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The Two-way FDI Development in Scandinavian Countries

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Dear dad, I miss you so much. You left us on December 29th, 2011 after struggling against renal cancer during last two years. You behaved very brave when confronted with cancer and death. I love you, I miss you and you live in my heart and memory forever.

Dear mom, thank you for supporting me during last 24 years, and now, it is my turn to be your support. I love you.

This paper is to my father Liu Lianjun and my mother Lv Chaohui.

ABSTRACT

This thesis investigates the two-way FDI development in Scandinavian countries, including Norway, Sweden and Denmark. The concept of two-way FDI, in this paper, refers to a combination of inward FDI and outward FDI. Firstly, this paper studies the two-way FDI structure of each country, based on the IDP framework (Dunning, 1981). The paper came to the conclusion that the two-way FDI patterns of both Norway and Denmark are in stage four of the IDP framework, however, this framework completely fails to explain the Swedish pattern. Then, this paper looked at the causes hidden behind these patterns according to the OIL theory (Dunning, 1988) and made comparisons of the location advantages and the domestic firms' ownership advantages among the three countries. Finally, the paper offered both conclusions and new questions that can be discussed deeper in the future.

Key Words: FDI, Two-way, the IDP Framework, Location Advantages, Ownership Advantages, Scandinavian, Norway, Sweden, Denmark

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CHAPTER 1: INTRODUCTION

"According to the BPM5, FDI refers to an investment made to acquire lasting interest in enterprises operating outside of the economy of the investor. Further, in cases of FDI, the investor´s purpose is to gain an effective voice in the management of the enterprise."

-UNCTAD, Foreign Direct Investment

FDI, as a crucial factor that facilitates globalization, characterizes a period since the 1980s. There have been an increasing number of studies that covered a variety of topics, including the relationship between FDI and economic development, host country effects, FDI in developing countries, etc. When they came to discuss FDI development in an economy or among a category of countries, rather to consider the combination of two-way FDI, most of the studies chose to focus on inward FDI or outward FDI separately. However, when participate in the global FDI activities, a country, especially the developed countries, may not only be a receiver/an investor of FDI, but an investor/a receiver of FDI. Therefore, the concept of two-way FDI, in this paper, refers to a combination of inward FDI and outward FDI. For a country engaged in two-way FDI activities, it must have a specific pattern of the structure of two-way FDI development, which is not invariable but will adjust to the development of its economic level and strength of domestic enterprises.

The aim of this paper is to look into the two-way FDI developments in Scandinavian countries, including Norway, Sweden and Denmark. These countries have close connection among each other not only in location and history, but also in economic development. Some previous papers have studied several specific aspects of FDI development in Norway, Sweden and Denmark respectively. For instance, Hans Jarle Kind and Siri Pettersen Strandenes (2002) have analysis the causes and effects of FDI

by the Norwegian maritime industry; Roger Bandick and Par Hansson (2009) have studied the Inward FDI and demand for skills in manufacturing firms in Sweden, and Jesper Strandskov and Kurt Pedersen (2008) have discussed the topic of Foreign direct investment into Denmark before 1939. This paper takes all of the three Scandinavia countries together into consideration and studies the two-way FDI developments in these countries from a macro-angle of view.

1.1 BACK GROUND

The history of Scandinavia contains the splits and merges among Norway, Sweden and Denmark, which lead to both common points and differences among the developments of each country. All of them have found their own ways to accelerate economic growth and been regarded as high income countries. Norway focus on developing ship building, aquaculture and oil industries relays on its fundamental oil resources and ocean resources; and Denmark pays attention to energy and environment industry, while Sweden has been getting benefits from its high and new technology industries. In 2010, Norway has obtained a GDP per capita of 53000 US dollars, while Sweden and Denmark have achieved GDP per capita of 38900 and 39400 US dollars respectively. (CIA, 2011)

Following are the country facts of each country, which conclude an overview of economic and FDI developments in Scandinavian countries.

