tiger' economies in the eastern pole, the deepening and widening of Europe, and the Free Trade Agreement in the American zone. Nonetheless, one must bear in mind that there is a great deal of economic relationship between the three poles, in the sense that the within-pole links are deepening and more satellites are joining in. However, each pole's integration is

[6] Though Ohmae does not specify which European countries are at the core triad, however, he often mentions three countries: the United Kingdom, Germany and France.

different: in Japan' pole is economy-driven, in Europe it is policy driven, and in America is a mixture of the two UNCTC[7] (1991, pp. 34-40).

The triad phenomenon remained only a normative term for many years and most empirical studies remained exploratory in terms of testing the power of the triad (see for example, Gittelman, 1997). Besides, few empirical studies attempted to determine the existence and borders of the global triad until recently. These studies use two general measures in order to specify the borders of triad: *de jure* and *de facto*[8] definitions of integration. Basing their analyses on the trade agreements and the ratio of the sales of Fortune 500 firms, Rugman and his colleagues (Rugman, 2004; Rugman & Verbeke, 2004a) argue that globalisation is not a *fete-a-comple*, and that transnational firms apply regional strategies, the liability of foreignness is now the liability of "regional foreignness" and the "broad" triad[9] is at the centre of these changes. Dunning et al. (2007) using the aggregate FDI data rather than Fortune 500, find support for Rugman and colleagues that MNCs concentrate in their home regions. Interestingly, *de jure* studies emphasise on the trading agreements and thus study FDI in trading blocs[10]. On the other hand, few empirical studies from the *de facto* view use statistical methods to determine the triad. In *de facto* studies, the division of the countries

[7] United Nations Center on Transnational Corporations, later took the name UNCTAD: United Nations Center on Trade and Development.

[8] *De jure* means "concerning law" and emphasises the importance legal agreements to establish free movement of capital, labour and goods between the countries while *de facto* meaning "concerning fact" and focuses on macroeconomic variables and statistical analyses.

[9] NAFTA, EU, APEC Countries. For a definition of these countries please see Appendix A2.

[10] For an excellent study on trading blocs, see for example Andresen (2010)

and regions as core and periphery is often discussed in spatial economics and geographical analyses. Among them, Poon et al (2000) using the intramax method[11] analyse the intensity of trade and foreign direct investment flows during 1985 and 1995 separately. They find that during those years, international trade was organised around fewer world regions, while investment intensity patterns did not conform any bloc-like formation, but exhibited diffusion of global networks. Van Hamme & Grasland (2011) examining FDI flows in Boolean matrix for the years 2006 and 2008, find strong evidence on core/periphery pattern FDI inwards. They state southern and Eastern Europe receive nearly all of their FDI from Europe, while North-Western Europe and more specifically UK, receive higher share of FDI coming from other parts of the world. For outward FDI, they find out that neighbouring countries' main destination (and sometimes the only one) is Europe. Van Hamme & Pion (2012) test the validity of the core-periphery structure of the world economy for a long time span (from 1960s to the end of 2000s) using k core method[12] in Boolean matrix, investigate more evidence on the core-periphery structure of the triad with the former having the basis for FDI outflows are held by the developed "core" areas which are Spain, Italy, Germany, UK, Bleu (Belgium and Luxemburg), Netherlands, France, Switzerland, USA. The highly integrated core countries in their findings are Western Europe (as for FDI these are Spain, Italy, Germany, United Kingdom, Bleu the Netherlands, France, and Switzerland) USA and to a lesser extent Japan from 1967 to the

[11] Intramax is a method of clustering algorithm that uses the (trade and) investment intensity index, form regions and blocs. Rather than testing the relationship in a given region, this method allows the algorithm to determine it (if there is any).

[12] k-core is a method of testing the linkage of complex network regions that contain pockets of densely connected actors (Van Hamme & Grasland, 2011, p. 69)

present This is in line with the core triad of Ohmae, however, yet it does not confirm the broad triad. On the other hand, both Andresen (2010) and Van Hamme & Pion (2012) confirm that there are signs of a new integration in Asia with China overcoming Japan and being in the core in terms of trade, however, not in terms of outward FDI in relative terms, yet.

In the light of the above literature, this thesis takes the core triad for studying FDI outflows as Japan, North America[13] and West Europe[14] for several reasons. First, among the European countries, West European ones are the major sources both in terms of flows and stocks as revealed in the previous section. Second, the world has witnessed several reforms during the last decades, in terms of countries' political divisions and geographical borders. Thus much of the new members of the European Union, and Euro Area are still undergoing several structural changes and it might not be technically correct to include them in the "old" FDI flows. Besides, the outflows from these countries are so frictional that it might interfere the validity of a longitudinal study and comparability over time. In the light of these background, the next section aims to explore the triad FDI, both intra triad and inter-regional boundaries. As for North America, USA and Canada are almost the only source countries of FDI. Regarding Asia, since it has not completed its evolvement yet, in terms of FDI and Japan is still one of the biggest single country in the world both in flows and stocks of FDI we exclude other Asian FDI in the empirical analyses. In what follows is a brief chronology and information on this tripod and the FDI trends of Triad.

[13] US with Canada

[14] Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, Luxembourg, Netherlands, Spain, Sweden, Switzerland, and United Kingdom.

2.3.1 Europe

European Union has been seen as the major economic integration in the world. It refers to not only an economic and spatial integration, but also a political union[15]. The idea, of European integration can be traced back to the 14th Century but has become a topic of discussion in 1920s among the European intellectuals[16]. As for the economic integration, the roots of single Europe goes back to "The Organisation for European Economic Co-operation; (OEEC)" built on 16 April 1948 by 18 founder members[17]. In fact, OEEC is later converted to OECD with non-European countries, such as, US and Japan. In 1957, two institutions - ECSC[18] and Euratom[19] were merged into the same commission (European Commission) together with EEC (European Economic Commissions) to set up a single market among the members. On the other hand, seven European countries[20] of the OEEC, signed EFTA (European Free Trade Association) in 1960. Although EFTA was not as successful as EEC in terms of trade relations and integration with each other economically, mainly due to the geographical disperse and economical differences among the member states, however, EFTA's GDP per capita was always higher than EEC countries (Jovanović, 2005, pp. 10-14). In

[15] Much of the chronological information on this part of the thesis is benefited from the website of European Union (2012).

[16] For a historical review on integration of European politics and military and the history of EU, among others see for e example, Jovanović (2005)

[17] Austria, Belgium, Denmark, France, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Sweden, Switzerland, Turkey, United Kingdom, Western Germany, The Anglo-American zone of the Free Territory of Trieste

[18] The European Coal and Steel Community founded by six countries namely, Belgium, France, Germany, Italy, Luxembourg and the Netherlands in 1950

[19] European Atomic Energy Community founded by the same countries as ESCS in 1951

[20] Austria, Denmark, Norway, Portugal, Sweden, Switzerland and the United Kingdom.

1973 Denmark, Ireland and the United Kingdom (was also a member of EFTA) joined to EEC. In 1980s the Union further enlarged with Greece (1981), Spain and Portugal (1986). In 1993 with the Treaty of Maastricht, the single market and single currency as well as policy unity was signed by the member countries and European Union was officially created. In 1995, what is known today as the EU-15 (commonly refers to the strongest 15 countries of the EU[21]) was established with Austria, Finland and Sweden. Although the European Union further enlarged in 2004 and 2007 and now is made up by 27 countries. On the other hand, this thesis utilises the "core" triad concept (p. 32) that includes the West European countries (EU-15 & Norway and Switzerland[22].) whose outward FDI levels are the highest among the others.

2.3.2 North America

In the North America, the United States and Canada have been two pioneering FDI source and host countries. In fact, early FDI theories, such as, Hymer's thesis, have been inspired by inward FDI to Canada. However, Canada is now a net exporter of outward FDI. USA on the other hand, is the largest outward FDI stocks country in the world. In addition, unlike the European countries, which are mostly dispersed, Canada and USA are geographically and culturally close to each other. In addition, unlike the European integration process which officially started after the WW 2, the US-Canada integration has first started in 1935 with

[21] Germany, France, Italy, the Netherlands, Belgium, Luxembourg, Denmark, Ireland, United Kingdom, Spain and Portugal, Austria, Finland, and Sweden

[22] Although they are not a member of EU, both are member of EFTA and have close trade and investment relations with the EU. Besides, the main reason for these countries resisting full and formal integration with the EU is political rather than economical (Jovanović, 2005, p. 674)

the Canada-United States Trade Agreement, in 1935. Although the condition of this agreement can be considered as protectionist on today's norms, it meant free, even freer trade that time (Goldenberg, 1936). Among the several agreements between the two countries, the Canada-U.S. Free Trade Agreement (CUSTA) of 1988 and the North American Free Trade Agreement (NAFTA) between Canada, USA and Mexico in 1994 are the most important ones

The two methods to measure the integration are de facto and de jure. De facto measure judges the integration on the macroeconomic variables (such as GDP, FDI, and trade) and statistical modelling while de jure is based on the extensiveness of legal agreements on freer goods, capital and labour movements between the countries[23]. This study focuses on the former with a specific emphasise on the FDI flows among the North American nations.

While NAFTA brings Canada, USA and Mexico in terms of trade, however, it must be noted that US and Canada FDI flows as home countries are more extensive to other countries than each other. Besides, while Mexico is an important trade partner to both US and Canada, Mexico's outward FDI both in absolute and relative terms[24] is negligible compared to that of the US and Canada FDI (pp. 37-41). Thus, albeit with the trade relations and regional integration arguments in the North America, as they are powerful investors in terms of their well-known technological development (to add the arguments of firms with higher

[23] For an comprehensive evolution of the history of US-Canada integration and detailed information on the agreements between the two see for example (Andresen, 2009)

[24] Mexican outward FDI stocks are US$ 112,087 as of 2011 and FDI outward performance index value was virtually 0.00 on the basis of both outward stocks and flows.

technology would mostly invest abroad in order to exploit this advantage) and the magnitude and similarities in their FDI behaviour, only the US and Canada is included in this thesis as the second pole of the triad in line with Ohmae (1985, 1986), UNCTAD (1994), and Andresen (2009).

2.3.3 Japan

Japan was not an FDI source until the late 1960s for several reasons. First, the Japanese government restricted outward investment in order to outcome the foreign exchange shortage. Second, the Japanese economy was growing rapidly and domestic investment was more attractive than the overseas production. Third, the lack of firm-specific assets, such as, technology and management knowledge and international production experience of the Japanese firms discouraged them from FDI but forced and export-focused strategy (Urata, 1993).

Examining Japanese outward FDI periodically, Park (2003) states that, pre-2000s Japanese FDI strategy has gone three different stages: in the 1950s and 1960s it was natural-resource seeking, in the 1970s and 1980s it was market-expansion, and in 1990s it was a combination of low-cost labour seeking and market-penetrating FDI. Despite the 'lost decade',[25], Yang, et al. (2009) observe the same pattern as 1990s in 2000s.

[25] From early 1990s to 2000s is known as the lost decade of Japan due to the economic stagnation during that era; arguably as a result of asset bubble. The lost decade is usually characterised by low level of total factor productivity, growth decline, non-performing loans, and governance (Hamada & Okada, 2009; Kneller, et al., 2012).

While Japanese outward FDI favoured its region to some extent[26], unlike the Europe and US who had exclusive trade and investment partners and successful integration processes, Japan did not attempt such concentrations in her region until recently. Japan's first region-specific trade agreement in her own region (East Asia) was with Singapore only in 2002. In fact, the trading blocs in the whole Asia[27] is economic rather than institutional, unlike the European integration. Although many believes that integration in East Asia is on the process, however, production of advanced technology goods are still locked in Japan. However, disruption of supply chains by the earthquake in 2011, might force Japan towards the East Asian integration.

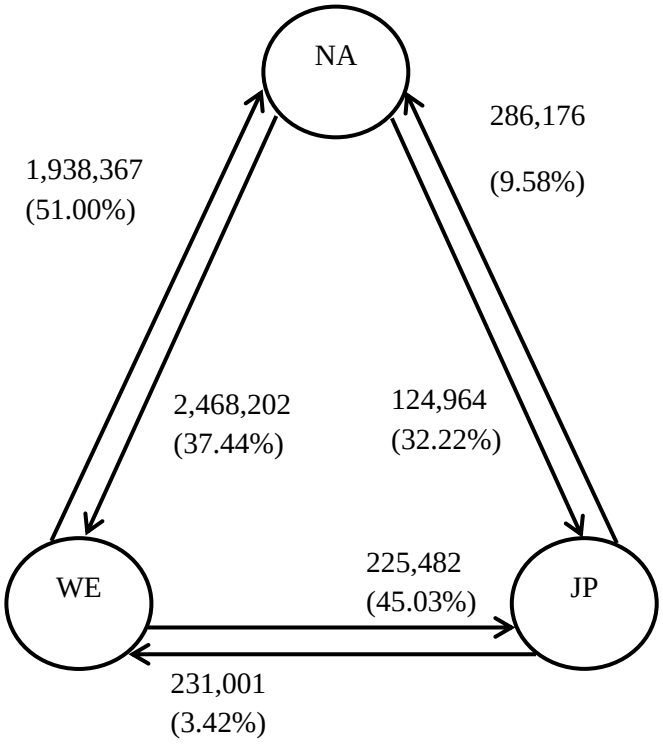
2.4 Triad FDI

As Figure 2.11 shows, most of the FDI from triad countries is directed to other triad counterparts. 82.48% US inward FDI stocks are directed from the other triad countries of which 71.11% and 11.36% are from Europe and Japan, respectively.

[26] Most of the Japanese outward FDI goes to Europe, USA and Asia while completely ignores Africa and heavily fluctuated in Central and South America.

[27] Such as APEC and ASEAN

Figure 2.11 Intra-Triad FDI Stocks



Notes: Total FDI stocks as of 2011. JP: Japan, NA: North America, WE: West Europe. FDI stocks in US$ million, parenthesis indicate percentage of the total in host country/region FDI stock. Inward stocks are calculated from the reporting host country data and outwards from the home countries' data. Hence, there are small differences between inward and outward stocks and from the UNCTAD and other sources as explained in page 10. Besides, BEA uses the cost of FDI while other sources the nominal value of FDI. Different recording methods among the countries and exchange rate valuing methods hinder flawless accounting (p. 10).

Sources: Data for US from BEA (2012) for Japan, JETRO (2012), for EU Eurostat (2011) EU data is converted to US$ at the annual average of exchange rate. Adjusted data and percentages are complemented with OECD (2012), and UNCTAD (2012).

In Japan, these figures are slightly lower than US with receiving 45% FDI from WE and 32.21% from US. It is interesting that, while WE is the main source to the other triadic countries, only 38.43% of its inward flow is directed from US (35.01%) and Japan (3.42). Europe's biggest outward share goes to US (Eurostat, 2011), North America's biggest share goes to Europe and Japan's biggest share goes to North America (Figure 2.11, and Table 2.2, p. 40).

Although Japan has a big share in the world FDI stocks (4.55% at the end of 2011 with being 6th in the world), its inward FDI is relatively small compared to the other triad countries (1.10% of the world inward FDI stocks as of 2011, 19th in the world). The low level of Japanese outward and inward FDI relative to its economic size and financial resources to support inward and outward investors is noteworthy and will be discussed in the next section which evaluates each of the triad's segments regional integration.

Table 2.1 Intra-Triad FDI Stocks, Inward and Outward

Inwards			*Outwards*	
Total	226,166 (100.00%)		Total	964,651 (100.00%)
of which from			of which to	
WE	101,841 (45.03%)	**JP**	WE	231,001 (23.95%)
NA	72,863 (32.22%)		NA	286,176 (29.67%)
Triad Total	174,703 (77.25%)		Triad Total	517,177 (53.61%)
Rest of the World	51,463 (22.75%)		Rest of the World	447,474 (46.39%)
Total	3,155,325 (100.00%)		Total	4,840,047 (100.00%)
of which from			of which to	
WE	1,938,367 (61.43%)	**NA**	WE	2,468,202 (51.00%)
JP	302,279 (9.58%)		JP	124,964 (2.58%)
Triad Total	2,240,646 (71.01%)		Triad Total	2,593,166 (53.58%)
Rest of the World	914,679 (28.99%)		Rest of the World	2,246,881 (46.42%)
Total	6,592,091 (100.00%)		Total	9,526,179 (100.00%)
of which from			of which to	
NA	2,468,202 (37.44%)	**WE**	NA	3,505,634 (36.80%)
JP	225,482 (3.42%)		JP	231,001 (2.42%)
Triad Total	2,693,684 (40.86%)		Triad Total	3,736,635 (39.22%)
Rest of the World	3,898,407 (59.14%)		Rest of the World	5,789,544 (60.78%)

Notes and Sources: As Figure 2.10

2.5 Outward FDI Performance of the Countries and Country Groups

In order to measure countries' outward FDI performances rather than purely flows, UNCTAD (2004) introduced a method to calculate outward FDI performance of countries which is the application of inward performance index introduced previously (UNCTAD, 2002). These indices are computed as the share of a country´s (inward/outward) FDI flows or stocks in world FDI as a ratio of its share in world GDP. In this model, flows reflect the current FDI performance, while stocks refer to accumulated FDI. On the other hand, these indices must be interpreted carefully for its shortcomings. First, it does not determine between the ownership and location factors. Second, theory suggests firms which have greater ownership advantages but are based in a country with fewer locational advantages would deal with FDI. Thus, the industrialised countries' firms are the ones to choose this kind of FDI activity. Therefore, one might expect that developed countries FDI outward performance indices would be higher than the less developed ones. However, considering the higher levels of development in home countries, developed countries also can be expected to perform smaller FDI index relative to their size. Third, smaller countries might have higher index due to their size (as in the case of Liberia as Table A5 in Appendices show). Fourth, special factors, such as round-tripping FDI between China and Hong Kong and the case of financial offshore centres can also interfere with the FDI performance indices.

Outward FDI performance indices are computed for all countries from 1980 to 2011 year on year basis, and presented the averages within 4-year intervals on A5and on the regional basis as A6show in appendices. The results for earlier

years were checked against UNCTAD (2004) and only negligible fraction differences are observed. Thus, an updated version of UNCTAD outward FDI performance index is presented in this thesis since UNCTAD does not provide these indices from 2008.

The results can be summarised as follows. All in all, developed countries indices are higher than those of the less developed ones. It is interesting to notice that, although China is one of the biggest FDI source among the developing countries, the rates of performance index of developing countries group is better without China. This might be a result of the round-tripping FDI often discussed in literature and in this thesis. In addition, since this performance index is not an absolutely accurate, there might be other reasons behind the results, too. The emerging economies outperformed all of the country groupings during 1980-1984 notably. However, their performance constantly felt and recorded the least in its history in 2000. It started to recover from next year, however, is still lower than Developing economies excluding China.

Based on the accumulated data, the triad outperformed virtually all the country groupings during 1981-2011 (except emerging economies)[28], and a slightly smaller than G8 in 1980. Although G8 countries have a great distribution in world FDI both in terms of flows and stocks, its index have been increasingly lower than the Triad since 2003. Similarly, when taken all developed economies in the world as a group, its index has been constantly and increasingly lower than the triad since 2005. Although United States, United Kingdom, Germany and

[28] The phenomenon of EE's FDI flows on page 76

France have the largest global outward FDI stocks, respectively their performance indices are relatively smaller than other triad countries, such as Switzerland, Ireland, and the Netherlands which are the leaders in terms of FDI performance index among the triad countries. It is worth noting that, among the triad countries, Japan has the weakest outward performance related to its economy. During the last 15 years, Japan has always had the least index value. As a shortcoming of the measurement method, and in the light of the explanations on the previous page, it is reasonable to think that these countries might be performing smaller FDI relative to their development.

To sum up, developing countries' outward FDI is increasing noticeably, especially during the last few years. However, their FDI still remains minimal compared to the developed countries' which are still main players in the world FDI activities.

2.6 Summary

Cross-border investments have a long history. However, data on FDI was not accurate until recently due to several factors, such as, differences on recording methods among the countries and exchange rate evaluation.

The growth pattern of the global flow of FDI is as follows. FDI grew slowly until 1985. It took off in 1986 and grew rapidly until 1990 when it began to stagnate: the years 2000 and 2007 marked another unexpected rise in foreign direct investment while during the recent crises in the developed world adversely affected flows since much of the FDI flows are sourced from the developed countries.

The distribution of inward FDI is very uneven in terms of geographical locations and sectors. FDI clusters around the three economic poles, Japan, West Europe, and North America, known as the Triad. Most of the FDI outflow goes to industrialised countries. In the developing world, South East Asia takes the lion's share, and is followed by Latin America, with a lumpy intake, and the rest of the developing countries receiving a negligible amount. With the Chinese case in mind, it can be predicted that the coming years might witness an integration in the East Asia and China might takeover Japanese outward FDI changing the structure of the triad.

It was also of interest in this chapter that the outward FDI performance of the countries was as expected: developed countries outperform the others and the triad has an extensive impact on the world FDI flows.

So far, this thesis dealt with the theories of FDI with a specific attention on the factors that might influence firms' decision to deal with overseas production and next it reviewed the global trends of FDI with a specific attention to the major outward sources, i.e. the triad countries.

In line with the literature and the outward FDI performance indices constructed, this thesis considers the triad as West Europe (Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, Luxembourg, Netherlands, Spain, Sweden, Switzerland, and United Kingdom), North America (USA and Canada) and Japan and attempts to find out firm-specific motives for initial FDI decisions of triad companies. Therefore the next chapter describes the research design together with the hypotheses setting, sampling and methodologies used in this research.

CHAPTER 3. THEORETICAL REVIEW

3.0 Introduction

This chapter aims to review the prevailing theories of FDI in order to establish a background for a further empirical research. There is a vast amount of literature on FDI since Stephen Hymer's seminal work (Hymer, 1976 [1960])that distinguishes FDI from portfolio investment for the first time. However, in absence of a general theory, FDI results in a wide variety of approaches to answering the question of why firms invest abroad. As Dunning & Lundan (2008, p. 95) state "The theory of MNC activity stands at the intersection between a macro-economic theory of international trade and a micro-economic theory of the firm". Theories on the determinants of FDI can be categorised according to their nature as being *horizontal* (Markusen, 1984) and *vertical* (Helpman, 1984) FDI; their types: *natural resource seeking, market-seeking, efficiency seeking, strategic asset seeking* FDI (Dunning, 2001), and their assumptions of *perfect markets* and *imperfect markets*[29] (Agarwal, 1980; Moosa, 2002)[30].

Earlier studies on FDI focus on three main determinants: *ownership specific* (Hymer, 1976 [1960]; Knickerbocker, 1973; Vernon, 1966), *internalisation* (Buckley & Casson, 1976; Buckley, 1988; Rugman, 1975; Rugman, 1980) and *locational* (Dunning, 1973; Buckley, 1988) factors as determinants of outward FDI. These factors are later brought up as an Eclectic Theory (OLI Paradigm) by Dunning (1980; 1988). ***O*** (ownership factors) emphasises "why", ***I***

[29] See glossary for a brief explanations of the terms.

[30] For a review of classification of FDI theories, see for example Faeth (2009) and Buckley & Lessard (2005).

(internalisation) focuses on "how" and ***L*** focuses on "where" FDI activities take place. Although the other theories will also be looked at in this thesis, the central weight is given to the ***ownership advantages*** as they put greater emphasis on the motivation for initial FDI decisions

The main thrust of ownership theories is that 'markets are full of barriers' *(imperfect markets*) followed by the assumption that, 'competitors are monopolies' *(organisational views*). Despite such a sharp contrast, however, an in-depth investigation of these theories reveals that they have not completely purged themselves of trade views. In fact, indirect trade in factors of production is unextractable from most FDI notions.

In the classical and neo-classical trade theories tradition there is no space for FDI or capital movements since they assume perfect markets where all the firms in the market sell a homogeneous product, there are numerous small firms, but not a large one, firms are price-takers not price-makers with no entry and exit barriers in the long term and firms and consumers have perfect information on the operations in the market. As a result, in a perfect market, no transaction cost exists and perfect mobility of the capital at home and goods across borders is provided (Negishi, 1961; Roberts & Sonnenschein, 1977). Under these perfect competition conditions, domestic firms would have an advantage over foreign firms in the proximity of their operations to their decision-making centres, so that no firm could survive in foreign operations and direct investment cannot exist (Kindleberger, 1969, p. 13) since in perfect conditions goods move freely (and therefore there is no need for the factors). As Krugman (1983, p. 57) states "the theoretical models of trade factor movements, and protection, which are the

essence of standard trade theory, have no role for FDI. But any theory of the multinational firm must come to grips with imperfect competition".

While the trade theories did not provide an explanation for factor mobility, however, Mundell's (1957) international capital movement theory provided an early account of foreign investments without distinguishing between portfolio and direct investments. Capital movement theory also assumes (capital) market perfections in which, risks, uncertainties, and barriers to capital movement do not exist in the markets, where capital moves from countries where the interest rate is low to those where the interest rate is higher. In this approach, FDI (like any other form of international investment) was seen as a response to differences in the rates of return on capital between countries.

In the Mundellian tradition "commodity movements and factor movements are substitutes. The absence of trade impediments implies commodity-price equalization and, even when factors are immobile, a tendency toward factor-price equalization and, even when commodity movements cannot take place, in commodity-price equalization." (Mundell, 1957, p. 321). This suggestion was supported by the empirical observation that American firms achieved a higher rate of return from their European investments than at home (ibid). Similar to trade theories, this theory also assumes some "perfect" conditions:

The important theoretical shortcoming of the interest-rate theory is that it does not explain control of international production. At this point, Mundellian theory was

challenged by Stephen Hymer (1976 [1960])[31] in his doctoral thesis bringing up issue of 'control' from the micro view and 'market imperfection' concern which is often accepted as the first realistic approach to FDI.

In this context, the next section provides a review on the literature on explaining 'what are the firm-specific considerations for investing abroad?' Therefore the theories of FDI (and MNC) are approached from the imperfect markets viewpoint. To obtain a better understanding of firm-specific aspects of FDI, next section provides a brief review of the FDI theories and notions assuming imperfect market conditions.

3.1 Industrial Organisation Approach to FDI

The earliest theory of international production is usually attributed to Hymer (1976 [1960]) often coupled with his PhD supervisor Kindleberger (1969; 1987). In Hymer's view, the strategic interdependence between *monopolistic* (extended to oligopoly by Kindleberger) firms was the reason for international production and thus the theory of FDI belongs to the theory of industrial organisation (IO) rather than to the theory of capital movements. For a firm to deal with international production, it must have some advantages over the potential competitors in that country. These advantages give the foreign firms market power, i.e. the power to determine the price. Though he did not use the term "market power" in his thesis, Hymer is best known with this approach since in it he adapted the IO theory (Bain-type advantages) to the international production.

[31] The founder of the theory of FDI as acknowledged among others, see for example, Pitelis (1996), Buckley (2006), and Faeth (2009).

The essence of market power approach is that it claims that neither interest theory nor international trade theories are able to explain the direct investment across the borders as attributable to market imperfections.

> If interest rates are higher abroad than at home, an investor will do well to lend money abroad, but there is no logical necessity for him to control the enterprise he lends to. If we wish to explain direct investment, we must explain control. (Hymer, 1976 [1960], p. 23)

The central question to Hymer was that how do firms belonging to one nation compete in another nation's local firms when they invest abroad, i.e. how do international firms cope with the "liabilities of foreignness"[32]. The answer to Hymer was in the application of Bain's (1956, pp. 15-16) concept of the advantages that established firms had over the new firms. Therefore an application of the barriers to entry to the new *firms to the firms of different nationality* (with the Bain-type advantages that foreign firms have) is the answer to cope with the local firms in the overseas markets (Hymer, op cit p. 45). Thus, FDI could be seen as a way of defending and reinforcing market power in oligopolistic industries. This market power is not "easy to define", but "...may be understood as the ability of particular firms to dominate their respective markets" (Lall, 1976, p. 1343).

The market power approach to FDI suggests that a firm continuously increases its share in the local markets through (collusive) networks and thus industrial concentration, so does its profits. When it arrives to a point that it is not easy to

[32] A term dubbed by Zaheer (1995) in order to define cost of doing business abroad.

increase concentration any more, it invests the earnings in foreign operations. Therefore, FDI is an extension of national monopolies to the international markets and firms with greater market power will have the power of determining the prices. Kindleberger (1969) further elaborates on the industry-specific nature of FDI. He categorises the nature of the monopolistic advantages which helps firms to grow via direct investments into four:

> ...first departure from perfect competition in goods markets, including product differentiation, special marketing skills, retail price maintenance, administrated pricing and so forth;…second departure from perfect competition in factor markets, including the existence of patented or unavailable technology, discrimination in access to capital, differences in skills of managers organized into firms rather than hired in competitive markets;… third internal and external economies of scale, the latter being taken advantage of by vertical integration; and fourth government restrictions on output or entry (Kindleberger, 1969, p. 14).

In the IO tradition, Johnson (1970, pp. 35-39) emphasising the public goods nature of the knowledge which costs near-zero social cost and non-zero private cost extends the H-K approach to the knowledge-based advantages of a firm that it can exploit for FDI decisions.

Aliber (1970) takes another view on IO and integrates the imperfect markets approach to his "currency area hypothesis" as capital markets being a source of monopolistic advantages. He argues that MNCs from strong currency areas can

borrow at lower costs and thus they become capable to deal with FDI in risky currency areas. Therefore, in addition to the firm's own built assets, currency area hypothesis adds the home country advantage. The strength of the Aliber's hypothesis is that it merges the firm specific assets together with the locational advantages. However, it does not explain the FDI within the currency areas, for example, the French FDI within the Euro area. The currency area hypothesis cannot be a general theory of FDI, however, it can be seen as another look at the market failure and FDI relationship.

Expanding H-K and Johnson's view on IO tradition with FDI, Caves (1971) identifies the nature of ownership advantages and states that the fundamental element of FDI is the market structure (both home and host countries)[33]. The nature of the ownership advantages depends on the form of the firm expansion which can take any of the three forms: "…horizontal extension (producing the same goods elsewhere), vertical extension (adding a stage in the production process that comes earlier or later than the firm's principal processing activity), or conglomerate diversification" (ibid, p. 3). In the case of horizontal direct investment, oligopoly with product differentiation is the main determinant and in the case of vertical direct investment oligopoly without necessary differentiation is the motive for FDI involvement of the firms[34].

[33] It is thus H-K tradition is often dubbed with Caves.

[34] This approach later applied to the transaction cost-multinational activity framework by Teece (1986 as two groups of MNCs: *horizontally integrated* and *vertically integrated* ones. The horizontally integrated MNCs produce the same line of goods in several locations while the latter produces outputs in some of its plants which serve as inputs into others located in different countries

While Hymer and Kindleberger are clear about the imperfect markets as the main determinant of FDI, Caves (1971) ends up expanding the Heckscher-Ohlin *Factor Proportion Theory* with special emphasis on the *factor rent* being extracted by MNCs from the market. In fact, he gives a more comprehensive example of comparative advantage at the end of his article, which improves on HOS (Heckscher-Ohlin-Samuelson) example of two-country two-goods model. One thing that Caves has in common with Hymer-Kindleberger is the attention to *location* and *the uneven exploitation of factors of production* (emphasis added). If a firm wants to achieve *full rent* on its products then it has to transfer its entire technology to the licensee or franchisee. Nevertheless, doing so might lead the firm to expose its technology and subsequently, rent deduction[35]. As a result, the firm deals in direct investment rather than technology transfer in order to avoid the imperfection in the foreign markets. In his further refinement of market power theory, Caves (1974a) is clearer about the firm advantages which are intangible in nature and are difficult to exploit without having control and FDI occurs mainly in industries by oligopolistic market structures. Therefore, it is essential for direct investors to improve international resource allocation by avoiding market failure.

That is to say, a firm would deal with FDI on two conditions: first, it would have *substantial advantages of some kind*[36] over local firms and second, the market would be imperfect so that the firm can use these advantages (Calvet, 1981;

[35] Especially, when there is asymmetry in the contracts, third-party contractors might not be loyal to the licensors or franchisors.

[36] Kindleberger (1969) "Restrictions on Direct Investments in Host Countries," a discussion paper for the University of Chicago Workshop on International Business (unpublished), p. 9. As quoted by Aliber (1970, p. 27).

Dunning & Rugman, 1985). Industrial organisation approach main strengths are: first it is the first theory on FDI which assumes the realistic market conditions, rather than the perfect assumptions. Second, it sheds the light on why firms expand their operations overseas, i.e. it discusses the initial FDI decisions of the firms and it takes into account the sunk costs[37] through the initial investment in a foreign country. At its most basic, firms invest abroad when expected profits exceed the sunk cost necessary to establish facilities in their chosen country.

Although market power approach shifts FDI phenomenon from investment theory to the theory of MNC, it is not flawless. First, even though it explains why a firm would invest abroad (in order to control of its overseas assets), it does not explain the growth of the existing MNCs. In other words, it discusses the initial FDI, but it does not discuss why a company would invest in several countries, and may be in several sectors. Secondly, it sees international production as the only option by ignoring contractual agreements, such as, licensing. Thirdly, IO approach to FDI focuses only on the structural market imperfections[38] ignoring the (cognitive) natural imperfections[39].

The above arguments shift the matter of market imperfections of H-K approach, to market failure in the theory of the firm. Therefore firms do invest abroad not only to overcome the barriers to trade and not only to protect and efficient use of firm specific advantages, but also they do invest to overcome transaction costs.

[37] These are the costs associated with gathering information,

38 Deviations from purely market-determined prices brought about by the existence of monopolistic or oligopolistic market characteristics (Calvet, 1981, p. 46).

39Those arising out of excessive market transaction costs, such as, searching, negotiating, and contracting expenses (Dunning & Rugman, 1985, p. 229).

The higher the market failure is the better to choose FDI mode. Otherwise, licensing is chosen (Hennart, 1986). The issue of transaction costs are taken into account in the internalisation theory of FDI. In what follows is a survey of the theories related to the internalisation issue.

3.2 Transaction Cost Approach to FDI and Internalisation Theory

The starting point of the transaction cost theory is to resolve two questions: "What explains the existence of the firm?" and "What explains the existence of the MNC?" (Buckley & Casson, 2009, p. 1573). The answer to the first question, the existence of the firms, comes from the *Coasean Theory of the Firm* as "the failure of markets is the cause for the existence of managers (co-ordinators) and even the firm itself" (Coase, 1937, p. 336). In order to continue its existence, firms should create an internal market rather than using the externalities in case of high transaction costs. According to Coase's *The Nature of the Firm*, when transaction costs exist, the firm is a superior institution for allocating resources. Therefore the cost of transactions between the other agents can be reduced by forming an institution from individuals whose exchanges are governed by hierarchy instead of arm's-length relations. In that way, the firm internalises transaction costs which become less costly compared to the markets.

