UNIVERSITY OF GOTHENBURG
SCHOOL OF BUSINESS, ECONOMICS AND LAW

Macroeconomic Determinants of European FDI Outflows: An Empirical Approach

University of Gothenburg

School of Business, Economics and Law

Bachelor thesis in Economics

Summer 2015

Authors: Charlotte Nielsen & Karin Hällås

Supervisor: Per-Åke Andersson

Date: 2015-09-03

Acknowledgement

Writing this thesis has been a great and challenging experience for us. We would like to thank our supervisor, Per-Åke Andersson, for invaluable support during our work, and for fruitful as well as pleasant discussions. We would also like to extend our gratitude to Adam Farago and Nicklas Nordfors, for the support regarding econometrics.

Gothenburg, August 2015

Charlotte Nielsen and Karin Hällås

Abstract

The aim of this thesis is to investigate the effect of country specific characteristics on foreign direct investment (FDI) outflows of ten European countries. The macroeconomic determinants included in the study are income, technology, the current account balance, openness of economy and exchange rate. Previous studies and theories implies that the relationship between these variables and FDI outflows should be positive. This is therefore our expected results. In order to test this hypothesis we use time series analysis, with an annual frequency of the data. We have a total of 34 observations from 1980-2013. Openness of economy was found to be the most important determinant, since it was statistically significant for several countries. It was also the variable which corresponded the most with our expectations. However, the overall results are inconclusive, and suggests that macroeconomic characteristics may not be good determinants of FDI outflows.

Keywords: FDI, foreign direct investment outflow, income, technology, current account balance, openness of economy, exchange rate, internalisation theory, OLI, Europe

Table of content

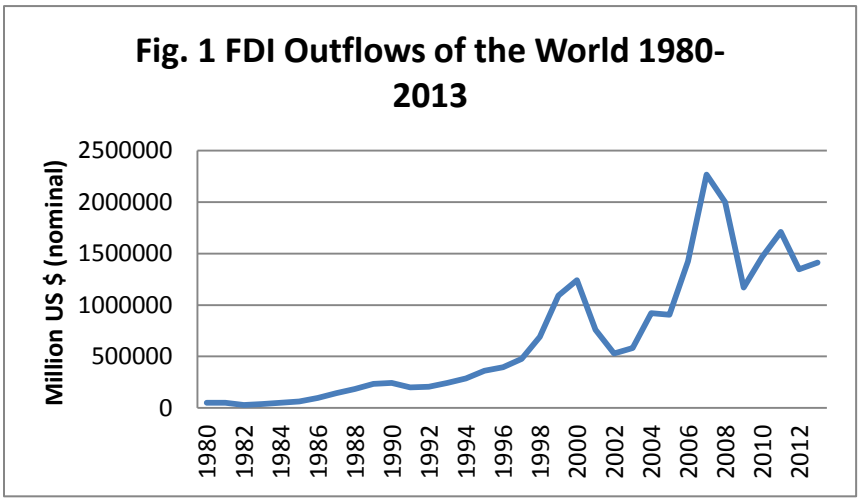
1 Introduction

The foreign direct investment flows of the world have grown considerably during the last decades, becoming an even more important part of the world economy. The total outflows of FDI in the world has increased from approximately 50 billion to 1400 billion US dollars, from 1980-2013. This is an astonishing increase of almost 2700 percent (UNCTAD, 2014). Figure 1 illustrates how FDI outflows of the world have varied during this time period. It is essential to study these flows in order to understand the underlying mechanisms driving international investment. Especially with flows of this magnitude. FDI has therefore become a very well researched field.

However, a lot of the existing literature takes a host country perspective, i.e. the receiving country. This research focus on explaining the FDI flows of the world by looking at what makes a host country desirable for international investments (Coughlin, Terza & Arromdee, 1991; Cheng & Kwan, 2000; Castellani, Meliciani & Mirra, 2014). This is an important aspect, but it seldom considers neither source country nor firm-specific characteristics that might influence FDI. Among the research on outward FDI, i.e. research that takes a source country perspective, the focus tends to be on microeconomic determinants, and why multinational enterprises invest abroad (Hymer, 1974; Caves 1971; Buckley, 2014).

Little research takes a purely macroeconomic approach, and even less so a macroeconomic empirical one. Kyrkilis and Pantelidis (2003) are one of few who do take this approach, by testing the effect of macroeconomic determinants on outward FDI. They investigate how income, technology, human capital, interest rates, openness of economy and exchange rates affect FDI outflows, of five EU countries and four non-EU countries. They argue that macroeconomic determinants do indeed explain FDI outflows, during a 21 year period from 1977-1997. We want to further add to this limited research area by solely focusing on Europe and by adding more observations. We aim to explain FDI outflows of ten European countries with country specific characteristics, from 1980-2013. Originally we were only including the three largest economies in the Euro zone, specifically Germany, France and Italy, as we observed huge differences in FDI outflows between them. This is what first got us interested in the subject of FDI, as we wanted to understand why the outflows differed so much. These differences made us curious as to how FDI outflows vary in Europe, and therefore we decided to include more countries in the

study. We will be using time series methods, and in order to see differences between countries we will do one regression for each country.



Source: UNCTAD Statistics

1.2 Research question

1. Do macroeconomic determinants explain foreign direct investment outflows of countries in the European Union, and if so, do the most important characteristics differ across countries?

1.3 Aim

The aim of this study is to determine whether certain country characteristics, such as income, technology, current account balance, openness of the economy and exchange rates explain the outward FDI position of European countries. We aim to contribute to the research field by studying ten countries in the European Union, of which six are also part of the Euro zone. We further want to investigate which characteristics are the most important for European FDI outflows, and see if these differ across countries.

1.4 Delimitation

In this study we will only be focusing on outward FDI flows from a source country and macroeconomic perspective. We do not take the host country and their locational advantages into consideration. In this thesis we are not interested in investigating why the Multinational Enterprises choose to invest abroad. Furthermore, we will only be focusing on Europe, and the ten countries included in this study.

1.5 Disposition

This study is organized as follows; in the next section we present previous research about foreign direct investment, both general theory, and a more thorough description of the theories behind our macroeconomic determinants. This section also includes a definition on foreign direct investment, and ends with our hypothesis, expected result and the model. In section three we present the data and the econometric approach we used for this study. This section includes more detailed information on each variable. The fourth section provides the regression results, where our hypothesis has been tested and analysed. Conclusion and further research suggestions is found in section five. Appendix A and B is in the end of this thesis.

2 Literature overview and hypothesis

2.1 Foreign Direct Investment

There are several definitions of foreign direct investment (FDI), but the most commonly used is provided by The Organization for Economic Co-operation and Development (OECD) (1996) and the International Monetary Fund (IMF) (1993). According to this definition, FDI generally has two main guidelines. First, the foreign investor is recommended to own at least ten percent of the ordinary shares or votes. Second, FDI consists of both initial transaction and all subsequent capital transaction between the direct investor and the direct investment enterprise (OECD, 1996). It is the ability to control management, decision making and the long-term perspective that differentiate FDI from other forms of international investments, e.g. portfolio investment (Moosa, 2002). A direct investment could take the shape of a greenfield investment, cross-border mergers and acquisitions or joint ventures with a local company (Moosa, 2002).

There are mainly two types of FDI that each serves a different purpose to the investor. If a multinational enterprise wants to expand their business horizontally, they may duplicate the home production of goods or services and allocate it in multiple countries (host country). This type of FDI is called horizontal FDI. Vertical FDI on the other hand, serves to allocate fragments of the different production stages of a multinational firm, with the aim of lowering costs. (Aizenman & Marion, 2003; Braconier, Norbäck & Dieter, 2004). Another aim for this type of

FDI is to utilize raw materials in the host country, or to establish a closer contact to the consumers via distribution outlets (Moosa, 2002).