Norway

A skillful exploitation of abundant natural resources and the adoption of effective economic policies guarantee the high living standards in Norway, whose society has been regarded as welfare capitalism. The country has rich endowment of natural resources, such as petroleum, hydropower, fish, forests, and minerals. The petroleum sector supports Norway's economy as the fact that Norway is the largest

exporter of crude oil outside the organization of the petroleum exporting countries (CIA, 2011). According to the WTO secretariat report, most of Norway's trade is conducted duty free under the EEA and other preferential arrangements. Norway also offers imports from least-developed countries duty free entry. Except some sensitive areas such as fisheries, Norway opens most of its industries to foreigner investors and grants them national treatment. (WTO, 2000)

At the end of 2009, investments in oil activities accounted for 30 percent of direct investments both in Norway and abroad. Apart from the oil activities, financial intermediation and insurance activities dominated the inward investment, which together with transport and communication areas, also contribute largely in outward investments. (Statistic Norway, 2010)

Sweden

Sweden has maintained peace and neutrality through the whole 20th century, which enables it to achieve a remarkable living standard by the blossom of high-tech capitalism. It is famous for its modern distributions system, excellent internal and external communications, skilled labor force, and abundant natural resources of timber, hydropower and iron ore. Privately owned firms in Sweden have grown up maturely to produce nearly 90 percent of industry output. In addition, the engineering sector accounts for 50 percent output and exports (CIA, 2011).

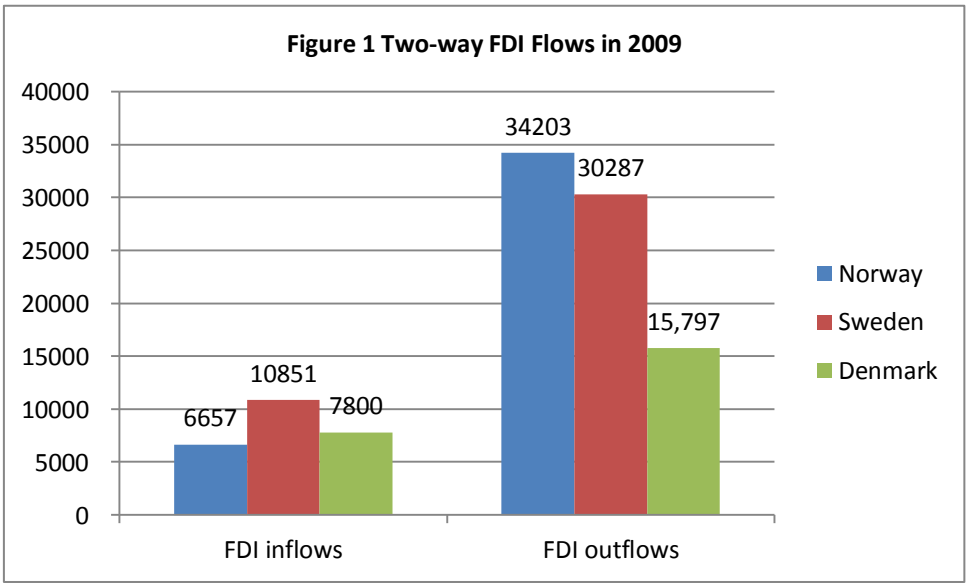
The United States, Finland and Netherlands are the main locations of Sweden's direct investment assets abroad, while in Sweden, the largest assets are owned from the Netherlands, Luxembourg and Great Britain. The majority of Swedish direct investments assets abroad are found in the engineering industry, banking, and the chemical and pharmaceutical industry, and Sweden absorbs FDI mainly in chemical and pharmaceutical industry (Statistic Sweden, 2009).