Williamson (1973; 1975; 1981) further refines Coasean theory and defines firm as an alternative institution to markets. He brings up the *economies of integration* and *control* which is hierarchic and central calling for caution in terms of necessary 'threshold' before internal organisation offers a clear-cut cost advantage (Williamson, 1975, p. 113). In the transaction cost approach, (multinational)

firms are hierarchical and "the resource allocation processes that are internalized are those which are not efficiently carried out in a decentralized manner, such as financial management and control of R & D (the source of the firm specific advantage to the MNC)" (Rugman, 1981a, p. 606).

Unlike the Hymer-Kindleberger approach, which focuses on the structural market imperfections, transaction cost approach emphasises the natural market imperfections (see page 54) as a reason for firms' existence. Williamson (1973; 1981) approaches the firm as a governance structure and identifies three distinct drivers of transaction costs: bounded rationality (a concept introduced by Herbert Simon in 1960s), opportunism and asset specificity. Since the human being can make mistakes or not know everything (bounded rationality), can cheat, lie, or exploit new opportunities (opportunism) and the degree to which assets may be redeployed without sacrifice of value (asset specificity) (Wynn-Williams, 2009, pp. 83-86) exist, transaction costs will be high. These costs of using the market mechanism can often be reduced if the firm, as a hierarchy supersedes the market. "…then the possibility of opportunistic behaviour on the part of the other party to a transaction may lead to a firm protecting its investment by throwing corporate boundaries around the transaction and internalising the trade" (Kay, 1991, p. 161).

While Coasean-Williamsonian transaction cost approach widely developed in a domestic context, about the same time, transaction cost approach to FDI (internalisation theory)[40] simultaneously and independently developed by

[40] In fact, some authors, such as, Buckley (1990)and Dunning & Lundan (2008, p. 94) argue that internalisation is better described as a paradigm than a theory as it predicts the conditions for firms to choose internalising the foreign markets.

McManus (1972), Buckley and Casson (1976), and Hennart (1977 [1982]), Dunning (1977), Rugman (1980; 1981b) Casson (1982), independently from Williamson's core apart from Hennart (1982) who developed a model of internalisation based on the Williamsonian transaction cost theory of the firm (Rugman & Verbeke, 2003).

The transaction cost theory deals with the growth of any firm whether it be domestic or multinational while internalisation is the theory of transaction cost to the MNCs. In transaction cost theory, firm's size grows through integration (vertical or horizontal) because, in this way, the firm supersedes the price mechanism. The notion of the transaction cost approach to FDI is that "imperfections" are inherent attributes of markets, and MNCs are institutions to bypass these imperfections. Therefore, internalisation is defined as:

> …a theory of the size and scope of firms. It argues that interdependencies between economic agents can be organized through the price system or through hierarchy (through employment contracts). MNCs arise whenever inter dependencies between agents located in different countries are more efficiently organized through hierarchical processes than on a market through spot prices or contracts. (Hennart, 2005, p. 86)

Hence, internalisation theory[41] is closely linked to transaction cost theory (Rugman, 1980). The concept of internalization to the international production is

[41] In fact, some authors, such as, Buckley (1990)and Dunning & Lundan (2008, p. 94) argue that internalisation is better described as a paradigm than a theory as it predicts the conditions for firms to choose internalising the foreign markets.

presented by Buckley and Casson (1976) and further refined by Casson (1985). The theory explains why firms choose to utilise firm-specific assets internally rather than via arm's length operations with individual contracts. Simply put, it asks why firms do not choose alternative methods to serve foreign markets, e.g., exporting or licencing instead of investing abroad.

While the market power approach views the existence of MNCs be due to exploiting either host country resources and markets, or firms' monopolistic advantages, the internalisation approach links the locational advantages to firm specific advantages (Rugman, et al., 1995) and the cluster networks (Rugman & Verbeke, 2003). The strength of the internalisation theory is that it explains the internalisation advantages of producing abroad rather than licensing or exporting, which could not be explained by the Hymer-Kindleberger-Caves (Page 52) tradition[42]. Basically, it is the *cost of control* which determines the degree of foreign involvement of the firms. When the cost is lower, than trade or licensing could be alternative to direct investment. According to Casson (1985) these costs are such as, unpatentable know-how, difficulty of enforcing long-term contracts, and tariff and non-tariff barriers. Similar to Casson, Buckley (1988) defines the advantages of internalisation as the increased ability to control and plan production, exploiting the market power via discriminatory pricing, avoiding uncertainties in transferring the knowledge and avoiding the potential governmental intervention.

[42] Although Hymer inspires the internalisation approach directly in his thesis, he was not included in transaction cost approach until recently (Pitelis, 2005) mostly due to the fact that Hymer does not relate his work to the theory of the firm.

Another important point is that while the IO view of FDI sees multinational companies as monopolistic *rent seekers* through monopolistic power of the MNCs, internalisation approach based on the Coasean theory of the firm views them as *efficiency seekers* through economies of integration.

Among the reviewed mainstream theories, market power approach explains why international production takes place and as internalisation focuses on the efficiency of FDI over the contractual forms. On the other hand, none of the above theories explains how and when these operations are realised. In this vein, Vernon (1966) emphasises the role of technology as an ownership advantage for a firm growing through oligopolistic behaviour and add timing to the international production by MNCs.

3.3 Product Life Cycle Theory

Explaining horizontal FDI, in line with the market imperfections approach, Vernon (1966) comes up with application of product life cycle (PLC) theory to the international operations of the firms. The theory suggests that trade and FDI emerge a cycle: the (high-tech) goods are first innovated and produced at the home market by the parent firm (home country is USA in Vernon's explanation where the relatively higher income and variation of tastes spur on new products requiring new technical and managerial expertise). In the later stage, goods are exported to other developed countries, i.e. to Europe so long as it is still cheaper to export rather than produce abroad. At the final stage, when the goods reach maturity, the decision of exporting or producing abroad depends on the

comparative cost of production, mainly the labour cost (Vernon, 1966; Wells, 1968).

The main application of the PLC's to multinational activity is that "technology is a key factor in creating and developing new products, while market size and structure are influential in determining the extent and type of international trade" (Morgan & Katsikeas, 1997). The strength of the PLC is that it adds *time* dimension to the market imperfection paradigm. The markets are imperfect, e.g. knowledge is not a public good, firms do not have information about the customers and the markets equally, and new product development is costly. Under these conditions, firms do invest abroad only when their newly innovated products are standardised. The labour-intensive production in poorer countries is obviously well suited to the context of PLC factors, *knowledge* and *labour* balancing out internationally.

At that time, the PLC theory of international trade was found to be a useful framework for explaining and predicting international trade patterns as well as multinational enterprises' expansion. It explains the relationship between the exports of US industries to the degree of innovation. In addition, it combines the ownership and locational advantages of the MNCs investing abroad with the focus on technology transfer; it does well explain the movement of technology and expertise from developed countries to the less developed ones. However, PLC does not explain the non-export substituting investment. In addition, Vernon's model does not answer the question of investment among the developed countries, nor does it explain the movement of capital among developing countries. What is more, Vernon means USA by innovative –developed- country, however, not only

USA but also the other two poles of the Triad (Japan and Europe) are significant in innovation. Vernon's PLC theory is more relevant to manufacturers' initial entries into foreign markets than to MNCs that have FDI already in place.

Vernon's theory is an important concept in perfect market conditions and FDI approaches since it relates the product, location and oligopolistic markets in explaining FDI. In the latter version, Vernon (1974b) links the PLC stages to the oligopolistic structures with absolute clarity (see section 3.3 on page 63).

Although the earlier versions of Vernon's theory merges trade and investment together and sees FDI as an alternative for low-cost production, as Vernon (1979) acknowledges, two conditions that results in product life cycle hypothesis to lose its explanatory power: the global networks of MNCs subsidiaries and the environmental changes that force the product life cycle hypothesis lose its explanatory power. The global networks refer to standardised production of multinational firms around the world and thus saving cost in this way while environmental changes refer to narrowing gap between the income levels and market conditions. As a result of these changes, customers in the developing world would not tolerate old technology at home markets when they can afford to import the newest technology from other countries.

In sum, market power theories suggest that firms gain some monopolistic-oligopolistic *power* at home markets via domestic operations, and then want to exploit this power in the international markets. This power stems from such assets as new product development, production know-how, brand name, company image, etc. give them strength to achieve barriers to new entrants into the industry

and the market and thus eventually to create (collusive) networks. On the other hand, it does not explain the recent movement of FDI from developing and emerging countries to the developed ones. In what follows is a review of competitive international industry approach to FDI also known as oligopolistic reaction theory.

3.4 Oligopolistic Reaction Approach

An oligopolistic industry is defined as an industry with a high four-firm concentration ratio (Kamerschen, 1968, pp. 615-616). The oligopolistic structure of an industry dictates that decisions of one firm (usually the leader in the industry) influences other firms in the industry and it is influenced by the other firms in that industry too. Contrary to the industrial organisation view of reaping the monopolistic power and the internalisation approach's creating efficiency, the theory of competitive international industry approach emphasises the role of inter-firm rivalry in explaining international production.

Knickerbocker (1973) introduces oligopolistic reaction as the main motive for the firms to follow their rivals in the international markets. Knickerbocker's model assumes that in some markets, there is oligopoly equilibrium among a group of competing firms. Rivalry starts with one of these companies' investing abroad, which is called 'follow-the-leader' model. Knickerbocker applied his assumption to the US based companies in a given industry and his finding shows that there is strong evidence supporting his hypothesis. On the other hand, as Knickerbocker (ibid. p.8) notes oligopolistic reaction theory has two limits: first it "does not explain why a firm moves in the first place" and second "it cannot explain and of

itself, why is that some (U.S.) industries have been heavily engaged in direct investment while others have not".

Vernon (1974a; 1974b) also emphasises the power of oligopoly and does not assume knowledge as a public good anymore. Information is costly therefore the new product development gives some market power to the firms in the international production. This market power, in the form of oligopoly, takes the place of the products' life cycle and becomes a cycle of global innovative activities of the firms. Similar to the classical PLC, in the modified form there are also three stages: innovation-based oligopolies, mature oligopolies and senescent oligopolies. An *innovation-based oligopoly* is one in which barriers to new entrants are achieved through the new technologies. Production of the newly innovated goods will most likely be the innovative country where R&D (research and development) facilities are placed. In a *mature oligopoly*, the barriers are created "by scale in production, transportation or marketing". Finally, in '*senescent oligopolies* the product is in maturity stage and economies of scale are not strong enough to achieve barriers to entry and maintain oligopolistic stability. Under these circumstances, firms may either choose "entering into cartels" or attempt to "differentiate their trade names and their products". Alternatively, they may try to find lower cost supplies for their production and when supplies or prices are not stable, they may locate their production in low-cost countries. At that phase, an exporter at the beginning of the life cycle may become an importer from the lower-cost countries. However, "…a significant problem for Vernon's product cycles is when it concerns a class of product, such as electronic devices or

automobiles, which are conceptually standardized yet are being continually updated" (Wynn-Williams, 2009, p. 161).

Graham (1975) points out that as the firms grow, *economies of scale* become more important in an oligopolistic industry. Consequently, the level of competition increases and risk minimising strategies leaves the place to profit maximising strategies. Later, Graham (1978) develops a theory opposition to the Knickerbocker's, if two rival companies operating in monopolistic markets, one enters to the other's market by FDI and breaks the monopoly. Then the other enters to the first one's market to react. Same as Knickerbocker, Graham (1978) tests his model using cross-investment between US and Europe and finds some support for his hypothesis; however, his findings were not as strong as Knickerbocker's be due to paradoxical results probably because of the industrial differences and unavailability of disaggregated data that time.

Flowers (1976) testing Knickerbockers theory finds evidence on country-specific temporal and sectorial FDI clusters. Investments from different countries occur at different times. The clustering of investments disappeared when various countries were examined. Investors only seem to react to activities of their national competitors.

The significance of oligopolistic reaction approach is that it shifts the FDI theories from risk minimising approaches of firm to the intra-industry production and inter-firm rivalry. Graham (1975, 1978, and 1996) concentrates on the game theory in the oligopolistic approach. Anand and Kogut (1997) examines *home based technological advantages and domestic inter-firm rivalry* as ***'push'*** factor,

and *host geography* as the ***'pull'*** factors of FDI. Using a multi-country, multi-sector analysis they find that '*the greater the technological advantages and more intense the rivalry, the greater will be the outward FDI*'. Therefore, "the old assumption of pure competition is replaced by the assumption that domestic and foreign firms are oligopolies and form oligopolistic interdependences" (Yamawaki, 2007, p. 5).

To summarise, oligopolistic reaction concept suggests that FDI takes place because of the global oligopolistic competition of the companies. Thus, competitive dynamics are main determinants of firm involvement in FDI. However, while oligopolistic reaction theory explains the followers' FDI, it does not explain the leaders' FDI, i.e. it does not explain how international production of firms occur at first instance which lies in the realms of resource-based view as determinants of foreign production.

3.5 The Eclectic Paradigm

The Eclectic Paradigm (OLI) is arguably the dominant theoretical basis in studying FDI, MNC and international operations of firms for the last three decades. As Graham (1996, p. 186) states "within the field of international business, it has become virtually mandatory for young scholars to cite what is variously known as the "OLI or 'eclectic' paradigm of FDI and the MNE (these are both the same thing) when discussing direct investment or multinational enterprises". This is because the eclectic paradigm is rather a holistic view to FDI theories rather than being a distinct theory. It is an analysing framework rather than being a distinct theory of international production.

The letters "O, L, and I" stands for Ownership, Location and Internalisation. The origins of eclectic paradigm (Dunning, 1977) stem from several theories related to international production, e.g., theory of firm, industrial organisation theory and location theory. The eclectic (OLI) paradigm asserts that there are three conditions for FDI to happen:

Firstly, there are "net *ownership advantages* largely in the form of intangible assets" (e.g. Hymer's monopolistic and Kindleberger's oligopolistic advantage assets, Vernon's newly innovated goods, Teece's resources and capabilities) and these assets are "at least for a period exclusive or specific to the firm"

Once the above condition met, it should be more beneficial for the firm to exploit these assets (*to internalise* in order to avoid the *transaction costs*) rather than licensing or similar contracting with other firms, i.e. internalisation through the hierarchy rather externalising them in the market.

Having the above two conditions are met, a firm would invest *only* if using these advantages in conjunction with at least some *factor inputs* (such as, natural resources) abroad. Otherwise, firms would prefer to utilise the foreign markets through exportation and the domestic ones by domestic production[43] (Dunning, 1980).

It is the formation of these advantages that either encourages or discourages firms to undertake foreign activities and become a multinational. Once the OLI advantages are assured, then the firm would deal with FDI if it is in line with the

[43] Emphases added

firm's productions and long-term objectives of the stakeholders and organisational hierarchy. Combining the resources and capabilities of the firm (O advantages) together with market conditions (L advantages) and the economic rationality (I advantages); eclectic paradigm provides a general framework for analysing firms' overseas operations. Although it is not a fully testable theory, the power of the eclectic paradigm is that, while the theories of FDI under imperfect market conditions mostly concentrate on firm specific advantages, i.e. a firm's monopolistic power and ability to reduce the transaction cost through internalisation, and answers "*why*" firms invest abroad, the eclectic (OLI) paradigm of Dunning (1977)[44] answers "*why*" and "*how*" deal with FDI.

3.5.1 Ownership Advantages

Ownership (O) advantages, which are also central to this thesis is at the heart of the eclectic paradigm and they provide the initial framework for analysing firms' international expansion. They are essentially concerned with the production activity of, and the nature and nationality of the ownership of, the investing firm, and are a necessary condition for sustained profitability and growth.

The (O) advantages are similar to firm-specific assets and capabilities in competence based theories (CBTs). However, while CBTs deal with how to create and sustain these advantages and capabilities, ownership advantages focus on how to exploit them. For Hymer (1976 [1960]), these advantages were: economies of scale that arises from integrations of national firms by international markets and the marketing skills of the firms in order to offset the liability of

[44] Also known as the eclectic theory and OLI paradigm (Dunning, 1980)

foreignness. Kindleberger (1969, p. 14) refines Hymer-type ownership advantages as: "ownership of a brand name, the possession of special marketings, access to exclusive technologies, favoured access to sources of finance and managerial skills, planned economies of scale, and economies of vertical integration". For Vernon (1966; 1979) these advantages are the innovative capability of the firms (page 59). Caves (1971) focus on product differentiation as monopolistic advantage steaming from imperfect competition. Horst (1972) examining the US manufacturing companies in Canada, tries to answer the questions 'why do the firms invest abroad and how a foreign owned company can compete with the local companies'. He argues that firm size best explains FDI and trade.

Through the evolution of Dunning's eclectic paradigm, ownership advantages are defined as: tangible and intangible assets (Dunning, 1977); Type 1 advantages (those that any firm might have over others, but these do not arise from multinationality. Such advantages include, monopolistic power, better sourcing capability, technical knowledge, and cost efficiency), Type 2 advantages (those arising from being a part of multi-plant firm. These advantages consist of economies of scale, access to lower cost resources, etc.), Type 3 advantages (resulting from the multinationality of firms. These kinds of advantages are such ones as access to factor endowments at better prices, markets in other countries, and diversity of their environments) (Dunning, 1983); those that stem from the exclusive privileged possession of or access to particular income-generating assets, those that are normally enjoyed by a branch plant compared with a de novo firm, and those that are a consequence of geographical diversification or

multinationality *per se*. (Dunning, 1988); ownership advantage from proprietorship of specific asset (Oa) those advantages that are based on the firms' capabilities to organise these assets in the most efficient way (Ot)[45] (Dunning, 2000) and finally, adding institutional variables[46] which are "the range of formal and informal institutions that govern the value-added processes within firms" as the third type ownership advantages (Dunning & Lundan, 2008a). This final version is especially important since the ownership advantages in the framework are in line with the competence based theories.

On the other hand, the role of the managers that was central to Johanson & Vahlne's (1990) criticism (page 77) is still not included in the eclectic paradigm. Similarly, Devinney (2003) discusses that the eclectic paradigm's lack of attention to the inside of the firm, i.e. the role played by the managers and the dynamic structure of MNCs, and it should incorporate with strategic decision-making (Lopes, 2010). In addition, it should avoid such complexity in defining ownership advantages and simply be described as the answer to the question : "What is likely to give firms a *sustainable* advantage over other firms in their (foreign) operating milieu?"[47] (Narula, 2010)

[45] Advantages of common governance, arising from transactional benefits "as a result of the size, product diversity and learning experience of the firm, and also of its exclusive access to inputs in the host country, to information and to product markets" (Lopes, 2010).

[46] Informal institutions that govern the value-added processes within firms (Dunning & Lundan, 2008a).

[47] emphasise as in the original text

In sum, the ownership advantages in the eclectic (OLI) paradigm[48] could be summarised as the compilation of firm-specific resources and capabilities which give firms power in their foreign operations. Ownership advantages answer the question why to invest abroad? i.e. the firms have some assets and capabilities that they can utilise to offset their initial costs abroad, to take advantage in the foreign markets and to expand their operations. Once firms decide to produce in other countries, than they decide the location of these activities. In what follows is a brief of locational theories as the second leg of the OLI tripod.

3.5.2 Locational Advantages

Location advantages (L) relate to the "where" of production. Location approach states firms determine their FDI location decisions based on certain advantages in specific markets. These factors include but not exclusive to the immobile assets, such as, natural resources, market size, human resources, infrastructure, political factors, taxation and fiscal conditions as *pull* factors, and dynamics, such as, the degree of the competition as *push* factors from the home country perspective. On the other hand, locational advantages do not determine the FDI decisions alone. Although some locations hold better advantages compared to the others, these advantages are dependent on the ownership advantages and the firms' sourcing capabilities. For example, for an oil company to decide where to locate their oil extraction facilities, the company first consider its own technology and how to set up their facilities. Hence, location-specific factors should interact with the ownership factors. In that sense, it can be said that locational factors act as a

[48] In fact, as the contents, the concept has also been evolved through its history from theory to paradigm and to framework.

medium between the microeconomics of the firm-specific factors and the macroeconomics of the country-specific factors. Thus, in the early version of the eclectic paradigm, it was not clear where ownership advantages end and location advantages start. Explaining the location specific factors, Dunning (1979) states that, investment decisions of a firm will depend on "…*the characteristics of home and host countries, and the physical and/or 'physic' and 'economic' distance*". He also adds the risk factor, size of domestic markets, the geographical proximity of the home country to the MNCs main market and, the industrial structure to locational factors in OLI paradigm.

However, in this approach it is not clear about where ownership advantages end and locational advantages start. Probably, Dunning's grapple with 'location' is related to this. The unruly flow of FDI, in particular, the massive upsurge since the late 1980s and the new economic geography (in which the intellectual capital and alliance capitalism was of great importance) have led the scholars to think outside OLI. Instead of one time and one company FDI, Doz (1986), Porter (1986) and Bartlett & Ghoshal (1989) for example, focus on industrial clusters from strategic management point of view. By acknowledging the "flatness" of the world, the availability of (low cost) inputs to any firm wherever it is located, Porter (1994) emphasises the role of subsidiary initiative and knowledge clusters within the MNCs. Graham (1996) also focuses on the local industrial clusters from the game-theory point of view and concludes that the study of locational

factors should involve in the new economic geography, particularly the study of "thick market externalities"[49]

Pitelis (1996) regards all FDI theories a supply-side issue and attempts to build a practical model for (home country) push and (host country) pull factors[50]. He refers to Hilferding's Finance Capital (1910) and argues that the crisis of exportation of capital stems from the fact that the rate of profits begins to decline. '*Firms undertake overseas investment, so as to relieve their profitability pressures, be they due to supply side problems, demand side problems or a combination of the two'*. He quotes Baran and Swezy (1960) to the effect that joint profit maximisation by monopolies result in higher prices which reduce the effective demand at home. The reduction in consumer expenditure, in turn reduces the incentives to domestic investment, leaving outward investment as a distinct possibility. However, this does not explain the movement of FDI across the industrialised countries, i.e. flows from rich countries to other rich ones. Pitelis does not answer this question presumably because it will it will knock off the developing world from focus as the subject of exploitation of local resources.

If there is insufficient demand in the home market, than FDI will go to those countries with a higher-income level (see for example, FDI from emerging countries on page 14). On the other hand, if there is a need for supply (e.g. natural sources, labour) then it will prefer where these exist. It is a thorny

[49] A thick market has many buyers and sellers. "Thick market externalities occur when there exists sufficient geographic clustering of business activities that opportunities for networking among business are generated" (Graham, 1996, p. 188).

[50] Supply-side FDI determinants are factor-oriented ones, such as, low production costs, and favourable business environment while demand-side factors are market conditions, such as market size and growth rate

question. Even differentiated markets absorbing the 'escapee' capital are not the solution if the issue is the declining demand due to falling rate of profit in all industrialised areas. The new business environment, such as, the emerging countries as surprising FDI sources, MNCs' subsidiaries successes in R&D and innovations, etc. forces scholars and authors to think out of the orthodox locational determinants.

In this vein, Porter (1998) stresses the importance of location in competitive advantage of firms through productivity and productivity growth[51]; Cantwell & Piscitello (2000a; 2000b) focus and find empirical evidence on technological diversification and technology accumulation as locational factors; Xu & Shenkar (2002) look at the institutional distance as a determinant of multinational activity; Nachum &Zaheer (2005) state that the cost of distance and national approaches to innovation affect the FDI motivations as locational factors; Buckley, et al. (2007) differentiating the actual FDI and the consideration by the managers, find out that while the thought of managers are very much rational, the actual investment does not reflect their rationality[52]. On a different approach, Ekholm, et al. (2007) and Baltagi, et al. (2007), find evidence for third market effects[53] as MNCs location choices. This may be regarded as an extension of market-seeking investment.

[51] For those who works on the field it might be interesting to see Ketels (2008) for a detailed review on the role of factors affecting location decisions of MNCs and the nature of competition among the locations.

[52] Although their (experimental) model is debatable, this study is especially interesting since it focuses on the managers' thoughts and actions against the notions of internationalisation, particularly, FDI locational decisions.

[53] When firms consider activities not only in the host country, but also with the nearby countries, they look for the third markets.

Rugman (2004) and Rugman & Verbeke (2004) have novel idea that instead of global strategies and locational factors, one should look at regional determinants with a specific emphasise on Ohmae's Triad Power (on page 28). In a more recent study, Rugman & Oh (2012) also find support on the regional dimension of MNCs' location decisions[54].

To summarise, a country's geographical position, economical and industrial structure creates certain advantages in terms of attracting the foreign investment. This however, is not enough to explain, why for example, the USA investment prefers China, rather than Latin America. Secondly, although redefined several times, and examined widely, in many cases the boundary between location specific and firm specific factors are still blurred (Singh & Jun, 1995; Graham, 1996; Hennart, 2009; Rugman & Oh, 2012). Thus, mainly the non-location bound firm specific assets (Rugman & Verbeke, 1992; 2003; Rugman & Oh, 2012) would be included in the conceptual framework. However, in order to conclude the eclectic paradigm, the next section provides a brief on the internalisation advantages with a special emphasis on the transaction cost and firm specific assets.

3.5.3 Internalisation Advantages

Internalisation theory, in general, focuses on the imperfections in intermediate product markets. The basic premise of the internalisation theory is that the growth of the firm is one aspect of a change in business organisation as a result of imperfection in the intermediate product markets. The existence of the firms is

[54] For a review on the Triad, regional FDI flows and trends see the next chapter.

explained in the way that since markets are imperfect, transaction costs do exist and they might be minimised by bringing up the inderdependent activities under common ownership and control. This concept simply refers to the "make or buy" decision, or the notion of vertical and horizontal integration. Therefore MNCs exist as a result of the (imperfect) markets' internalisation.

The term "internalisation" refers to two concepts: internalisation of markets (used in IO theory) and externalities (used in the economics of welfare) (Casson, 1987, pp. 36-38) Considering Rugman's (1986, p. 108) rererence to Casson's (1984) earlier work, however, the distinction may be redundant: "in practice such a distinction is not useful since the MNE incorporates both characteristics in its operating behaviour".

In the international context, the internalisation theory, as developed by Buckley & Casson (1976), analyses the MNCs' operations based on Coase's (1937) work (pp. 55-59). The theory has three main assumptions: "firms maximise profit in a world of imperfect markets, when markets in intermediate products are imperfect, there is an incentive to bypass them by creating internal markets, … and internalisation of markets across national boundaries generates MNEs" (Buckley & Casson, 1976, p. 33). In other words, internalisation advantage result from the imperfections in the markets, i.e. "when the contracting mechanism breaks down market is unable to value and protect firm-specific advantages that are intangible in nature. Thus, firms are better to grow by using their intangibles themselves rather than through the market. Thus, the integration of R&D, manufacturing and marketing operations and the internalisation of knowledge within the firm are drivers for MNCs' growth.

Emphasising the importance of internalisation as a general theory of FDI and a "synthesising explanation of FDI motives", Rugman (1980) states that internalisation is a refinement of the market imperfection approach, and it explains why MNC has a firm-specific rather than a country specific advantage. However, while Rugman notes that possessing firm specific assets is a necessary but not a sufficient condition for FDI to take place, Casson (1987, p. 33) and Buckley (1988, p. 182) state that ownership advantage is not necessary because a combination of internalisation and location advantage itself is sufficient to explain multinational activities and inclusion of ownership will be a double counting.

However, Rugman & Verbeke, (1992) hold the ownership advantages and categorise it as location bound firm-specific (or ownership-specific) advantages (FSAs) and non-location bound FSAs in their "new" internalisation theory. The location bound FSAs are those developed at home or in subsidiaries specific to each host country and non-location bound FSAs are all the FSAs developed by the parent firm in the home country, such as, R&D and head office capabilities and they are transferable to subsidiaries (Rugman & Verbeke, 2008, pp. 165-167). Similarly, in their formalisation of the eclectic paradigm in the "new "classical economics literature, Buckley & Hashai (2009) point out that "the greater ownership advantage, the greater is internalization advantage, since complex firm-specific knowledge can be more efficiently transferred within firms than between firms". Therefore, unlike the classical internalisation theory[55], the new versions approve the "O" advantages and the "L" advantages and thus "I" is a combination of the two.

[55] or paradigm as Buckley (1990) suggests

In Dunning's eclectic paradigm, having the answers for why (O advantages) and where (L advantages), internalisation (I) seeks to answer how do firms operate internationally, i.e., (I) advantages determine the MNCs' make-or-buy decision, at an international level. The role of (I) advantages are "critical in the eclectic paradigm because only with such an advantage can the question of multinational internalization of ownership through subsidiaries vs. licensing of ownership across borders be addressed" (Devinney, 2003, p. 33).

In the new version of the eclectic paradigm "the (I) advantages reflect either the greater organizational efficiency or superior incentive structures of hierarchies, or the ability of (large) firms to exercise monopoly power over the assets under their governance" (Dunning & Lundan, 2008a).

To sum up, internalisation advantages in the eclectic paradigm, combines and mediates the ownership advantages together with the locational ones. Since the eclectic paradigm is an organising framework for the MNCs rather than being a theory, it does not depend on a particular theory of the firm. Its capability is that it provides explanation, for example, for market power approach in which the growth of the firms is due to market failure, and for internalisation approach in which firms grow by internalising the market (whether this growth be domestic or multinational).

On the other hand, being such a holistic outlook, the OLI paradigm faces several criticisms. Johanson & Vahlne (1990) for example, emphasise the eclectic paradigm's being deterministic and hence downplaying the role of managers and networks in decision making. Singh & Jun (1995), criticise the paradigm for

being tautological, i.e. providing "a taxonomy for a wide variety of variables that may be important. But the taxonomy does not provide theoretical justification of why certain location factors are important". Graham (1996), considering the 'irregular' patterns of FDI pays special attention to *clusters* of investment, which he calls externalisation in contrast to internalisation. Madhok & Phene (2001) argue that the eclectic paradigm was useful in the past when firms were beginning international production, but nowadays it is less useful since many firms are multinational and undertake repeat investments, and the basis of competitive advantage now is "knowledge portfolio".

Dunning's response to these criticisms is that the OLI paradigm encompasses most of the explanatory variables of international production since it is "an envelope for economic and business theories of the multinational activity" (Dunning, 2000), but it is definitely *not* "a shopping list of variables" as it is a *general framework* for analysing international production rather than being a stand-alone theory (Dunning, 2001).

3.6 Competence-Based Theories of FDI

The theory of FDI concentrates on three factors influencing foreign direct investment decisions: the ownership of firm-specific assets, such as, technological and managerial know-how, brand name, unique product, etc.; (Kindleberger, 1969; Horst, 1972; Hymer, 1976 [1960]) the location of FDI as for the place where the cost could be minimised and/or profits could be maximised through the market in the host countries (Dunning, 1993; Dunning, 1988); and between the

firm and the market there is internalisation issue affecting FDI decisions (Buckley, 1988).

Unlike the conventional theories suggesting that firms are likely to invest abroad in order to exploit the host country resources or markets, firm-specific approach sees FDI as a way of exploiting firms' own resources and capabilities in the foreign markets (Dunning, 1993). In this sense, the transaction cost approach (page 55) and the competence-based theories (CBT) sound very similar since both deal with how the firms expand by alternative uses of their assets and resources. However, while the CBTs hold that firms expand because the resources are not specialised in particular uses, the transaction cost approach suggests just the opposite, in that, the firm expands because the resources are specialised in particular uses, i.e., the higher the degree of asset specificity the higher the opportunity expansion (page 56). To illustrate, while the Coasean-Williamsonian approach explains the reason for a firm to exist at all, the Penrosian theory of the growth of the firm, -applied to international business strategy- describes the firm expansion beyond the national states (Dunning & Lundan, 2008, p. 120).

Contrary to the previous studies which emphasise the role of asset exploitation, CBTs underline the role of asset creation through firms' capabilities. As for the knowledge capabilities, while the prevailing studies consider firms as technical instruments, the CBT approach sees them as social communities. Most of the classical theories (e.g. market power, PLC, internalisation) sees FDI firms as holding and exploiting knowledge assets at the headquarters, CBT sees MNCs as a community together with their subsidiaries which also possess knowledge (at least market knowledge). Even the advantages of producing abroad (such as

lower costs, access to raw materials) are related to the firms' capabilities of exploitation of these advantages. All in all, value creation is at the heart of CBT views.

CBT to FDI motives has been studied from several approaches: the resource based view (Teece, 1977), the evolutionary theory of the multinational firm (Johanson & Vahlne, 1990; Kogut & Zander, 1993), the organizational capability view (Madhok, 1997), and the dynamic capability view Teece *et al*. (1997). Although these perspectives focus on different sides of firm specific advantages, they all stress the importance of the uniqueness of the firms, the importance of knowledge, the relationship between asset creation and asset exploitation. The essence of competences, i.e. resources and capabilities is that "they cannot generally be bought; they must be built" and "a firm's basic competences, if well honed, enable it to perform efficiently the activities that it sets out to perform" (Katkalo *et al*. 2010, p.4).

In that vein, this section is a brief review of competence based theories of the firm with specific attention to the MNCs.

3.6.1 Resource Based View

Departing from IO approaches that consider the industry and market structures as main determinants of firm expansion strategy, the resource-based view (RBV) sees the firm, not the market as the source of competitive strategies of the firm. While RBV is mostly associated with authors in the business strategy area such as (Rumelt, 1984) and (Wernerfelt, 1984), it is drawn on the Penrosian theory of the growth of the firm (Penrose, 1959 [1995]). The work of Penrose was applied to

multinationals by Wolf (1977). He suggests that a firm could expand in three ways: (1) at home in its own industry, (2) at home in other industries (domestic industrial diversification), and (3) abroad (geographical diversification or internationalization)" though he concentrates on the latter two (ibid p. 178). His findings confirm that "exporting, foreign investment and domestic industrial diversification provide alternative ways for the firm to collect on underutilized resources which may be a product of large firm size and technical expertise" (p.189).

RBV is rather a newly developing approach that is also applied to multinational firms as well as purely domestic (uninational) ones. It asserts that a firm is a unique bundle of resources which provides competitive advantage and power of performance (Wernerfelt, 1984), and sustained competitive advantage (Grant, 1991; Peteraf, 1993) on condition that these resources are non-transferable, valuable, rare, inimitable and organised (Barney, 1991a; Amit & Shoemaker, 1993). In addition, these intangible assets are accumulated throughout the firms' history; therefore firms are idiosyncratic (Dosi *et al*. 1992). Thus it is difficult to imitate them, and they cannot be easily substituted. As a result, the firm would enjoy the competitive advantage in the world markets. In addition, since these resources are heterogeneous across firms, each firm would have control over their own resources and capabilities and thus different performance in the global area. As a result, firms seek to expand their product areas (Teece, 1982) and production places (Barney, 1991a). The RBV provides an alternative explanation for why (multinational and uninational) firms exist at all. While it is in line with IO approach from the perspective that firms' efficiency depend on the resources and

capabilities, nonetheless it has to be pointed out that RBV sees the firm at the same time capable of shaping the environment in which it operates (Conner, 1991). According to RBV, the firm is an organisation of unique competencies and capabilities (Winter, 1987) and the firm resources are accumulated through innovative and entrepreneurial activities (Peteraf, 1993).