2.2 Previous studies

According to Lizondo (1990) three classifications can be made of the many theories regarding FDI; theories that assume perfect markets, theories that assume imperfect markets, and theories based on some other variable, e.g. political instability. In this section we focus on the theories assuming imperfect markets, since they are most relevant to our research question. Also, according to Kindleberger (1969) FDI cannot exist with perfect markets, and therefore this assumption must be loosened.

Within the literature assuming imperfect markets there are two main flows of research. The first was initiated by Hymer in the 60's and is based on the theory of industrial organisation. The second began with Vernon, also in the 60's, and is rooted in the theory of international trade. Vernon based his theory on the product-cycle, and it mostly focuses on cutting costs by moving production to low-cost countries (Tøndel, 2001).

The main research and literature on FDI can be said to have begun with Hymer (1976), who in 1960 developed a theory under the imperfect market setting. The central part of his theory concerns firm-specific advantages. He argued that firms operating abroad are at a disadvantage compared to domestic firms, regarding culture, language, laws etc. To overcome these challenges the firm must exploit their market power in order to profit on their investment, i.e. they must possess some firm-specific advantages. Hymer (1976) is supported by many, among others by Kindleberger (1969), Caves (1974) and Dunning (1981a).

Alongside and closely connected to the work of Hymer two other theories began to develop under the assumption of imperfect markets, namely internalisation theory and the eclectic theory by Dunning (1981a) and Dunning and Narula (1996).

The general theory of internalisation is a well researched one, among many others by the authors (Hymer, 1976; Rugman, 1981; Caves 1971; Buckley and Casson, 1976 (cited by Rugman, 1982)), and emphasises the role of imperfect markets, while describing the firm as an alternative to these markets (Hymer, 1976; Buckley, 2014). Generally the theory weighs the costs and benefits of internal versus external markets against each other. The benefits of internalising

includes eliminating time lags in processes, exploitation of market power, less instability in intermediate product markets, overcoming information asymmetries and exploiting the disharmony in international tax systems. The drawbacks include costs in communications, management and resources (Buckley, 2014).

The eclectic theory of Dunning, also called the OLI paradigm, integrates many different theories into one (Tøndel, 2001). According to Dunning (1981a) a combination of three conditions has to be fulfilled in order for FDI to occur; ownership specific advantages, internalisation advantages and location specific advantages. Ownership specific advantages are based on Hymer's firm specific advantages (Gou, 2015), and can be said to be the "why" of Multinational Enterprises (MNE) activity (Tøndel, 2001). They include transferable assets such as patents, technology and managerial skills, that the firm possess but foreign firms do not. Internalisation advantages reflect whether the firm believe it is in their best interest to internalise these assets, that is, whether the perceived efficiency of an internal market is higher than an external market (Dunning, 1981a). The incentives for internalisation can be referred to as the "how" of MNE's activity. Finally location specific advantages can be referred to as the "where" of MNE's activity (Tøndel, 2001), and includes the attractiveness of foreign locations. Whether firms find it profitable to invest abroad depends on these attractions (Dunning, 1981a).

Dunning (1981a) and Dunning and Narula (1996) also plots the relationship between GNP per capita and net outward investments flows per capita (NOI). They suggest that countries can be put into five different stages corresponding to their level of development. The graphic relationship suggests that when a country develops from extreme poverty NOI decreases in stage one and two, as gross inward investment (GII) increases, but gross outward investment (GOI) does not. Not until a country reaches some threshold of GNP per capita does the GOI begin to rise in stage three, and in stage four NOI is positive while still increasing. In the fifth and final stage, which was added in 1996, the country is economically developed, and we see NOI varying over time and around the line where NOI is equal to zero.

According to Tøndel (2001) the macroeconomic theory of FDI focuses on the benefits and costs of producing in different foreign locations. The FDI flows can be considered a function of the desired capital stock in a given foreign location. This in turn is a function of a firm's profitability, which is dependent upon technology, human capital and the general business environment.

Kyrkilis and Pantelidis (2003) take a more empirical approach to macroeconomic theory. They believe that FDI outflows may be considered a function of macroeconomic characteristics of a certain country. They tested this hypothesis using time-series data for five EU countries and four non-EU countries; France, Germany, Italy, The Netherlands, UK, and Korea, Brazil, Singapore and Argentina, respectively. The study was made during a 20 year period from 1977 to 1997. They investigated the effect of income, interest rate level, exchange rates, technology, human capital and openness of the economy on annual FDI outflows, while also including a dummy variable for the unification of Germany. The result of their investigation shows that national characteristics can be used to explain FDI, while income proved to be the most important determinant. They also found that the same type of endowments has different significance in different countries, especially between EU and non-EU countries.

Next we will more thoroughly explain the theories behind each included macroeconomic variable.

2.2.1 Gross National Income

As a country develops, the balance of ownership, location-specific and internalisation advantages changes (OLI). When the gross national income (GNI) of a country increases, so does a national firm's ability to develop specific ownership advantage relative international corporations. This will in turn create internalisation advantages as it becomes profitable for firms to exploit their ownership advantages (Dunning, 1981a), especially knowledge based intangible assets (Buckley, 2014; Pugel 1981), in foreign locations by internalising them. The internalisation advantages increases the likelihood of the firm engaging in foreign direct investment (Dunning, 1981a). Also, as the country's economy grows it develops location-specific advantages which encourage economies of scale. Their economic structure and mix of competitive advantages change, as production becomes more capital-intensive and diversified (Dunning and Narula, 1996; Lall, 1980), and they will depend more upon their own created assets rather than natural assets (Dunning and Narula, 1996).

2.2.2 Technology

Among researchers within the field of FDI there is a strong theoretical and empirical support for the positive relationship between technology and FDI (Buckley, 2014; Kyrkilis & Pantelidis, 2003; Pugel, 1981). Most of the research takes a host country perspective. However, Pugel

(1981), Kyrkilis and Pantelidis (2003) and Buckley (2014) have investigated the relationship between technology and direct investment from a source country perspective. The possessions of technology give firm's advantages against others, and the best way to protect this knowledge is by internalisation. This increases the incentives for foreign direct investment (Buckley, 2014; Kyrkilis & Pantelidis, 2003).

We must however be aware of differences between a firm's ability to protect and produce new technology. Politics, market structure as well as laws and regulations, that control the patent system, vary across countries. Also, the ability to find appropriate competence and production factors appears to be different. These differences will affect a firm's ability to generate proprietorship of technology, which in turn will affect the level of FDI outflow (Kyrkilis & Pantelidis, 2003).

2.2.3 Current account

The existing literature and research on the effect of the current account balance on FDI outflows is insufficient to say the least. There is however a lot of existing research on the causal relationship between current account deficit and FDI inflows, often from a developing country perspective (Akbas, Senturk and Sancar, 2013; Siddiqui and Ahmad, 2007; Fry, Classens, Burridge and Blanchet, 1995). While Akbas *et. al.*, (2013) and Siddiqui and Ahmad (2007) find unidirectional causality from FDI to the current account, Fry *et. al.*, (1995) get inconclusive results. Causality runs from the current account to FDI in some countries, while going from FDI to the current account in others. They find bidirectional causality in a few countries and in others they find no causality at all. While these studies do not say anything about causality in our example, since we look at the relationship between FDI outflows and the current account balance in highly developed countries, they do suggest that some relationship might exist between the two. Here we will further explain our intuition behind including this variable in the analysis.