Denmark

Like Norway and Sweden, Denmark is among countries with the highest living standard in the world due to its extensive government welfare measures and an equitable distribution of income. High-tech agricultural sector, pharmaceuticals, maritime shipping and renewable energy are leading industries of Denmark, whose economy is highly dependent on foreign trade. The service sector has gain prominent development in Denmark. In 2010, the service sector accounted for 76.1 percent of Denmark's GDP, while agriculture and industry each contributed 1.1 percent and 22.8 percent (CIA, 2011).

In 2008, capitals from United States of America, United Kingdom and Sweden were the main resources of inward FDI in Denmark, and the EU countries were the primary receivers of Danish investments. (Statistic Denmark, 2009)

In a word, all of the Scandinavian countries have participated in FDI activities in both inward and outward directions. Figure 1 below shows the inward and outward FDI flows in Norway, Sweden and Denmark in 2009.



(Resource: UNCTADstat, measured in US Dollars at current prices and current exchange rates in millions)

In 2009, outward FDI flows were larger than inward FDI flows in all three countries. Norway achieved the highest FDI outflows with 34203.2 million US dollars and Sweden obtained the highest FDI inflows with 10851.33 million US dollars.

1.2 RESEARCH METHODOLOGY & PAPER STRUCTURE

This paper combines data analysis, econometric model and theoretical explanation together to study the two-way FDI development in Scandinavian countries. During the part of data analysis, the paper will focus on three important indexes introduced by UNCTAD, which are the inward FDI performance index (IND index) that measures a country's inward FDI performance, the outward FDI performance index (OND index) which measures a country's outward FDI performance, and the inward FDI potential index which indicates a country's potential ability to attract the inward FDI. The econometric experiment that studies the structures of the two-way FDI development is based on the Investment Development Path theory (IDP) from Dunning (1981). Then the results generated from the econometric experiment will be explained according to the OIL theory from Dunning (1988).

This paper is structured as follows. Chapter 2 studies the two-way FDI structure in Scandinavian countries, by modelling and identifying the two-way FDI structures of each country. Chapter 3 offers explanations to the results generated from Chapter 2. Finally, the paper is concluded in Chapter 4.

CHAPTER 2: EMPIRICAL ANALYSIS OF THE TWO-WAY FDI STRUCTURE

-The Theory of Investment Development Path

In this section, an empirical analysis based on the theory of investment development path (the IDP theory) from Dunning (1981) will be done, in order to find out whether the two-way FDI developments of the Scandinavia countries have followed any regular patterns.

2.1 LITERATURE REVIEW - THE THEORY OF INVESTMENT DEVELOPMENT PATH

The theory of Investment development path (IDP) was introduced by Dunning (1981). The IDP theory presents a framework of a country's investment development path, which includes five phases, by modeling the association between a country's investment performance (proxied by net outward FDI, i.e. outward FDI minus inward FDI) and its economic development level (proxied by GDP per capita). The basic assumption of the IDP framework is that the conditions for domestic and foreign companies will change as a country develops and affect the flows of the outward FDI and the inward FDI. In contrary, the structure of the two-way FDI has impact on the economic structure of this country as well, thus the interaction between them is dynamic. Moreover, by creating public goods, the governments can influence a country's conditions (Buckley and Casson, 1998) and will have impact on both the two-way FDI structure and the competitive advantages of domestic firms (Dunning, 1988) consequently.

According to the IDP theory, a country will go through five phases of development of investment, from a FDI recipient at the initial stage to be an FDI investor at the final stage (Dunning, 1981, 1986; Dunning and Narula, 1996). Dunning believes that a country's net outward FDI is associated with its economic development level and assumes that this relationship has a U shape in graphs, which means that a country's net outward FDI flow will decrease first and then go up as its economic develops. In other words, its net inward FDI flow will increase first and then falls down.

In the first phase, the country has a small GDP per capita, both inward FDI and outward FDI are quite small. Its net outward FDI will be zero or some very small negative numbers. At this stage, the country lacks location advantages that enable it to attract foreign investments, because neither the infrastructures nor the market grows mature enough to support the foreign investments. Meanwhile, the domestic firms have not accumulated enough ownership advantages to participate in the international production activities.