In strategic marketing and management literature, firm resources are determined as *financial capital*, *physical capital*, *human capital* and *organisation capital* (Barney, 1991b). Similarly, Hunt & Morgan (1995), categorise them as *financial, physical, legal, human, organizational, informational*, and *relational assets* while Fahy & Smithee (1999) broadly classify as *tangible assets*, *intangible assets,* and *capabilities.* Other influential literature on RBV categorises the resources strengthening firms' competitive advantages as: tangible and intangible assets (Penrose, 1959 [1995]) managerial expertise (Teece, 1982; Wernerfelt, 1984), physical, human, and organisational capital (Barney, 1991a), intangible assets (Rugman, 1981b; Hennart, 1986), non-location-bound firm-specific advantages (Rugman & Verbeke, 2002), knowledge bundles (Rugman & Verbeke, 2003) relationship-based resources and social capital (Doh, et al., 2004), economics of property rights (Foss & Foss, 2005), and resource-based and knowledge-based ownership advantages (Dunning & Lundan, 2008). These resources depend on the firms' own resource accumulation, such as, production experience gained through the years or an innovative product developed by the firm.

The firm specific assets are also suggested by the prevailing theories (i.e. IO and internalisation approaches). The essence of RBV is that it stresses firm heterogeneity and focuses on the unique assets and capabilities as important

factors to overcome the imperfect competition and to achieve "super-normal profits". That is to say, rather than emphasise market structures, RBV highlights firm heterogeneity and proposes that the unique assets and capabilities of firms are "important factors giving rise to imperfect competition and the attainment of super-normal profits" (Fahy, 2000). The main difference between RBV and internalisation approach is that while the former sees sole ownership as default FDI mode, the latter views it as contractual agreements (Ekeledo & Sivakumar, 2004).

RBV and firm specific determinants of FDI are widely included in the ownership advantages of the eclectic paradigm, too (page 65). In the case of the MNCs, "although RBV models in the strategy field have not been applied widely to the case of the MNE, researchers have suggested that the resource-based view of the firm (RBV) is compatible with traditional MNE theory" (Trevino & Grosse, 2002, p. 433) since deployment of the unique resources may increase the ability of the firm to compete with the host countries' local firms. What is more, when these resources are leveraged together with host countries' advantageous environment, the contrary to the liability of foreignness (p. 50) "assets of foreignness" occur (Sethi & Judge, 2009).

To sum up, RBV emphasises the importance of unique resources and capabilities which can provide (multinational and uninational) firms a sustainable competitive advantage similar to the market power approach. However, the essence of RBV is that it differs from market power / IO approaches is that RBV asserts firms can influence the environment in which they operate while the previous ones concentrate on the market / industry structure together with firm assets.

While RBV concentrates on the firm specific assets to eliminate the market and industry hinders barriers, the knowledge-based view concentrates on the firm specific assets' importance in reducing transaction cost. In what follows is a brief review of the knowledge-based view in line with the competence-based theories of MNCs.

3.6.2 Knowledge-Based View

The knowledge-based view of the firm, (KBV) is based on the Schumpeterian principals and it "claims that firms are essentially knowledge-creating entities and that the successful creation of new, commercially viable knowledge leads to a sustainable competitive advantage" (Regnér & Zander, 2011). The KBV is based on an evolutionary theory of Nelson and Winter (1982) and applied to the theory of MNCs by Kogut and Zander (1993). Similar to RBV, KBV also emphasises the firm resources and both are based on the Penrosian growth of the firm. On the other hand, while RBV is a theory of strategy KBV is a theory of organisational design. It argues that knowledge is the key reason for the existence of firms since the firm is better than the market in terms of knowledge share and transfer (Kogut & Zander, 1993) in contrast to Williamson (1991) view of it as the "last resort to be employed when all else fails".

KBV sees the knowledge as the most important strategic resource of the firm and heterogeneous knowledge among firms are the main determinants of sustained competitive advantage and superior corporate performance (Grant, 1996). It asserts that knowledge is the most strategically important resource of the firm because of its complexity and heterogeneity. It is embedded and carried through

the organisational culture, policies, systems and employees. In this vein, firms exist as a means of managing knowledge-intensive processes more efficiently than the markets (Conner, 1991; Foss, 1996).

KBV is a rather new approach, being developed in various fields, such as, management and organisational learning, governance, and economics. However, for the purpose of this thesis, only the KBV literature in international business area, particularly MNCs and FDI will be discussed. The reason for such a narrow approach is that first, KBV is an extension and a logical evolution of RBV since it is a way of incorporating temporal evolution of the resources (Mathews, 2003)[56]. In addition, it is widely recognised that KBV is best applied to the international expansion of the firms more than any other area (Eisenhardt & Santos, 2002).

Kogut and Zander's (1993) ground-breaking article "Knowledge of the Firm and the Evolutionary Theory of the Multinational Corporation" is regarded as a milestone in the development of modern MNC theory (Verbeke, 2003). Knowledge of the firm and evolutionary theory of the MNC posits that hierarchy as a means to reduce transaction cost is not the main advantage of MNCs. Rather, MNCs are *social communities* serving as efficient mechanism of knowledge transfer across borders (Kogut & Zander, 1993; 2003). The KBV model asserts that the ability to share knowledge across the globe is the main reason for the existence of MNCs (Gupta & Govindarajan, 1994). Therefore

[56] However, according to RBV, knowledge is a generic source without a distinction among the different types of knowledge-based capabilities while it has special characteristics in KBV (Helfat & Peteraf, 2003).

MNCs rely on the tacit knowledge that is effectively transferrable through the governance structures. While this argument is in line with the TC approach (page55), however, in KBV multinationals are not only exploiters of the knowledge, but also they are global learners (Madhok, 1997).

KBV is widely accepted as a revolutionary approach to firms' international expansion for three main reasons as summarised by Verbeke (2003, p. 503):

> First, it opened the path to more eclectic conceptual and empirical studies in the realm of MNE expansion and internal functioning. Second, it usefully suggested the elimination of the opportunism concept as a key focus in Williamsonian TCE-based analyses of MNEs. Third, it provided new avenues for the renewal of internalization theory, thereby ensuring this theory's continued relevance in the decades to come.

RBV and KBV maintain the importance of firm specific assets and knowledge and their transfer in the international operations, clearly. However, as Russo and Fouts (1997) point out, these resources are not productive on their own; it is the ability of the firm to transfer them which the development of organisational capability view is grounded. In what follows is a review of the organisational capability perspective to FDI and MNCs.

3.6.3 Organisational Capability View

It should be noted here that there is a debate in literature whether organisational capability view (OCV) should be studied under RBV or it is a separate paradigm. Wernerfelt (1984) for example suggest that OCV is directly related to RBV while

others (e.g. Grant, 1996 and Helfat & Peteraf, 2003) argue that since resources and capabilities are different notions, they should be studied separately. This thesis recognises the fact that the two views may overlap sometimes since it treats OCV as an extension of RBV; however, it is thought to be more appropriate to review them seperately.

Penrose (1959 [1995], p. 320) describes the firm as "both an administrative organization and a collection of productive resources, both human and material". Accordingly organisational capability of the firm is defined as "routines" (Nelson & Winter, 1982, p. 97). These *routines* are all regular and predictable behaviour patterns of firms (ibid. pp.14-17).

In the international context, OCV emphasises the MNCs ability to organise the firms' activities where large distances exist which is called as "transnational solution" by Barlett and Ghoshal (1989). Within the OCV, multinationality or transnationality involves replicating the firm-specific advantages across borders rather than just producing the same goods. Similar to the "hierarchy" concept in transaction cost and internalisation theories, the routines are the core of OCV. "It is the existence of this hierarchy that makes the activities and operations of the whole enterprise more than the sum of its operation units". (Chandler, 1990, p. 15). The essence of the OC perspective is that it shifts the competence-based FDI theories from resources to capabilities. The OCV considers firms as bundles of static *competences.* When transformed into capabilities through idiosyncratic firm-specific processes (routines), these static resources become capabilities (Amit & Shoemaker, 1993). Such competences include but are not limited to quality, systems integration, and R&D and innovation management. They are

typically "viable across multiple product lines, and may extend outside the firm to embrace alliance partners" (Teece *et al*. 1997, p. 516).

On the other hand, while transaction cost theories focus on the characteristics and efficient management of transactions, OCV emphasises the importance of the firm capabilities, their development and exploitation (Madhok, 1997). Similar to the other competences and resources, organisational capabilities are also non-location bound firm specific assets. However, while *resources* refer to relatively static firm specific assets, "the term 'capabilities' emphasises the role of strategic management in adapting, integrating and reconfiguring internal and external organisational skills and functional capabilities in response to changing external conditions" (Davies & Brady, 2000, p. 935). In this context organisational capability refers to "capacity to constitute a well-established organizational structure, coordinate the work of all activities towards shared objectives, and influence the speed of innovational processes through the infrastructure it creates for developmental projects" (Guan & Ma, 2003, p. 740). Therefore internal organisational capabilities of the MNCs, such as, financial management, technological capabilities, and marketing abilities are of great importance since they "…can best orchestrate knowledge processes by means of designing and implementing mechanisms of organizational control" (Foss & Pedersen, 2004). The OCV is found to be one of the most promising theoretical frameworks in explaining the emergence of early internationalizing firms and the rapid and sustained international growth (Rialp *et al*., 2005) since *raison d'être* for MNCs is "the ability to create, transfer, recombine, and exploit resources across multiple contexts" (Meyer *et al*., 2011).

In sum, OCV plays an intermediatory role between the static resources and dynamic capabilities of firms albeit with it being difficult to observe[57]. It offers a capability driven reasoning for firms' FDI decisions. This perspective makes a significant contribution to FDI analysis as it provides an insight for exploring firm level differences and heterogeneity. OCV shifts the focus from resource exploitation to capability development which underlies the value creation and broadens the FDI strategy analyses.

3.6.4 Dynamic Capability View

Although the importance of dynamic capabilities has been acknowledged at least four decades ago by Horst in order to understand the complexity of the foreign investment processes "…a systematic study of the dynamic behavior of firms must be undertaken" (Horst, 1972, p. 265), however, it is only recently that dynamic capability view (DCV) has taken the changing environment into consideration and views firms' capabilities as to renew its capabilities through innovative responses. The core elements of dynamic capabilities are: coordination/integrating, learning, and reconfiguring (Teece & Pisano, 1994). These capabilities are "the firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments" (Teece *et al*. 1997, p.16). In a wider context as Eisenhardt & Martin (2000, p. 1107) state, dynamic capabilities are:

> The firm's processes that use resources—specifically the processes to

[57] For more detailed information on developing transnational OCs see Chapter 11 in Whitley (2007).

> integrate, reconfigure, gain and release resources—to match and even create market change. Dynamic capabilities thus are the organizational and strategic routines by which firms achieve new resource configurations as markets emerge, collide, split, evolve, and die.

In the international environment, DCV state that firms locate their resources and capabilities according to the market in which they operate while the prevailing approaches take them static, i.e. granted at a time and do not change. On the other hand, FDI is not one-time occurance. It is a dynamic process that moves together with the adaptability of and MNC in line with its capabilities. It requires gaining new resources, in addition to utilising the existing resources in order to adopt to *changing nature and dynamics of international business* (Augier & Teece , 2007).

As of the essence of competence-based views, for international expansion, wholly owned direct investment or contracting mechanisms, such as licensing are not the only options. International mergers and acqusitions, and joint ventures are also other options (Katkalo, et al., 2010). Indeed, the recent FDI trends, such as, emerging market MNCs in developed countries and the increasing number of mergers and acquisitions (see Chapter 3) strongly support the DCV approach to FDI. According to DCV, firms constantly build new resource combinations. When these combinations are used "to exploit foreign opportunities, a higher order dynamic and a lower order substantive capability emerge. The higher order dynamic capability drives the over-all international expansion, whereas substantive capability is a specific market commitment capability required to transit from the initial survival to growth stages" (Khalid & Larimo, 2012).

In sum, DCV asserts that, firm resources are not sufficient to maintain monopolistic rents and firms process these resources according to the markets and even to shape the outside business environment. Hence, these dynamic capabilities together with the resources are essential in order to expand and survive in the international markets.

In the theoretical approaches reviewed so far, the resources of firms were taken granted and FDI decisions were already made. In the IO tradition, firms' monopolistic advantages are the main resources to give them strength over the local firms in host countries, and the entry mode was full ownership, in the TC framework, firms with strong resources would choose whether to internalise or externalise these sources, in PLC the product's life cycle stage plays the crucial role as a determinant of FDI decision, in oligopolistic reaction approach firms follow the leader (but why the first mover goes abroad is ambiguous) and in the prevailing CBTs, firms have unique resources and knowledge together with the ability to orchestrate them in international operations with the efficiency in mind rather than cost minimisation. However, all of the above theories (with OC being partly exceptional) consider the firm resources and market power as static, i.e. they are there for at least a long time without taking into consideration the rapidly changing business environment while DCV adds dynamism of the business process to the existing theories.

To summarise, the economic theory of FDI emphasises three dimensions of international production: MNCs' strategic resources and capabilities in order to exploit (in the case of inadequacy of these resources, the aim is to obtain them) in the international markets, i.e., ownership approach; the method of production, e.g.

direct control or contractual mechanisms to achieve these aims, i.e. the choice of internalisation or externalisation; and the location of the production, i.e. the best location which fits with the objectives and capabilities of the firm. Therefore, it is still *the firm* that is at the centre of the investment (domestic and overseas) decisions as suggested by the competence-based theories. Whether it is their tangible and intangible sources, knowledge, organisation or dynamics, firms' resources and capabilities (hereafter they will be used interchangeably for simplicity) that give rise the firms cross-border investing decisions.

In what follows is a review of the recent empirical literature on the firm characteristics affecting FDI decisions so that a conceptual framework could be developed and set hypotheses in light of the relevant studies.

3.7 Empirical Literature on FSA and FDI Relationship

Firm-specific assets (FSA), monopolistic advantages, resources, and capabilities are interchangeably used in the reviewed literature. In the Eclectic Paradigm, Dunning (1979) has used FSA as ownership advantages, while in internalisation theory, Buckley and Casson (1976) calls firm-specific advantages and Rugman (1980) and Rugman & Verbeke (1992) use firm specific assets. The definition and the concept of firm specific advantages are borrowed from the strategic management literature mainly from, Barney (1991a) as those resources and capabilities that enable firms to gain sustained competitive advantage. These resources and capabilities are valuable, rare, imperfectly imitable, and not substitutable. In RBT, resources are bundles of tangible and intangible assets of a

firm. As for the purpose of this study, FSAs consist of those sources and capabilities that are internal to the firm and theoretically, they contribute to the firm growth (since international production is taken as a version of firm growth in line with the Penrosian view). Another point is that despite the advent of recent FDI outflows from the emerging markets, this study concentrates mostly on the Triad firms' FDI to gain a background for the conceptual and empirical sections. In addition, much of the empirical work on emerging countries' FDI is found to be asset-seeking in nature whereas asset-exploiting FDI is more likely to originate in developed countries. Since "FDI is more likely to originate in countries abundant in capital and skilled-labour which are necessary for generating the firm-specific assets that create the need to internalize through FDI" (Blonigen, 2005). Following is a review on the empirical work on the relationship between the firm specific factors and FDI involvement.

In an earlier work, Morck & Yeung (1991) note that if the MNCs have certain firm-specific intangible assets (they measure by R & D and advertising spending), they increase their level of multinationality which in turn increases the value of the firm because intangible assets. In the ownership advantages and eclectic theory view, firm specific advantages (FSAs) are categorised into two: location bound and non-location bound ones. Location bound FSAs cannot be easily transferred and thus need to be used in certain locations while non-location bound FSAs are developed usually in the parent firm and can be exploited globally and transferred across borders at a low marginal cost (Rugman & Verbeke, 1992). In industrial organisation literature, firm-specific advantages, interchangeably

termed as monopolistic advantages (p. 49), ownership advantages (p. 67) or firm resources and capabilities (p. 78).

All in all, FSAs constitute the building blocks of FDI decisions (Erramilli, et al., 1997). Whether to choose FDI or other means to serve the international market depends on the type of the firm-specific resources and the degree of the market imperfections. The higher the degree of market imperfections, the greater will be the need to control the asset through direct investment. Firms' decisions to locate their production abroad require carefully analysing their current capabilities and potential in the host countries. Host countries offer similar opportunities for each firm in the market and thus "firms again differ in their abilities to capture those returns" (Henisz & Macher, 2004). Thus it is important to understand how FDI is determined by the internal source factors, given the broad spectrum of firms dealing with international production.

It is noteworthy to point out two important issues here: First, despite the fact that conventional theories (pp. 49-65) views FDI decision related to the firm-specific resources' exploitation in international markets and the CBT's assertion that firms differ in their resources and capabilities, many of the past empirical studies rely on industry and country data due to the unavailability of sufficient firm-level data (Trevino & Grosse, 2002).

Second, a typical characteristic of the macro-economic studies on FDI is that they regard firms in a given industry to be naturally homogeneous. However, recent microeconomic empirical research shows that within-industry heterogeneity in terms of firm productivity levels and their international involvement does exists

and that it should not be ignored. Hence, the symmetry across firms within the same industry is not fully satisfactory and need to be relaxed (Melitz, 2003; Helpman, et al., 2004). This theoretical breakdown results in new ways of thinking about firm heterogeneity in terms of productivity and firm size. (Helpman, et al., 2004). They suggest that only firms exceeding a critical level of productivity choose FDI.

In what follows is a brief of the some major studies in FSA, firm heterogeneity and FDI relationship in order to draw a conceptual framework based on the theories reviewed in the previous section.

In the European context, much of the FDI related literature is at the macro-level examining the effects of FDI. There are only few studies testing FDI at firm level and particularly with reference to firm heterogeneity. Girma, et al., (2005) compare the productivity levels and growth of the UK firms for the year 1992 using non-parametric tests using the concept of stochastic dominance and highlight that the distribution for exporters and multinational firms dominate purely domestic firms. Buch et al. (2005) applying firm-level data for German companies controlling for a set of firm-specific fixed effects conclude that heterogeneity matters for firms' international activities. Castellani & Zanfei (2007) for Italy, controlling for firm size, sectorial and geographical characteristics also find out that multinational firms outperform exporters and both are dominant in terms of productivity and innovativeness (measured by the number of employees in R&D activities of the firms). Mayer & Ottaviano (2008) in extensive explorative study of internationalisation (they determine internalisation as imports, exports and overseas production) of seven EU countries

(Belgium, France, Germany, Hungary, Italy, Norway and the UK) surveying their exports value, export intensity, employment, value added, wages, capital intensity and, skill intensity find out that exporters and FDI-makers have superior performance over the purely domestic firms (with few exceptions mainly due to the outliers). In another heterogeneity study, Arnold & Hussinger (2010) examine the German manufacturing companies with 5 or more employees for the period 1996–2002 use semi-parametric tests (KS test) and find out the existence of the theoretical order[58]. In a recent study, Engel & Procher (2012) analysing 110 000 French firms' international involvement using KS test similar to Arnold & Hussinger's (2010) also confirm the validity of the Melitz and Helpman et al. hypotheses, i.e. FDI firms having the highest, domestic firms the lowest and exporters the moderate level of productivity.

Studies on North American firms, generally finds out that size is a significant factor in their FDI involvement. Horst (1972) investigates firm level FDI for 1191 U.S. manufacturing corporations, and shows that firms in R&D intensive industries tend to deal with FDI, but firm size best explains FDI decisions of firms. While the earlier studies find firm size as the main determinant of FDI decisions abroad; however, more recent studies find mixed results about firm size-FDI relation.

Caves (1974a) examining the inward FDI in Canada and the UK finds out intangible assets were significant factors in FDI flows. Similarly, Wolf (1977) also concludes that technological intensity (as a monopolistic advantage) is a

[58] See also Engel & Procher (2012) for a recent survey on the empirical studies on exports vs. FDI firms among the heterogeneous firms.

determinant of US foreign involvement while his findings do not confirm firm size as an important factor. Lall (1980) testing the monopolistic advantage theory on US foreign involvement for 25 industries finds evidence that product differentiation and possession of large numbers of salaried personnel promote foreign production. Lipsey, et al. (1983) comparing US overseas investor firms with non-investors finds out that size and profitability in addition to the industry effects are the major important determinants of foreign production. Another study (Grubaugh, 1987) examining US outward investment concludes that intangible assets (proxied by R&D expenditures and product diversity) are the most important firm-specific variables in FDI decisions. Blomström & Lipsey (1991), testing US FDI abroad conclude that firm size is useful for jumping the initial barriers to FDI, but once the firm becomes foreign direct investor, size acquires only a threshold effect. In this vein, controlling for home country currency effects, Trevino & Grosse (2002) using multivariate regression model based on firm-specific resources and controlling for country specific variables test the RBV for the firms investing in USA show that international diversification is a way of leveraging underutilised intangible resources.

Tseng, et al., (2007) examining the RBV factors and controlling for the industry segment together with firm size and age use firms' level of multinationality (proxied by foreign sales to total sales ratio) find strong evidence on the knowledge-based and property-based resources on US firms FDIs.

In a more recent study Rugman & Oh (2010) examine some 40 US firms among the world's 500 largest firms in 2001 for the period 2001-2005 financial data, replacing ROE (return on equity) in their earlier work with Tobin's Q as a

measure of firm performance, and FSAs as firm size, R&D, and advertising intensity. Instead of sales in their previous study, they use ratio of assets to proxy multinationality of firms to measure to determine if firms are home region oriented or not. They find evidence that MNCs perform on an intra-regional basis and intra-regional liability of foreignness can be overcome faster while inter-regional is a difficult one for the US firms.

Japanese firms' FDI also are also found to have similar patterns to that of US FDI. Among the few firm-level studies on Japanese FDI, examining the effects of FSA on FDI behaviour of Japanese (semiconductor) firms, Kimura (1989) finds evidence for technology driven FDI, especially in the developed countries. Exploring Japanese FDI in US Kogut & Chang (1991) test whether Japanese FDI is technology-driven (proxied by Japanese firms' R & D expenditures as a percentage of their sales in US) with negative binomial regression method (as they also examine the type of entry). The authors' findings confirm that Japanese FDI in US dominated with high R & D expenditures. Although the work is much more important for locational theories as it also focuses on the domestic firms, it is important to explain that Japanese FDI in US is not a technology seeking but technology exploiting in nature. In a very similar study, Pugel, et al., (1996) using similar data to that of Kogut & Chang's (but with different model -Tobit estimation) find out similar results -much of the Japanese FDI in USA technology and marketing assets' power. Head & Ries (2003) examining a large sample of Japanese companies in 17 industries for the year 1991 find similar results to Melitz and Helpman et al. hypotheses, i.e. the least productive firms produce for

the domestic market and the most productive firms deal with FDI; however, only a small correlation between productivity and firm size exists.

Murakami (2005) examining Japanese companies, does not categorise firms only as domestic-international-multinational, but also considers firms with more than one international activity and finds out that the highest productivity occurs in the firms which engage both in exports and FDI while firms that engage neither are the lowest productive ones. Todo (2011) testing for the export vs. FDI decisions of Japanese firms include firm size, firm profits and credit constraints in order to control for unobserved firm heterogeneity in their mixed *logit* model. His data includes Japanese manufacturing firms with at least 50 employees for the years 1997–2005 from 20 industrial divisions in 47 Japanese provinces. Controlling for the industry and regional attributes, his results confirm that productivity has a positive impact on exports and FDI but this impact is economically negligible while firm size and information spillovers from neighbouring firms in the same industry is positive and larger than the impact of productivity, but still small.

In a similar study to the conceptual agenda of this study, Raff et al. (Raff, et al., 2012) survey FDI by Japanese manufacturing firms in 19 European countries for the period 1970-1994 with proportional hazard model. They divide each firm's total FDI into a sequence of individual investment decisions with the choice between exporting and FDI. Controlling for industry and host country attributes, they analyse how firm-specific variables[59] influence export vs. FDI decisions, and

[59] Since they study Japanese firms, they include "membership of Keiretsu" in addition to the conventional RBV variables –factor productivity, firm size, R&D intensity and export ratio.

in the case of FDI greenfield vs. M&As and fully ownership vs. joint ventures. Their findings show that productivity has a significant effect on firm's FDI decisions at the initial stage and sequential development, export ratio, R&D intensity and Keiretsu membership also have influence on the investment process while firm size does not have a significant effect.

While the above studies examine firms' FDI from the specific countries, (Rugman & Verbeke (2004) re-introducing the Triad power (Ohmae, 1985) with a special emphasis on regional economic blocs rather than a geographic space advice that MNCs should be studied in the regional framework rather than country-base. It is worth noting that empirical evidence (though only few exist) supports the idea of regional MNCs which is also the main departure of this thesis. Rugman & Sukpanich (2006) test a number of FSAs (firm size, knowledge, and marketing ability) in addition to industry in which firms operate as service and manufacturing firms. They categorise 87 large North American and European firms (with one exception) for the year 2001 in their database as home-region oriented, host-region oriented, bi-regional, and global firms according to their sales. Using OLS (ordinary least square) method to test the effects of each variable on the firm performance (proxied by return on equity) their findings underline important points albeit with the sample size and selection: R&D intensive and service type firms can exploit their FSAs profitably only in the home region, firm size in both home and other regions.

To sum up, prevailing Triad polls' firm level studies conclude that size, productivity, intangible assets, particularly technological capabilities are significant factors affecting firm-level FDI. As a result, recent empirical works

increasingly focus on analysing the relationship between firm-level characteristics (such as, financial capabilities, human resources, physical assets) and cross-border involvement of firms (Greenaway & Kneller, 2007).

While the above studies looked at the FSAs from the tangible and intangible sources of the companies, financial power of the FDI firms remained an ignored realm in the literature. From the CBT, particularly the RBV point of view, financial resources are part of comparative advantages of firms (Hunt & Morgan, 1995). The pecking order theory (Myers, 1984) maintains that firms prefer not to fund their business externally when they can fund internally since the cost of financing increases with asymmetric information. Thus firms would prefer not to go for external sources in order not to disclose information on their operations to outsiders (Daniels, et al., 2004), on the other hand, using own financial resources could reduce the remaining capital for other expansion activities (Tseng, et al., 2007, p. 963).

According to conventional wisdom, better financial strategies allow firms to minimise their cost and maximise availability of capital both domestic and foreign. Hence, firms with greater financial power are expected to deal with FDI more than others because sufficient financial resources give firms a greater degree of freedom for expanding their operations, including across borders. In the same vein, not only financial sources but also financial strategies count as they provide an ownership advantage in terms of lower cost of capital than that of its domestic and foreign competitors and thus they can be integrated into OLI paradigm (Oxelheim, et al., 2001).

The empirical literature reports mixed results due to the diversity of the proxies used for financial performance and capabilities of the firms. For example, Dahlquist & Robertsson (2001) find a positive relationship between the current ratio and the likelihood of foreign ownership while Trevino & Grosse (2002) using debt to equity ratio to measure financial resources effects in FDI companies in US obtain unstable results. The reason for the mixed results might be due to the differences in proxies (e.g. leverage ratio, short term credibility of the firms or cash flows) used. It is only recently that a theoretical approach to financial status in line with FDI has been developed by Oxelheim, et al. (2001; 2003) and empirically tested by Forssbaeck & Oxelheim (2008) who find out that financial characteristics and "proactive financial strategies"[60] have significant effects on FDI decisions. Choe (2000) and Cleeve (2007) observe that parent firms' creditworthiness is one of the main determinants of Japanese firms' FDI in the US and UK, respectively. Similarly, Singh & Nejadmalayeri, (2004) find out that French multinationals achieve a relatively lower cost of capital than other in France.

So far, FSAs role in firms' FDI involvement is reviewed from the theoretical and empirical approaches in order to prepare a ground for the conceptual framework and hypotheses setting for this thesis. Among the FSAs influencing FDI involvement of the firms in the above empirical literature are intangible assets,

[60] Oxelheim, et al., (2001) point out three proactive financial strategies: (1) the gaining and maintaining of a global cost and availability of capital, (2) the negotiation of financial subsidies and/or reduced taxation to increase free cash flow, and (3) a successful risk management. In the same line of research, Forssbaeck & Oxelheim (2008, p. 632) point out five basic aspects on how firms can proactively engage in a financial strategy: when "it has access to competitively priced equity, when it has cross-listed its stock in a larger, more liquid equity market, when it enjoys a strong investment grade credit rating, and when it is able to negotiate reduced taxation and/or to attract subsidies".

particularly knowledge, (arguably) size, productivity, international experience, and profitability. Next section is to provide a brief summary of the whole chapter before presenting the research design of the study.

3.8 Summary

The literature on FDI is immense in terms of the theories each view or approach is based, and there is no alternative but to be selective in this thesis. This chapter reviews that first, there would be no room for FDI in the perfect markets since trade would have been a better option. However, the world is not perfect and FDI does exist. Secondly, for a firm to operate internationally, it must possess specific advantages, whether it is tangible or intangible. Only this way, firms can overcome the liability of foreignness and compete with their counterparts. To name a few, these advantages might stem from firms' strong assets in their home markets, (collusive) networks, oligopolies, or their own resources, core competences, knowledge, organisational capabilities, their abilities to adopt to the changing business environment easily, even their abilities to influence the business environment outside the company, etc. These advantages might be transferable to the host countries or fixed at home countries. Firms carefully analysing the costs of transactions and the (in) efficiency of transferring assets decide to choose among the available locations which suits their strategies, too. Last but not least, while reviewing the advantages they have, the locations suit their plans and strategies, than firms decide whether to use these assets and advantages or to use arm's length contractual relationships.

The economic, institutional, locational, strategic, dynamic and all the approaches reviewed in the previous pages are important components of firms' FDI decisions. However, each stream sheds light on only a part of the picture and there is not one theory to explain the whole phenomena. Therefore this thesis aims to combine these approaches together with the empirical literature in order to establish comprehensive base for the analyses and outcomes. In order to do this, next chapter reviews the global FDI trends with specific reference to Triad in order to find out if it is consistent with the theoretical explanations.

Among the many, two main strands of the literature regarding FDI decisions are discussed here. At the micro-level, industrial organisation and market power approach, and competence-based theories attempt to explain firms' initial FDI decisions, i.e. why firms choose international diversification as a way of growth while macro-level (locational) theories look at the determinants of firms' choosing certain countries, i.e. why firms prefer one location to others. Product life cycle theory and internalisation combine these two factors and act as moderator between the home and host countries. While the invalidity of PLC has been declared in a globalised world, however, the importance of internalisation theory is emphasised by several theoretical studies since internalisation effects cannot be measured directly.

The Eclectic Paradigm combines the ownership, locational and internalisation (OLI) advantages of firms to be successful in their FDI decisions. However, being too much flexible and the changing patterns of the FDI flows drive the scholars to think about more theoretical approaches rather than paradigms. When introduced first, the Eclectic Paradigm was regarded as a theory, however, with

the new trends, theories and micro-level data availability, OLI has become an analysing framework rather than a testable theory. On the contrary, competence-based theories, mainly the resource-based view was an approach until recently has now become widely accepted as a theory. In this regard, each element of the OLI has been examined in either of the theory of the firm, locational theories and transaction cost theory, respectively. This thesis is mainly interested in the initial FDI decisions of the firms rather than the location decisions, and the choice between contracts vs. FDI according to the firm and location factors together, i.e. internalisation. Therefore, the theoretical approach in this study is much closer to the competence-based theories which are mainly interested in the firms-specific advantages with an emphasis on the exploring, not only exploitation of these advantages.

The next chapter presents the trends and patterns of the FDI in the world with particular attention on the Triad regions.

CHAPTER 4. RESEARCH DESIGN

This section aims to introduce the methodology, data, and variable issues together with the analytical procedure in order to determine the factors affecting firms' FDI decisions. Specific attention is given to the CBT factors (p. 78) since they fit best with the firm capacities and resources which enable them to compete at home and international operations efficiently. In order to figure out the factors affecting FDI, quantitative data analyses approach is utilised to determine the relationships based on the firm-specific factors revealed in the theoretical and empirical literature surveys.

This thesis makes use of a quantitative research design involving the collection of secondary data for thirty one years from 1985 to 2011 since 1980s are dubbed as the big wave of globalisation.

4.0 Introduction

This chapter presents the research approaches used in this thesis and the design of the research. It starts by introducing the empirical studies which inspires this thesis and the methodologies they use. Next, it describes the design of the research for this study and concludes with the analytic approach.

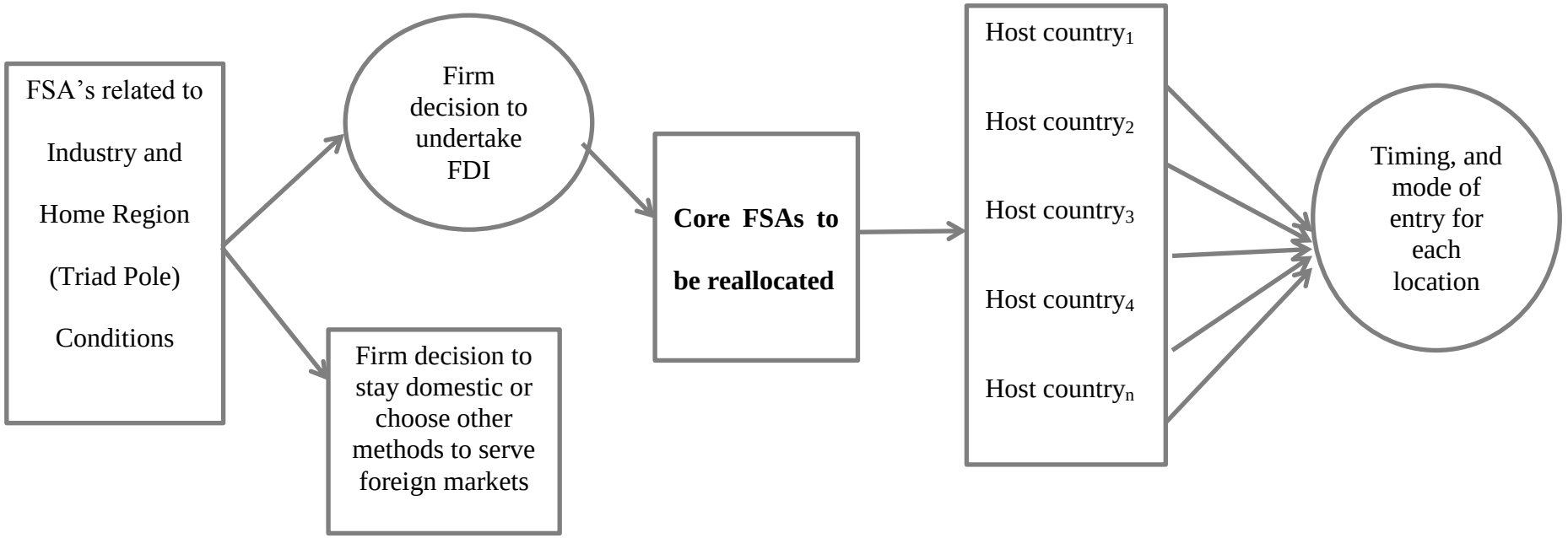
The main objective of this thesis is to investigate firm-specific attributes that differentiate EU, Japan and North American firms involved in FDI and to evaluate how these characteristics affect their FDI behaviours. The analyses focus on the determinants of FDI in the manufacturing industry from a firm-specific view. That is to say this study aims to find out how factors related to ownership and possession of specific advantages drive firms to involve in FDI.