According to the Balance of Payments identity one can relate the current account (CA) balance to net capital flows. The CA balance equals the difference between domestic saving and domestic investment. If a country experiences a CA surplus then total expenditures are less than total output, that is domestic saving exceed domestic investment. The country is a net exporter of goods and services and foreign resources flows in as income. In this case it becomes a net exporter of capital (foreign investments) or net lender abroad, and hence we can equal net capital

flows to the difference between domestic saving and domestic investment as well. Therefore, if we have a CA surplus we must necessarily also have a net capital outflow and vice versa, at least in theory (Daniels and Van Hoose, 2014). However, we must be wary with causality, as it could run in both directions. When investors earn interest and dividend on their foreign direct investments it gets included in the CA as an income. This can then be reinvested in foreign firms.

2.2.4 Openness of economy

The relationship between FDI and economic openness was investigated in the early 1970's and the early 1980's by Scaperlanda and Mauer (1973) and Scaperlanda and Balough (1983). They came to the conclusion that diminishing capital controls, by liberalisation of a country's foreign transactions, permits unlimited funding for investments abroad. This in turn will have a positive effect on outward FDI. Kogut (1983, (cited by Kyrkilis & Pantelidis, 2003)) argued that if a country is an export-oriented economy, firms have easy access to information about foreign markets. They are therefore more likely to have knowledge and skills about arranging foreign operations, and how to market their products internationally. Based on this, firms may change their strategy for serving the international market from export to FDI.

2.2.5 Exchange rate

The theory of how exchange rates affect a country's foreign direct investment was first expressed in 1970 by Aliber. He argued that firms located in countries with a strong currency have a higher competitiveness in terms of financing their foreign investment, relative firms located in countries with a weak currency. When the home country's currency appreciate the capital requirements of a foreign investment in domestic currency will be lower, which will make it easier for domestic firms to obtain necessary capital for the investment. In a similar fashion, an appreciation of the home currency will reduce the amount of export, since it becomes more expensive for foreign countries to buy the exported goods and services. This in turn, will reduce the nominal competitiveness of exports of the home country. In this case, firms may choose foreign direct investment instead of exports to serve the foreign market (Aliber 1970 (cited by Kyrkilis & Pantelidis, 2003)). This theory is supported by Hsu (2011), who 40 years later came to the same conclusion as Aliber. He investigated how firm's mode of foreign expansion was affected by innovation and exchange rate (Hsu, 2011). Hsu found that an appreciation in the home currency

will make firms choose FDI instead of exporting as its mode of foreign expansion. On the other hand, a depreciation of the home currency will result in a transition from FDI to export.

2.3 Hypothesis and expected results

In order to determine whether or not certain country characteristics influences outward FDI, and in which way, we have developed the following hypothesis in accordance with the theory.

H1: A positive relationship exists between all five of our macroeconomic variables and FDI outflows.

As stated, we believe that a higher level of income, technology, current account, economic openness and exchange rates will each influence FDI outflows positively, and therefore result in a higher level of OFDI. Table 1 summarizes our expected results.

Table 1. Expected Results

Variable	Sign
logGNI	+
TE	+
CAB	+
logOPEN	+
ER	+

To test this hypothesis we will be using the following time-series regression model:

$$OFDI_t = \beta_0 + \beta_1 logGNI_t + \beta_2 TE_t + \beta_3 CAB_t + \beta_4 logOPEN_t + \beta_5 ER_t + \beta_6 d08 + \beta_7 d89 + t + u_t$$

The variables of this model will further be explained in section 3.2.

3 Data and methodology

3.1 Data

For this study we have used both qualitative and quantitative approaches. For the literature and methodology parts we used a qualitative approach, by collecting data from different online databases and books. The online databases used to find professional and published articles were

GUNDA, Google Scholar and EconLit. Keywords frequently used in the search were “FDI” and “outward foreign direct investment”. Other search words were used in combination with these two main keywords. These were “theory”, “income”, “OLI”, “internalisation”, “technology”, “current account balance”, “exchange rate”, “openness of economy” and “trade openness”. The books used were within the field of econometrics and FDI.

The numerical data used to estimate all regressions constitute our quantitative approach. It was collected from UNCTAD, UN, WIPO, IMF and the World Bank. The frequency of the data is annual and we have a total of 34 observations for each country, from 1980 to 2013. In the case of Italy and Hungary we had issues with missing values. For Italy the technology data for 1985 was missing and we replaced it with an average of 1984 and 1986. For Hungary the openness of economy data was missing for 1980-1981, and we replaced it with the data from 1982. This of course could question the soundness of our results. We therefore proceeded to test this by comparing one regression with missing values, to one where the missing values had been replaced. We found that the two regressions produced the exact same results, and we therefore conclude that replacing the missing values do not constitute an issue to the soundness of this thesis.

Table 2. Summary of Countries 2013

Country	GDP/capita*	Location	Euro
Denmark	59,921	North	No
Finland	49,265	North	Yes
France	42,339	West	Yes
Germany	45,091	West	Yes
Hungary	13,403	East	No
Italy	35,243	South	Yes
Poland	13,760	East	No
Portugal	21,429	South	Yes
Spain	29,685	South	Yes
United Kingdom	42,423	West	No

**GDP/capita is measured in current US dollar, source: UNdata*

The countries we have chosen for this study was selected on the basis of size (GDP/capita), geographic location and membership of the Euro zone. We wanted to be as diversified in the

selection as possible to get a good overall picture of the European Union, but we were constricted by the availability of data for certain countries. Table 2 above summarizes the selection characteristics by country for the year 2013. GDP/capita measured in current US dollars range from 13,403 in the case of Hungary, to 59,921 in the case of Denmark. We have three countries considered to lie in Western Europe, two in Eastern Europe, two in northern Europe and three in southern Europe. Finally, six countries are not only members of the European Union but also of the Euro zone, which mean they have a common currency, the euro. These countries are Finland, France, Germany, Italy, Portugal and Spain. Four countries are non-members of the Euro zone; these are Denmark, Hungary, Poland and the United Kingdom.

3.2 Variables

OFDI is the outward foreign direct investment flow in million US dollars. As a proxy for a country's level of income we propose the use of GNI, as has been done in previous studies (Dunning, 1981a, 1996; Kyrkilis and Pantelidis, 2003). GNI is the gross domestic product plus net factor income from abroad (Feenstra and Taylor, 2014). GNI is measured in billion US dollars, and we have chosen to take the natural logarithm. We use the number of patents granted in each country, both by domestic and foreign born residents, as a proxy for the level of technology. CAB is the current account balance, measured in billion US dollars. The most common way to measure economic openness is with the total sum of exports and imports, which is the proxy we propose. It is measured in billion US dollars, and we have also chosen to take the natural logarithm. For the exchange rate variable we use the real effective exchange rate, which is an index that measures the value of a currency against a basket of other currencies, divided by a price deflator (World Bank, 2015). We use this index, with base year 2010, as a proxy for how strong a country's currency is.

The Global Financial Crisis refers to the period 2007-2009, and was the deepest financial crisis since the World War II. Countries around the world experienced major declines in output, employment and trade. Since we use data from 1980-2013, we consider it necessary to control for how our dependent and independent variables have been affected by the financial crisis. We use a dummy variable which indicates zero for before the crisis and one for after the crisis.

In order to control for the dramatic changes occurring in Eastern Europe in the late 80's we have included a dummy variable. In 1989 both Poland and Hungary underwent huge political changes, as communism began its decline and they strived towards democracy. In the long run this is expected to influence FDI positively. According to Kyrkilis and Pantelidis (2003) the unification of Germany is expected to affect FDI negatively in the following years after 1989, in order to raise Eastern Germany to the same modern standard as Western Germany. The variable takes the value zero for before 1989, and the value one for after 1989.

Table 3 summarizes our variable measurements.