This study utilises the competence based view of FDI which assumes that firms obtain their power from tangible and intangible resources, such as, technological knowhow, economies of scale, excess returns, ownership of a unique product or superior brand, management capacity in order to offset these assets with the local business' advantages abroad. In addition, it borrows from the market power approach and ownership framework of OLI. The main concept of this section is that resources and capabilities are heterogeneous across firms and the market imperfection is the reason for transferring them. Firms combine their inputs and seek for efficient distribution of their outputs by internalising their resources in the most efficient places. The power of this research stems from its use of an extensive database that was constructed systematically over a year, and from its capacity to merge the internalisation model with the resource based view.

4.1 Conceptual Model

In light of the review of theories related to firm-specific and ownership factors in Chapter 2 and section 4.1, the following conceptual framework has been set in order to determine the relative importance of firm-specific factors by controlling for the firm size, firm age and the international experience of the companies.

Figure 4.1 Conceptual Framework: Firm Outward FDI Decisions



The logic behind the conceptual framework is to bring the IO, internalisation, CBT and PLC theories together: firms' specific assets are shaped in their home[61] and industry. At this phase, firms either choose to exploit their assets and capabilities at home and stay domestic or choose other methods to serve foreign markets or decide to produce abroad. Once FDI decision is taken, then core FSAs (resources that are available to the firm) form

4.2 Hypothesis Development

The basis to this thesis is the assumption that firms differ in their specific advantages and thus their possession of internationally and imperfectly mobile assets on which they rely. Firm characteristics are dominant determinants for the decision of overseas production (Helpman, et al., 2004).

The components of firms' motives could be categorised into two types: (1) the conventional factors, such as, monopolistic power and (2) the recent views of innovationist advantages. These factors are tested on the basis of a number of investor and invested countries widely (see for example, Lall, 1980; Lunn, 1980; Yamawaki, 2007). The results show that there is not an all-embracing theory of FDI. Since FDI involves a large number of heterogeneous firms, determinants and motives also vary across firms.

The main concept of this research is "firms have certain assets that they can exploit abroad and thus they decide overseas production". These assets or capabilities are obtained through their operations in the home countries and the

[61] The triad region

next stage is to exploit them in the world markets through FDI. Once they decide to invest abroad and they choose the location of their investments in line with the locational factors theory, whether it be markets or other reasons.

This thesis follows a similar strategy as those of (Lall, 1980) and Kim & Lyn (1990) Trevino & Grosse (2002) that augmented the resource based model with firm size and age as the control variables. The novelty of this thesis is that it brings the conventional and the newer theoretical insights into its empirical model, borrowing from the market power and competence-based theories reviewed in chapter 2 controlling for the country and industry specific competition in addition to firm size and firm age. What is more, it tests the firm-specific advantages by controlling the regional and industrial variations.

In line with IO, and Internalisation approaches, baseline assumptions are: firms are initially based in their home countries and gain competitive power over their rivals through their firm specific assets. The next stage is to export these goods through home market and gain some access to the foreign markets (product life cycle theory) and finally, to deal with overseas production, i.e. become an FDI firm. The oligopolistic firms would bypass these stages in order to protect their competitive position. Thus, they need to be evaluated in different theoretical and empirical frameworks, such as, game theory.

On the basis of the theoretical and empirical literature reviewed in previous sections, Hypotheses 1(H1) proposes that:

Hypothesis 1 (H1) A firm's likelihood to deal with FDI is significantly determined by the FSAs over its competitors without a priori prediction

In order to test H1 and to further explore the firm (and its local environment) specific assets that might influence firms' FDI decisions, a number of hypotheses and variables to test them are set in the light of the theoretical and empirical literature as follows.

4.2.1 Market Power

Market power indicates the sellers' ability to control the price it charges. The IO asserts that there is a positive relationship between the market power and foreign expansion of the firms (p.78). According to Hymer (1976 [1960]), developed country firms with greater market power would be motivated to expand their operations in other markets.

The principal Bain-type advantage which inspires the theory of IO is the main source for monopolistic advantages of the firms. According to Bain (1941) an important indication of firm monopolistic power is firms' ability to price above marginal cost (excess profits) that occur where the introduction of substitutes and competitors do not squeeze these profits out. The market power of firms as an influential factor in competition is utilised widely in the performance-based studies[62]. On the other hand, although Hymer (1976 [1960]) and Kindleberger (1969) laid the foundation of IO-based FDI theories that firms aim to exploit their

[62] For a recent review of these studies see for example, Inui, et al., (2012).

market power through FDI, the market-power factor as an FDI motive was largely unexplored in the FDI studies within the contemporary theory of heterogeneous firms (De Blas & Russ, 2013)[63].

Testing the market power-FDI of largest US Multinationals, Hirschey (1982) finds that firms develop markets abroad in order to exploit economic rent opportunities while Kim and Lyn (1990) have found out that US domestic firms were more effective than their foreign counterparts in terms of market power measured as the firm Lerner Index. More recently, measuring market power with the firm's assets to the average industry assets, Pattnaik & Elango (2009) found a non-linear relationship between firm internalization and performance using market power as one of the firm assets.

While there is a vast literature on the theoretical grounds, however, empirical studies on FDI mostly ignore the IO based variables probably due to the measurement difficulties because of the lack of the micro data until recently. Thus only a little is known about the relationship between market power and FDI as expounded by Hymer.

One of the main contributions of this thesis to the literature is that it takes market power as a-priority in the FDI decisions of firms. Hence,

> *Hypothesis 2 (H2)* The market power of firms has positive impacts on their intention to undertake FDI.

[63] with few exceptions (see for example, (Kim & Lyn, (1986); Kim & Lyn, (1990)

4.2.2 Technological Intensity

In the Penrosean growth of the firm framework, *knowledge* is the most important asset of a firm (Pitelis & Teece, 2010). That is FDI firms are expected to have superior technology so as to be able to expand in the global markets, as IO, Internalisation, RBV and KBV postulate. This is because FDI firms are believed to be larger in size, more productive and profitable than the domestic companies at home and abroad, and thus they are able to afford the cost of the technology (e.g. research and development facilities and employing highly qualified labour). In the empirical literature, technology is often represented by the R&D intensity of the firms and is found to have significantly positive relation to FDI (see for example, Lall, 1980; Chen & Chen, 1998; Trevino & Grosse, 2002).

On the other hand, Vernon's Product Life Cycle (p. 59), teaches that firms with a unique technology would deal with exports first, thus FDI should occur in industries that are mature and, hence, declining in R & D expenditures. Vernon' theory might have found empirical grounds in recent studies, such as, Stoian & Filippaios (2008) who for example, found that R&D intensity is only important for high-tech sectors and even though for the heavily R&D intensive firms in low-tech industries "this does not make a difference in their decision making process to invest abroad". (PLC is about one product; the firm is still strong in technology using the cash cow to finance new technologies)

In addition, when (asset-seeking) firms pursue to adapt higher technology at lower costs (since adaptation is easier and cheaper than innovation) they engage FDI to look for markets with higher technology so that they could learn by doing or adopt

that technology by imitating. As a result, technological intensity could be negatively associated with firm FDI.

Therefore, in line with the theoretical and empirical literature, hypothesis 3 assumes that.

> *Hypothesis 3a (H3a)* There is a positive relationship between technological intensity and firm FDI in hi-tech industries.
>
> Hypothesis 3b (H3b) There is a negative relationship between technological intensity and firm FDI in hi-tech industries

4.2.3 Economies of Scale

"The theory of the economies of scale is the theory of the relationship between the scale of use of a properly chosen combination of all productive services and the rate of output of the enterprise" (Stigler, 1958). The theory distinguishes between economies of scale at the firm and plant levels (Markusen, 1998). Firm-level economies of scale as suggested by Brainard (1997) is an important factor which influence the strategic operation of firms are positively related with the FDI involvement. Since FDI "takes place only in a world which admits revenue-producing factors which are firm specific on the one hand and information, communication, and transaction costs, which increase with economic distance, on the other" (Hirsch, 1976), firms' possessing large scale economies promote foreign production (Dunning, 1973; Markusen, 1995). This is because large firms are considered with larger scales economies at the firm level and thus they tend to have sales in many countries while the large plant level economies of scale might

drive firms not willing to split production in several countries (Navaretti, et al., 2004, p. 25). Put differently, firms involve in international production for "taking advantage of the economies of scale" (Dunning & Lundan, 2008, p. 72). On the other hand, empirical evidence shows that there is a negative relation between the plant level economies of scale and multinationality (Markusen, 1998) whereas the opposite is factual for firm level scale economies (Navaretti, et al., 2004). It should be noted here that the sample data does not cover any information on the plant level operations of the firms it consists of only consolidated firm data. Thus only *firm-level economies of scale* would be proxied and included in the model.

Since economies of scale is relatively cost-related, there are two possibilities in relation to cost reduction: first, if companies have certain cost advantages at their local market, they might prefer to produce in their domestic environment and export there and the second is if firms want to exploit that cost reduction abroad they might prefer overseas production. This proposition is in line with Vernon's Product Life Cycle Theory (p. 59) stating that firms produce at home at the initial innovation stage, and enjoy the economies of scale through exports till the maturity stage of the product by locating the production abroad. Similarly, the (L) of OLI also posits that in the case of locational advantages abroad, firms locate production abroad if there are scale economies to be obtained.

In sum, on the one hand, firms with larger economies of scale at home involve in FDI in order to exploit this advantage abroad. On the other, firms (especially from developed countries) choose places (in developing countries) where they could obtain greater economies of scale due to their firm specific advantages, such as knowledge and size.

Accordingly, Hypothesis 4 posits that:

> *Hypothesis 4 (H4a)* The larger the firm level economies of scale the more firms will involve in FDI in order to enjoy this advantage.
>
> *Hypothesis 4 (H4b)* The lower the firm level economies of scale the more firms will involve in FDI in order to obtain it.

4.2.4 Capital Intensity

As an FSA, capital intensity has been seen as a complementary asset in the RBV framework (Teece, et al., 1997). Since capital-intensive industries are generally associated with increased levels of knowledge, capital intensive firms are expected to involve in overseas production relative to their domestic counterparts (Hsu, et al., 2011).

Empirical findings on FDI and capital intensity are clear for the developing country firms: they possess the advantage of low capital to labour intensive production technology since the labour cost is relatively low in those countries compared to the developed ones (Porter, 1990; Erramilli, et al., 1997). In the same vein, for example, Kuo and Li also report a highly significant negative association between Taiwanese firms FDI and capital intensity (Kuo, 2003).

The definition of capital intensity[64] suggests that the higher the ratio, the less cost efficient is the firm which might also indicate higher technology, productivity and

[64] The ratio reveals the amount of assets a firm requires to generate a unit in sales, meaning a smaller figure means better asset utilisation.

efficiency. Capital intensity, on the other hand, indicates the size of the resource commitments for FDI leading to superior product quality (Lin, 2010). Hence, a positive relation between FDI involvement and capital intensity of the firms might indicate higher resource commitments of FDI companies in the being other factors constant and a negative relationship might indicate more efficient asset utilisation than the counterparts.

Thus capital intensity's influence on the firm FDI involvement is hypothesised as:

> *Hypothesis 5 (H5)* the higher a firm's degree of capital intensity, the greater its likelihood of investing abroad

4.2.5 Intangible Assets

Perhaps the clearest FSA in relation to FDI is intangible assets (though its definition is debatable). The comparative theory of the competition suggests that intangible assets are heterogeneous among the firms and perfectly immobile across countries (Hunt & Morgan, 1995) and not all of the countries in the world are uniformly endowed with these specific factors. The value of intangible assets is not all nominal but it lies in their expected future return. Thus omitting intangibles may be particularly distorting to the valuation of foreign-owned affiliates (Bridgman, 2008).

From the firm related theories' and approaches point of view, intangible asset is the core for giving firms competitive advantage and thus firms with higher intangible assets are likely to expand their production abroad. For IO, it is the main reason for firms to give oligopolistic advantages, for OLI it is one of the main ownership (O) advantage and firms internalise (I) their production in order

to protect these assets. For RBV it is the main resource (not complimentary) for firms, for KBV, it is the result of the learning firm, for DCV it is the result of continuous research and development efforts of firms.

Several empirical studies tests intangible assets to measure its effects on FDI involvement of the firms (Rugman, 1980; Hennart, 1986; Grubaugh, 1987; Denekamp, 1995; Markusen, 2001) and find it positively correlated with FDI.

Based on the predictions of the previous studies and the theoretical discussions above, hypothesis 6 is deemed conceivable:

> *Hypothesis 6 (H6)* The greater a firm's intangible assets are the greater its intention is to undertake FDI

4.2.6 Productivity

Productivity is possibly the most commonly examined FSA in the FDI literature, especially after the ground-breaking work of Helpman, Melitz, and Yeaple (HMY) (2004) about productivity comparison of export and FDI companies (as reviewed on pages 94-100). In HMY paradigm, the hierarchy is clear cut: most productive firms go for FDI, less productive firms produce at home and export abroad and the least productive firms stay domestic. In addition, the existence of firm level economies of scale (as a sign of higher productivity) allows firms to reduce transport costs by locating production nearer to markets. (Barrel & Pain, 1997).

The empirical analyses of substantial literature provides strong support for HMY (Dimelis & Louri , 2002; Head & Ries, 2003; Girma, et al., 2005; Raff, et al.,

2012; Bhattacharya, et al., 2012). Regarding to the heterogeneity, it has been found that exporter firms are more productive than the firms which serve only domestic markets (Melitz, 2003).

In line with the previous empirical studies on firm productivity this thesis predicts that more productive firms would engage in FDI. Therefore I hypothesise that

> *Hypothesis 7* (H7) the higher productivity a firm has the higher the likely it would have FDI.

Thus, this study proposes that:

$$FDI_{it} = f\begin{Bmatrix} MARKPWR_{it},\ TECHINT_{it}, ECONSCAL_{it},\ CAPINT_{it},\ INTANG_{it}, \\ PRODVTY_{it} \end{Bmatrix} \quad (1)$$

4.3 Methodology

This thesis regards firms FDI involvement a two-stage procedure: first, the organisation decides whether to expand abroad or not, and the second stage is to decide how much to allocate for overseas involvement[65]. The econometric model of this thesis consists of two stages: the first stage aims to find out why some firms invest abroad while others do not. What kind of firm-specific assets are related with the probability of a firm's undertaking FDI. The factors that are

[65] Surely, the next stages are to decide how much to allocate in each location, timing, the mode of FDI, etc. However, the main interest of this research involves with the first and the second phases. In addition, after the second stage much of the factors with the firm's process of FDI deals with mostly the home countries and thus the third stage is out of the domains of this study.

likely to increase the probability of a firm to involve in FDI activities, the sample includes both the domestic and FDI firms.

In any region and sector not all firms undertake FDI. Even in the sample population out of more than 45 thousand firms, only near 10% were FDI firms. Firms might chose expanding through FDI due to prevailing or expected advantages in the markets and sectors they compete globally or regionally, even only at home country.

4.4 Data

In order to test the hypotheses H1 through H7, two datasets have been prepared. The first one includes the whole population, i.e. FDI and domestic firms available in Thomson Finance and Worldscope databases. This dataset has been used to find out if there are any differences between the FDI and domestic firms affecting firms' initial FDI decisions and to construct country-industry specific indices. The second dataset obtained from the same source consists of companies with foreign assets (and liabilities) together with other accounting data is obtained from Thomson Worldscope database. In fact, it is a modified version of the first dataset which includes only FDI companies. Then, each of these datasets is split into three for each region of the Triad.

Thomson data is complemented with Orbis Database of Bureau van Dijk which provides information on foreign investment types and subsidiary information of the firms. As one of the dependent variables is FDI decisions, it is of great importance to ensure the data is most accurate, correct and efficient. Some overseas investment might be due to a one-time opportunity or out of the realms

of the natural business routine. Thus the criterion for including a company in data set is to observe continuity. This left the sample data with 8058firms. However, a great number of these firms' did not have data on main variables, such as, employment, total assets, fixed assets, and sales. Having omitted these firms, data clearance involved several further steps. In order to achieve at least some degree of homogeneity among the sectors, the first criterion is to choose only manufacturing companies, based on their main economic activity at 2-digit Standard Industrial Classification (SIC) codes.

In this regard, equity investment companies and holdings were removed from the dataset. In addition, "miscellaneous production" category (two-SIC code 39) is excluded from the sample selection criteria as a crude attempt to include the most homogenous industries in the sample.

To further guarantee that the sample and the analyses results are accurate, the outliers were omitted by adopting the criteria: firms with values that are against the generally accepted accounting measures, such as negative sales and firms whose sales minus operating income exceeding operating expenses and vice versa. In addition, balance sheet items were also cross-validated, such as total of current, intangible and fixed assets should not exceed the value of total assets, cash and equivalents should not exceed current assets. Similarly all of the income statement and balance sheet items were cross-checked for validation and firms with invalid ratios are removed from the dataset. Firms whose total operating expenses are smaller than the sum of the cost of goods sold+ selling, general and administrative expenses are removed as these expenses reflect the minimum operating expenses in income statements.

Next, in order to avoid double accounting, subsidiary companies were omitted since the parent companies' accounts are consolidated in Worldscope. As for the MNEs, parent company data is utilised since the decision to engage in FDI is highly likely to be taken at the parent firm level.

Finally, sales, expenses, assets, number of employees with the 1st and 99th percentiles were truncated in order to omit outliers.

The above criteria yielded a total of around 5870 manufacturing firms registered in EU, Japan and North America without any firm-size threshold. In order to make sure the home countries are from triad (since much of the non-triad countries register their equities in the triad stock exchanges, Worldscope sometimes regard them as triad companies) those companies' country-of-origins are compared with Orbis data and this stage left 5388 firms. Next, carefully examining these companies, especially SIC code 28 companies show somehow diversity from each other. The reason for this is the broad chemicals & allied products, especially pharmaceutical firms. Most of them only deal with R&D activities, while some others are not known. In addition, sales and assets of these companies diverse greatly. Thus, SIC 28 companies are carefully examined and non-manufacturing companies are eliminated from the sample since only research and innovation companies would bias the results with the high level of R&D expenses and almost no sales.

The data had a number of missing values especially, in terms of intangible assets and R&D expenditures and exports. However, some of these are found in company annual reports, accounting filings, and SEC (Securities and Exchange

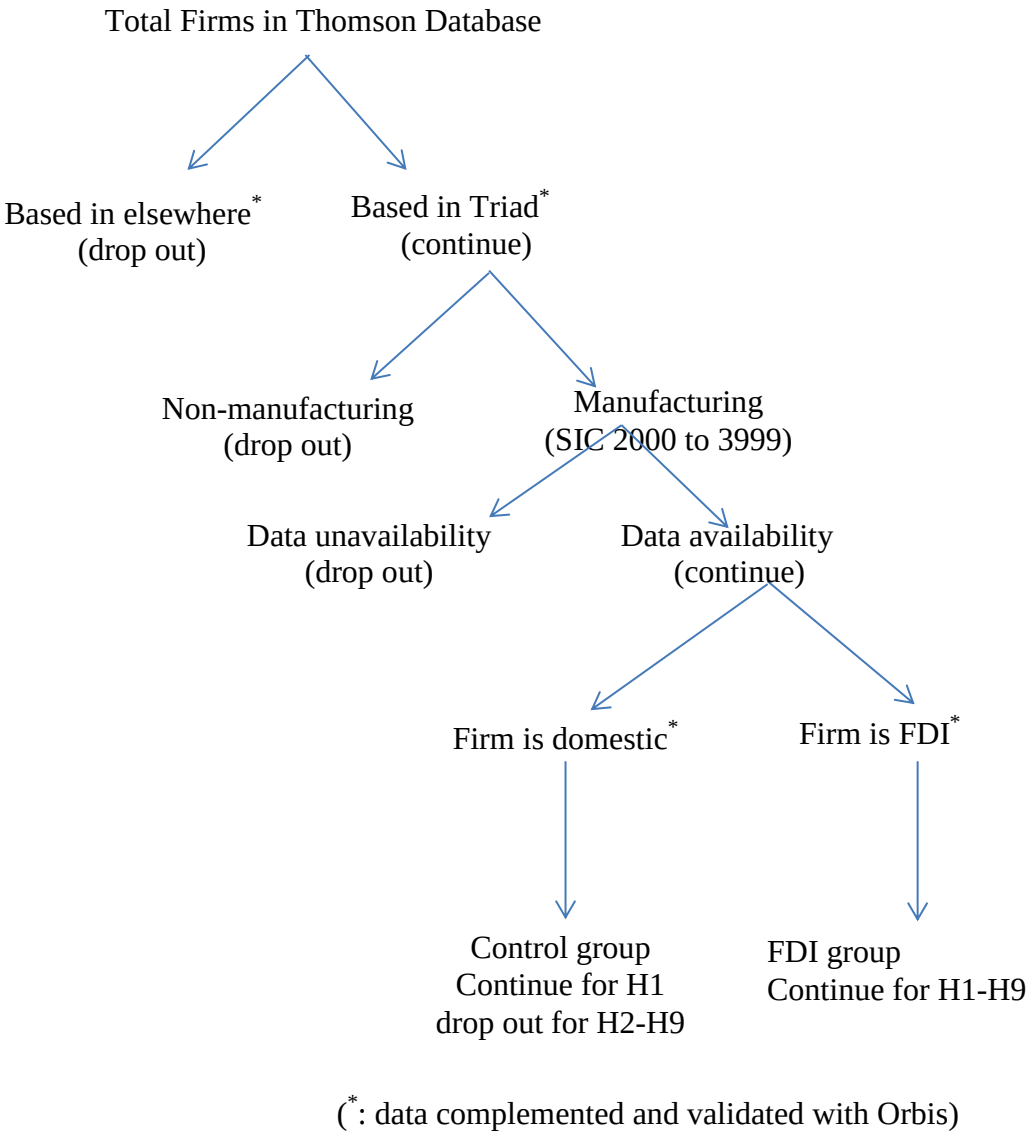
Commission) of USA, SEDAR filings of Canada, Euronext of Europe, and Tokyo Stock Exchange data were also utilised when available.

The time period for this study is taken as the period of 1985-2011. This time span is chosen due to the globalisation wave during the mid-1980s around the world and of course, data availability. No restriction was applied on the age (time-year since the company's inception) in order to allow entry and exit of the companies from the industry-country since all the costs and factors are to be calculated on yearly basis.

All of the sub-sectors of manufacturing has been included in the data in order to ensure external validity and to allow generalizability of the results. However, tobacco production companies (two-digit SIC 21) were excluded from the sample since there are only few in data and the presented ones are the natural monopolies around the world. Similarly, printing publishing and allied industries (SIC 27) were also removed since only very few companies were found in this sector. Finally, leather goods production firms (two-digit SIC 31) were also removed since almost no FDI companies from these sectors were left in the sample after removing the missing variables.

Figure 4.2 on the next page summarises the sample selection process.

Figure 4.2 Sample Selection Process



Source: Adopted from Maddala (1983, p. 266)

Finally, companies whose data were not available for at least four consecutive years were removed in order to obtain at least one 3-year moving average and one year lag observation for each firm. After all these requirements are applied, the sample is reduced to 59694 firm-year observations (approximately 12.25 years per firm) belonging to a total of 4873 firms with from 15 sectors according to their 2-digit SICs (Table 4.1). 2845 of these firms are FDI[66] firms (if a firm has foreign assets for at least two consecutive years with a minimum of four years observations) and the remaining 2028 are domestic ones. That does not necessarily mean FDI firms are higher in the whole population; however since a number of them are registered in the stock markets, their accounting data is more accessible.

Table 4.1 presents the home region and industry characteristics of the sample firms in detail. However,. As coding for modelling FDI decisions and ownership determinants require separate criteria, these figures aim presenting only a general description of the sample dataset. Details on further splitting up data and coding for firms FDI decision and ownership are detailed on pages 149 and 151 .

[66] The term FDI firm is purposely preferred to MNE since the data includes both multinational companies and standalone firms.

Table 4. 1 Sample Population

	DOMESTIC FIRMS				FDI FIRMS				FULL SAMPLE
Industry(2-digit- SIC)	*EUR*	*JPN*	*NM*	*Total*	*EUR*	*JPN*	*NM*	*Total*	*TOTAL*
Food and kindred products (20)	892	1975	309	3176	1131	295	792	2218	5394
	(71)	(114)	(46)	(231)	(89)	(20)	(57)	(166)	(397)
Textile mill products (22)	169	295	26	490	221	191	183	595	1085
	(12)	(19)	(3)	(34)	(19)	(13)	(14)	(46)	(80)
Apparel and other finished products (23)	23	154	40	217	80	155	246	481	698
	(2)	(10)	(5)	(17)	(11)	(17)	(19)	(47)	(64)
Lumber and wood products (24)	94	56	83	233	29	24	197	250	483
	(9)	(5)	(8)	(22)	(2)	(2)	(14)	(18)	(40)
Furniture and fixtures (25)	223	485	118	826	378	298	519	1195	2021
	(20)	(33)	(14)	(67)	(31)	(22)	(46)	(99)	(166)
Paper and allied products (26)	213	470	37	720	699	81	448	1228	1948
	(17)	(30)	(8)	(55)	(46)	(7)	(29)	(82)	(137)

	DOMESTIC FIRMS				FDI FIRMS				FULL SAMPLE
Industry(2-digit- SIC)	*EUR*	*JPN*	*NM*	*Total*	*EUR*	*JPN*	*NM*	*Total*	*TOTAL*
Chemical products (28)	457	2124	710	3291	1103	1022	2768	4893	8184
	(42)	(133)	(110)	(285)	(102)	(75)	(215)	(392)	(677)
Rubber and miscellaneous plastics products (30)	173	241	75	489	395	353	401	1149	1638
	(16)	(17)	(10)	(43)	(32)	(22)	(33)	(87)	(130)
Stone, clay, glass, and concrete products (32)	285	677	100	1062	606	293	293	1192	2254
	(23)	(39)	(11)	(73)	(43)	(16)	(23)	(82)	(155)
Primary metal industries (33)	261	876	199	1336	365	309	581	1255	2591
	(21)	(57)	(22)	(100)	(35)	(21)	(46)	(102)	(202)
Fabricated metal products (34)	402	1090	161	1653	378	297	760	1435	3088
	(32)	(71)	(18)	(121)	(38)	(24)	(52)	(114)	(235)
Industrial and commercial machinery and computer equipment (35)	957	2236	498	3691	1268	1437	3118	5823	9514
	(84)	(162)	(58)	(304)	(135)	(102)	(235)	(472)	(776)

	DOMESTIC FIRMS				FDI FIRMS				FULL SAMPLE
Industry(2-digit- SIC)	*EUR*	*JPN*	*NM*	*Total*	*EUR*	*JPN*	*NM*	*Total*	*TOTAL*
Electronic and other electrical equipment and components (36)	767	1616	1132	3515	1130	1714	3711	6555	10070
	(77)	(121)	(142)	(340)	(124)	(127)	(335)	(586)	(926)
Transportation equipment (37)	370	599	327	1296	906	719	1191	2816	4112
	(35)	(40)	(35)	(110)	(67)	(55)	(82)	(204)	(314)
Measuring, analysing, & controlling instr.; photographic, medic. & optic. goods; watches & clocks (38)	412	830	1042	2284	811	624	2895	4330	6614
	(51)	(66)	(109)	(226)	(74)	(41)	(233)	(348)	(574)
Total Observations	5698	13724	4857	24279	9500	7812	18103	35415	59694
(No. of firms)	(512)	(917)	(599)	(2028)	(848)	(564)	(1433)	(2845)	(4873)

4.5 Dependent Variables

In order to identify the firm-specific assets those distinguish the multinational firms from the domestic ones. Thus the dependent variable is binary and coded 1 for firms which dealt with FDI at least for a year.

Further, for the regression models, the book value of the firms' foreign assets (FDI) are utilised in order to determine factors influencing the amount of the FDI that firms invest. For the regressions models, firm FDI stock value (in logarithmic form) has been utilised since flows are vulnerable to internal and external changes more than stocks. In addition, stocks are accumulated throughout longer time spans while flows are influenced from the fluctuations in the home/host countries quickly.

4.6 Independent Variables

In order to test H1-H7, the independent variables are: Market power proxied by Lerner index of competition calculated from the income statement of firms, Technological intensity is proxied by R&D involvement of firms calculated from income statement, intangible assets (as their book value on company balance sheets), economies of scale refers to the difference between the firm's and its home-region industry- average real output relevant to the total industry output (i.e. the minimum efficient production scale - MEPS), capital intensity is proxied by total assets needed to generate per dollar of sales, , firm productivity is measured by the total factor productivity index. Details of the variables' calculation are as follows.

Market power is proxied by price-cost margin. Theoretically, a firm's price–cost margin is a function of its elasticity of demand, market share, and the conjectural variation, i.e. the firm-level price-cost margin. The Lerner Index is a common measure the extent to which a firm's prices exceed marginal costs. The average cost is used widely when constant returns to scale exist and also when the marginal costs are not available. A large value means that the firm has high market power relative to its average industry competitors. The Lerner Index is an inverse measure of competition[67] and has been utilised in competition-related studies commonly (see for example, Feinberg, 1980; Kim & Lyn, 1990; Inui, Kawakami, & Miyagawa, 2012). It is calculated as:

$$FIRMLI_{it} = \frac{sales - cost\ of\ goods\ sold - SGA\ expenses}{sales} \qquad (2)$$

Technological intensity is measured by the R&D intensity of the firms. R&D intensity is generally measured by R&D expenses per sales ratio. However, this study follows the cautions by Barry (2005) that R&D to sales might be misleading "due to the difficulties that transfer pricing causes for the interpretation of output data in low corporation tax jurisdictions". With the purpose of eliminating such deficiency, this study follows the strategy of Barry (2005) and Lee & Rugman (2012), and measures technological intensity by R&D expenses per employee. As a result, technological intensity is formulated as:

[67] i.e., a greater index indicates lower competition in the market-industry

$$RNDINT_{it} = \frac{R\&D\ expenses}{Number\ of\ employees} \quad (3)$$

A direct measurement of *economies of scale* is difficult for many firms and industries due to lack of data. In order to measure economies of scale, actual unit cost data of the firms is needed so that the optimum size of a firm with its minimum unit cost could be computed. Information on actual unit costs is not easily accessible. Thus, several proxy measures are utilised in literature: Stigler (1958) compares market share of firms in US steel industry in order to measure economies of scale. However, industry data for many industries and companies are not obtainable in this thesis' data set. Among others, Lall (1980) proxies economies of scale by value added, Buckley, Wang, & Clegg, (2007) use net fixed assets per firm while Navaretti, Venables, & Barry (2004) proxies economies of scale is by the number of employees (the real number) and the number of nonproduction workers in the average U.S.-based firm in each industry (Brainard, 1997). On the other hand, since number of employees and value of assets are related to the firm size, these measures might suffer from the risk that large firm size may capture other factors. However, most economies of scale measures suffer from this problem (Lall, 1980). Thus, Comanor and Wilson's (1967) approach, minimum efficient production (MEP) is computed as the ratio of average of the real sales of those companies which produce half of the industry output to the total output at home region *h*, industry *i*, and year *t*. MEP is

computed manually in Microsoft Excel v.2010. ECONSCAL is proxied as the difference between firms' real sales and MEP.

A common measure of *capital intensity* is to take the total assets to generate sales in the firm, i.e. it is the assets-to-sales ratio expressed as:

$$FRMCAPIN_{it} = \frac{Total\ assets}{Total\ sales} \quad (4)$$

The value of *intangible assets* are taken as Worldscope[68] database. ince intangible assets are taken with goodwill, the dataset also includes negative intangible assets for two observations. Intangible assets are weighted with total assets and formulated as:

$$INTAINT_{it} = \frac{intangible\ assets}{total\ assets} \quad (5)$$

Finally, as for *productivity*, total factor productivity (TFP) is measured as an extension to Caves, Christensen and Diewert (CCD) (1982) index, in line with the

[68] Intangibles are described by Thomson as: "goodwill/cost in excess of net assets purchased, patents, copyrights, trademarks, formulae, franchises of no specific duration, capitalized software development costs/computer programs, organizational costs, customer lists, licenses of no specific duration, capitalized advertising cost, mastheads newspapers, capitalized servicing rights, purchased servicing rights".

literature (see for example, Aw, et al., 2003; Girma, et al., 2005; Van Biesebroeck, 2007).

The CCD index of TFP is :

$$lnTFP_{it} = \left(lnq_i - \overline{lnq}\right) - \tilde{\alpha}_i^K\left(lnX_i - \overline{lnX}\right) - \tilde{\alpha}_i^l\left(lnK_i - \overline{lnK}\right)$$

$$\overline{\alpha}_i^L + \alpha_i^L = 1, \qquad (6)$$

$$\overline{\alpha}_i^x = \frac{\alpha_i^x + \overline{\alpha}^x}{2} \text{ where}$$

$$\overline{\alpha}_i^x = \frac{1}{N}\sum_{i=1}^{N} \alpha^x, x = L, K$$

Where *q* indicates output, *L* and *K* labour and capital inputs and, α factor share for firm *i* respectively. Bars indicate same variables for the hypothetical firm. The hypothetical firm, in fact is the geometric mean of the relavant variable.

Extending CCD to multilateral level, the equation (6) becomes:

$$lnTFP_t^i = \left(lnQ_t^i - \overline{lnQ_t}\right) + \sum_{s=2}^{t}(\bar{Q}_s - \bar{Q}_{s-1})$$
$$-\left[\sum_j \frac{1}{2}\,(\alpha_{tj}^i - \bar{\alpha}_{tj})(x_{tj}^i - \bar{x}_{tj}) + \sum_{s=2}^{t}\sum_j \left(\bar{\alpha}_{sj} + \bar{\alpha}_{s-1j}\right)\left(\overline{lnx}_{sj} - lnx_{s-1j}\right)\right] \qquad (7)$$

The above index measures the proportional difference of total factor productivity of the firm *i*, at time *t* relative to a hypothetical firm. The hypothetical firm is the one which has the arithmetic mean values of log output, log input, and input cost shares over all plants in the 2-digit SIC in each year. The first term of the first line in equation (7) is the deviation of the firm *i*'s output from the output of the hypothetical firms in the 2-SIC industry in year *t*, and the second term is the cumulative change in the hypothetical firm's output between year *t* and the initial year, *t* =1. The second line is the same operation for each input *j*. The two terms in the second line perform the same operation for each factor input j. Inputs are weighted by the average of the cost shares for firm *i* and the hypothetical firms in year *t*. Thus firm's logarithmic output and input levels are measured relative to this reference point in each year and then the reference points are chain-linked over time. (Aw, et al., 2003; Greenaway, et al., 2007).

TFP index is constructed for each home region and 2-digit SIC industry to control for home region-industry effects. The index is computed for each year as a Törnqvist-Theil-translog index using TFPIP software[69] version 1. By comparing the TFP of each firm to a hypothetical firm (with average log output, labour, capital and cost share). The index is computed for each home-2-digit SIC industry with the real values.

Since each country's inflation rates are different which may result measurement error, cost related variables are deflated with the producer price indices (PPI) while sales are deflated with consumer price indices (CPI) and capital variables

[69] TFPIP is a program written by Tim Coelli to compute Total Factor Productivity Index.

are deflated with GDP deflator. All deflators (2010=100) are obtained from the World Bank's World Development Indicators (The World Bank Group, 2013) database[70].

Output is taken as the real value of revenues deflated with consumer price indices; capital is fixed assets deflated with GDP deflator of fixed capital formation; cost input is cost of goods produced deflated with producer price indices of each country in the sample, and labour is the number of employees.

An alternative method could have been Olley-Pakes (OP) (1996) or Levinsohn-Petrin (LP) (2003) semi-parametric approach. However, estimating TFP with OP requires firm entry and exit information which is not available in the dataset utilised for this thesis and for estimation with LP the dataset did not produce enough variation in many home-region 2-SIC industries. Besides, the index method suits this study very well since allows to compare TFP growth among the firms over time.

4.7 Control Variables

4.7.1 Firm Size

Arguably, firm size is one of the greatest assets of a firm. The larger is the size, the bigger the volume is expected in their sales and income. Consequently, size increases the possibility of firms' dealing with FDI since they can internalise the liability of foreignness which is likely to arise due to the local conditions in the

[70] Although, it would have been better to deflate the producer prices according to the industry inputs; however, data was not available for all of the countries in the sample. Thus, for standardization, World Bank PPI figures are utilised.

host markets. What is more, large firms are likely to get more information on the market trends (Caves, 1974b). Firm characteristics together with industry effects are examined as the major determinants in FDI decisions by several authors. Among all, firm size is possibly the most discussed firm characteristics.

Although firm size-FDI relation is not theorised in the literature, several empirical studies found that larger firms are likely to deal with FDI (Horst, 1972; Lall, 1980; Lipsey, et al., 1983).

Among the three common measures for firm size (i.e. number of employees, sales, total assets) this study uses the number of employees as an indicator of firm size for two reasons: first, to protect multicollinearity since ECONSCAL is measured by the sales difference and ales has been utilised in other variables since it shows more stability (sales might increase due to a one-time opportunity and total assets include the liquid assets, too which also might increase or decrease under extraordinary circumstances). In addition, as Lee & Rugman (2012) state, employees are arguably the most important asset of a firm. The expected sign of firm size is positive.

4.7.2 Firm Age

As previously suggested, a firm's experience is one of its greatest assets. Age is expected to give firms learning-by-doing benefit in addition to asset accumulation. What is more, resource allocation process which requires knowledge and experience could be better realised with the experience gained through time. Thus, the age of a firm is likely to influence its experience and project development. What is more, the higher is the age; the better would be the

reputation of the firm, more aggregated intangible assets, organisational capabilities, and experience to give them monopolistic advantage.

Firm age, is calculated as the number of years since company's inception. It is measured as the difference between the current year and the year of incorporation. In order to reduce sample selection bias raising from the unbalanced panel data, firms' age were carefully checked together with Worldscope, Orbis and companies' web pages (where available) in order to distinguish sample firms that have always been operating in the relative time span and firms which have entered over the period. The expected sign of firm age is positive.

4.7.3 International Experience

FDI firms' international experience is of great importance, as the PLC, IO, RBV, OCV all as it brings foreign market knowledge to the firm. Resource accumulation through the experience whether it be domestic or international is one of the greatest advantages of firms as RBV suggests (p.82). The nature of FDI-dealing with legal, cultural and economical differences, make these firms to need for more resources in order reduce the liability of foreignness (p. 50). Firms get opportunistic cost reduction with the accumulation of (international) experience (Hymer, 1976 [1960]). In addition, when firms have some intangibles to exploit in the international markets, their previous experience (FDI or exports) would help them to improve their competitiveness in the foreign markets (Delios & Beamish, 2001; Kindleberger, 1987). In addition, firms' presences in different markets would give them the opportunity to gain higher levels of "information, knowledge, and experience" (Delgado-Gómez, et al., 2004).

International experience is a dummy variable which takes 1 if the firm dealt with either FDI or export in the previous year, and 0 otherwise.

4.7.4 Financial Flexibility

Until the recent work of Oxelheim, et al (2001) finance-specific factors (as the authors dub it) have been seen as a by-product of by-product of other FSAs (Oxelheim, et al., 2003; Forssbaeck & Oxelheim, 2008) in affecting FDI decisions. Similarly, in the international business context, Greenaway, et al., (2007) and (2010) find that exporters' financial health is better than non-exporters, stressing the importance of continuous export. Since financial health is a new concept in the FDI literature, there is little empirical evidence on the FDI outflows-firm finance relation. Bridges & Guariglia (2008) testing the other way, i.e., global engagement's influences on financial variables find that domestic firms are likely to have higher failure probabilities if they have lower collateral ratio of the firm's (measured as tangible assets to its total assets) and higher leverage (measured as short-term debt to total assets ratio) while "financial variables either do not significantly affect the survival probabilities of globally engaged firms, or exert a smaller impact on them".

In a similar research to this thesis, Tseng, et al., (2007) differentiates between internally and externally generated financial resources and find out that internally generated financial resources (measured as return on investment) have a positive

effect on international growth while externally raised financial resources (assessed by the ratio of cash flow to invested capital) slow down multinational expansion[71].

Two financial variables financial liquidity (cash and equivalents) as a fraction of total assets and firm leverage (debt to asset ratio) are included as financial health indicators in line with the literature and data availability. These are:

$$CASHTOT_{it} = \frac{Cash\ and\ equv.}{Total\ assets} \quad (8)$$

$$DEBTOAST_{it} = \frac{Total\ debts}{Total\ assets} \quad (9)$$

Financial liquidity gives firms flexibility in their investments which is expected to have a positive influence on FDI operations of firms while leverage ratio indicates the financial risk associated with the firm's operations. Smaller leverage means also better financial health conditions of the firms since it indicates smaller ratios of debts to assets .

Among the control variables,

4.7.5 Time-Fixed Effects

In order to account for global dynamics which might influence firms' FDI decisions and the amount of assets they move abroad, such as, structural changes and bilateral agreements (e.g.. acceptance of Euro, Nafta Agreement, China's

[71] The authors remark that "firms borrowing money from outside are bounded by capital costs and, to some extent, are dictated to by the capital providers who attempt to keep firms away from perilous foreign operations".

access to WTO -as a significant host country-, Japan-Asean Trade Agreement), governmental policy changes, Japan's lost decades (1990s and 2000s) global financial crises, etc. time-fixed effects are entered in the estimations as control variables from 1988 to 2011 by adding a year dummy for each year.

Table 4.2, below, summarizes the variables description and their expected sign in order to test H1.

Table 4. 2 Variable List and Expected Signs for the Probability of Firm FDI

Variable	*Code*	*Description*	*Expected Sign*
		Dependent Variables	
Firm FDI status	*FDIDUMMY*	Coded as 0 if firm *i* 's has no foreign assets or liabilities in year *t*, 1 otherwise.	
		Control Variables	
Firm Size	SIZE	3-Year moving average of the difference between the number of the employees of the firm and its home-industry (in thousands)	+
Firm Age	AGE	The number of years since the firm was first established.	+
International experience	EXPINT	Export intensity	+
	INTEXP	3-Year moving average of the above	
Firm financial Strength	CASHTOT	Cash and equivalents /total assets	
	FINLIQU	3-year moving average of the above	+
	DEBTOAST	Ratio of total debt/total assets	
	LEVERAGE	3-year moving average of the above	-
		Independent Variables	
Market Power	FIRMLI	Difference between the Price-cost margin of the firm and home region-	

Variable	*Code*	*Description*	*Expected Sign*
		industry average	
	MARKPWR	3-year moving average of the above	+
Technological intensity	RNDINT	Difference between R&D expenses per employee of the firm and home region-industry mean.	
		3-year moving average of the above	+
	TECHINT		
Economies of scale	MESPDIF	Difference between home-industry's MESP and each firms' (deflated) sales	
	ECONSCAL	3-year moving average of the above	+ -
Capital intensity	ASTOSLS	Difference between total assets/total sales of the firm and home region-industry mean.	
	CAPINT	3-year moving average of the above	+
Intangibles	INTANGS	Difference between intangible assets ratio to total assets of the firm and home region-industry average	
	INTAINT	3-year moving average of the above	+
Productivity	TFP	TFP index	
	PRODVTY	3-year moving average of TFP index	+
Time-Fixed Effects	YEARDUM	Year dummies, reference year:1988	

In order to test Hypotheses 2 thorough 7, i.e. in the second stage, purely firm-related assets are needed as once firms decide to supply FDI, the amount would be determined heavily by the firm resources, wheather it be tangible or intangible. Hence, the industry-home region assumption is relaxed in this stage and firms' assets are computed as shown in Table 4.3.

Since economies of scale and productivity are computed naturally related to the home market competition for the probability equation, in order to account for purely firm assets, they are removed from the variable list for the ownership analyses. In the new model, economies of scale is proxied as the ratio of costs of goods sold to sales as an indicator of cost advantage/disadvantage to proxy cost reduction from the scale of production/sales. Thus, the small is the number means the higher the economies of scale at the firm-level. In the same vein, productivity is proxied by the labour productivity, as value added in dollars per employee in the firm since this is the only measure that dataset allows (p. 135). However, labour productivity is utilised in the business literature widely and reported as a good measure of the firm productivity (Cole, et al., 2010).

Table 4.3 on the next page summarisizes the independent variables for the ownership equation.

Table 4. 3 Variable List and Expected Signs for the Amount of Firm FDI

Variable	*Code*	*Description*	*Expected Sign*
		Dependent Variables	
Firm FDI	*lnFORAST*	Foreign assets of the firms	
		Control Variables	
Firm Size	FRMSIZE	3-year moving average of number of employees (in thousands)	+
Firm Age	AGE	The number of years since the firm was first established.	+
International experience	FDIEXP	Dummy variable 0 if ΔFIRMFDI is> 0, 1 otherwise	+
	FRMSALINT	3-Year moving average of the firms' affiliates' sales weighted by the total sales	+
Firm financial Strength	FINLIQU	As in the probability equation	+
	LEVERAGE	As in the probability equation	-
		Independent Variables (	
Market Power	FRMMARKPWR	3-year moving average of FIRMLI	+
Technological intensity	FRMTECHINT	3-year moving average of RNDINT	+
Economies of scale	FRMECONSCAL	3-year moving average of the cost of goods sold per dollar of sales.	+ -
Capital intensity	FRMCAPINT	3-year moving average of FRMCAPIN	+
Intangibles	FRMINTAINT	3-year moving average of INTAINT	+
Productivity	FRMLABPRD	3-year moving average of value added per employee	+
Time-Fixed Effects	YEARDUM	Year dummies, reference year:1988	

In order to utilise a standard approach to the way that companies' compliance with GAAP, the minimum employee number is selected for this research is 9 since companies below this number are accepted as self-employed regulated with different accounting standards. No other threshold or restriction has been applied on sample selection in order to be able to include SMEs (small and medium size enterprises), and non-multinational FDI firms. This is important since the vast literature on FDI deals with the biggest MNEs while there is a great number of SMEs who are doing overseas production, too. In addition, taking only the large companies could have avoided the domestic firms since most of the FDI firms are suggested as to be larger than the domestic ones in the literature. Thus, including all companies without threshold might cause heterogeneity among the firms. Moreover, measures and necessary firm assets might differ among regions, even in the same region industries due to minimum efficient scale differences. Since variables should be normalized in a way that so that the information across regions-industries could be aggregated, explanatory variables is weighted by their relative size measures (i.e. the components of the items in their respective financial statements). In order to avoid bias from these issues, all the variables are taken as their difference from the home-region-industry averages as described below.

4.8 Operationalization of the Variables

As a first step to proper inference to test the Hypotheses H1-H7, a panel data with three-dimension (industry, home region, and time) has been prepared at the micro level with the purpose of finding out why some firms do invest abroad while some others stay domestic in order to test H1.

An issue often arises with firm-specific comparative studies is that how to count for the macro environmental (such as, home country socio-economy) and industrial factors in the research. Working with mixed industry-country samples make it even more difficult. For example, small size in one industry might mean medium in another, not every sector needs huge R&D expenses, or advertisement expenses, business cycle effects might differ in every country, etc.

As a second step, in order to minimize bias that might result from the firm size effects, each variable is weighted by a size proxy (number of employees, total assets or sales), similar to Lee & Rugman (2012) among others.

Thirdly, firms in different industries (and locations) have different characteristics mainly influenced by their business environment. Thus, the variables in the model are computed as their distance home-region and industry at the two-digit SIC codes. In order to achieve this, a hypothetical firm (reference firm) is formed for each two-digit SIC code in each Triad region. The hypothetical firm refers to the mean value of each variable in home-industry. The strength and weaknesses of the firms are proxied as their difference between the reference firm's and each firm's variables, similar to similar to Head & Ries (2003). In this way, home region-industry fixed effects would capture the characteristics of each home region-industry that might vary over time. Hence, the operationalization of variables takes the advantage of accounting for time, location (home region), and industry dynamics into the consideration while comparing the domestic and the foreign investment firms. The firm itself is excluded from the home-industry average in order to prevent spurious correlations. The population for the hypothetical firm is the all firms that is available in Worldscope database.

Constructing such indices also helps the researcher to avoid the differences in measuring firm assets due to the different macroeconomic conditions of the firms, as well as minimising the bias from data errors (if there is any). Industry adjustment by demeaning the variables (subtracting the industry mean or median value from the firms') is a common technique in business literature (among the others, see for example, Gaspar & Massa, 2006 and Peress, 2010 for Lerner Index; Haleblian, et al., 2012 for R&D and marketing intensity, and Beck, et al., 2003 for firm size).

In order to test Hypotheses H2-H7 a different approach is applied to selection of regressors: the home market competitors' notion is relaxed, i.e. variables are computed at the firm-level, not as a distance from their home-industry averages. The underlying logic for this is once firms take FDI decisions, they compete with other FDI firms in each host country (which is unknown in this dataset) and they allocate assets abroad according to their resources, as conceptual framework claims (p. 108). Thus firm-specific assets are the determinants of the amount of FDI that they will direct abroad.

As a result, variables have been computed as:

$$MARKPWR_{ijht} = FIRMLI_{ijht} - \sum_{i=0}^{n} \omega_{ijht} FIRMLI_{jht} \; ; \qquad (10)$$

h=1,2,3; t=1, 2,…27

$$TECHINT_{ijrt} = RNDINT_{ijht} - \sum_{i=0}^{N} \omega_{ijht} R\&D\ intensity_{jht} \; ; \qquad (11)$$

h=1,2,3 ; t=1, 2, …27

$$INTANGS_{ijht} = INTAINT_{ijht} - \sum_{i=0}^{N} \omega_{ijht} INTAINT_{jht};$$

h=1,2,3 ; t=1, 2, ...27

$$CAPINT_{ijrt} = FRMCAPIN_{ijht} - \sum_{i=0}^{n} \omega_{ijrt} FRMCAPIN_{jht} \quad (12)$$

h=1,2,3 ; t=1, 2, ...27;

$$SIZE_{ijrt} = EMPLOYEE_{ijht} - \sum_{i=0}^{n} \omega_{ijrt} EMPLOYEE_{jht}; \quad (13)$$

h=1,2,3 ; t=1, 2, ...27

Where *i* stands for firm, *j* industry (at 2-digit SIC code), script *h* represents home region (1=EUR, 2=JPN, 3=NM), ω indicates weight, *t* stands for time (1985-2011). As a result, MARKPWR is the difference between the firm level Lerner in industry *j*, in home region *h*, TECHINT is the difference between firm R&D intensity and the industry-region, INTANGS is the difference between firm and industry intangible asset intensity at the home region levels, SCAL is the difference between firm and industry fixed asset intensity at the home region levels, CAPINT is the difference between firm and industry capital intensity (measured as total asset committed per dollar of sales) at the home region levels.

On the other hand, among the control variables, firm age, international involvement, and financial factors are indigenous to the firms, i.e. free from the home-industry influences to a great extent. Thus they are not computed as the difference between the firms' counterparts in the home-sector, only weighted with total assets.

After all these procedure, in order to avoid simultaneity effects, the influences of the temporary shocks and business cycles, the effects of the volatility of the investment patterns, and to reduce the effects of data errors (such as, typographical errors in data recording) all of the independent variables for H1-H7 are taken as their 3-year moving averages, for *x* variable and year *t* computed as:

$$X_t = \frac{x_{t-2} + x_{t-1} + x_t}{3}$$

In addition, in order to avoid reverse causality and simultaneity, independent variables are lagged for one year.

4.9 Estimation Procedure

A two-stage estimation procedure would be applied for this thesis. At the first stage, the study aims to find out factors those drive indigenous firms to invest abroad. Mainly driven by the Industrial Organisation Theory, Internalisation Approach, Product Life Cycle Theory, and Competence Based Theories of FDI together with the ownership advantages of OLI Paradigm and in line with the conceptual framework, this first stage aims to investigate FDI firms' strengths over their competitors in their home markets.

Obviously, first the factors affecting to decide to allocate at least some of the firm resources is a priori condition for FDI. Thus, this study uses a binary choice technique, Probit, to investigate the reasoning of the FDI decisions. In this technique, FDI is a binary dummy variable which takes 1 if the firm *i* has foreign assets in year *t* and takes 0, otherwise.

Stata SE version 13 is utilised for all the analyses of this thesis.

4.10 Probit Model

Firstly, in order to determine the relationship between the firm status and firm-specific assets, a probit (probability unit) function is utilised. Firstly, in order to determine the relationship between the firm status and firm-specific assets, a probit (probability unit) function is utilised. The dependent variable, FDIDUMMY for firm *i* is coded as 0 for year *t*, if the firm has no foreign assets in that year and 1 if the firm has foreign assets (and liabilities)[72].

In reality, the decision and its process are not unobservable for the research; only the outcome is known, i.e. in the case of this study, if the firm decides or how they decide to undertake FDI are known. An alternative method to probit could have been OLS model, however, when dependent variables are discrete, OLS becomes an inefficient and inappropriate estimation technique (Aldrich & Nelson, 1984).

[72] Only one firm had negative FDI indicating its foreign liabilities exceed foreign assets; however, while outliers were removed, it is dropped by the software automatically. Thus, only firms with 0 or positive foreign assets remained in the dataset.

Since the dependent variable in this first phase is discrete, a probability function equation is prepared to test the H1 i.e.:.

$$y = \begin{cases} 1, & with\ probability\ p \\ 0, & with\ probability\ 1-p \end{cases}$$

Following Long & Freese (2001) and Baltagi (2005), the probit equation is estimated as follows:

Only the values 0 and 1 for variable y are observable while there is a latent unobserved continues variable y^* ranging from -∞ to ∞ 1 determines the value of y. y^* could be specified as:

$$y_i^* = x_i\beta + \varepsilon_i \qquad (14)$$

and that

y_i=1, if y^*>0

y_i=0, otherwise

where *i* indicates the observation, *x* refers vectors of random variables, and *ε* is a error. As a result, the model to test H1 becomes:

$$y_{FDIDUMMYit} \qquad (15)$$
$$= \beta_0 + \beta_1 MARKPWR_{it} + \beta_2 TECHINT_{it} + \beta_3 ECONSCAL_{it}$$
$$+ \beta_4 CAPINT_{it} + \beta_5 INTANGS_{it} + \beta_6 PRODVTY_{it}$$
$$+ \sum \beta_c CONTROL\ VARIABLES_{it} + \varepsilon_{it}$$

4.11 Estimation Model

In this stage, explanatory variables are free from the home-industry environment since this stage involves with the amount of the FSAs to be allocated after the FDI decision.

The underlying logic for this procedure is that, once firms undertake foreign operations, their competitors are not only the firms in their home markets, but also the entire local and other foreign firms in the host countries (which is not known in dataset) as revealed on page 146. Hence, the equation to be estimated is:

$$lnFDI_{it} = \beta_0 + \beta_1 FRMMARKPWR_{it} + \beta_2 FRMTECHINT_{it} + \beta_3 FRMECONSCAL_{it} + \beta_4 FRMCAPINT_{it} + \beta_5 FRMINTINT_{it} + \beta_6 FRMLABPRD_{it} + CONTROL\ VARIABLES + \varepsilon_{it} \quad (16)$$

Where *i* stands for firm, *j* industry (at 2-digit SIC code), script *h* represents home region (1=EUR, 2=JPN, 3=NM), and *t* stands for time (1985-2011

lnFDI	is firm foreign asset stock in logarithmic form
β	is constant
FRMMARKPWR	is firm market power proxied by FIRMLI
FRMTECHINT	is firm technological intensity proxied by RNDEMP
FRMECONSCAL	is firm economies of scale proxied by cost of goods sold to sales
FRMCAPINT	is firm capital intensity proxied by real total assets to real sales
FRMINTANINT	is firm intangible intensity proxied by intangible assets to total assets

FRMLABPRD is firm productivity proxied by labour productivity

Econometric models should be estimated to handle the possible problems associated with them. Under the normality assumptions, the above model could be estimated with fixed or random effects ordinary least squares estimation (OLS). The standard error component model (ε_{it}) in equation (16) assumes that the regression disturbances are homoscedastic with the same variance across time and firms. However, since the data consists of firms those are different in terms size, industry and home region, the error term obtained from the second step may be heteroscedastic.

HAC procedures are more efficient than OLS but it is asymptotic and OLS could perform better in really small samples (Gujarati, 2005, p. 485). Hence panel data analysis method that allows corrected heteroscedasticity and autocorrelation correction (HAC procedure) would suit to this research as the sample is relatively large.

Among the various HAC correction models, FGLS (feasible generalized least square) (Parks, 1967), Panel-corrected standard errors (PCSE) (Beck & Katz, 1995), Newey and West's (1987) Serial Correlation Consistent Standard Errors (NEWEY) and Driscoll and Kraay (1998) robust standard errors are perhaps the most common ones in the empirical literature.

FGLS is a regression technique similar to generalized least squares (GLS) except that FGLS utilises an estimated variance-covariance matrix as the true matrix is unknown. It is frequently utilised in order to remedy possible heteroscedasticity

and serial correlation problems. It produces residuals so that they could be utilised to estimate the unit-specific serial corrections of the errors. These residuals then are used to transform the model into the serially independent errors. As a result, errors with autocorrelation allow OLS.

PCSE also produces similar results to FGLS, except that the latter is believed to produce too optimistic standard errors with small samples. Introducing PCSE model based on Monte Carlo simulations' maximum-likelihood estimations, in fact, Beck & Katz (1995) suggest that one should avoid FGLS and use PCSE instead since the latter performs better. However, a study by Chen et al. (2004) find out that FGLS performs as good as PCSE and the authors recommend researchers to use PCSE for hypothesis testing and FGLS if the primary interest is accurate coefficient estimates. In a more recent research, the authors find that the FGLS is usually more efficient than PCSE except when the number of time periods is close to the number of cross sections. When the population is larger than time period, FGLS produces inefficient results. (Chen, et al., 2009).

OLS estimates remain unbiased, and asymptotically consistent under the autocorrelation assumptions. However, Eicker, Huber and White (heteroscedasticity-robust standard errors) would be used, since heteroscedasticity-robust standard errors are valid in the case of any kind of heteroscedasticity, even in the case of homoscedasticity (Wooldridge, 2002). As a remedy to the possible problems with autocorrelation, which is very common among the panel data studies, standard errors clustered on the firm id would be applied.

It should be noted that, time series component of the sample could create issues of non-stationarity in some of the variables. Although this issue is greatly reduced by the considerable size of the cross section observations for each period of time, further research should pay attention to the stationarity issue.

Having identified the research framework, hypotheses, models and variables and prepared sample data, next section provides the empirical findings of the thesis.

4.12 Summary

This chapter presented the research design, i.e. conceptual model, data and sample selection and the econometric model that would be utilised in the empirical section.

In sum, the variables to be included in the model are chosen from the relevant theoretical and empirical studies and data accuracy is of great importance in this study.

The variables to be included in the empirical work are market power, technological intensity, economies of scale, capital intensity, intangible assets, and total factor productivity while firm size, age, international experience and financial positions would be control variables.

In what follows is the application of the model by using the framework and variables stated in this chapter.

CHAPTER 5. EMPIRICAL EVIDENCE

5.0 Introduction

So far, firm specific assets as motives for FDI has been discussed in order to find out a conceptual framework and hypothesis development, construction of the data, model and variables in order to test these hypotheses has been presented in the prevailing chapters. This chapter aims to provide the implication of the models developed in previous sections, and present the results.

Analyses based on pooled data have advantages and disadvantages. Although pooled data benefits from working with a large sample and could capture variance in some of the regressors across regions, it might cause the problem of heterogeneity to a greater extent. In addition, in order to count for common external environment shared by the firms in the sample data set, separate analyses for both the probit and OLS estimations are run for full sample, EUR, JPN and NM firms.

Routine descriptive statistics and estimation results are presented in the next section.

5.1 Descriptive Statistics for Selection Equation

Table 5.1on the next page exhibits descriptive statistics of the variables.

In dataset, only AGE variable is known for the all companies (mainly due to the individual efforts and ease obtaining the information).

Table 5.1 Descriptive Statistics for the Selection Equation

Full Sample	***DOMESTIC FIRMS***					***FDI FIRMS***				
Variable	*Obs*	*Mean*	*S.D.*	*Min*	*Max*	*Obs*	*Mean*	*S.D.*	*Min*	*Max*
MARKPWR	16055	0.0753	0.2686	-6.3124	0.7192	21575	0.1374	0.1776	-5.2608	0.8637
TECHINT	15791	-0.0264	0.2558	-5.2832	3.7034	21509	-0.0117	0.1700	-7.2852	4.6836
ECONSCAL	15759	-0.2059	0.2216	-1.4097	0.1242	21107	-0.2375	0.2475	-1.4073	0.9168
CAPINT	16093	0.0634	0.6756	-1.5824	11.6351	21578	0.0014	0.5527	-2.0566	8.7928
INTAINT	15626	0.0416	0.0910	-0.0960	0.8893	21438	0.1077	0.1301	-0.1032	0.8788
PRODVTY	16076	0.5583	0.6398	-4.3230	3.5877	21552	0.7190	0.5853	-2.2166	3.9289
SIZE	16105	-4.8701	5.98	-58.16	51.8761	21579	5.6721	33.7586	-45.3167	461.85
AGE	25388	73.3760	35.4770	1.0000	390.00	34306	91.25	43.65	1.00	390.00
INTEXP	16105	0.1748	0.2221	0.0000	0.9925	21579	0.1099	0.0865	0.0000	0.9833
LEVERAGE	16105	0.2068	0.2080	0.0000	3.1271	21579	0.1864	0.1794	0.0000	2.6048
FINLIQU	22850	0.1654	0.1516	0.0000	0.9714	30727	0.1433	0.1405	0.0000	0.9404

Triad Region: EUR	***DOMESTIC FIRMS***					***FDI FIRMS***				
Variable	*Obs*	*Mean*	*S.D.*	*Min*	*Max*	*Obs*	*Mean*	*S.D.*	*Min*	*Max*
MARKPWR	3525	0.1033	0.2220	-4.0262	0.7192	5510	0.1755	0.1394	-3.3334	0.8637
TECHINT	3527	-0.0822	0.4161	-5.2832	0.9516	5504	-0.0422	0.1949	-7.2852	1.6999
ECONSCAL	3436	-0.2337	0.2182	-0.9029	0.0057	5263	-0.2250	0.2286	-0.9027	0.8295
CAPINT	3540	-0.0411	0.5643	-1.5824	5.3305	5513	-0.0629	0.5258	-2.0566	7.7076
INTAINT	3540	0.0681	0.1111	-0.0960	0.7456	5513	0.1186	0.1316	-0.1032	0.8537
PRODVTY	3539	0.7617	0.7028	-3.1979	3.4095	5503	0.7565	0.5183	-2.0357	3.4846
SIZE	3544	-8.5780	6.99	-58.16	27.8779	5513	7.7156	42.3854	-45.3167	450.39
AGE	5878	83.7965	50.0896	8.0000	390.00	9320	106.40	53.26	13.00	390.00
INTEXP	3544	0.3014	0.2938	0.0000	0.9892	5513	0.1131	0.0963	0.0000	0.9551
LEVERAGE	3544	0.2157	0.1828	0.0000	1.7117	5513	0.1950	0.1354	0.0000	1.5895
FINLIQU	5245	0.1197	0.1338	0.0000	0.8978	8269	0.1165	0.1094	0.0000	0.8779

Triad Region: JPN	***DOMESTIC FIRMS***					***FDI FIRMS***				
Variable	*Obs*	*Mean*	*S.D.*	*Min*	*Max*	*Obs*	*Mean*	*S.D.*	*Min*	*Max*
MARKPWR	9773	0.1075	0.0880	-1.7255	0.6428	5274	0.1231	0.0735	-0.0926	0.5363
TECHINT	9754	-0.0310	0.1423	-3.8668	0.4353	5264	-0.0252	0.1476	-4.8532	0.2040
ECONSCAL	9631	-0.1781	0.2117	-1.4097	0.1242	5253	-0.2508	0.2857	-1.4073	0.9168
CAPINT	9773	0.0786	0.4758	-0.9875	5.4300	5274	0.0647	0.4078	-1.0061	3.5895
INTAINT	9772	0.0133	0.0274	-0.0757	0.5095	5274	0.0178	0.0283	-0.0296	0.3699
PRODVTY	9770	0.4069	0.5193	-2.8729	3.2886	5270	0.4627	0.5080	-1.4780	3.0269
SIZE	9781	-2.8705	4.62	-26.67	51.8761	5274	6.6762	32.2833	-17.0145	349.14
AGE	13889	79.8421	22.0348	5.0000	191.00	7647	87.04	21.03	26.00	165.00
INTEXP	9781	0.1359	0.1771	0.0000	0.9603	5274	0.0847	0.0588	0.0000	0.5743
LEVERAGE	9781	0.2046	0.1719	0.0000	1.6363	5274	0.1714	0.1325	0.0000	1.2614
FINLIQU	12824	0.1692	0.1163	0.0000	0.8604	7016	0.1630	0.1084	0.0002	0.8479

Triad Region: NM	**DOMESTIC FIRMS**					**FDI FIRMS**				
Variable	*Obs*	*Mean*	*S.D.*	*Min*	*Max*	*Obs*	*Mean*	*S.D.*	*Min*	*Max*
MARKPWR	2757	-0.0747	0.5500	-6.3124	0.6407	10791	0.1250	0.2224	-5.2608	0.6179
TECHINT	2510	0.0702	0.2760	-0.6129	3.7034	10741	0.0105	0.1633	-3.1617	4.6836
ECONSCAL	2692	-0.2701	0.2419	-1.3255	0.0080	10591	-0.2372	0.2354	-1.3232	0.8766
CAPINT	2780	0.1428	1.1918	-1.2415	11.6351	10791	0.0033	0.6199	-1.2644	8.7928
INTAINT	2314	0.1205	0.1524	-0.0237	0.8893	10651	0.1466	0.1383	-0.0770	0.8788
PRODVTY	2767	0.8330	0.7648	-4.3230	3.5877	10779	0.8251	0.6145	-2.2166	3.9289
SIZE	2780	-7.1783	5.72	-43.18	18.2363	10792	4.1375	29.1024	-41.8752	461.85
AGE	5621	46.5021	30.3763	1.0000	215.00	17339	84.97	43.36	1.00	234.00
INTEXP	2780	0.1504	0.1981	0.0000	0.9925	10792	0.1206	0.0900	0.0000	0.9833
LEVERAGE	2780	0.2034	0.3225	0.0000	3.1271	10792	0.1893	0.2151	0.0000	2.6048
FINLIQU	4781	0.2053	0.2237	0.0000	0.9714	15442	0.1487	0.1641	0.0000	0.9404

All regressors are measured in their relative size to the home-industry means.

SIZE and ECONSCALE are scaled by dividing by 1000 for simplicity

An initial look at the Tables 5.1and 5.2 reveals some interesting points: On average, firms with FDI operations are better than those with no FDI operations in terms of market power, intangible assets intensity, size, age, international experience and financial leverage, as expected.

For the full sample, all explanatory variables indicate a dominance of FDI firms over their counterparts except for ECONSCALE, i.e. economies of scale and productivity.

Table 5.1and 5.2 shows that in line with the existing empirical literature, European FDI firms are superior to their domestic counterparts virtually in all aspects, except for productivity. Their marketing power, technological intensity, economies of scale, intangible intensity, size, age, international experience, and financial liquidity and leverage ratios are all better than the domestic ones. European FDI firms' average CAPINT is smaller than the domestic ones. As for productivity measure for the EUR sub-sample, interestingly, t-test shows that domestic firms are doing better than the FDI firms, though with a negligible mean difference (-0.00004040).

JPN sub-set t-test shows that Japanese FDI firms perform better in every explanatory variable, except economies of scale. In addition, mean difference test results show that CAPINT is insignificant. Thus, in sum, JPN FDI firms have higher values than their domestic counterparts in terms of MARKPWR, TECHINT, ECONSCALE, CAPINT, INTAINT, PRODVTY, SIZE, AGE, INTEXP, LEVERAGE, and FINLIQU. However, since higher levels of

LEVERAGE means higher rates of debt burden, JPN firms do better than their domestic counterparts.