Table 3. Variable Measurements

Variable	Regression	Measurement
Outward FDI	**OFDI**	FDI outflow in million of US dollars
logGNI	**logGNI**	The natural logarithm of GNI in billion of US dollars
Technology	**TE**	Technology level measured in numbers of patent grants
CA balance	**CAB**	Current account balance in billion of US dollars
logOPEN	**logOPEN**	The natural logarithm of the sum of imports and exports, in billions of US dollars
Exchange Rate	**ER**	Effective exchange rate index, 2010=100
time	**t**	Annual time period, 1980 – 2013
Financial Crisis	**d08**	dummy = 0 if before year 2008, dummy = 1 if after year 2008
dummy89	**d89**	dummy = 0 if before year 1989, dummy = 1 if after year 1989

3.3 Methodology

3.3.1 Time series data

For this study we chose to use time series methods. Similar studies have also used this method, such as Kyrkilis and Pantelidis (2003). We did however consider using panel data, as it has several advantages over pure time series data according to Gujarati and Porter (2009). But as we wanted to be able to compare results between countries, we ultimately chose not to use panel data. Times series data is different from cross-sectional data because it has a temporal ordering,

which means that we are able to take into consideration that past events can affect future ones. It is also different in that it has a stochastic process rather than each variable being randomly chosen from a population. A time series data set only shows one outcome, or realisation, for the stochastic process out of many possible ones. This is why we think of the time series data as being random (Wooldridge, 2014).

There are different time series models; the static model, the finite distributed lag model, the autoregressive model and forecasting models. We chose to use a simple static model, since we would lose to many degrees of freedom if we included lagged variables. This type of model is used when we are interested in the contemporaneous relationship between two or more variables (Wooldridge, 2014).

3.3.2 Augmented Dickey-Fuller test

When using time series we want to ascertain that our process is stationary and weakly dependent, we need to assume some sort of stability over time. Our stochastic process is stationary if the joint probability distribution remains unchanged, after taking any sequence in the process and moving it ahead *h* time periods. More formally we say that the process is covariance stationary if the expected value of the process is constant around its mean, if the variance is constant and if, for any t and h ≤ 1 $cov(y_t, y_{t+h})$ depends only on h but not on t. It follows that if the covariance is dependent only on h, then so is the correlation between y_t and y_{t+h}. Neither the expected value nor the variance can be dependent on time, which means we must be particularly careful when dealing with trending time series. A covariance stationary process is weakly dependent if the correlation moves toward zero as h approaches infinity, $corr(y_t, y_{t+h}) \rightarrow 0 \; as \; h \rightarrow \infty$. It is important that our time series is stationary and weakly dependent because that essentially replaces the law of large numbers and the central limit theorem, without which our OLS regression would be difficult to do. If it is not weakly dependent then we call it a strongly dependent or unit root process (Wooldridge, 2014).

In order to test for unit root we used the augmented Dickey-Fuller test, as it is reliable and a commonly used test. In the ADF test the null hypothesis is that there is a unit root or the time series is nonstationary, and the alternative hypothesis is that the time-series is stationary and weakly dependent. Before applying the test to our variables we had to decide on the nature of our stochastic processes. There are three possibilities; a random walk, a random walk with drift and

finally a random walk with drift and deterministic trend (Gujarati and Porter, 2009). In order to see what specification we had to choose in each case, we looked at the time series plots of all variables for all countries. A random walk is an AR(1) model where the variable has a stochastic trend, that is, it is random and varies over time. If we included a drift (the constant) in the model we saw a tendency in the plot for our variable to move, or "drift", either up or down. Finally, if we also included a deterministic trend in the model we saw a clear trend in the variable, which was a non-random function of time. In this final case the alternative hypothesis instead becomes a trend-stationary process (Stock and Watson, 2012). In order to correct for unit-root we took first-difference of the series, which is weakly dependent and often stationary. Such a serie is said to be integrated of order one, I(1) (Wooldridge, 2014).

Most of our variables were found to be I(1). For Denmark, Finland, Hungary and the United Kingdom only OFDI was found to be integrated of order zero, I(0). For Portugal both FDI and TE were I(0), for France ER was I(0), and finally for Poland TE was I(0). Table 1 shows the results of the augmented Dickey-fuller tests.

Table 4. Augmented Dickey-Fuller test for Unit-Root

	Denmark	**Finland**	**France**	**Germany**	**Hungary**	**Italy**	**Poland**	**Portugal**	**Spain**	**United Kingdom**
OFDI	-3.45*	-3.64*	-4.38**	-5.73**	-3.08*	-6.70**	-3.45**	-4.57**	-5.68**	-2.11*
GNI	-3.78**	-3.47**	-3.75**	-3.93**	-3.46**	-3.68**	-4.98**	-3.15**	-3.14**	-3.17**
TE	-4.60**	-4.21**	-6.52**	-6.59**	-8.11**	-6.27**	-4.95**	-3.39*	-7.54**	-5.66**
CAB	-5.68**	-5.28**	-5.17**	-4.57**	-4.93**	-5.04**	-5.89**	-3.32**	-3.91**	-5.37**
OPEN	-3.69**	-4.12**	-3.56**	-3.74**	-3.75**	-4.10**	-3.69**	-3.70**	-3.25**	-3.41**
ER	-5.60**	-3.88**	-3.20*	-5.70**	-4.65**	-4.99**	-3.21**	-4.27**	-4.27**	-4.42**

Notes:

1. ** p<0.05; ** p<0.01*
2. The presented numbers are t-statistics
3. Germany, Italy, and Spain are conducted in level one
4. Denmark, Finland, Hungary, UK: FDI is conducted in level zero, the other variables in level one
5. France: ER is conducted in level zero, the other variables in level one
6. Portugal: FDI and TE are conducted in level zero, the other variables in level one
7. Poland: TE is conducted in level zero, the other variables in level one

3.3.3 Durbin-Watson test

The Durbin-Watson test was used in this study to investigate whether the errors in different time periods were correlated. More specifically, it tests for serial correlation, the presence of which would invalidate our usual OLS standard errors and test statistics (Wooldridge, 2014). The null hypothesis is that there are no autocorrelation, neither positive nor negative. The alternative hypothesis thus become serially correlated errors. The DW statistic lies somewhere between zero and four, and in order for the null to hold it should be equal to two. The closer the DW statistic gets to either zero or four the more autocorrelation is detected (Gujarati and Porter, 2009). The DW statistic for every country is presented in the regression table. No severe autocorrelation was detected in any of the cases, as the statistic never went below one or above three (Stock and Watson, 2012). In the case of Germany and Hungary, no autocorrelation was detected at all. In order to correct for autocorrelation we used Newey-West standard errors with two lags, which are also robust to heteroskedasticity (Wooldridge, 2014).

3.3.4 Breusch-Pagan / Cook-Weisberg test

The Breusch-Pagan / Cook-Weisberg test was used to test for the presence of heteroskedasticity, that is the variance of the errors depends on the value of the explanatory variables, and is therefore non constant (Wooldridge, 2014). The null hypothesis is that the error variances are constant, while the alternative hypothesis is that the variances are a function of one or more explanatory variables (Gujarati and Porter, 2009). A large chi-square indicates that we can reject the null hypothesis, and that heteroskedasticity is strong enough to invalidate our usual standard errors and test-statistics (Wooldridge, 2014). The results of this test are presented in the regression table, and in all ten cases we had problems of heteroskedasticity. We corrected this with Newey-West standard errors.

4 Empirical results and analysis

4.1 Descriptive statistics and pair-wise correlation matrixes

Descriptive statistics of the variables for each country is presented in Appendix A. The mean value, standard deviation, and the maximum and minimum values is included in the tables. Every country has in common that OFDI varies quite a lot between their max. and min. values, often from negative to huge positive values. For example, France has a min. value of -2,554.6 and a

max. value of 177,448.9. Sometimes we observe some large standard deviations, for example in the case of OFDI and TE, which suggests that these data points are spread within a wider range of its mean. We also observe a relationship between a country's economical size and the mean values of OFDI, logGNI, CAB and OPEN. The mean value tend to be larger for larger economies. Overall we think that the descriptive statistics for every country seems reasonable, except perhaps for Poland and its ER variable. We observed quite a large max. value of 1,123.8, which is due to a distorted exchange rate against western currencies during the 80's and 90's.

A pair-wise correlation matrix has been made for every country, and is included in Appendix B. Such a matrix shows the correlation between each explanatory variable, since they are likely to correlate not only with the dependent variable but also amongst themselves. Multicollinearity can become an issue if two or more explanatory variables are highly correlated. According to Wooldridge (2014) the correlation should not exceed 0.9, otherwise we suffer from this econometrical problem. As we are dealing with time series our variables can show high correlation since they have a similar trend across time (Gujarati and Porter, 2009). We automatically adjusted for this beforehand by taking the first-difference of almost all of the variables, while we tested for unit-root. Taking the first-difference effectively remove any time trend (Wooldridge, 2014). As we can see from our matrixes (see Appendix B) none of our variables exceed 0.9.

4.2 Regression results

In order for our OLS to be BLUE (Best Linear Unbiased Estimator) and have the usual sampling variance, five assumptions needs to be met. These are the Gauss-Markov assumptions (Wooldridge, 2014). Our variables are linear in parameters, and thus the first assumption is fulfilled. In the correlation matrixes we found none of the independent variables to be seriously correlated with one another, so we have no multicollinearity. The second assumption of no perfect collinearity is therefore also met. We furthermore know that the fourth and fifth assumptions of homoskedasticity and no serial correlation are fulfilled, since we have corrected for these issues with Newey-West standard errors. Before correcting for these two problems however, our OLS regressions did suffer from both heteroskedasticity and some serial correlation. We believe that the third assumption of zero conditional mean may not hold however, due to the issue of omitted variables. For instance, we were not able to include human

capital and interest rate as independent variables, because of the unavailability of data. This could cause a bias in our estimations. For example, human capital may be positively correlated with technology. We expect that an increase in the number of highly skilled workers will increase the ability to produce new technology. Since human capital may also affect OFDI positively (Kyrkilis & Pantelidis, 2003), we get an upward bias on the technology variable. This means that technology may be overestimated in the regressions. Interest rates could be positively correlated with the exchange rate variable. An increase in the interest rate of the home country may cause an upward pressure on the currency. Interest rates may also affect OFDI negatively (Kyrkilis & Pantelidis, 2003), and therefore cause a downward bias on the exchange rate variable. This implies that exchange rate could be underestimated in the regressions. To make correct inference, a sixth assumption of normality also needs to be met. We believe this assumption may not hold, also due to the fact that we have omitted variable issues.

4.2.1 Interpretation of the regression results

Table 5 summarizes the regression results. The F-value gives an overall indication of how good the model is. It is statistically significant for Denmark, France, Hungary, Portugal and Spain, which suggests that the variables included in the model are all valid. In the case of Finland, Germany, Italy, Poland and the UK, we fail to reject the null hypothesis that all coefficients are jointly equal to zero. This mean that the variables jointly do not explain the FDI outflows very well and we should consider changing the model for these countries. R^2 ranges between 0,18 and 0,59, which mean the independent variables in the model explains between 18% and 59% of the variation in OFDI, depending on country. We used ordinary R^2, so we have to consider the possibility that the R^2 is too high, since it increases with the number of variables added to the model.

GNI is negatively influencing OFDI for all countries, except Germany and the UK. For Denmark, OFDI will decrease by 910 million US dollars if GNI increases by one percent. This is statistically significant at the 10% level. TE takes a positive value for Denmark, Finland, Hungary, Poland and Portugal, but it is not statistically significant for any country. CAB is positive for Finland, Italy and Portugal, but takes a negative value of -1,182 for France, which is statistically significant at the 10% level. This implies that if CAB increases by one billion US dollars then OFDI will decrease by 1,182 million US dollars.

Table 5. OLS estimates of outward FDI for period 1980-2013

	Denmark	Finland	France	Germany	Hungary	Italy	Poland	Portugal	Spain	United Kingdom
GNI	-90,971.01	-35,125.78	-129,032.73	48,150.97	-6,152.58	-62,625.71	-1,552.54	-8,401.44	-125,068.90	11,262.69
	(1.81)*	(1.19)	(1.55)	(0.43)	(1.17)	(1.53)	(0.81)	(1.35)	(1,38)	(0.03)
TE	0.58	3.27	-1.28	-0.63	0.45	-0.30	0.31	0.07	-0.85	-0.11
	(0.30)	(0.50)	(0.79)	(1.26)	(0.88)	(1.45)	(0.39)	(0.12)	(0.30)	(0.06)
CAB	-260.13	222.46	-1,181.69	-4.60	-376.42	41.70	-56.70	200.13	-112.89	-922.87
	(0.62)	(0.72)	(1.85)*	(0.03)	(1.28)	(0.18)	(0.57)	(0.69)	(0.23)	(0.89)
OPEN	65,958.88	18,604.76	127,407.05	-28,123.70	-3,223.31	111,317.15	2,356.54	9,141.90	173,66.00	-91,221.32
	(2.18)**	(1.09)	(1.72)*	(0.25)	(0.81)	(2.60)**	(0.88)	(1.19)	(1.52)	(0.26)
ER	1,436.32	381.61	2,457.09	-961.89	-55.88	245.13	0.49	136.36	-2.17	-605.13
	(1.65)	(1.15)	(1.02)	(0.48)	(0.73)	(0.45)	(0.44)	(0.67)	(0.00)	(0.26)
d08	-2,125.40	-1,864.35	-45,088.18	-51,126.41	257.43	-18,009.38	-2,012.14	-5,362.27	-25,306.56	-103,458.31
	(0.50)	(0.41)	(3.08)***	(1.40)	(0.19)	(1.44)	(0.75)	(2.47)**	(0.83)	(2.35)**
t	414.78	318.85	930.97	1,885.57	239.91	444.05	19.68	283.57	732.34	6,071.90
	(2.27)**	(1.64)	(1.67)	(1.12)	(2.66)**	(1.09)	(0.15)	(4.64)***	(1.07)	(3.61)***
d89				-16,434.56	-1,698.97		112.98			
				(0.98)	(1.62)		(0.11)			
Constant	-1,447.82	21.44	-262,674.79	-11,891.87	-1,265.32	-6,968.75	-1,269.67	-2,387.24	-14,432.57	-24,626.88
	(0.71)	(0.01)	(1.04)	(1.16)	(2.66)**	(1.13)	(0.32)	(1.69)	(1.34)	(1.31)
N	33	33	33	33	33	33	33	33	33	33
R^2	0.44	0.29	0.40	0.18	0.59	0.37	0.18	0.31	0.44	0.40
F-statistic	7.18	2.37	9.65	1.36	6.01	1.90	0.46	6.64	7.48	2.69
DW	1.81	1.36	1.74	1.99	2.05	2.59	1.69	2.75	2.34	1.43
BP	17.25	15.01	28.42	28.48	46.96	24.76	39.50	42.70	25.13	19.75

Notes:

1. * $p<0.1$; ** $p<0.05$; *** $p<0.01$
2. Regression with Newey-West Standard Errors
3. The t-statistic is presented in the parentheses
4. In the case of Italy, data for TE was missing for 1985, we replaced it with an average of 1984 and 1986
5. In the case of Hungary, data for OPEN was missing for 1980-1981, we replaced it with the data from 1982
6. DW=Durbin-Watson test for autocorrelation
7. BP=Breusch-Pagan test for heteroskedasticity

OPEN is impacting OFDI positively for all countries except Germany, Hungary and the UK. For Denmark, OPEN is statistically significant at the 5% level, and for France and Italy it is significant at the 10% level. For these three countries, OFDI will increase by 660, 1,274 and 1,113 million US dollars respectively, if OPEN increase by one percent. ER takes on a negative value for Germany, Hungary, Spain and the UK, but it is not statistically significant for any country. The financial crisis of 2008 affected every country negatively except Hungary, but it is only statistically significant for France at the 1% level and for Portugal and the UK at the 5% level. In the case of France OFDI decreased by 45,088 million US dollars as a direct cause of the crisis, and for Portugal and the UK OFDI decreased by 5,362 and 103,458 million US dollars respectively.