Table 5.2 t-tests for Differences between Domestic and FDI Operations

Variable	*Full Sample*	*EUR*	*JPN*	*NM*
MARKPWR	-0.0559*	-0.0729*	-0.0170*	-0.1872*
	(-25.16)	(-16.98)	(-12.55)	(-16.94)
TECHINT	-0.0195*	-0.0415*	-0.0065‡	0.0443*
	(-8.28)	(-5.32)	(-2.58)	(8.45)
ECONSCALE	0.0320*	-0.0087§	0.0726*	-0.0498*
	(12.71)	(-1.75)	(16.11)	(-8.07)
CAPINT	0.0600*	0.0357‡	0.0120	0.1283*
	(9.25)	(2.96)	(1.60)	(4.74)
INTAINT	-0.0662*	-0.0502*	-0.0045*	-0.0278*
	(-57.86)	(-18.80)	(-9.24)	(-7.96)
PRODVTY	-0.1646*	-0.0000	-0.0543*	0.0489‡
	(-25.23)	(-0.00)	(-6.17)	(2.79)
SIZE	-10.4099*	-16.3078*	-9.5930*	-11.2009*
	(-43.49)	(-26.78)	(-21.31)	(-36.06)
AGE	-15.6537*	-20.6539*	-7.1449*	-37.4677*
	(-39.04)	(-17.98)	(-20.18)	(-46.23)
INTEXP	0.0677*	0.1868*	0.0515*	0.0426*
	(35.42)	(35.62)	(26.03)	(9.23)
LEVERAGE	0.0220*	0.0224*	0.0314*	0.0335*
	(10.57)	(6.05)	(12.42)	(4.40)
FINLIQU	0.0178*	0.0030	0.0058‡	0.0474*
	(12.49)	(1.15)	(3.11)	(10.14)
No. of obs	35771	8550	14796	12425

difference = mean(FDIDUM0) - mean(FDIDUM1)

t statistics in parentheses

§ $p<0.10$, ‡ $p<0.05$, * $p<0.001$

The North American sub-set presents an interesting case. According to t-tests results, North American domestic firms perform better in terms of technological intensity, productivity and LEVERAGE while FDI firms are better in MARKPWR, ECONSCALE, CAPINT, INTAINT, SIZE, AGE, INTEXP, , and FINLIQU.

In order to evaluate the above points further, the usual routine of exploratory and empirical data analyses continues with the correlation matrix on the following pages.

Table 5.3 Correlation Matrices for the Selection Equation

Full sample	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
MARKPWR(1)		-0.279*	0.062*	-0.258*	0.000	0.079*	0.063*	0.148*	0.047*	-0.070*	-0.121*
TECHINT(2)			-0.083*	0.191*	0.069*	0.050*	-0.001	-0.087*	-0.026*	-0.031*	0.152*
ECONSCALE(3)				0.042*	-0.079*	-0.081*	0.281*	0.048*	0.009+	0.015‡	0.004
CAPINT(4)					0.096*	-0.211*	0.008	-0.084*	0.075*	-0.085*	0.263*
INTAINT(5)						0.257*	0.079*	0.042*	-0.030*	0.054*	-0.134*
PRODVTY(6)							-0.006	-0.109*	0.064*	-0.072*	0.190*
SIZE(7)								0.187*	-0.054*	-0.033*	-0.057*
AGE(8)									0.005	0.027*	-0.224*
EXPINT(9)										-0.041*	0.082*
LEVERAGE(10)											-0.255*
FINLIQU(11)											

Triad region: ***EUR*** (1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
MARKPWR(1)	-0.124*	0.063*	-0.188*	-0.039*	0.131*	0.046*	0.103*	0.042*	-0.082*	-0.119*
TECHINT(2)		-0.125*	0.093*	0.072*	-0.022‡	0.007	-0.003	-0.079*	0.027‡	0.067*
ECONSCALE(3)			-0.016	-0.153*	-0.230*	0.323*	0.095*	0.045*	-0.013	-0.031‡
CAPINT(4)				0.209*	-0.189*	0.045*	0.011	0.060*	0.014	0.134*
INTAINT(5)					0.212*	0.076*	-0.035*	-0.127*	0.01	-0.055*
PRODVTY(6)						-0.006	-0.151*	0.020+	-0.054*	0.183*
SIZE(7)							0.173*	-0.087*	-0.045*	0.004
AGE(8)								0.023‡	0.008	-0.114*
EXPINT(9)									-0.026‡	0.085*
LEVERAGE(10)										-0.217*
FINLIQU(11)										

Triad region: ***JPN***	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
MARKPWR(1)		0.039*	0.067*	0.182*	-0.009	-0.052*	0.047*	-0.048*	0.055*	-0.121*	0.284*
TECHINT(2)			-0.091*	0.015+	0.038*	-0.022‡	0.01	-0.026‡	0.016+	-0.061*	-0.009
ECONSCALE(3)				0.009	0.024‡	-0.058*	0.251*	0.041*	-0.024‡	0.127*	-0.037*
CAPINT(4)					0.056*	-0.355*	-0.035*	-0.056*	0.055*	-0.123*	0.287*
INTAINT(5)						0.042*	0.135*	-0.001	-0.065*	-0.028*	-0.006
PRODVTY(6)							-0.002	-0.039*	-0.002	-0.091*	0.107*
SIZE(7)								0.155*	-0.039*	-0.001	-0.068*
AGE(8)									0.01	0.082*	-0.213*
EXPINT(9)										-0.029*	0.016‡
LEVERAGE(10)											-0.313*
FINLIQU(11)											

Triad region: ***NM***	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
MARKPWR(1)		-0.542*	0.071*	-0.377*	0.027‡	0.115*	0.089*	0.192*	0.035*	-0.064*	-0.210*
TECHINT(2)			-0.026‡	0.412*	0.015+	0.150*	-0.028‡	-0.194*	0.111*	-0.061*	0.344*
ECONSCALE(3)				0.087*	-0.021‡	0.036*	0.304*	0.032*	0.030*	-0.060*	0.044*
CAPINT(4)					0.132*	-0.125*	0.011	-0.133*	0.175*	-0.096*	0.281*
INTAINT(5)						0.135*	0.073*	0.073*	-0.021‡	0.093*	-0.181*
PRODVTY(6)							-0.032*	-0.190*	0.136*	-0.086*	0.332*
SIZE(7)								0.229*	-0.027‡	-0.050*	-0.091*
AGE(8)									-0.147*	0.013	-0.276*
EXPINT(9)										-0.091*	0.250*
LEVERAGE(10)											-0.235*
FINLIQU(11)											

Sidak-corrected pairwise comparisons
§ Significant at 10%, ‡ 5% and 1%, respectively

Table 5.3 presents pair-wise correlation coefficients of the variables separately, for each of the Triad regions and the full sample. Sidak correction in correlation matrices is utilised in order to control for multiple comparison fallacy in Pearson correlation table (Hamilton, 2004, p. 172).

While there is not a common census on the quantity number of the high correlation among the explanatory variables, Dormann, et al., (2013) suggest that when correlations between the regressors are >0.7, collinearity diagnostics are essential. Although there is not a perfect linearity, a low-to- moderate correlation exists between the explanatory variables.

In order to further examine any (multi)collinearity issue, corresponding variance inflation factor (VIF) for each test is reported in Appendix A.6. on pages 240 and 241. As could be seen in from the Tables A6.2 and A6.3, none of the VIF values exceed the common cut-off (a rule of thumb generally accepted as maximum 4 for VIF, 2for mean VIF for all set of the sample is well below, and minimum tolerance level as 0.10).

5.2 Firm Specific Assets – FDI Decisions Estimation

In order to obtain some interpretable and comparable results, marginal effects after standard probit regression are presented in

Table 5.4 Columns I-IV below. Results from standard probit estimation and year fixed effect variables (from year 1988 to 2011) are presented in Appendix A8 in order to save space. All estimators include time-fixed effects (year dummies).

Marginal effects are computed at the mean of each regressor as shown in Equation (17) below, except for time fixed effects where the marginal effect is the effect of change of dummy variable from 0 to 1

$$\frac{\partial P(Y=1)}{\partial X_i} = \frac{\partial \Phi(x_i \beta)}{\partial x_i} = \phi(x_i \beta)\beta_i \tag{17}$$

Table 5.4 Marginal Effects after Probit Estimates of FDI Decision

	Model I -Full Sample-	Model II -EUR-	Model III -JPN-	Model IV -NM-
MARKPWR	0.2927*	0.5883*	1.5156*	0.0810*
	(5.23)	(4.15)	(7.44)	(3.63)
TECHINT	0.2163*	0.1117‡	-0.3080‡	0.0602‡
	(3.60)	(2.10)	(-2.89)	(2.47)
ECONSCA	-0.4772*	-0.5064*	-0.7998*	-0.0962*
	(-11.46)	(-6.29)	(-5.91)	(-4.19)
CAPINT	-0.0141	-0.0373	0.0144	0.0049
	(-0.95)	(-1.42)	(0.37)	(0.83)
INTAINT	1.1835*	0.5135*	0.2804	0.0679§
	(13.77)	(4.18)	(0.64)	(1.92)
PRODVTY	0.0812*	-0.0533‡	0.1023‡	0.0025
	(5.48)	(-2.04)	(3.02)	(0.34)
SIZE	0.0192*	0.0218*	0.0383*	0.0079*
	(13.01)	(12.91)	(4.06)	(9.75)
AGE	0.0023*	0.0014*	0.0030*	0.0014*
	(8.88)	(4.07)	(3.99)	(6.72)

	Model I -Full Sample-	Model II -EUR-	Model III -JPN-	Model IV -NM-
INTEXP	-0.6818*	-0.9855*	-0.9624*	-0.1061‡
	(-13.40)	(-9.71)	(-8.50)	(-3.01)
LEVERAGE	-0.1637*	-0.0913	-0.1400	-0.0173
	(-4.46)	(-1.12)	(-1.49)	(-1.32)
FINLIQU	0.0513	0.3221‡	-0.1036	0.0382
	(0.92)	(2.97)	(-0.79)	(1.43)
No of obs.	40653	10009	16352	14292
McFadden's R^2	0.2208	0.3297	0.2466	0.2549
obs. P	0.5806	0.6066	0.3538	0.8220
pred. P (at x-bar)	0.6772	0.7627	0.3924	0.9460

z-stat. in parentheses;

§, ‡, and * indicates significance at 10%, 5% and 1%, respectively

As

Table 5.4 shows, MARKPWR, TECHINT, ECONSCALE, SIZE, AGE, and INTEXP are found to be significant at least at 10% for all sample sets.

For the *full sample*, among the six main variables included in the equation, five carries significant coefficients with expected signs, lending strong support to H1. These variables are MARKPWR, TECHINT, ECONSCALE, INTAINT, and PRODVTY. The characteristics of these variables are that they are firm-specific, competition-oriented and internalisation-related assets. These findings are in line with the literature since Kindleberger's assumptions on Hymer's view on Bain-

type advantages and IO approach (Section 3.2), the Eclectic paradigm (Section 3.6) and competence-based theories (Section 3.7)

The figures on Table 5.4 indicate, other things being constant, that if the firm's MARKPWR, i.e. market power on its rivals at home-industry rises by a single percentage, the probability of FDI involvement of the firm would increase by approximately 29 percentage, on average. This result also support the theoretical approach first proposed by Kindleberger (1969, p. 14) as "special marketings" (as revealed on page 68) and the empirical findings of the previous studies (pages 98 and 100**Error! Bookmark not defined.**). As for TECHINT, this change is around 22 to 24 percentage points, ceteris paribus, mirroring the IO, internalisation, and RBV literature.

As for technological intensity, TECHINT is statistically significant at the 1% level and probit estimation results indicate that, 1 percent change in economies of scale would generate a 21.63 percentage increase in the firms' FDI involvement probability. This indicates that firms with greater technological intensity would be keener to move abroad.

Another significant variable in the model, ECONSCAL is statistically significant at the 1% level in all models; and probit estimation results indicate that, an infinitesimal change of economies of scale changes the probability that FDIDUMMY variable takes the value one by -47.72 percentage. This indicates that firms with greater ECONSCAL would be reluctant to move abroad (probably to protect their place in the market as discussed in Section 4.2.3, pp.114-115).

The effect of intangible assets on firms' FDI probability is intensive. It has a high positive and significant coefficient among the right side variables. Other things being equal, an additional unit of intangibles would increase a firm's FDI involvement probability approximately 118 percentage points. INTAINT's coefficient typically indicates over shifting in asset exploiting considerations. In addition, market dynamics, such as, monopolistic or oligopolistic competition might also influence the significance of intangible assets. This high coefficient reflects the theoretical and empirical literature in the frameworks of industrial organisation, internalisation, and ownership advantages of OLI paradigm, resource-based view, and knowledge-based view of competence-based theories. As a remark for intangibles it should be noted here that firms do not necessarily invest instantaneously as they increase their intangibles; it takes time to enter or exit a market, and to change investment forms.

As for productivity measure, on average, if PRODVTY increases by 1 percentage, probability of firm FDI decision would increase by around 8 percentage points, other things being constant. This might mirror HMY (Helpman, et al., 2004) hierarchy of the productivity and market involvement, i.e. the most productive firms deal with FDI, moderate ones export and the least productive ones stay domestic. However, as revealed several times, the dataset is not feasible to test the hierarchy.

As for the control variables, SIZE, AGE, INTEXP, and LEVERAGE were all founded as significant though the effects of SIZE and AGE are relatively small. On average a one percent change in firm size increases the probability of the firms' FDI involvement by around 2 percentage points, other things being

constant while firm experience, i.e. AGE influences FDI decisions on the firms by negligibly small percentage points, other things being constant. These results reflect the practical existence that not only the large and old firms invest abroad, but also do so the small and young firms.

Among the other control variables international experience shows that export intensity is negatively associated with the FDI probability. There could be several reasons for these results. Firms might prefer exporting over FDI when possible, probably due to the "sunk costs" (p. 54)sunk cost and "liability of foreignness" (p. 50). As a remark, these results might also reflect the exporting and foreign direct investment as "alternative ways for the firm to collect on underutilized resources which may be a product of large firm size and technical expertise" Wolf (1977, p. 189), as revealed on page 81.

For *European* firms, as Column II of able 5.4 reveals, among the main variables, five are of particular importance for the European firms' FDI decisions. These are market power, intangible assets, technological intensity, economies of scale, and productivity. The characteristics of these variables are that they are firm-specific, competition-oriented and internalisation-related assets. These findings are in line with the literature since Kindleberger's assumptions on Hymer's view on Bain-type advantages and IO approach (Section 3.2), the Eclectic paradigm (3.6) and competence-based theories (Section 3.7)

Among the main variables, PRODVTY, i.e. firm productivity exhibits an interesting case: it is found to be affecting firms' FDI decisions negatively, albeit with the theoretical and empirical literature. However, the literature on TFP

suggests two issues: first, the hierarchy between the domestic firms-exporters-and FDI firms; second, the Helpman, Melitz, and Yeaple's (Helpman, et al., 2004) assertion that only firms exceeding a critical level of productivity choose FDI (p. 95). As for the hierarchy, it is not efficient to test in this thesis since only few domestic firms stay as purely domestic and only few FDI firms do not export. The threshold effect could also indicate a non-linear relationship for European firms' FDI decisions and productivity levels. What is more, productivity might have been captured by other variables in the model, such as, firm size (SIZE) and economies of scale (ECONSCAL). SIZE and ECONSCAL are also significant factors affecting European firms' FDI involvement probability. For the former, one percent in size changes the probability of EUR firms' FDI decision by two percentage points, positively while economies of scale reduces by around 51 percentage points, other things being constant.

The figures on Table 5.4 indicate, other things being constant, that if the firm's market power on its rivals at home-industry rises by a single percentage, the probability of FDI involvement of the firm would increase by approximately 58.83 percentage points, on average, ceteris paribus. This is in line with the theoretical and conceptual frameworks, empirical findings of the prevailing studies and practical existence of "market-oriented" European firms.

Probit estimates also indicate that intangible assets are positively associated with firms' FDI probability. Other things being equal, an additional unit of intangibles would increase a firm's FDI involvement probability approximately 51 percentage points. INTAINT's coefficient typically indicates over shifting in asset exploiting considerations.

As for economies of scale, Table 5.4 shows that one percent of intangible asset intensity increases the probability of European firms' FDI decision from 0 to 1 by around 51 percentage points, holding other variables constant.

As for the control variables, firm size, age and financial liquidity all are associated positively with firms FDI decisions while exports are not. The coefficients of SIZE indicates that a one employee increase in the firm than the home-industry average results 2.2 percentage points increase in the probability of European firms' FDI involvement while a 1 year additional experience has negligibly small influence. As for the financial health indicators, on average, one percent of change in FINLIQ makes around 32 percentage point change, other things being constant.

INTEXP, proxied by the export intensity is left to the end since it is also interesting that the INTEXP coefficient is significant and highly negative. On average, one percent of change in export intensity reduces the probability of firm FDI form 0 to 1 by 99 percentage points, ceteris paribus.

In sum, the estimation model provides somehow good prediction for European firms' FDI involvement and provides support for H1. Among the modelled seven variables, six were found significant and carrying wright signs in both models with and without dummy variables.

To sum up, findings from Models (1-2) for the European sub-sample support Hypotheses 1, strongly. Among the tested variables; market power, capital intensity, technological intensity, economies of scale and, intangible assets, carry expected signs and significant coefficients on firms' FDI decisions.

In the *Japanese* sample set, as Column III of Table 5.4 shows, among the baseline variables, MARKPWR, TECHINT, ECONSCALE and PRODVTY are significant factors affecting Japanese firms' FDI involvement. These findings also support H1 partially and reflect the theoretical literature on RBV.

Market power's coefficient for Japanese firms' model estimation is the highest in all the models and variables. On average a 1 unit increase in the Japanese firms' excess returns than the home-industry average increases the probability of undertaking FDI operations by 152 percentage points, holding other regressors constant.

The sign and coefficient of TECHINT indicates that a 1 percentage change in technological intensity would increase the probability of Japanese firms' FDI involvement by around 32 percentage points, other things being constant, in line with the expectations.

ECONSCALE influences the Japanese firms' FDI decisions negatively. A one unit increase in economies of scale at home market, reduces the probability of Japanese firms' FDI decisions by around 80 percentage points. Having a negative direction, JPN firms show similar results to their EUR counterparts.

Contrary to European sub-set, PRODVTY carries significant positive coefficient for the Japanese sub-sample. On average, productivity increases Japanese firms' probability of investing abroad by around 10 percentage points, ceteris paribus. This mirrors HMY (Helpman, et al., 2004) hierarchy of the productivity and market involvement, i.e. the most productive firms deal with FDI, (moderate ones export, and) the least productive ones stay domestic.

As for the control variables, INTEXP, SIZE, and AGE are found to be important with the negligibly small coefficient of AGE.

For the *North American* firms, as Column IV of Table 5.6 reveals, four of the explanatory variables carry significance sign in NM sub-sample: MARKPWR TECHINT ECONSCALE and INTAINT; all mirroring IO approach of Hymer-Kindleberger (pp 49-55) and RBV approach (pp 80-84).

On average, if market power increases by 1 percentage, the probability of firm FDI involvement by around 8 percentage points, other things being constant. As for the technological intensity, on average if technological intensity increases by 1 percentage, the probability of firm FDI involvement decreases by around 6 percentage points, ceteris paribus.

Similar to full sample, EUR and JPN, ECONSCAL's coefficient is negative in NM, too. On average, 1 unit increase in the firm and its home-industry difference of economies of scale at home market decreases the probability of firms' FDI involvement by around 9 percentage points, holding other regressors constant (probably to protect their place in the market as discussed in Section 4.3.3). This is in line with the findings of Markusen (1998) and Navaretti, Venables, and; Barry (2004), i.e. firms with greater economies of scale might continue these advantages at home, since the cost of investing abroad might not be able to offset these advantages.

INTAINT coefficient for NM region's estimation is significant at least at 10% level carrying a positive sign, in line with the expectations of H1. On average a 1 unit increase in NM firms' intangible intensity than the home-industry

competitors results around 7 percentage points increase in their probability of undertaking FDI decisions.

As for the control variables, the effect of SIZE and AGE firms' FDI probability is negligibly small with and without structural dummies and financial variables are little helpful in explaining North American firms' FDI decisions. As Column IV of Table 5.4 reveals, a 1 percent change in export intensity influences the probability for a firm to undertake FDI decision rises by approximately 11 percentage points, negatively, ceteris paribus.

In sum, the findings from NM sub-set partially support Hypotheses 1. Among the tested variables; market power, technological intensity, and intangible intensity variables have positive and significant effect on North American firms' FDI decisions which is in line with the special marketing knowledge as the firms' strong assets suggested by Kindleberger (p. 51). The effects of the economies scale are negative, indicating that firms with greater economies of scale would prefer to enjoy it at home market. Table 5.5 on the next page, presents the summary from the probit estimation results for the full sample and each poll of the Triad.

Table 5.5 Firm Specific Assets in FDI Relationship Estimation Summary

	Full Sample	*EUR*	*JPN*	*NM*
MARKPWR	(+)	(+)	(+)	(+)
TECHINT	(+)	(+)	(-)	(+)
ECONSCAL	(-)	(-)	(-)	(-)
CAPINT	(indecisive)	(indecisive)	(indecisive)	(indecisive)
INTAINT	(+)	(+)	(indecisive)	(+)
PRODVTY	(+)	(-)	(+)	(indecisive)
SIZE	(+)	(+)	(+)	(+)
AGE	(+)	(+)	(+)	(+)
INTEXP	(-)	(-)	(-)	(-)
LEVERAGE	(indecisive)	(indecisive)	(indecisive)	(indecisive)
FINLIQU	(indecisive)	(+)	(indecisive)	(indecisive)

As Table 5.5 shows, MARKPWR, SIZE, and AGE are positively associated with firms' FDI decisions in all of the models contrary ECONSCAL and INTEXP which have negative influences on firms FDI involvement. TECHINT carries significant positive coefficient in all estimations except for JPN which is negative significant. INTAINT's coefficient is insignificant in Japanese sub-sample set while its direction and sign are common in full sample, EUR and NM sets. PRODVTY is indecisive in NM, whereas its coefficient is positive significant in JPN and full sample and negative in EUR.

Among the financial indicators as control variables, only FINLIQU is found to be significant only in the EUR firms.

On the whole, findings from Models (I-IV) lend strong support Hypotheses 1, except for CAPINT which is not found significant in any of the models for the full sample[73].

Having reviewed the estimation results from probit analyses to see the factors influencing firms' FDI decisions, next section provides OLS estimation results for the amount of assets to be allocated abroad. As revealed on pages

The underlying logic for the second stage analyses is that once firms undertake FDI investments, they either stay at market, or divest according to their resources. Surely, host market conditions are also important in this manner. However, this thesis is more interested in the firm specific determinants.

[73] Exercises with different measures (total assets ratio to total employee, fixed assets to total assets and fixed assets to total employee) did not produce different results.

5.3 Firm Specific Determinants of FDI Allocation

Previous section aimed at investigating factors influencing firms' FDI decisions in their home-industry by differencing their resources to domestic competitors. This section aims to discover the role of firm specific assets in deciding the amount of the FDI to be allocated in other countries.

As a priori, in line with the conceptual framework, firms first take FDI decisions according to their competitive position in their home markets and once decided to invest abroad; they allocate company assets in relation to their firm-specific assets. Consequently, FDI firms compete not only in their home markets with the indigenous counterparts, but also in the international markets with the domestic and other FDI firms in each host country. These host countries are not available in sample data set. However, globalisation concept suggests that every host country is equally available to every firm. Thus, home country competitors assumptions are relaxed in this stage and only firm-specific assets are considered to be the determining factors.

In order to prepare the data set for this set of analyses, purely domestic firms removed from the sample data in the previous section. In order to achieve this, firms' FDI amount for the entire observable period was summed and those firms with

In line with the above statement, in this stage firm-specific variables are regressed to the amount of FDI they possess. In order to test hypotheses H2-H7, in this second stage, domestic firms are removed from the sample as their FDI amount is

constantly 0 and only firms whose total FDI amount for the entire sample is ≠0) are kept.

The dependent variable, lnFORAST is calculated as logarithm of firms' foreign assets by adding 1 to firms' foreign assets not to miss enter and exit firms, i.e. firms which did not have FDI in previous years but had later, and firms who exited from the foreign markets .

5.4 Descriptive Statistics for FDI Allocation Estimations

Table 5.6 on the next page exhibits descriptive statistics of the regressors for firms with FDI operations.

All the variables represent their 3-year moving averages. For simplicity, descriptive statistics for lag independent variables are reported here. However, they are examined closely and they do not show significant differences than the no-lag relations.

Table 5.6 Descriptive Statistics for Ownership Equation

	FULL SAMPLE				EUR				JPN				NM			
Variable	*Mean*	*S.D.*	*Min.*	*Max*	*Mean*	*S.D.*	*Min.*	*Max*	*Mean*	*S.D.*	*Min.*	*Max*	*Mean*	*S.D.*	*Min.*	*Max*
*ln*FORAST	4.84	2.21	0.00	12.32	5.24	2.30	0.00	11.83	5.33	1.85	0.00	12.32	4.41	2.21	0.00	11.34
FRMMARKPWR	0.13	0.19	-5.24	0.84	0.17	0.14	-3.29	0.84	0.12	0.07	-0.10	0.56	0.12	0.24	-5.24	0.62
FRMTECHINT	0.06	0.15	0.00	7.09	0.04	0.11	0.00	2.76	0.03	0.03	0.00	0.34	0.07	0.20	0.00	7.09
FRMECONSCAL	0.63	0.16	0.02	2.98	0.62	0.15	0.04	1.73	0.68	0.13	0.12	1.04	0.60	0.17	0.02	2.98
FRMCAPINT	1.10	0.58	0.12	10.09	1.04	0.55	0.12	8.86	1.14	0.43	0.26	4.60	1.10	0.66	0.16	10.09
FRMINTAINT	0.11	0.13	0.00	0.88	0.13	0.14	0.00	0.86	0.02	0.03	0.00	0.37	0.15	0.14	0.00	0.88
FRMLABPRD	0.30	0.34	0.01	6.76	0.25	0.19	0.01	3.54	0.42	0.44	0.02	5.92	0.26	0.33	0.01	6.76
FRMSIZE	13.48	33.32	0.01	479.00	17.29	41.72	0.01	457.00	12.29	32.30	0.04	357.12	12.08	28.44	0.01	479.00
AGE	90.58	43.76	1.00	390.00	106.03	53.23	13.00	390.00	87.00	21.12	26.00	165.00	84.01	43.51	1.00	234.00
FRMLEV	0.19	0.19	0.00	3.02	0.19	0.14	0.00	1.59	0.17	0.13	0.00	1.26	0.19	0.23	0.00	3.02

	FULL SAMPLE				EUR				JPN				NM			
Variable	*Mean*	*S.D.*	*Min.*	*Max*	*Mean*	*S.D.*	*Min.*	*Max*	*Mean*	*S.D.*	*Min.*	*Max*	*Mean*	*S.D.*	*Min.*	*Max*
FRMFINLIQ	0.14	0.13	0.00	0.92	0.11	0.10	0.00	0.87	0.16	0.10	0.00	0.78	0.14	0.15	0.00	0.92
FDIEXP	0.97	0.17	0.00	1.00	0.98	0.14	0.00	1.00	0.98	0.14	0.00	1.00	0.96	0.20	0.00	1.00
FRMSALINT	0.46	0.23	0.00	0.93	0.60	0.22	0.00	0.93	0.37	0.20	0.00	0.91	0.44	0.22	0.00	0.93

All of the independent variables are in their lagged forms, except FDIEXP which represents already firms' FDI position in the previous year

FRMSIZE and FRMECONSCAL are scaled by dividing by 1000 for simplicity

An initial look at Table 5.6 reveals some interesting points. First, intangible asset intensity of the Japanese firms are rather small compared to EUR and NM firms. On the other hand, their labour productivity is higher than the European and North American counterparts in the sample data.

Next, in the sample data the minimum age of EUR firms is 13, JPN firms 26 while there are NM companies in the dataset who did invest abroad as early as in their first year.

Another remarkable point is that mean FRMSALINT of the EUR firms is relatively larger than their JPN and NM counterparts.

In general, other explanatory variables for the FDI level estimation show similar patterns, in general.

In order to predict these variables' role in firms resource allocation levels for FDI, next section continues with the usual routine of correlation tables for each of the Triad poll and for the full sample.

Table 5.7 Correlation Matrices for FDI Levels

Full Sample	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
FRMMARKPWR (1)		-0.325*	-0.292*	-0.197*	0.045*	0.006	0.067*	0.084*	-0.076*	-0.104*	0.055*	0.171*
FRMTECHINT (2)			-0.317*	0.363*	0.052*	-0.024*	-0.029*	-0.179*	-0.068*	0.361*	-0.064*	0.063*
FRMECONSCAL (3)				-0.285*	-0.232*	0.097*	0.006	0.145*	0.118*	-0.327*	-0.020‡	-0.226*
FRMCAPINT (4)					0.155*	-0.021‡	-0.003	-0.093*	-0.069*	0.324*	0.015‡	0.118*
FRMINTAINT (5)						-0.056*	0.056*	0.059*	0.105*	-0.181*	0.026*	0.151*
FRMLABPRD (6)							-0.038*	-0.006	0.026*	0.082*	0.019‡	-0.044*
FRMSIZE (7)								0.196*	-0.025*	-0.099*	0.058*	0.168*
AGE (8)									0.022‡	-0.260*	0.057*	0.106*
FRMLEV (9)										-0.281*	-0.025*	-0.055*
FRMFINLIQ (10)											-0.041*	0.074*
FDIEXP (11)												0.222*
FRMSALINT (12)												

Triad Region: EUR	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
FRMMARKPWR (1)		-0.270*	-0.422*	-0.053*	0.034‡	-0.023+	0.004	-0.066*	-0.067*	-0.039‡	-0.040‡	0.074*
FRMTECHINT (2)			-0.268*	0.300*	0.083*	-0.019	0.011	-0.128*	0.007	0.340*	0.034‡	0.065*
FRMECONSCAL (3)				-0.285*	-0.186*	0.065*	-0.009	0.130*	0.033‡	-0.243*	0.014	-0.121*
FRMCAPINT (4)					0.309*	0.051*	0.067*	-0.008	0.055*	0.159*	0.037‡	0.217*
FRMINTAINT (5)						0.105*	0.053*	-0.019	0.039‡	-0.108*	0.070*	0.164*
FRMLABPRD (6)							-0.019	0.023+	-0.009	0.060*	0.075*	0.086*
FRMSIZE (7)								0.162*	-0.030‡	0.001	0.044‡	0.160*
AGE (8)									-0.050*	-0.136*	0.035‡	0.079*
FRMLEV (9)										-0.229*	-0.001	0.048*
FRMFINLIQ (10)											0.057*	0.091*
FDIEXP (11)												0.270*
FRMSALINT (12)												

Triad Region: JPN	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
FRMMARKPWR (1)		0.279*	-0.558*	0.348*	0.041‡	-0.049*	0.002	-0.098*	-0.299*	0.416*	-0.021	0.264*
FRMTECHINT (2)			-0.524*	0.193*	0.155*	-0.099*	0.136*	-0.037‡	-0.214*	0.269*	0.061*	0.246*
FRMECONSCAL (3)				-0.406*	-0.272*	0.179*	-0.026+	0.060*	0.275*	-0.392*	-0.048*	-0.258*
FRMCAPINT (4)					-0.050*	-0.165*	-0.072*	-0.065*	-0.142*	0.385*	0.005	0.081*
FRMINTAINT (5)						-0.040‡	0.202*	0.093*	0.005	-0.057*	0.035‡	0.172*
FRMLABPRD (6)							-0.064*	0.018	0.133*	0.005	-0.056*	-0.111*
FRMSIZE (7)								0.185*	0.007	-0.087*	0.043‡	0.250*
AGE (8)									0.146*	-0.305*	-0.02	-0.072*
FRMLEV (9)										-0.372*	-0.035‡	-0.136*
FRMFINLIQ (10)											-0.014	0.227*
FDIEXP (11)												0.171*
FRMSALINT (12)												

Triad Region: NM	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
FRMMARKPWR (1)		-0.357*	-0.242*	-0.298*	0.037*	0.052*	0.106*	0.123*	-0.061*	-0.163*	0.082*	0.146*
FRMTECHINT (2)			-0.313*	0.420*	-0.013	0.01	-0.065*	-0.210*	-0.080*	0.396*	-0.087*	0.076*
FRMECONSCAL (3)				-0.284*	-0.149*	-0.013	0.030‡	0.200*	0.132*	-0.378*	-0.040*	-0.239*
FRMCAPINT (4)					0.179*	0.004	-0.009	-0.125*	-0.081*	0.347*	0.011	0.157*
FRMINTAINT (5)						0.039*	0.055*	0.078*	0.116*	-0.207*	0.044*	0.053*
FRMLABPRD (6)							-0.021‡	0.017+	0.012	0.103*	0.036*	0.075*
FRMSIZE (7)								0.223*	-0.039*	-0.149*	0.072*	0.106*
AGE (8)									0.027‡	-0.295*	0.076*	0.034*
FRMLEV (9)										-0.270*	-0.026‡	-0.097*
FRMFINLIQ (10)											-0.070*	0.118*
FDIEXP (11)												0.248*
FRMSALINT (12)												

For all correlation tables above, § indicates significance level at 10%, ‡ 5% and *1%, respectively

Table 5.7 presents Sidak-corrected pair-wise correlation coefficients of the variables separately, for each of the Triad regions and the full sample for the actual right-hand regressors used in the regression, i.e. they are in their lagged forms.

A low-to-moderate correlation exists among the variables in all four panels. As in the routine cycle, collinearity diagnostics are presented in Appendix (A8). Collinearity diagnostic results indicate that there is no linear or near-linear dependency in the sample set. Thus, the next section provides the estimates results from ordinary least square (OLS) regressions.

Table 5.8 below presents the results obtained from ordinary least square regression with robust standard errors clustered by firms for full sample, EUR, JPN, and NM firms, respectively. Time fixed effects are added in all models.

Table 5.8 Estimation Results of Firm Specific Assets in FDI Allocation

Dependent variable: *ln*FORAST	Full sample (1)	EUR (2)	JPN (3)	NM (4)
INTERCEPT	-2.0653*	-2.7421*	-3.8093*	-1.6786*
	(0.2564)	(0.5594)	(0.7546)	(0.3029)
FRMMARKPWR	2.0434*	2.0656*	4.2148*	1.7650*
	(0.2654)	(0.6088)	(0.9579)	(0.3090)
FRMTECHINT	-0.5036	-1.8295§	2.7902§	-0.2387
	(0.3415)	(1.0188)	(1.6903)	(0.2791)
FRMECONSCAL	1.2134*	1.2956‡	1.1958‡	0.8677‡
	(0.2581)	(0.5432)	(0.5779)	(0.3223)
FRMCAPINT	0.5928*	0.6207*	-0.2053	0.5389*

	(0.0614)	(0.1433)	(0.1344)	(0.0790)
FRMINTAINT	-0.4884‡	1.8494*	6.1385*	-0.0660
	(0.2101)	(0.4265)	(1.3437)	(0.2886)
FRMLABPRD	0.9607*	1.5036*	0.3962‡	0.9253*
	(0.1512)	(0.3207)	(0.1310)	(0.2754)
FRMSIZE	0.0268*	0.0239*	0.0200*	0.0299*
	(0.0026)	(0.0035)	(0.0032)	(0.0052)
AGE	0.0061*	0.0042*	0.0201*	0.0079*
	(0.0008)	(0.0011)	(0.0025)	(0.0011)
FRMLEVERAGE	-0.3194‡	-0.1284	0.8329‡	-0.4459‡
	(0.1379)	(0.4015)	(0.3524)	(0.1553)
FRMFINLIQ	-2.4282*	-0.4845	-1.6989‡	-2.8753*
	(0.2722)	(0.6275)	(0.5703)	(0.3547)
FDIEXP	3.5854*	3.2446*	4.6662*	3.0900*
	(0.1014)	(0.2371)	(0.2241)	(0.1190)
FRMSALINT	2.9872*	3.7606*	3.6081*	3.2261*
	(0.1353)	(0.2771)	(0.2742)	(0.1949)
No of observations	21440	5355	5314	10771
R^2	0.586	0.607	0.639	0.629
F	192.6055*	67.3767*	89.4675*	131.9716*

Robust standard errors are in parenthesis

Clustered by firm id

§ , ‡ , * 0.001 represents statistical significance at the 10%, 5% and 1% level, respectively.