4.2.2 Analysis

Generally our regressions show some unexpected and equivocal results. According to our hypothesis we believed that all five of the macroeconomic determinants would influence FDI outflows positively. Economic openness, measured as exports plus imports, is the variable that most correspond with our expectations, as it was positive for seven out of ten countries. It was also the determinant that proved to be the most important explanatory variable, because it was statistically significant for three out of ten countries. Since all ten countries are quite similar in terms of the conditions for international trade, we found it surprising that the coefficients vary across countries as much as they do. Why are only three countries statistically significant and why is openness of economy in some countries influencing FDI negatively? All ten countries are members of the EU, and are therefore bound under the same EU trade laws and regulations. They have all undergone the same process of capital liberalisation and removal of barriers to trade, information and people. Also, they have all experienced diminishing trade costs and the evolution of the World Wide Web, which makes it easier to transfer capital and buy goods and services across borders. These are all factors the countries have in common and they should increase both exports and imports, and thereby foreign direct investment outflows (Scaperlanda and Mauer, 1973; Scaperlanda and Balough; Kogut, 1983 (cited by Kyrkilis and Pantelidis, 2003)). Of the three countries showing negative results, Germany is the most interesting since it is an export intensive economy. According to Kogut (1983 (cited by Kyrkilis and Pantelidis, 2003)) an export-oriented economy has more knowledge and information about the foreign

market, and are therefore more likely to invest abroad. This does not correspond well with our results for Germany.

According to the Balance of Payments identity when the current account balance increases, so do FDI outflows (Daniels and Van Hoose, 2014). From our results we do not believe that this relationship is always valid. If we look at the regressions, we see that seven out of ten countries show a negative relationship, which means that if the current account increases the FDI outflow decrease. It is only statistically significant for France at the 10% level, which shows a negative sign. If we look at the overall results for the exchange rate variable, we see that they better correspond to our expectations than what the current account did. When a country's currency appreciates the competitiveness of its exports decreases. The national firm may therefore choose FDI over exports for serving the foreign market, as the capital requirements of an investment in national currency will be lower as well (Hsu, 2011). Six out of ten countries showed a positive relationship between exchange rates and FDI, but since none are statistically significant we cannot say anything for sure. Overall, an exchange rate does not seem to be a determinant factor for FDI outflows.

If we were to look at export, which is strongly connected to ER and a natural part of both the OPEN and CAB variables, we get some contradicting findings. According to the overall direction of signs, it could seem that for the current account balance and exchange rates, exports and FDI are substitutes rather than complements. In the case of the current account balance, this was not as we expected. Also, this is contradictory to the overall positive results of openness of economy however, which may suggest a complementary relationship between exports and FDI outflows. Thus it seems that exports may affect FDI through many different channels and in different directions.

We believe that our insignificant results for ER could possibly be explained partly by the fact that six of our countries are euro-members, and Denmark has its Danish crown pegged to the euro. Before the euro was introduced in 1999 most of the bigger economies had some sort of fixed exchange rate, in order to reduce variability. For instance, ERM (European Exchange Rate Mechanism) was introduced 1979 for this purpose (European Commission, 2010). This could possibly give rise to little variation in exchange rates over our investigation period, which may have caused our insignificant results.

Technology does not seem to be a major determinant of FDI outflows, and furthermore it shows very equivocal effects. It is positive for half of the countries, and negative for the other half. We did not use lagged variables in this study, and this could be one of the reasons for these poor results. The effect on FDI outflows could be delayed and occur during a later time period than when the patent was granted. Unfortunately, this could very well be an issue for all of the variables in the model, since the processes of macro economy are slow. The effects of macroeconomic changes can sometimes take years to materialise.

According to Kyrkilis and Pantelidis (2003) GNI was the most important variable in their model for explaining FDI outflows, and the effect was found to be positive in all of their countries. In our case GNI is only positive for two countries; Germany and the UK. We find this surprising since a negative sign is not in accordance with our hypothesis. The five stage theory brought forth by Dunning (1981a) and Dunning and Narula (1996) may shed some light on our divergent results. Only in 1996 did Dunning discover and add the fifth stage of his theory. He observed that countries that began to reach a certain level of high economic development, tended to stagnate in their FDI outflow, and then vary around the line where NOI (Net Outward Investment) is equal to zero. Kyrkilis and Pantelidis (2003) investigate the years 1977-1997, while we analyze the years 1980-2013. Is it possible that a majority of transitions from stage four to five took place in the 90's, i.e. in the end of Kyrkilis and Pantelidis (2003) investigation period? Based on the fact that Dunning added the fifth stage in 1996, we argue that this could very well be the case. Then the stagnation of NOI in stage five may have caused the relationship between GNI and OFDI to change to the negative. Perhaps this could explain why most of our countries show negative relationships between GNI and OFDI. At least this could be the case for Denmark, which shows a negative effect, and it is both economically and statistically significant at the 10% level.

Overall it is not just GNI that shows differing results compared to Kyrkilis and Pantelidis (2003). Their model proved to have a good explanatory power. Especially GNI and exchange rates were found to be good macroeconomic determinants of FDI outflow. In our case the model is somewhat unreliable, particularly for the five countries showing an insignificant F-value, and we do not get many significant results. Firstly, the different results can be explained by the fact that we have included current account balance and excluded interest rate and human capital due to

poor data. Secondly, we analyse different time periods. They only have 21 observations, which might be too few when dealing with macroeconomic variables, since macroeconomic processes are slow. Thirdly, the total amount of FDI outflows and the movement of capital have increased since the 90´s. More firms are investing abroad, which may suggest that firm specific factors are now even more important than before.

5 Conclusion

The aim of this study was to investigate whether certain country characteristics affect the outward FDI position of countries in the European Union. If macroeconomic determinants were found to have an impact on FDI outflows, we further wanted to know which characteristics were the most important, and if these differed across countries. To answer these questions we have analysed ten countries in the European Union within a time series framework. With a low level of significant values and poor F-statistics, we get overall equivocal and inconclusive results. This suggests that macroeconomic determinants in general do not explain FDI outflows of countries in the European Union very well.

However, we do get some individual results which are interesting. For example, openness of economy was found to be the most important variable, as it had the expected sign and was statistically significant for three countries. If we were to consider only the five countries that got a significant F-value, i.e. Denmark, France, Hungary, Portugal and Spain, especially two countries are worth mentioning. Denmark and France seem to be the countries whose FDI outflows can best be explained by macroeconomic determinants. Openness of economy was positive and significant for both of them, while income was significant for Denmark and the current account balance was significant for France. Both income and the current account balance showed a different sign than our expectations though.

These overall results differ quite a lot from the conclusions drawn by Kyrkilis and Pantelidis (2003). According to their regression result, macroeconomic determinants explain FDI outflows, especially income and exchange rate. This divergence may be caused by different time periods and some different variables. Also firm-specific determinants may be more important today.

Based on our equivocal discussion on the relationship between export and FDI, we believe that it would be interesting to further investigate this issue. This could be done either by focusing a study solely to this relationship, or by including export as a separate variable in the current model. For further research we also propose a study, which takes into account that the effects of macroeconomics determinants may be delayed. Such a study would include lagged variables in the model, and investigate their effect on FDI outflows.