As Table 5.8 reveals, among the main predictors, FRMMARKPWR, FRMECONSCAL, FRMCAPINT and FRMLABPRD carry the expected signs at least at 5% significant level for all models.

For the *full sample*, FRMMARKPWR is significant 1% level, carrying predicted sign, hence supporting H2. On average, a one unit increase in FRMMARKPWR increases the amount of FDI by 204 percentage points.

FRMECONSCAL is significant at least at 1% level lending support to H4b. On average, a 1% change in economies of scale leads to 121 percentage points increase in firms' FDI amount, holding other variables constant. Hence H4 is supported by the findings of the regression models.

A one unit change in FRMCAPINT also makes around 59 percentage points change in firm FDI flows, positively, other things being constant. This is in line with the hypothesis 5, the more resource commitment for FDI firms.

As for productivity proxied by the FRMLAPROD, the estimation results show that a one percentage change in productivity increases the amount of the FDI allocation of the firms by 96 percentage points, ceteris paribus.

FRMINTAINT, on the other hand, carries negative sign, contradictory to H6. Its sign and coefficient indicates that higher intangible intensity could lead to approximately by 50 percentage points decrease in firms' FDI amount, holding other predictors constant.

As for the control variables, SIZE and AGE are found to be positively associated with FDI amount of the firms, other things being constant, in line with the priori expectations. FRMLEVERAGE also carries the expected sign at significant levels. On the other hand, FINLIQU has the unexpected sign indicating that the higher the financial liquidity a firm has, the lower the FDI they might assign, other things being constant. Although, the prediction for the financial liquidity (as

firms' financial health indicator) is to be positively associated with FDI, findings from the probit analyses were inconclusive. However, this strong negative association in the ownership estimation results bring the alternative methods to the mind, such as, portfolio investment, contrary do direct investment. Finally, it might also be the fact that firms' not disclosing their financial situations since they are regarded as firms' secret.

As for the international experience indicators, FDIEXP and FRMSALINT both are significant at the 1% in all model specifications, reflecting the international experience's high impact on the FDI amount of the firms in the sample, holding other predictors constant.

Finally, the predictions of the Models (1) explain 58.6% of the variance of the factors influencing firms' FDI allocation of EUR firms. The remaining 41.4% could be attributed to unobserved firm characteristics, such as, organisational considerations, willing to penetrate home markets, and most importantly human resources (which is not available in the sample set), and the interactions with other firms in the indigenous and global markets.

To sum up, H2, H4a, H5, and H7 are supported to a great extent by the estimations made with full sample set.

As Table 5.8 exhibits, for *European Firms*, all of the main variables are significant at least at 10% level. Among them, FRMMARKPWR is positively associated with *ln*FORAST and is statistically significant at least at 1% level indicating H2 is supported by the estimation results by the EUR firms.

FRMTECHINT is significant at 5% level, carrying negative sign; hence supporting H3b. Even the curvilinear exercises did not produce any result and its sign remained negative. Accounting for the probit results, which found firms' technological intensity compared to their competitors in home markets associated with positive decisions on FDI involvement, the ownership results points an interesting feature: firms with higher technological intensity than their home market counterparts take FDI decisions positively; however, once their R&D intensity increases, the amount of the resources they allocate abroad reduces, dramatically. On one hand, magnitude of the technological intensity relative to the domestic rivals, as a motive for FDI decision, on the other, its magnitude at the firm-level as a restraint for FDI amount. Although these two results seem to be contradicting, they are in line with the practical existence. As Markusen & Maskus (1998) suggest "…two different motives for multinational activity: exploiting differences in endowments (which leads to vertical MNC activity, with skill-intensive activities such as R&D done at home, and labour-intensive activities such as assembly done abroad) versus exploiting certain firm-specific assets or ideas that can be shared across units. In the same vein, Blonigen (2005), evaluating the findings on R&D as discouraging factor, contradictory to the theory of FDI, states that "there is evidence that firms that are "lacking" R&D intensity (or innovation) relative to their industry competitors are the ones more likely to engage in FDI". Thus, although the findings from the ownership estimation does not support H3a, findings from the two estimations as a process of firms' FDI involvement (decision and ownership) indicate FDI involvement of the firms in the sample with the aim of "exploiting differences in endowments". In sum,

findings from FRMTECHINT lend strong support for the alternative hypotheses, i.e. H3b.

Economies of scale carries positive sign at 5% and 10% significant levels for no lag and 1-year lag periods, respectively, indicating less scale efficient[74] firms allocate more FDI abroad, thus rejecting for H4 for EUR firms.

As for the firm capital intensity (FRMCAPINT), its coefficients carry positive sign significant at the 1% level in all models indicating that firms with higher resource commitment allocate more resources abroad. On average, 10 percentage points increase in FRMCAPINT leads to 62 percentage point increase in FDI of firms while all other variables in the model are held constant. Thus, H5 is supported by the EUR firms.

Intangible assets (FRMINTAINT) perhaps the most cited firm –specific on one hand, internalisation advantageous on the other, have been found significant at 1% with a 1.85 coefficient. As intangible asset intensity of the EUR firms increases, so does the amount of firm resources they move abroad. As a result, estimations for EUR firms lend strong support to H6.

As far as H7 is concerned, coefficient estimate for productivity (FRMLABPRD) is also positively significant at the 1% level in all lag periods. On average, if firms productivity increases by one unit, FDI of firms increases by 150 percentage points, ceteris paribus. Hence H6 finds strong support.

[74] Since FRMECONSCALE is measured as cost of goods per dollar of sales, higher values indicate smaller cost efficiency.

As for the control variables, FRMSIZE and AGE are also significant at the 1% and 5%, respectively while the influence of firm age being negligibly small on firms' foreign asset allocation of EUR firms, as in the case of their selection estimations.

International experience variables, i.e. FDIEXP and FRMSALINT carry also positive sign, in EUR firms' estimation results indicating previous year's international experience increases the firms' foreign resource supply, to a very great extent.

Finally, the predictions of the Model (2) explain 60.7% of the variance of the factors influencing firms' FDI allocation of EUR firms. The remaining 39.3% could be attributed to unobserved firm characteristics, such as, organisational considerations, willing to penetrate home markets, and most importantly human resources (which is not available in the sample set) and the dynamics of the markets firms operate in.

For *JPN* sample set, the predictions of the Column (3) of Table 5.8 indicates that, among the main variables, FRMMARKPWR, FRMTECHINT FRMECONSCAL, FRMINTAINT, and FRMLABPRD are all significant at least at 10% level, with the expected signs, lending support for H2, H3, H4a, H6 and H7.

FRMMARKPWR is positively associated with *ln*FIRMFDI and stays significant at least at 5% level indicating H2 is supported by the estimation results by the JPN firms.

FRMTECHINT is significant and carries the right sign at 10% level supporting H3a for Japanese firms.

Firm intangible intensity carries the right sign at 1% significance level lending support for H6 for JPN firms.

As far as H7 is concerned, coefficient estimate for productivity (FRMLABPRD) is also positively significant at the 5% level in all lag periods. On average, if firms' productivity increases by one unit, FDI of firms increases by 39.6 percentage points, holding all other variables constant. Hence H7 also finds strong support from the JPN FDI firms.

As for the control variables, FRMSIZE, AGE, FDIEXP, and FRMSALINT are also significant at least at 5% level with relatively small coefficients on size and age and very high coefficients on FDI experience and foreign sales intensity variables.

As far as the financial variables are concerned, JPN sub-set carries the unexpected signs for both of the financial indicators at 5% significance levels. This might indicate that financially burdened JPN firms would disperse more resources maybe to offset their financial difficulties via FDI, or it could be a selection issue with the data.

In sum, H2, H3a, H4a, H6, H7 are confirmed by the results from prediction of FDI ownership equation for the JPN sample set while H3 finds partial support.

As for the variances explained by the JPN sub-set, the predictions of the Model (3) explain 63.9% of the variance of the factors influencing firms' FDI allocation. The remaining 36.1% could be attributed to Keiretsu membership, organisational considerations, and most importantly human resources (which is not available in

the sample set) and the interactions with other firms in the indigenous and global markets.

For the *North American* subset, four main variables carry significant signs: FRMMARKPWR FRMCAPINT and FRMLABPRD at 1% significant level and FRMECONSCAL at 5% levels.

These findings lend strong support to H2, H5, and H7 and H4a in the NM subset. These findings are in line with the IO and RBV theories partly, and the practical existence. While 63% of variance in the model was predicted by the regression analyses, the insignificance of the technological intensity and intangible assets intensity makes the inconclusive results about knowledge-based theories for the NM sub-set.

Among the main variables, FRMMARKPWR carries the highest coefficient at the 1% level mirroring Caves-Hymer-Kindleberger approach on North American firms' excess return approach (page 53)

FRMECONSCAL carries positive sign at 5% significance level. Its coefficient indicates that, a one unit change in economies of scale would lend a 87 percentage points increase in the amount of FDI allocated by the NM firms, holding other regressor fixed.

As far as capital intensity is concerned; on average, 1 one unit change in CAPINT increases the amount of the NM firms would assign outside of their home country is 54%, ceteris paribus. This also reflects the dominance of the North American firms in capital-intensive sectors in the world and is in line with the IO view.

As for the productivity measure, on average, a one unit increase in productivity would result 92.5% increase in NM firms FDI amount, other things being constant.

Among the control variables, size, age FDI experience, and foreign sales intensity are significant positive at the 1% level with AGE's being negligibly small influence on NM firms' FDI decisions. As for the financial variables, leverage ratio carries the expected sign and indicates a 1 unit change in firm leverage would result a 45 percentage points decrease in NM firms' FDI amount, holding other variables constant. On the other hand, financial liquidity has also negative direction. This might be an indicator of size bias in the NM dataset as Mulligan (1997) research indicates that in US firms large firms hold less cash amount (weighted by sales). This issue is left to a further study.

The predictions of the Model (4) explain 62.9% of the variance of the factors influencing firms' FDI allocation of NM firms. The remaining 37.1% could be attributed to unobserved firm characteristics, such as, organisational considerations, willing to penetrate home markets, and most importantly human resources (which is not available in the sample set) and the interactions with other firms in the indigenous and global markets.

In sum, regression analyses from the NM subset supports H2, H4a, H5, and H7 strongly.

While interpreting regression results from the different data sets, it is worth noting that EUR firms include firms from 13 countries including EU and non-EU firms, and NM firms include USA and Canada, JPN sub-set contains only firms from

Japan. Thus, compared to other sub-sets utilised in the study, JPN the most homogenous one. The relatively high coefficients of the variables compared to other regions could be attributed to this context.

Since the variables in Models 1-4 are in different units, the level of importance of each variable for the firms' FDI amount could not be comparable unless they are standardized to a common metric. However, the aim of this research is to test the hypotheses 2 to 8, rather than to compare the magnitude the effects of each regressor on firms' FDI allocation. Thus, further studies could be implemented by standardizing the units of measures and compare the level of each variables' effect on firms' FDI amount.

As Table 5.9 on the next page exhibits, in general, H2 to H4a, and H7 (positive influences of market power, economies of scale and productivity) were confirmed by the full sample and EUR, JPN and NM firms. As for H3, while estimation results were indecisive for NM and full sample firms, H3a was supported by the JPN and H3b by the EUR firms. H5 was not supported only by the Japanese firms in the sample and H6 was supported by all firms except the North American ones which did not produce statistically significant results.

Control variables carried expected signs at least at 10% significant level, except the financial variables. As for financial variables, firm leverage was found to be positively associated with the level of FDI involvement in all estimations except for EUR which was insignificant. The reason for unexpected sign could be explained by several factors. First, as stated before, firm financial variables are indigenous to the firms, and they might not have been reporting the correct

amounts as firms' financial situations are one of the most private information and thus difficult to obtain. Secondly, ignoring the above factor, it could be assumed that firms with higher debt burdens relative to their assets might prefer to allocate more sources abroad in order to offset this weakness.

Table 5.9 Firm Specific Assets FDI Ownership Estimation Summary

Variable/Hypothesis	FULL SAMPLE	EUR	JPN	NM
FRMMARKPWR (H2)	Yes	Yes	Yes	Yes
FRMTECHINT (H3a, H3b)	Indecisive	H3b	H3a	Indecisive
FRMECONSCAL (H4a, H4b)	H4a	H4a	H4a	H4a
FRMCAPINT (H5)	Yes	Yes	Indecisive	Yes
FRMINTAINT (H6)	Yes	Yes	Yes	Indecisive
FRMLABPRD (H7)	Yes	Yes	Yes	Yes
FRMSIZE (Control)	Positive	Positive	Positive	Positive
AGE (Control)	Positive	Positive	Positive	Positive
FRMLEV (Control)	Positive	Indecisive	Positive	Positive
FRMFINLIQ (Control)	Negative	Indecisive	Negative	Negative
FDIEXP (Control)	Positive	Positive	Positive	Positive
FRMSALINT (Control)	Positive	Positive	Positive	Positive

In a similar fashion, the negative signs for financial liquidity in full sample, JPN and NM subsets (indecisive in EUR) could be explained as a substitution effects

of portfolio investment to FDI. However, without knowing the real portfolio investment amounts, their substitution effects could not be estimated. Further studies might consider on testing the firm specific resources' power in determining firms' portfolio investment vs FDI.

5.5 Findings

When interpreting the results from this study, it is important to consider some limitations. Due to the limitations of dataset, it is difficult to test each of the theoretical explanations reviewed in Chapter 1.

Secondly, the possibility of two kinds of selection bias blurs the findings: self-selection bias, i.e. firms might and might not choose becoming FDI firms or deciding how much to allocate in other countries for the reasons which are unknown to the researcher, such as, managerial considerations, corporate culture, etc. The second bias is that the sample selection bias: not all firms in the universe report to the databases utilised in this thesis. Thus, it is a possibility that important data and firms might have been missed in the dataset of this study.

Thirdly, the effects of each regressor on the amount of the FDI firms allocate abroad could not be compared as only unstandardized results are presented in this study.

Albeit with shortcomings, this study sheds some light on the firm-specific assets on determining outward FDI flows. First and foremost, it gives support to firm-level studies' importance in analysing firm-specific strategies. In addition, this study is one of the few testing firms' by indexing their resources and capabilities to their counterparts in the home market.

In general, the findings of this thesis from the full sample support the conceptual framework and hypotheses presented in Section 4, adding to the importance of firm-level studies in international business discipline, except for technological intensity since the estimations could not produce statistically significant results for this variable.

It was argued that FDI flows could be explained by firm's competitive assets monopolistic/oligopolistic advantages over its competitors at own home region and industry. Among these assets, market power, economies of scale, capital intensity, intangible intensity, productivity, size, age, and firm international experience have all been found effective and significant and carry expected signs, holding other regressors constant. Among the financial variables, leverage is found to be negatively associated with the level of FDI allocation, as expected while financial liquidity has the negative sign for the full sample, other things being constant. This negative association might be a sign of the portfolio investment as oppose to FDI by financially flexible firms.

As for the hypotheses tested, H2, H3b, H4a, H5, H6, and H7 finds strong support from the regression estimates while H5 and H6 are strongly rejected for the full sample.

In sum, results obtained from the full sample are robust with the theoretical and empirical literature and relaxation of firm heterogeneity assumption to a great extent except for remaining indecisive in technological intensity.

As for each polls of the Triad, findings are mixed. However, marketing intensity, economies of scale, productivity, firm size, age, and international experience as

determinants of firms' FDI commitment is found to be commonly positively influential in regression models run separately for these regions.

Estimations from decision and ownership equations reveal some remarkable differences: in terms of selection, firms with excess economies of scale than their home market-industry averages are found to be reluctant to take FDI decisions. On the other hand, economies of scale are founded to be positively associated with the amount of assets that firms invest abroad. There might be two reasons for this: first, and most likely, the differences in measurement. Since economies of scale is measured as the differences between the minimum efficient scale in the home-industry for decision estimation and firms' cost efficiency in the FDI equation, the difference in results could be attributed to the differences in measurement.

Secondly, this difference could be attributed as once firms obtain higher economies of scale in their home markets, they might prefer to exploit it there and when FDI firms have higher economies of scale, they might want to exploit more via higher FDI amounts or by re-investing their FDI abroad.

Another interesting point is that in selection estimations, international experience is found to be negatively correlated with FDI decisions while in ownership estimation it is positively associated with the amount of firms' FDI. Again this could be a result of differences in measurement as in decision estimation international experience was measured with exports while in ownership estimation, foreign sales (sales by affiliates) and the difference between previous year's and current year's FDI amount. However, it is more likely and in line with

the theoretical and empirical existence that, for probit estimation, exports might represent substitutes to FDI and foreign affiliates' success might encourage firms to deal with higher FDI amounts in different host countries or the same host country.

Contradictory results are also found in technological intensity variable for the EUR and JPN firms. In selection estimation, technological intensity is negatively associated with EUR firms' FDI decisions while in ownership estimation it is found to be positively influential and the opposite way applies to estimation results for JPN firms. Although measurements did not change for this variable, EUR firms with higher technological intensity might be willing to exploit these resources at home markets and, technologically intensive FDI firms might be willing to exploit it in overseas markets and vice versa for JPN firms.

All in all, firms' market power is found to be positively associated with FDI decisions and asset allocation in all estimations for all sample sets indicating market power as a stable predictor for firms' FDI behaviour as arguably one of the most commonly acknowledged Bain-type advantage effecting FDI involvement as pointed out by Hymer (1976 [1960]) long ago.

5.6 Summary and Conclusions

This chapter presented empirical results from two estimates: a probit estimation to see what firm specific advantages determine the probability of taking FDI decisions at the first phase. In order to find out these advantages, an index method was applied in an attempt to investigate the differences between those firms which undertake FDI decisions and those stay domestic.

In the second stage, since the markets these firms compete is not known, they are accepted as competing in one market, i.e. globally with the indigenous firms and other foreign companies in their host countries. Thus, firms' resources are not indexed and utilised in the way they are described in Section 4.8

So far, this chapter presented the results from probit and OLS estimations in order to find out which factors determine firms' FDI decisions and the amount of the assets they will set abroad. Although the study suffers from several limitations, at least it sheds some light on the firms' market power's power as a good predictor of both FDI decision and allocation processes.

CHAPTER 6. SUMMARY AND CONCLUSIONS

6.0 Summary

This thesis attempted to find out which FSAs are the main drivers for firms to take FDI decisions and to determine the amount of assets to allocate abroad by studying Triad FDI companies'. Specifically, it seeks to find out answers to the main research questions that:

Which firm specific assets drive firms to undertake FDI decisions?

How these assets determine the amount of the capital to be allocated?

In order to find out hypothetical answers to these questions, possible factors were derived from a literature review evolved on especially, industrial organisation, monopolistic/oligopolistic competition, O (ownership) of the OLI (ownership, location, and internalisation) advantages and the contemporary competence-based views together with prevailing empirical studies to develop a conceptual framework.

The sample data were chosen from Triad firms for several reasons.

First, they posit an important part in world FDI, almost three quarter of the world as briefed in Chapter 2.

Second, Triad countries are relatively more developed than many countries and thus there is a competition among the other countries for attracting FDI from them since host countries expect some development from the FDI firms since these

firms are believed to hold some assets that they can exploit abroad through their overseas operations.

Third, since the main interest of this thesis is firm-specific assets, Triad firms are believed to have them more than other countries due to the development and technology level in these countries.

Prevailing studies on firm-FDI relations also mostly found that firm assets, capabilities and competencies are of great importance for firms' FDI decisions. This study adds to the existing literature in many ways:

First, while much of the literature is interested in the locational factors to attract FDI, this study is one of the few looking from the investor firms, rather than investor and invested countries.

Second, this study adds to the understudied Triad concept. Although Triad counts almost three quarter of the world stock, only few studies on FDI focused on FDI from Triad as a whole.

Third, albeit with the regional studies, this thesis adds to the concept of firm-specific motives from the purely firm-level perspective FDI as seeing FDI as a firm notion, regardless of their home countries.

Fourth, by modelling FDI a two-stage process, i.e. for the FDI decisions and the amount of the FDI to be carried out of the home markets, this study adds to a understanding of FDI involvement by the heterogeneous firms. Dividing the dataset into two, as firms in their home regions and firms in the global arena, and computing the firm assets and resources by index method for the firms' FDI

decision and purely firm asset and resources for firms' FDI, this thesis adds to a better understanding of the effects of the monopolistic/oligopolistic power of the firms, the importance of the internalisation, ownership advantages, and resource-based view of the FDI at the firm-level.

6.1 Contribution

This thesis developed a conceptual framework derived from different theoretical frameworks, based on the ownership theories. Since the ownership and internalisation theories might overlap, it could be said that internalisation advantages was also regarded in this study.

The main contribution this research has made to the FDI body of literature is to develop a conceptual framework FDI as a two-stage process, the decision to undertake and the amount of the capital to allocate.

As for the empirical contribution, drawing its variables from different body of literature has included a number of firm-specific assets influencing firms FDI decisions. Together with more firm-level data availability, the model is broadly acceptable and its prediction power is high.

The theoretical issues in this thesis drew insights from FDI, industrial organisation and competence-based theories as ownership advantages,. While much of the prevailing studies concentrated and found significant host country effects to attract FDI, this study mostly concentrated on the firm-level motivations for undertaking and continuing FDI involvement.

With a specific attention on modelling FDI as a two-stage process, i.e. to decide to operate abroad and to allocate the firm resources for that purpose, this study found out that firm-specific assets are important in firms FDI process. Particularly, market competition related factors, i.e. market power, capital intensity; technological intensity, economies of scale, and productivity are found to be important factors in firms FDI flows.

In addition to its contribution to the literature, the novelty of this research is that the dataset used for this study. In order to increase the reliability and validity of this research, the independent variables have been broadened to include several factors such as, firms' age, size, intangible assets, market power, performance indicators, and productivity that influence FDI. Prevailing studies revealing the Triad FDI is mostly focused on locational (mainly host country) determinants while this study uses firm-specific factors.

6.2 Implications

The implications that arise from the outcome of this research could be suggested as follows.

Determining the key determinants for main firm specific assets could assist individual firms what to consider before taking FDI decisions. In that sense, managers could compare their own resources and generally would know their competition power abroad before taking outward investment decisions. In addition, looking at the power of prediction of each variable, firms could adopt their resource allocation accordingly.

From the host country point of view, governments who want to attract FDI from developed countries could benefit from important FSAs to base their policy research to provide needed grounds for the firms to maintain and protect these assets.

6.3 Limitations of the Study

Since data set suffered from a great number of missing values, and employee payment was available for only few firms, this thesis could not explore many issues regarding to labour division. Related to this, it would have added to the quality of findings if the number or ratios of white collar/blue collar employees and other proxies for R&D and intangibles, e.g. patents and innovations it would have been worth to check if these influence firms FDI activities.

Next, data on firms' enter and exit dates from the foreign markets was not available during this study, it avoids the fact that firms might opt out from the foreign markets while this study takes a firm as and FDI firm if the companies' data on foreign assets was available at least for three consecutive years. Only firms whose foreign assets were observable for at least four-consecutive years were included in the dataset and thus prediction on enter and exit as foreign investors were made on the grounds of these foreign assets, i.e. if firms' foreign assets are 0, they are considered as enter or exit.

Perhaps most important is that firms FDI values are measured by their foreign asset stocks. Since the study covers relatively long-period across the countries, FDI measure might be suffering from reality in terms of deflation and host

country resource requirements. However, firm FDI is measured by the firms foreign assets in the literature, commonly.

Two important issues should also be noted here: first, some of the variables utilised in the estimation processes: first, the time series component of the sample could create issues of non-stationarity in some variables and further research should be carried out with unit root tests.

Second, although directions of the coefficients shed at least some light on FSA-FDI relations direction estimations for the ownership equation, variables are not comparable to each other since they are not converted to a common metric. Further studies could implement analyses by standardizing the variables so that comparable results would be obtained for each of the Triad polls and variables.

6.4 Areas for Further Research

This study extends the literature on FSAs role on FDI decisions and activities; however, three areas still need attention: the home region-industry effects as the "push" factors, and the host locations attractions as the "pull" factors. In addition, micro data could be categorised into industries and sizes to see these factors single influence on firms' FDI participation. Hence it is important to examine "what happens" after the firms decide to undertake FDI decisions and allocate sources for that purpose.

Another area could be that study takes the broad Triad as FDI firms' home regions, while other investors, such as emerging countries need also attention.

Next, home countries in this thesis sample population are all developed countries with well-studied FDI host countries. Further attention is needed if the domestic firms from these countries do not leave their home countries in order not to lose their home market to the other FDI home firms. Given that this thesis uses secondary data source, a continuation of this research could be focusing on self-selection criteria by studying individual firms.

Last but not least, further studies could be produced by standardising variables to a common metric and thus measuring the importance of each variable for each Triad polls' firms and comparing them each other.

APPENDICES

A.1 Country Groupings Cited in the Study

EU Countries

1980-1985	1986-1993	1994-2004	2004-2006	2007-2012
Belgium	Belgium	Belgium	Belgium	Belgium
Denmark	Denmark	Denmark	Denmark	Denmark
France	France	France	France	France
West Germany	West Germany & Germany (1990)	Germany	Germany	Germany
Greece	Greece	Greece	Greece	Greece
Ireland	Ireland	Ireland	Ireland	Ireland
Italy	Italy	Italy	Italy	Italy
Luxembourg	Luxembourg	Luxembourg	Luxembourg	Luxembourg
Netherlands	Netherlands	Netherlands	Netherlands	Netherlands
United Kingdom	United Kingdom	United Kingdom	United Kingdom	United Kingdom
	Portugal	Portugal	Portugal	Portugal
	Spain	Spain	Spain	Spain
		Austria	Austria	Austria
		Finland	Finland	Finland
		Sweden	Sweden	Sweden
			Cyprus	Cyprus
			Czech Republic	Czech Republic
			Estonia	Estonia
			Hungary	Hungary
			Latvia	Latvia
			Lithuania	Lithuania
			Malta	Malta
			Poland	Poland
			Slovakia	Slovakia
			Slovenia	Slovenia
				Bulgaria
				Romania

G6: forum founded in 1975 by France, Germany, Italy, Japan, the United Kingdom, and the United States

G7: Canada joined in 1976

***G8*:** Russia in 1997 the forum is now called G8

A.2 Country Abbreviations

AU	Austria
BE	Belgium
BLEU	Belgium & Luxembourg
CH	Switzerland
CN	China
DE	Germany
ES	Spain
FI	Finland
FR	France
IE	Ireland
IT	Italy
JP	Japan
LU	Luxembourg
NL	Netherlands
NO	Norway
RU	Russian Federation
SE	Sweden
UK	United Kingdom
US	United States

A.3 Country of Origins Included in the Sample Dataset

Country	*Code*
Austria	EUR
Belgium	EUR
Finland	EUR
France	EUR
Germany	EUR
Ireland	EUR
Italy	EUR
Netherlands	EUR
Norway	EUR
Spain	EUR
Sweden	EUR
Switzerland	EUR
United Kingdom	EUR
Japan	JPN
Canada	NM
United States	NM

A.4 Major Participants in FDI Flows (1980-2011)

Table A4. 1 FDI Outflows, 1980-2011

	Outflows					*Percentage Change from Previous Year*					*Share in the World*				
Year	EE	EU	JP	NA	World	EE	EU	JP	NA	World	EE	EU	JP	NA	World
1980	673	21,902	2,385	23,328	51,590	95.68	-23.89	-17.70	-23.05	-17.96	1.30	42.46	4.62	45.22	93.60
1981	541	25,059	4,894	18,775	51,516	-19.65	14.41	105.20	-19.52	-0.14	1.05	48.64	9.50	36.45	95.64
1982	1,206	15,499	4,540	3,480	27,442	122.98	-38.15	-7.23	-81.47	-46.73	4.39	56.48	16.54	12.68	90.10
1983	590	17,735	3,612	12,157	37,394	-51.08	14.43	-20.44	249.38	36.26	1.58	47.43	9.66	32.51	91.18
1984	642	21,846	5,965	16,730	50,147	8.84	23.17	65.14	37.61	34.11	1.28	43.56	11.89	33.36	90.10
1985	1,466	26,406	6,440	17,250	62,014	128.29	20.88	7.97	3.11	23.66	2.36	42.58	10.38	27.82	83.15
1986	2,203	46,875	14,402	23,142	96,799	50.28	77.52	123.64	34.15	56.09	2.28	48.42	14.88	23.91	89.49
1987	1,993	69,381	20,101	37,274	142,016	-9.52	48.01	39.56	61.07	46.71	1.40	48.85	14.15	26.25	90.66
1988	5,311	93,055	35,436	24,824	182,452	166.46	34.12	76.29	-33.40	28.47	2.91	51.00	19.42	13.61	86.94
1989	9,469	112,554	46,251	42,870	234,059	78.31	20.95	30.52	72.70	28.29	4.05	48.09	19.76	18.32	90.21
1990	9,551	130,572	50,775	36,219	241,498	0.87	16.01	9.78	-15.52	3.18	3.96	54.07	21.02	15.00	94.04
1991	5,804	105,768	31,638	38,530	198,041	-39.23	-19.00	-37.69	6.38	-17.99	2.93	53.41	15.98	19.46	91.77
1992	7,054	103,849	17,304	46,238	202,635	21.53	-1.81	-45.31	20.01	2.32	3.48	51.25	8.54	22.82	86.09

	Outflows					*Percentage Change from Previous Year*					*Share in the World*				
Year	EE	EU	JP	NA	World	EE	EU	JP	NA	World	EE	EU	JP	NA	World
1993	8,908	93,920	13,913	82,949	242,554	26.29	-9.56	-19.60	79.40	19.70	3.67	38.72	5.74	34.20	82.33
1994	16,173	120,880	18,121	82,546	286,888	81.54	28.71	30.24	-0.49	18.28	5.64	42.13	6.32	28.77	82.86
1995	20,282	159,154	22,630	103,536	363,241	25.41	31.66	24.89	25.43	26.61	5.58	43.81	6.23	28.50	84.13
1996	24,696	183,807	23,426	97,522	397,770	21.76	15.49	3.52	-5.81	9.51	6.21	46.21	5.89	24.52	82.82
1997	32,627	225,441	25,994	118,835	477,507	32.12	22.65	10.96	21.85	20.05	6.83	47.21	5.44	24.89	84.38
1998	19,582	420,635	24,151	165,354	689,700	-39.98	86.58	-7.09	39.15	44.44	2.84	60.99	3.50	23.97	91.30
1999	25,166	727,903	22,745	226,638	1,088,079	28.52	73.05	-5.82	37.06	57.76	2.31	66.90	2.09	20.83	92.13
2000	27,123	807,487	31,557	187,304	1,226,633	7.77	10.93	38.74	-17.36	12.73	2.21	65.83	2.57	15.27	85.88
2001	32,222	429,895	38,333	160,902	747,657	18.80	-46.76	21.47	-14.10	-39.05	4.31	57.50	5.13	21.52	88.46
2002	12,721	259,864	32,281	161,719	528,496	-60.52	-39.55	-15.79	0.51	-29.31	2.41	49.17	6.11	30.60	88.29
2003	18,797	290,173	28,799	152,276	570,679	47.77	11.66	-10.78	-5.84	7.98	3.29	50.85	5.05	26.68	85.87
2004	42,941	371,478	30,949	338,252	925,716	128.45	28.02	7.47	122.13	62.21	4.64	40.13	3.34	36.54	84.65
2005	40,025	604,076	45,781	42,907	888,561	-6.79	62.61	47.92	-87.31	-4.01	4.50	67.98	5.15	4.83	82.47
2006	82,811	691,764	50,264	270,434	1,415,094	106.90	14.52	9.79	530.27	59.26	5.85	48.88	3.55	19.11	77.40
2007	103,785	1,204,747	73,548	451,244	2,198,025	25.33	74.16	46.32	66.86	55.33	4.72	54.81	3.35	20.53	83.41
2008	89,264	957,798	128,019	388,090	1,969,336	-13.99	-20.50	74.06	-14.00	-10.40	4.53	48.64	6.50	19.71	79.38

	Outflows					*Percentage Change from Previous Year*					*Share in the World*				
Year	EE	EU	JP	NA	World	EE	EU	JP	NA	World	EE	EU	JP	NA	World
2009	58,024	393,618	74,699	308,620	1,175,108	-35.00	-58.90	-41.65	-20.48	-40.33	4.94	33.50	6.36	26.26	71.05
2010	110,430	482,905	56,263	342,984	1,451,365	90.32	22.68	-24.68	11.13	23.51	7.61	33.27	3.88	23.63	68.39
2011	105,581	561,805	114,353	446,225	1,694,396	-4.39	16.34	103.25	30.10	16.75	6.23	33.16	6.75	26.34	72.47

Notes: EE: Emerging Economies, EU: European Union (27), JP: Japan, NA: North America (US&Canada)

Source: Calculation based on UNCTAD (2012) data

Table A4. 2 Top Ten Major Sources of FDI Flows

Rank	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
1	US	US	JP	US	US	US	US	UK	UK	JP	JP	US	US	US	US	US
2	UK	UK	UK	UK	UK	UK	UK	US	JP	US	FR	JP	FR	UK	UK	UK
3	DE	JP	FR	DE	JP	JP	JP	JP	US	UK	US	FR	DE	FR	FR	DE
4	NL	FR	DE	JP	DE	DE	DE	DE	DE	FR	DE	DE	UK	DE	DE	JP
5	FR	DE	NL	NL	NL	CH	FR	FR	FR	DE	UK	UK	JP	JP	JP	NL
6	JP	NL	SE	IT	FR	NL	NL	NL	CH	NL	SE	NL	NL	NL	NL	FR
7	IT	IT	US	FR	IT	FR	SE	AU	SE	SE	NL	IT	BE	CH	CH	CH
8	SE	SE	IT	SE	SE	AU	AU	SE	AU	CH	IT	SE	CH	IT	SE	BE
9	AU	AU	AU	AU	AU	SE	IT	BE	NL	BE	CH	CH	IT	BE	IT	SE
10	ES	ES	ES	CH	CH	IT	CH	IT	IT	AU	BE	BE	AU	ES	FI	IT
Total % of World	83.96	84.09	78.43	82.32	83.72	83.02	85.25	85.76	83.90	83.83	86.83	85.25	82.28	77.52	73.64	75.43

Rank	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
1	US	US	US	US	UK	US	US	US	US	NL	US	US	US	US	US	US
2	DE	UK	UK	UK	FR	BE	FR	UK	UK	FR	DE	UK	BE	FR	DE	JP
3	UK	DE	DE	FR	US	FR	UK	NL	ES	UK	FR	DE	UK	DE	FR	UK
4	NL	FR	FR	BE	BE	UK	ES	FR	FR	DE	ES	FR	FR	JP	CH	FR
5	FR	JP	NL	DE	NL	NL	JP	BE	NL	CH	UK	ES	JP	UK	JP	BE
6	JP	NL	BE	NL	ES	DE	NL	JP	BE	JP	CH	IT	ES	RU	BE	CH
7	CH	CH	SE	ES	DE	JP	DE	ES	JP	ES	NL	BE	DE	NO	NL	RU
8	BE	ES	JP	CH	CH	ES	BE	SE	CH	IT	BE	JP	NL	NL	RU	DE
9	ES	SE	ES	JP	SE	CH	IT	AU	SE	BE	JP	LU	IT	CH	UK	IT
10	IT	IT	CH	SE	JP	IT	IE	CH	DE	SE	IT	NL	RU	IE	ES	ES
Total % of World	73.65	71.68	78.91	87.18	77.24	75.86	73.10	79.07	72.83	71.26	66.13	69.00	66.61	62.05	58.77	62.25

Table A4. 3 Top Ten Major Destinations of FDI Flows

Rank	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
1	US	US	US	US	US	US	US	US	UK	US	US	US	US	US	US	US
2	UK	UK	UK	UK	CA	UK	UK	UK	JP	UK	UK	FR	FR	FR	FR	FR
3	CA	MX	BR	AU	FR	FR	AU	CA	US	FR	FR	UK	UK	UK	MX	UK
4	FR	BR	AU	MX	ES	AU	ES	AU	DE	ES	ES	ES	ES	BE	ES	SE
5	MX	FR	MX	CA	MX	MX	NL	FR	FR	AU	NL	BE	BE	ES	UK	AU
6	NL	AU	ES	DE	BR	ES	CA	ES	CH	NL	AU	SE	NL	NL	BE	NL
7	BR	ES	FR	FR	IT	BR	FR	IT	SE	BE	BE	NL	AU	AU	CA	DE
8	AU	NL	BE	ES	NL	NL	MX	MX	AU	DE	CA	MX	CA	CA	NL	BE
9	BE	BE	NL	BR	DE	CA	DE	NL	NL	CA	IT	DE	MX	MX	DE	MX
10	ES	IT	DE	BE	CH	IT	CH	BE	CA	MX	CH	CA	IT	SE	SE	CA
Total % of World	87.09	67.78	56.96	62.59	70.93	71.03	78.50	79.31	77.63	79.84	74.36	63.82	61.65	56.84	49.81	53.68

Rank	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
1	US	US	US	US	UK	US	US	US	US	NL	US	US	US	US	US	US
2	DE	UK	UK	UK	FR	BE	FR	UK	UK	FR	DE	UK	BE	FR	DE	JP
3	UK	DE	DE	FR	US	FR	UK	NL	ES	UK	FR	DE	UK	DE	FR	UK
4	NL	FR	FR	BE	BE	UK	ES	FR	FR	DE	ES	FR	FR	JP	CH	FR
5	FR	JP	NL	DE	NL	NL	JP	BE	NL	CH	UK	ES	JP	UK	JP	BE
6	JP	NL	BE	NL	ES	DE	NL	JP	BE	JP	CH	IT	ES	RU	BE	CH
7	CH	CH	SE	ES	DE	JP	DE	ES	JP	ES	NL	BE	DE	NO	NL	RU
8	BE	ES	JP	CH	CH	ES	BE	SE	CH	IT	BE	JP	NL	NL	RU	DE
9	ES	SE	ES	JP	SE	CH	IT	AU	SE	BE	JP	LU	IT	CH	UK	IT
10	IT	IT	CH	SE	JP	IT	IE	CH	DE	SE	IT	NL	RU	IE	ES	ES
Total % of World	73.65	71.68	78.91	87.18	77.24	75.86	73.10	79.07	72.83	71.26	66.13	69.00	66.61	62.05	58.77	62.25

Notes: See Appendix A.3 for country abbreviations.