6 References

Aizenman, Joshua., & Marion, Nancy. (2003). The merits of horizontal versus vertical FDI in the 1presence of uncertainty. *Journal of International Economics. 62*(1), 125-148. doi: 10.1016/j.jinteco.2003.08.003

Akbas, Y. E., Senturk, M., & Sancar, C. (2013). Testing for Causality between the Foreign Direct Investment, Current Account Deficit, GDP and Total Credit: Evidence from G7. *Panoeconomicus, 60*(6), 791-812. doi: 10.2298/PAN1306791A

Braconier, H., Norbäck, P., & Dieter, U. (2004). Multinational enterprises and wage costs: Vertical FDI revisited. *Journal of International Economics. 67*(2), 446-470. doi:10.1016/j.jinteco.2004.08.011

Buckley, P. J. (2014). Forty Years Of Internalisation Theory and the Multinational Enterprise. *Multinational Business Review, 22*(3), 227 - 245. doi: http://dx.doi.org/10.1108/MBR-06-2014-0022

Castellani, D., Meliciani, V. & Mirra, L. (2014) The Determinants of Inward Foreign Direct Investment in Business Services across European Regions. *Regional Studies.* doi: 10.1080/00343404.2014.928677

Caves, R. E. (1971). International Corporations: The Industrial Economics of Foreign Investment. *Economica, 38*(149), 1-27. doi: 10.2307/2551748

Caves, R. E. (1974). Multinational Firms, Competition and Productivity in Host-Country Markets. *Economica, 41*(162), 176-193. doi: 10.2307/2553765

Cheng, L.K., & Kwan, Y. K. (2000). What are the Determinants of the Location of Foreign Direct Investment? The Chinese experience. *Journal of International Economics, 51*(2), 379-400. doi: 10.1016/S0022-1996(99)00032-X

Coughlin, C. C., Terza, J. V. & Arromdee, V. (1991). State Characteristics and the Location of Foreign Direct Investment within the United States. *The Review of Economics and Statistics, 73*(4), 675-683. doi: 10.2307/2109406

Daniels, J. P., & Van Hoose, D. D. (2014) *International Monetary and Financial Economics.* Boston: Pearson Education.

Dunning, J. H. (1981a). Explaining the International Direct Investment Position of Countries: Towards a Dynamic or Developmental Approach. *Weltwirtschaftliches Archiv, 117*(1), 30-67. doi:10.1007/BF02696577

Dunning, J. H., & Narula, R. (1996) *Foreign Direct Investment and Governments: Catalysts for Economic Restructuring.* London: Routledge

European Commission. (2010). *Phase 2: the European Monetary System.* Retrieved 2015-08-13, from http://ec.europa.eu/economy_finance/euro/emu/road/ems_en.htm

Feenstra, R. C., & Taylor, A. M. (2014) *International Economics.* New York: Worth Publishing.

Fry, M. J., Classens, S., Burridge, P. & Blanchet, M. (1995) *Foreign Direct Investment, Other Capital Flows, and Current Account Deficits: What Causes What?.* (Policy Research Working Paper, 1527). The World Bank

Gujarati, D. N., & Porter, D. C. (2009). *Basic Econometrics.* McGraw Hill Higher Education.

Gou, Z. (2015). The Determinants of FDI Inflows to CEE Countries: In Comparison to EU-15. (Master's thesis). Jönköping: JIBS, Jönköping University. Retrieved 2015-08-10 from http://hj.diva-portal.org/smash/get/diva2:821990/FULLTEXT01.pdf

Hsu, Judy. (2011). How do innovation and exchange rate changes affect firms' mode of foreign expansion?. *The Journal of International Trade & Economic Development: An International and Comparative Review*, *20*(4), 429-447. doi: 10.1080/09638190903003044

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

International Monetary Fund. (1993). *Balance of Payments Manual.* 5th ed. Washington DC: International Monetary Fund

Juhl, P. (1979). On the Sectoral Patterns of West German Manufacturing Investment in Less Developed Countries: The Impact of Firm Size, Factor Intensities and Protection. *Weltwirtschaftliches Archiv, 115*(3), 508-19.

Kindleberger, C. P. (1969). *American Business Abroad: six lectures on direct investment.* New Haven, Connecticut: Yale University Press.

Kyrkilis, D., Pantelidis, P. (2003). Macroeconomic Determinants of Foreign Direct Investment. *International Journal of Social Economics, 30*(7), 827-836. doi: 10.1007/978-81-322-1536-3

Lall, S. (1980) Monopolistic Advantages and Foreign Involvement by U.S. Manufacturing Industry. *Oxford Economic papers,* 32(1), 102-122

Lizondo, J. S. (1990). *Foreign Direct Investment*. (IMF Working Papers, 90/23). International Monetary Fund

Moosa, Imad. A. (2002). *Foreign Direct Investment - Theory, Evidence and Practice.* New York: Palgrave

Organization of Economic Co-Operation and Development. (1996). *OECD Benchmark Definition of Foreign Direct Investment.* 3rd ed. Paris: Organization of Economic Co-Operation and Development

Pugel, T. A. (1981). The Determinants of Foreign Direct Investment: An Analysis of US Manufacturing Industries. *Managerial and Decision Economics, 2*(4), 220-228. doi: 10.1002/mde.4090020403

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

Rugman, A. M. (1982). Internalization and Non-Equity Forms of International Involvement. In A. Rugman (Ed.), *New Theories of the Multinational Enterprise* (p. 9-23). New York: St. Martin's Press New York.

Scaperlanda, A. E. and Balough, R. S. (1983). Determinants of U.S direct investment in the E.E.C.: Revisited. *European Economic Review, 21*(3), 381-390. doi: 10.1016/0014-2921(83)90098-3

Scaperlanda, A. E. and Mauer, L. J. (1973). The Impact of Controls on United States Direct Foreign Investment in the European Economic Community. *Southern Economic Journal, 39*(3), 419-423. doi: 10.2307/1056408

Siddiqui, D. A., & Ahmad, M. H. (2007). *The causal relationship between foreign direct investment and current account: An empirical investigation for Pakistan economy.* (MPRA, 19743). Munich: Munich University Library

Stock, J. H., & Watson, M. W. (2012) *Introduction to Econometrics.* Harlow: Pearson

Tøndel, L. (2001) *Foreign direct investment during transition. Determinants and patterns in Central and Eastern Europe and the former Soviet Union.* (CMI Reports, WP 2001:9) Bergen, Norway: Chr. Michelsen Institute

Wooldrige, J. M. (2014). *Introduction to Econometrics.* Hampshire, UK: Cengage Learning EMEA

World Bank. (2015). *Real Effective Exchange Rate Index (2010=100).* Retrieved 2015-08-18 from http://data.worldbank.org/indicator/PX.REX.REER

United Nations Conference on Trade and Development. (2014). *Inward and outward foreign direct investment flows, annual, 1970-2013.* Retrieved 2015-08-19 from http://unctadstat.unctad.org/wds/TableViewer/tableView.aspx?ReportId=88

Appendix A

Descriptive Statistics

Denmark

Variable	Observation	Mean	Std.dev.	Min	Max
OFDI	34	5,244.747	7,267.762	-10,365.440	26,549.090
logGNI	34	5.063	0.586	4.049	5.876
TE	34	1,074.324	934.395	110	3,258
CAB	34	4.751	7.123	-4.490	24.207
logOPEN	34	4.799	0.710	3.731	5.894
ER	34	94.221	4.859	84.096	103.528
CRIS	34	0.176	0.387	0	1

Finland

Variable	Observation	Mean	Std.dev.	Min	Max
OFDI	34	4,313.966	5,437.724	-2,279.472	24,030.260
logGNI	34	4.843	0.547	3.925	5.649
TE	34	1,945.912	633.931	711	2,721
CAB	34	2.953	6.214	-6.962	13.292
logOPEN	34	4.401	0.677	3.375	5.503
ER	34	110.432	12.052	97.162	138.756
CRIS	34	0.176	0.387	0	1