Excludes China and Hong Kong due to the reasons briefed on page 20 in line with other studies.

Source: Calculated from UNCTAD (2012) data

Table A4. 4 Outward FDI Performance of Countries

Country/ Year	1980-83	1984-87	1988-91	1992-95	1996-99	2000-03	2004-07	2008-11	2011
Liberia	10.743	11.616	17.368	61.627	21.345	15.108	16.275	17.074	16.449
Hong Kong SAR	0.141	1.036	1.533	3.317	7.007	8.587	10.985	12.982	14.142
Iceland	0.000	0.160	0.124	0.182	0.354	1.670	7.496	10.405	10.659
Luxembourg	0.000	0.000	0.000	0.000	0.000	1.556	3.412	7.290	7.265
Belgium	1.200	1.571	2.121	2.458	2.463	3.379	4.335	5.935	6.062
Switzerland	0.840	3.292	3.007	3.408	3.399	4.052	4.257	5.174	5.074
Ireland	0.000	4.632	3.634	2.539	1.332	1.640	1.831	4.076	4.911
Singapore	1.223	0.889	1.447	2.619	2.832	3.953	4.513	4.450	4.389
Netherlands	5.223	4.602	3.700	3.449	3.032	3.615	3.664	3.719	3.702
Panama	6.166	5.041	6.442	5.698	5.113	4.321	4.277	3.797	3.619
United Kingdom	3.341	3.038	2.375	2.193	1.811	2.498	1.937	2.260	2.368
Denmark	0.558	0.406	0.664	1.087	1.124	1.962	1.777	2.132	2.303
Sweden	0.915	1.502	1.996	2.168	1.849	2.255	2.086	2.440	2.214
Finland	0.263	0.493	0.763	0.942	1.069	1.817	1.500	1.657	1.711
Libya	0.532	0.540	0.474	0.288	0.245	0.281	0.232	0.919	1.682
France	1.014	0.942	0.855	1.343	2.205	2.296	2.100	1.742	1.626

Country/ Year	1980-83	1984-87	1988-91	1992-95	1996-99	2000-03	2004-07	2008-11	2011
Austria	0.175	0.181	0.250	0.388	0.404	0.714	0.977	1.392	1.569
China, Taiwan Province of	5.469	2.724	1.793	1.422	1.026	0.988	1.039	1.431	1.503
Norway	0.194	0.262	0.746	1.094	0.956	0.936	1.121	1.338	1.432
Spain	0.275	0.352	0.320	0.474	0.563	0.963	1.064	1.367	1.399
Germany			0.945	0.877	0.859	1.330	1.199	1.327	1.329
Canada	1.980	1.797	1.537	1.570	1.436	1.448	1.194	1.288	1.272
Malaysia	0.476	0.211	0.237	0.276	0.715	0.477	0.648	1.213	1.255
Bahamas	0.000	0.000	0.000	0.000	0.066	0.340	0.504	1.037	1.249
Bahrain	3.277	2.430	1.866	1.594	1.330	1.033	1.267	1.218	1.082
Cyprus	0.000	0.002	0.018	0.062	0.115	0.425	0.979	1.435	1.037
United States	1.501	1.423	1.476	1.402	1.369	0.943	1.055	0.926	0.981
Chile	0.067	0.085	0.058	0.244	0.428	0.706	0.655	0.940	0.971
Israel	0.182	0.297	0.236	0.319	0.242	0.355	0.720	0.755	0.970
Portugal	0.344	0.274	0.135	0.220	0.343	0.740	0.840	0.909	0.939
Australia	0.571	0.618	1.219	1.255	1.101	1.188	1.059	0.919	0.833
Seychelles	2.712	2.893	1.666	1.186	0.938	0.713	0.683	0.859	0.805
Aruba	0.000	0.000	1.031	2.991	1.577	1.408	0.912	0.842	0.800

Country/ Year	1980-83	1984-87	1988-91	1992-95	1996-99	2000-03	2004-07	2008-11	2011
Italy	0.378	0.546	0.538	0.699	0.694	0.589	0.524	0.725	0.770
Mongolia	0.000	0.000	0.000	0.000	0.000	0.000	0.026	0.569	0.723
Estonia				0.134	0.204	0.318	0.607	0.928	0.703
Russian Federation				0.043	0.144	0.623	0.719	0.653	0.648
Lebanon	0.000	0.229	0.173	0.182	0.128	0.163	0.457	0.600	0.603
Zambia	0.000	0.000	0.000	0.000	0.000	0.000	0.015	0.392	0.591
South Africa	1.639	2.109	1.428	1.282	1.064	0.766	0.622	0.694	0.584
Hungary	0.000	0.000	0.023	0.044	0.073	0.133	0.297	0.478	0.559
Malta	0.000	0.000	0.000	0.081	0.218	0.351	0.589	0.527	0.549
Japan	0.460	0.443	0.585	0.523	0.348	0.295	0.322	0.492	0.543
United Arab Emirates	0.002	0.006	0.012	0.050	0.081	0.093	0.255	0.573	0.528
Slovenia				0.305	0.141	0.235	0.369	0.496	0.475
Greece	0.000	0.313	0.365	0.231	0.128	0.230	0.249	0.419	0.473
Korea, Republic of	0.056	0.074	0.082	0.143	0.204	0.157	0.175	0.428	0.470
Kuwait	0.885	1.157	2.141	1.670	0.583	0.099	0.266	0.633	0.411
New Zealand	0.098	0.389	0.854	1.113	0.623	0.603	0.405	0.377	0.385
Kazakhstan				0.000	0.002	0.028	0.015	0.244	0.368

Country/ Year	1980-83	1984-87	1988-91	1992-95	1996-99	2000-03	2004-07	2008-11	2011
Qatar	0.000	0.000	0.000	0.001	0.018	0.020	0.107	0.305	0.352
Azerbaijan				0.000	0.004	0.220	0.780	0.361	0.328
Poland	0.001	0.006	0.012	0.025	0.030	0.030	0.101	0.237	0.321
Mexico	0.157	0.167	0.105	0.088	0.072	0.231	0.251	0.283	0.321
Thailand	0.008	0.016	0.048	0.084	0.109	0.089	0.101	0.234	0.317
Trinidad and Tobago	0.002	0.040	0.047	0.037	0.051	0.190	0.217	0.312	0.317
Colombia	0.068	0.088	0.075	0.075	0.097	0.144	0.176	0.239	0.308
Brazil	3.850	2.852	1.257	0.829	0.337	0.384	0.333	0.303	0.276
Montenegro								0.270	0.275
Serbia								0.265	0.257
Kenya	0.972	0.813	0.619	0.690	0.346	0.295	0.207	0.229	0.253
Czech Republic				0.049	0.056	0.074	0.116	0.225	0.237
Croatia				0.421	0.207	0.204	0.173	0.260	0.234
Argentina	1.486	0.887	0.536	0.321	0.320	0.532	0.417	0.272	0.230
Venezuela	0.016	0.101	0.226	0.376	0.378	0.342	0.237	0.172	0.208
Angola	0.000	0.000	0.000	0.001	0.004	0.002	0.017	0.168	0.201
India	0.008	0.006	0.004	0.010	0.012	0.028	0.069	0.180	0.189

Country/ Year	1980-83	1984-87	1988-91	1992-95	1996-99	2000-03	2004-07	2008-11	2011
Saudi Arabia	0.046	0.092	0.251	0.172	0.125	0.135	0.121	0.176	0.177
Mauritius	0.000	0.000	0.013	0.205	0.138	0.113	0.107	0.147	0.172
China	0.003	0.048	0.101	0.203	0.131	0.097	0.084	0.147	0.171
Georgia				0.000	0.033	0.114	0.046	0.151	0.170
Ukraine				0.007	0.014	0.017	0.041	0.167	0.163
Oman	0.000	0.935	0.638	0.424	0.231	0.136	0.111	0.138	0.161
Lithuania				0.000	0.009	0.017	0.098	0.168	0.155
Slovakia				0.083	0.074	0.091	0.066	0.121	0.144
Brunei Darussalam	0.000	0.000	0.003	0.250	0.500	0.381	0.217	0.165	0.139
Solomon Islands	0.000	0.000	0.000	0.000	0.000	0.000	0.038	0.130	0.137
Togo	0.000	0.000	0.000	0.000	0.008	0.002	0.000	0.101	0.130
Zimbabwe	0.004	0.028	0.071	0.109	0.118	0.135	0.131	0.137	0.117
Belize	0.000	0.726	0.545	0.441	0.327	0.197	0.130	0.117	0.114
Bulgaria	0.000	0.018	0.085	0.098	0.037	0.010	0.029	0.098	0.104
Latvia				0.572	0.209	0.025	0.074	0.109	0.103
Gabon	0.392	0.367	0.325	0.369	0.257	0.190	0.092	0.108	0.102
Turkey	0.000	0.114	0.079	0.056	0.044	0.084	0.059	0.098	0.102

Country/ Year	1980-83	1984-87	1988-91	1992-95	1996-99	2000-03	2004-07	2008-11	2011
Cambodia	0.000	0.000	0.000	0.479	0.252	0.215	0.136	0.099	0.097
Philippines	0.082	0.123	0.091	0.127	0.113	0.065	0.078	0.107	0.097
Vanuatu	0.000	0.000	0.000	0.000	0.000	0.070	0.116	0.100	0.096
Guinea	0.000	0.000	0.000	0.000	0.004	0.014	0.013	0.106	0.095
Egypt	0.062	0.059	0.051	0.047	0.034	0.032	0.037	0.079	0.086
Nicaragua	0.000	0.000	0.000	0.000	0.006	0.056	0.066	0.080	0.084
Nigeria	0.002	0.001	0.282	0.719	0.617	0.335	0.062	0.070	0.081
Kiribati	0.000	0.000	0.000	0.000	0.000	0.011	0.045	0.072	0.081
Botswana	8.423	4.812	1.492	1.086	0.501	0.592	0.287	0.107	0.073
Senegal	0.173	0.171	0.087	0.154	0.116	0.098	0.060	0.064	0.072
Macao SAR	0.000	0.000	0.000	0.000	0.000	0.207	0.187	0.119	0.071
Morocco	0.133	0.105	0.060	0.066	0.045	0.047	0.047	0.066	0.069
Central African Republic	0.008	0.037	0.126	0.281	0.237	0.179	0.102	0.070	0.066
Swaziland	0.566	0.331	0.402	0.538	0.312	0.189	0.102	0.072	0.064
Papua New Guinea	0.202	0.132	0.067	0.420	0.297	0.258	0.140	0.079	0.058
Costa Rica	0.063	0.078	0.067	0.053	0.029	0.028	0.040	0.059	0.057
Peru	0.006	0.030	0.030	0.042	0.056	0.047	0.051	0.055	0.057

Country/ Year	1980-83	1984-87	1988-91	1992-95	1996-99	2000-03	2004-07	2008-11	2011
Jordan	0.746	0.448	0.408	0.180	0.022	0.030	0.086	0.055	0.055
Jamaica	0.029	0.026	0.076	0.352	0.337	0.368	0.108	0.041	0.053
Albania	0.000	0.000	0.000	0.000	0.000	0.000	0.014	0.043	0.052
Armenia				0.000	0.000	0.000	0.006	0.028	0.052
Yemen			0.011	0.011	0.016	0.016	0.038	0.048	0.052
Republic of Moldova				0.043	0.081	0.061	0.028	0.037	0.042
Algeria	0.052	0.039	0.034	0.036	0.022	0.018	0.020	0.032	0.038
Indonesia						0.000	0.008	0.016	0.037
Paraguay	0.593	0.457	0.302	0.242	0.135	0.107	0.068	0.043	0.035
Fiji	0.025	0.031	0.176	0.190	0.141	0.100	0.063	0.037	0.034
TFYR of Macedonia				0.000	0.006	0.029	0.029	0.031	0.031
Niger	0.031	0.166	0.240	0.467	0.286	0.001	0.005	0.021	0.029
Guatemala	0.000	0.000	0.000	0.030	0.014	0.025	0.031	0.029	0.028
Bosnia and Herzegovina				0.000	0.000	0.000	0.018	0.023	0.028
Romania	0.000	0.000	0.011	0.032	0.020	0.013	0.016	0.027	0.026
Chad	0.048	0.062	0.266	0.441	0.255	0.157	0.041	0.028	0.026
Mauritania	0.000	0.007	0.017	0.017	0.016	0.013	0.015	0.024	0.025

Country/ Year	1980-83	1984-87	1988-91	1992-95	1996-99	2000-03	2004-07	2008-11	2011
Sri Lanka	0.000	0.003	0.011	0.019	0.020	0.023	0.023	0.025	0.024
Syrian Arab Republic	0.000	0.001	0.007	0.022	0.015	0.036	0.044	0.025	0.024
Pakistan	0.036	0.054	0.052	0.037	0.025	0.032	0.027	0.033	0.023
Tunisia	0.015	0.011	0.012	0.014	0.008	0.006	0.007	0.018	0.022
Iran (Islamic Republic of)	0.000	0.000	0.001	0.001	0.016	0.017	0.012	0.020	0.020
Uruguay	0.402	0.442	0.217	0.098	0.046	0.030	0.035	0.026	0.020
Guinea-Bissau	0.000	0.000	0.000	0.000	0.000	0.004	0.010	0.012	0.019
Belarus				0.053	0.054	0.005	0.002	0.010	0.017
Ecuador	0.005	0.019	0.016	0.043	0.069	0.046	0.023	0.018	0.017
Benin	0.010	0.022	0.010	0.016	0.072	0.021	0.013	0.018	0.017
Barbados	0.139	0.141	0.126	0.129	0.085	0.057	0.072	0.083	0.016
Malawi	0.000	0.000	0.000	0.000	0.011	0.005	0.012	0.013	0.014
Côte d'Ivoire	0.000	0.000	0.005	0.007	0.014	0.003	0.004	0.012	0.014
Honduras	0.000	0.000	0.000	0.000	0.000	0.000	0.009	0.009	0.009
Namibia	0.000	0.000	0.231	0.138	0.030	0.040	0.019	0.012	0.007
Rwanda	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.008	0.007
Developing economies	0.572	0.485	0.394	0.438	0.467	0.516	0.466	0.504	0.512

Country/ Year	1980-83	1984-87	1988-91	1992-95	1996-99	2000-03	2004-07	2008-11	2011
Transition economies			0.005	0.043	0.105	0.430	0.522	0.509	0.519
Developed economies	1.256	1.216	1.184	1.164	1.166	1.145	1.197	1.266	1.297

Note: Countries whose index is smaller than 0.005 in 2011 are excluded if their index values are negligible during all years. Of 238 countries this criterion left 136.

Source: Own calculation from UNCTAD (2002) data. Method for calculation: $IND_i = \frac{FDI_i/FDI_w}{GDP_i/GDP_w}$ where *IND* refers to index country, *i* refers to region, *w* refers to world (UNCTAD 2004).

Table A4. 5 Outward FDI Performance of Economic Regions

Country Group/ Year	*Developing economies*	*Developing economies excluding China*	*Developing economies excluding LDCs*	*Transition economies*	*Emerging economies*	*Least developed countries*	*Developed economies*	*G8 Countries*	*Triad*
1980	0.61	0.69	0.63	0.00	1.82	0.00	1.24	1.33	1.32
1981	0.55	0.62	0.57	0.00	1.48	0.00	1.26	1.35	1.34
1982	0.58	0.65	0.60	0.00	1.61	0.00	1.26	1.34	1.34
1983	0.55	0.62	0.57	0.00	1.63	0.00	1.26	1.29	1.33
1984	0.55	0.62	0.57	0.00	1.48	0.00	1.24	1.26	1.31
1985	0.48	0.54	0.50	0.00	1.17	0.00	1.24	1.23	1.31
1986	0.46	0.52	0.48	0.00	1.03	0.08	1.20	1.20	1.25
1987	0.44	0.49	0.46	0.00	0.88	0.09	1.18	1.17	1.23
1988	0.41	0.45	0.42	0.00	0.76	0.10	1.18	1.17	1.22
1989	0.38	0.43	0.40	0.00	0.64	0.09	1.19	1.18	1.23
1990	0.40	0.43	0.41	0.01	0.65	0.08	1.18	1.15	1.21
1991	0.39	0.42	0.40	0.01	0.58	0.10	1.18	1.14	1.21
1992	0.43	0.46	0.44	0.01	0.59	0.14	1.16	1.08	1.19

Country Group/ Year	*Developing economies*	*Developing economies excluding China*	*Developing economies excluding LDCs*	*Transition economies*	*Emerging economies*	*Least developed countries*	*Developed economies*	*G8 Countries*	*Triad*
1993	0.42	0.45	0.43	0.05	0.51	0.11	1.17	1.10	1.20
1994	0.46	0.49	0.47	0.05	0.50	0.11	1.16	1.07	1.19
1995	0.44	0.47	0.45	0.06	0.48	0.10	1.16	1.10	1.20
1996	0.42	0.46	0.43	0.07	0.44	0.08	1.18	1.13	1.22
1997	0.50	0.56	0.51	0.09	0.42	0.08	1.17	1.12	1.21
1998	0.46	0.52	0.47	0.12	0.41	0.04	1.16	1.13	1.21
1999	0.49	0.56	0.50	0.14	0.40	0.04	1.15	1.12	1.19
2000	0.50	0.58	0.51	0.22	0.36	0.06	1.16	1.09	1.19
2001	0.54	0.65	0.56	0.41	0.50	0.05	1.14	1.05	1.17
2002	0.55	0.66	0.56	0.54	0.56	0.05	1.13	1.01	1.17
2003	0.48	0.59	0.49	0.56	0.51	0.05	1.15	1.04	1.19
2004	0.46	0.56	0.47	0.47	0.50	0.04	1.17	1.05	1.21
2005	0.46	0.56	0.47	0.51	0.50	0.05	1.19	1.07	1.24
2006	0.46	0.57	0.47	0.50	0.48	0.04	1.21	1.08	1.26
2007	0.48	0.61	0.50	0.61	0.49	0.04	1.22	1.10	1.27

Country Group/ Year	*Developing economies*	*Developing economies excluding China*	*Developing economies excluding LDCs*	*Transition economies*	*Emerging economies*	*Least developed countries*	*Developed economies*	*G8 Countries*	*Triad*
2008	0.53	0.66	0.54	0.37	0.61	0.07	1.24	1.01	1.30
2009	0.49	0.64	0.51	0.57	0.60	0.06	1.25	1.05	1.30
2010	0.49	0.62	0.50	0.58	0.57	0.07	1.28	1.07	1.34
2011	0.51	0.66	0.53	0.52	0.61	0.08	1.30	1.07	1.36

Notes: 1: Excluding transition economies, 2: including transition economies

Source: Own calculation from UNCTAD (2002) data.

Method for calculation: $IND_i = \frac{FDI_i / FDI_w}{GDP_i / GDP_w}$ where *IND* refers to index region, *i* refers to region, *w* refers to world (UNCTAD 2004).

A.5 Data Sources

Variable	*Source*
Firm FDI status	Worldscope, Orbis
Firm FDI Stock	Tohmson Finance - Worldscope
Firm Size	Tohmson Finance - Worldscope
Firm Establishment year	Tohmson Finance - Worldscope, firms' websites, Orbis
Exports	Tohmson Finance - Worldscope
Long term debt, short term debt	Tohmson Finance - Worldscope, CEDAR, EDGAR, firms' annual reports
Sales	Tohmson Finance - Worldscope, CEDAR, EDGAR, firms' annual reports
R&D expenses	Tohmson Finance - Worldscope, CEDAR, EDGAR, firms' annual reports
Fixed assets	Tohmson Finance - Worldscope, CEDAR, EDGAR, firms' annual reports
Intangible assets	Tohmson Finance - Worldscope, CEDAR, EDGAR, firms' annual reports
Total assets	Tohmson Finance - Worldscope, CEDAR, EDGAR, firms' annual reports
SGA expenses	Tohmson Finance - Worldscope, CEDAR, EDGAR, firms' annual reports
Number of employees	Tohmson Finance - Worldscope, CEDAR, EDGAR, firms' annual reports
Producer Price Index	WDI (World Development Indicators)
Consumer Price Index	WDI (World Development Indicators)

A.6 Data and Statistics

Table A6. 1 Probit Estimates of FDI Choice of the Firms

	Full Sample	EUR	JPN	NM
INTERCEPT	0.1447	0.9126‡	-2.4622*	1.2310*
	(0.1218)	(0.2887)	(0.3097)	(0.2584)
MARKPWR	0.8154*	1.9041*	3.9434*	0.7381*
	(0.1550)	(0.4409)	(0.5384)	(0.1624)
TECHIN	0.6026*	0.3614‡	-0.8015‡	0.5489‡
	(0.1672)	(0.1714)	(0.2689)	(0.2135)
ECONSCA	-1.3297*	-1.6390*	-2.0811*	-0.8771*
	(0.1227)	(0.2947)	(0.3176)	(0.2249)
CAPINT	-0.0394	-0.1206	0.0376	0.0447
	(0.0415)	(0.0845)	(0.1014)	(0.0543)
INTAINT	3.2977*	1.6619*	0.7296	0.6192‡
	(0.2363)	(0.3845)	(1.1398)	(0.2970)
PRODVTY	0.2264*	-0.1725‡	0.2663‡	0.0228
	(0.0416)	(0.0844)	(0.0866)	(0.0653)
NEWSIZE	0.0536*	0.0706*	0.0996*	0.0717*
	(0.0047)	(0.0077)	(0.0226)	(0.0095)
AGE	0.0063*	0.0046*	0.0077*	0.0125*
	(0.0007)	(0.0011)	(0.0020)	(0.0019)
INTEXP	-1.8998*	-3.1894*	-2.5040*	-0.9669*
	(0.1377)	(0.2745)	(0.3007)	(0.2620)
LEVERAGE	-0.4562*	-0.2956	-0.3643	-0.1575
	(0.1020)	(0.2620)	(0.2445)	(0.1154)
FINLIQU	0.1430	1.0424‡	-0.2697	0.3484
	(0.1554)	(0.3476)	(0.3426)	(0.2400)
year1989	-0.1504‡	-0.4253‡	-0.0138	-0.2131§
	(0.0468)	(0.1817)	(0.0791)	(0.1105)
year1990	-0.3160*	-0.8679*	-0.0275	-0.3151‡
	(0.0604)	(0.2132)	(0.0970)	(0.1568)

year1991	-0.4378*	-0.9465*	-0.1276	-0.4730‡
	(0.0668)	(0.2259)	(0.1090)	(0.1779)
year1992	-0.5843*	-0.9765*	-0.1680	-0.5967‡
	(0.0751)	(0.2309)	(0.1440)	(0.1924)
year1993	-0.6923*	-0.9647*	0.0494	-0.5679‡
	(0.0784)	(0.2307)	(0.1594)	(0.2054)
year1994	-0.6681*	-0.8219*	0.2944§	-0.6627‡
	(0.0802)	(0.2318)	(0.1701)	(0.2131)
year1995	-0.7023*	-0.7284‡	0.3690‡	-0.7377*
	(0.0799)	(0.2329)	(0.1716)	(0.2186)
year1996	-0.7057*	-0.6600‡	0.4285‡	-0.8453*
	(0.0817)	(0.2350)	(0.1778)	(0.2260)
year1997	-0.7041*	-0.6843‡	0.5191‡	-0.9886*
	(0.0831)	(0.2372)	(0.1829)	(0.2303)
year1998	-0.6572*	-0.7108‡	0.8993*	-1.0172*
	(0.0843)	(0.2398)	(0.1880)	(0.2357)
year1999	-0.5621*	-0.7663‡	1.2337*	-0.9940*
	(0.0856)	(0.2431)	(0.1938)	(0.2397)
year2000	-0.6039*	-0.8747*	1.2578*	-1.0164*
	(0.0869)	(0.2457)	(0.1985)	(0.2431)
year2001	-0.6106*	-0.9322*	1.2724*	-1.0628*
	(0.0880)	(0.2477)	(0.2025)	(0.2428)
year2002	-0.6747*	-0.9941*	1.2622*	-1.1469*
	(0.0886)	(0.2502)	(0.2055)	(0.2425)
year2003	-0.7816*	-1.0629*	1.1513*	-1.2062*
	(0.0898)	(0.2554)	(0.2086)	(0.2442)
year2004	-0.7940*	-1.0095*	1.1920*	-1.2541*
	(0.0915)	(0.2598)	(0.2120)	(0.2478)
year2005	-0.8445*	-0.9916*	1.1167*	-1.3197*
	(0.0921)	(0.2629)	(0.2124)	(0.2498)
year2006	-0.8650*	-0.8967*	1.0424*	-1.3641*
	(0.0917)	(0.2547)	(0.2111)	(0.2495)
year2007	-0.9002*	-0.8935*	0.9536*	-1.4187*
	(0.0911)	(0.2519)	(0.2081)	(0.2485)
year2008	-0.9366*	-0.8821*	0.8431*	-1.4542*

	(0.0906)	(0.2498)	(0.2051)	(0.2467)
year2009	-0.9964*	-0.9738*	0.7867*	-1.5049*
	(0.0904)	(0.2506)	(0.2016)	(0.2456)
year2010	-1.0038*	-0.9631*	0.8031*	-1.5167*
	(0.0901)	(0.2511)	(0.2028)	(0.2454)
year2011	-1.0651*	-0.9396*	0.6911*	-1.5621*
	(0.0909)	(0.2523)	(0.2038)	(0.2474)
No of obs.	40653	10009	16352	14292
McFadden's R^2	0.2208	0.3297	0.2466	0.2549
chi^2	881.5900	380.7817	435.8258	203.3194

Table A6. 2 Variance Inflation Factor (VIF) Results VIF Test Results for the Probit Analyses

	I				II				III				IV			
	VIF	SQRT VIF	Tolerance	R-Squared	VIF	SQRT VIF	Tolerance	R-Squared	VIF	SQRT VIF	Tolerance	R-Squared	VIF	SQRT VIF	Tolerance	R-Squared
MARKPWR	1.13	1.06	0.882	0.118	1.06	1.03	0.943	0.057	1.08	1.04	0.930	0.070	1.71	1.31	0.583	0.417
TECHINT	1.15	1.07	0.872	0.128	1.29	1.13	0.777	0.223	1.19	1.09	0.843	0.157	1.16	1.08	0.862	0.138
ECONSCALE	1.32	1.15	0.755	0.245	1.2	1.1	0.833	0.167	1.38	1.17	0.727	0.273	1.54	1.24	0.650	0.351
CAPINT	1.23	1.11	0.814	0.186	1.38	1.17	0.726	0.274	1.05	1.02	0.953	0.047	1.29	1.13	0.778	0.222
INTAINT	1.31	1.14	0.764	0.236	1.3	1.14	0.767	0.233	1.25	1.12	0.801	0.199	1.42	1.19	0.705	0.295
PRODVTY	1.15	1.07	0.873	0.127	1.2	1.1	0.833	0.167	1.13	1.06	0.886	0.114	1.18	1.09	0.846	0.154
SIZE	1.11	1.06	0.897	0.103	1.08	1.04	0.926	0.074	1.08	1.04	0.924	0.077	1.2	1.09	0.837	0.163
AGE	1.03	1.02	0.971	0.029	1.07	1.03	0.938	0.062	1.02	1.01	0.985	0.015	1.13	1.06	0.885	0.116
L.INTEXP	1.11	1.06	0.898	0.102	1.11	1.05	0.903	0.097	1.33	1.15	0.752	0.248	1.1	1.05	0.910	0.090
LEVERAGE	1.36	1.17	0.734	0.266	1.19	1.09	0.840	0.160	1.41	1.19	0.708	0.292	1.69	1.3	0.592	0.408
FINLIQU	1.19				1.19				1.22				1.38			
Mean VIF	1.13	1.06	0.882	0.118	1.06	1.03	0.943	0.057	1.08	1.04	0.930	0.070	1.71	1.31	0.583	0.417

Table A6. 3 Variance Inflation Factor (VIF) Results VIF Test Results for OLS Estimation

	NM								FULL SAMPLE							
	Model (1)				Model (2)				Model (1)				Model (2)			
	VIF	SQRT VIF	Tolerance	R-Squared	VIF	SQRT VIF	Tolerance	R-Squared	VIF	SQRT VIF	Tolerance	R-Squared	VIF	SQRT VIF	Tolerance	R-Squared
FRMMARKPWR	1.60	1.27	0.624	0.376	1.68	1.29	0.597	0.403	2.59	1.61	0.386	0.614	1.65	1.29	0.604	0.396
FRMTECHINT	1.55	1.25	0.644	0.356	1.49	1.22	0.670	0.330	1.46	1.21	0.683	0.317	1.59	1.26	0.627	0.373
FRMECONSCA	1.76	1.33	0.569	0.431	1.72	1.31	0.583	0.417	2.46	1.57	0.406	0.594	1.76	1.33	0.569	0.431
FRMCAPINT	1.35	1.16	0.740	0.260	1.32	1.15	0.760	0.240	1.51	1.23	0.663	0.338	1.51	1.23	0.661	0.340
FRMINTAINT	1.27	1.13	0.786	0.214	1.41	1.19	0.711	0.289	1.25	1.12	0.802	0.198	1.36	1.17	0.734	0.266
PRODVTY	1.07	1.03	0.938	0.062	1.17	1.08	0.852	0.148	1.12	1.06	0.889	0.111	1.07	1.04	0.931	0.069
SIZE	1.08	1.04	0.927	0.074	1.07	1.04	0.932	0.068	1.19	1.09	0.843	0.157	1.09	1.05	0.915	0.086
AGE	1.14	1.07	0.874	0.126	1.09	1.04	0.919	0.081	1.18	1.09	0.845	0.155	1.18	1.09	0.847	0.153
L.INTEXP	1.13	1.06	0.887	0.113	1.16	1.08	0.862	0.138	1.48	1.21	0.678	0.322	1.12	1.06	0.894	0.106
LEVERAGE	1.61	1.27	0.622	0.378	1.34	1.16	0.745	0.255	1.82	1.35	0.550	0.450	1.84	1.36	0.543	0.457
FINLIQU	1.07	1.03	0.934	0.066	1.09	1.05	0.914	0.086	1.08	1.04	0.928	0.072	1.09	1.05	0.916	0.084
Mean VIF	1.22	1.11	0.816	0.184	1.21	1.10	0.829	0.171	1.35	1.16	0.742	0.259	1.25	1.12	0.802	0.198

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