France

Variable	Observation	Mean	Std.dev.	Min	Max
OFDI	34	49,898.760	50,978.130	-2,554.573	177,448.900
logGNI	34	7.251	0.535	6.273	8.002
TE	34	14,700.410	5,086.692	9,899	28,060
CAB	34	-0.935	20.933	-41.361	45.891
logOPEN	34	6.504	0.611	5.525	7.446
ER	34	102.543	4.595	93.477	115.851
CRIS	34	0.176	0.387	0	1

Germany

Variable	Observation	Mean	Std.dev.	Min	Max
OFDI	34	44,096.980	42,333.480	3,020.247	170,617.500
logGNI	34	7.572	0.527	6.596	8.255
TE	34	16,287.150	3,557.478	5,792	23,691
CAB	34	61.831	97.832	-34.150	252.284
logOPEN	34	7.054	0.716	5.951	8.163
ER	34	104.343	5.343	95.660	118.163
CRIS	34	0.176	0.387	0	1
d89	34	0.706	0.462	0	1

Hungary

Variable	Observation	Mean	Std.dev.	Min	Max
OFDI	34	1,127.798	2,200.727	-3.639	11,336.600
logGNI	34	3.938	0.635	3.105	4.990
TE	34	1,595.471	831.182	65	3,624
CAB	34	-2.427	3.624	-11.214	5.527
logOPEN	34	3.998	0.983	2.893	5.523
ER	34	74.252	17.060	51.236	103.872
CRIS	34	0.176	0.387	0	1
d89	34	0.706	0.462	0	1

Italy

Variable	Observation	Mean	Std. dev.	Min	Max
OFDI	34	16,016.540	21,601.820	740.020	96,230.970
logGNI	34	7.036	0.547	6.052	7.770
TE	34	8,749.441	6,116.026	1,049	30,034
CAB	34	-10.636	26.661	-73.921	38.653
logOPEN	34	6.246	0.645	5.189	7.193
ER	34	100.210	6.996	87.331	116.022
CRIS	34	0.176	0.387	0	1

Poland

Variable	Observation	Mean	Std. dev.	Min	Max
OFDI	34	1,179.857	2,796.329	-4,851.896	8,883.203
logGNI	34	5.030	0.763	3.982	6.267
TE	34	3,301.382	1,213.749	1,748	7,698
CAB	34	-7.944	9.289	-34.887	3.067
logOPEN	34	4.457	1.062	3.238	6.183
ER	34	262.398	345.710	37.305	1,123.833
CRIS	34	0.176	0.387	0	1
D89	34	0.706	0.462	0	1

Portugal

Variable	Observation	Mean	Std. dev.	Min	Max
OFDI	34	2,021.321	3,784.136	-7,493.159	14,905.160
logGNI	34	4.579	0.758	3.168	5.529
TE	34	830.882	838.420	50	4,037
CAB	34	-8.063	9.385	-31.921	3.192
logOPEN	34	4.122	0.835	2.709	5.253
ER	34	89.985	10.275	73.539	102.741
CRIS	34	0.176	0.387	0	1

Spain

Variable	Observation	Mean	Std. dev.	Min	Max
OFDI	34	23,476.940	32,567.600	-3,981.858	137,051.700
logGNI	34	6.368	0.709	5.121	7.372
TE	34	3,837.324	2,879.199	309	9,710
CAB	34	-27.882	41.344	-151.962	20.033
logOPEN	34	5.593	0.901	4.188	6.845
ER	34	92.588	7.676	75.709	104.613
CRIS	34	0.176	0.387	0	1

United Kingdom

Variable	Observation	Mean	Std. dev.	Min	Max
OFDI	34	63,046.730	73,046.730	3,706.893	325,426.400
logGNI	34	7.150	0.607	6.115	8.004
TE	34	11,393.350	6,540.170	5,235	29,590
CAB	34	-31.625	32.786	-119.924	9.316
logOPEN	34	6.498	0.648	5.475	7.377
ER	34	107.437	9.484	90.734	125.727
CRIS	34	0.176	0.387	0	1

Appendix B

Pair-Wise Correlation Matrixes

Denmark

	logGNI	TE	CAB	logOPEN	ER
logGNI	1.000				
TE	0.018	1.000			
CAB	-0.004	0.237	1.000		
logOPEN	0.823	-0.058	-0.030	1.000	
ER	0.789	-0.027	-0.001	0.412	1.000

Notes:

1. All explanatory variables has been first-differenced

Finland

	logGNI	TE	CAB	logOPEN	ER
logGNI	1.000				
TE	-0.083	1.000			
CAB	-0.112	-0.249	1.000		
logOPEN	0.804	-0.192	0.018	1.000	
ER	0.737	-0.077	-0.207	0.391	1.000

Notes:

1. All explanatory variables has been first-differenced

France

	logGNI	TE	CAB	logOPEN	ER
logGNI	1.000				
TE	-0.123	1.000			
CAB	-0.119	-0.100	1.000		
logOPEN	0.875	-0.051	-0.253	1.000	
ER	0.215	-0.288	0.291	0.157	1.000

Notes:

1. ER is in level form, all other explanatory variables has been first-differenced

Germany

	logGNI	TE	CAB	logOPEN	ER
logGNI	1.000				
TE	0.169	1.000			
CAB	0.169	0.051	1.000		
logOPEN	0.846	0.242	0.252	1.000	
ER	0.772	0.124	0.096	0.437	1.000

Notes:

1. All explanatory variables has been first-differenced

Hungary

	logGNI	TE	CAB	logOPEN	ER
logGNI	1.000				
TE	0.022	1.000			
CAB	-0.546	0.195	1.000		
logOPEN	0.561	0.210	-0.455	1.000	
ER	0.470	-0.389	-0.517	0.270	1.000

Notes:

1. All explanatory variables has been first-differenced

Italy

	logGNI	TE	CAB	logOPEN	ER
logGNI	1.000				
TE	0.064	1.000			
CAB	-0.291	0.132	1.000		
logOPEN	0.780	-0.053	-0.455	1.000	
ER	0.701	0.137	-0.225	0.336	1.000

Notes:

1. All explanatory variables has been first-differenced

Poland

	logGNI	TE	CAB	logOPEN	ER
logGNI	1.000				
TE	-0.233	1.000			
CAB	-0.457	0.047	1.000		
logOPEN	0.615	-0.575	-0.475	1.000	
ER	0.252	0.034	-0.069	-0.069	1.000

Notes:

1. TE is in level form, all other explanatory variables has been first-differenced

Portugal

	logGNI	TE	CAB	logOPEN	ER
logGNI	1.000				
TE	0.348	1.000			
CAB	-0.195	-0.112	1.000		
logOPEN	0.813	0.236	-0.318	1.000	
ER	0.519	-0.097	-0.114	0.405	1.000

Notes:

1. TE is in level form, all other explanatory variables has been first-differenced

Spain

	logGNI	TE	CAB	logOPEN	ER
logGNI	1.000				
TE	-0.066	1.000			
CAB	-0.412	-0.011	1.000		
logOPEN	0.824	-0.046	-0.687	1.000	
ER	0.837	0.113	0.113	0.603	1.000

Notes:

1. All explanatory variables has been first-differenced

United Kingdom

	logGNI	TE	CAB	logOPEN	ER
logGNI	1.000				
TE	-0.066	1.000			
CAB	-0.412	-0.011	1.000		
logOPEN	0.824	-0.046	-0.687	1.000	
ER	0.837	0.113	-0.210	0.603	1.000

Notes:

1. All explanatory variables has been first-differenced