In the second phase, the country will absorb more inward FDI due to the economic development and the low cost advantages. However, the firms in developing countries need time and opportunities to accumulate ownership advantages to invest in foreign countries, its outward FDI stays on a low level. Therefore, its net outward FDI will still be negative and its absolute amount will increase as inward FDI exceeds outward FDI more and more.

In the third phase, since the learning effect from the former two stages make the firm gain enough ownership advantages, domestic firms start to make business expansion to the other countries. At the same time, because the increase of the domestic labor cost impair the location advantage of the country, which will affect the ability of attracting inward FDI, its net outward FDI will still be negative but the absolute amount will decrease.

In the fourth phase, because the country grows to be stronger and its domestic firms become eagerly to expand markets and seek new technologies to maintain competitive advantages, its outward FDI increases obviously and its net outward FDI will break through the zero level and keep increasing.

In the fifth phase, or the final phase, its net outward FDI decreases to zero, based on the results of research on developed countries by Dunning and Narula(1996). They argues that "Beyond a certain point in the IDP, the absolute size of GNP is no longer a reliable guide of a country's competitiveness; neither, indeed, is its NOI position" (Dunning and Narula, 1996, p.11).

According to the description of each phase above, figure 2 is a draft to show the relationship between net outward FDI and GDP per capita:

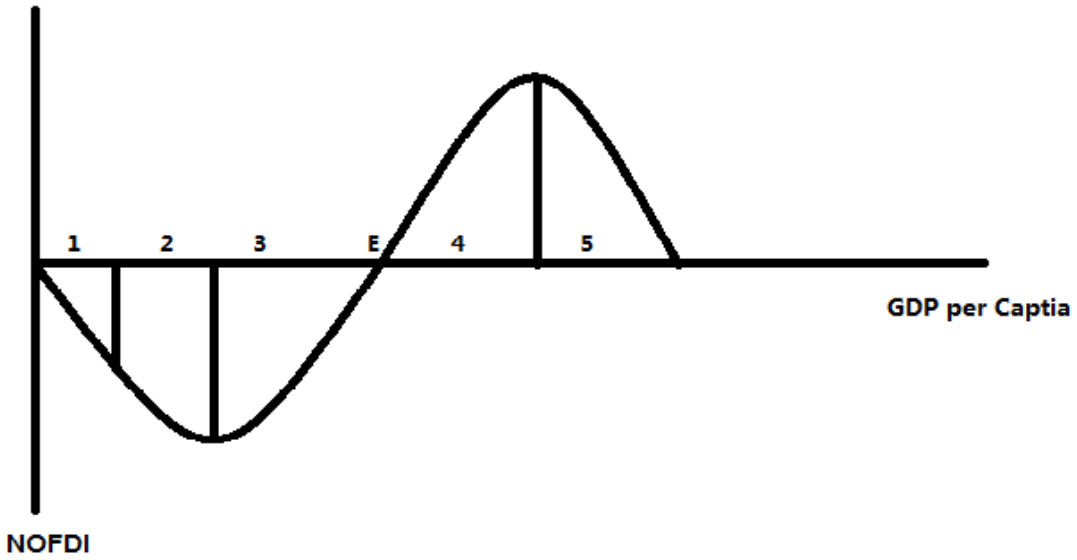


Figure 2 Five phrases in IDP framework

The horizontal axis shows economic development level, by using GDP per capita as its indicator, and vertical axis indicates net outward FDI. This curve represents the process of a country's evolution of investment. The numbers of "1, 2, 3, 4, 5" stand for the five phases in the investment development path, while letter "E" in figure 2 implies the point at where outward FDI equals to inward FDI.

The IDP theory has been used to study the FDI mode and economic development of both the developing and developed countries. Peter J. Buckley and Francisco B. Castro (1998) have studied the investment development path of the case of Portugal based on the IDP theory. Bellak (2000) has applied the theory to Australia's FDI investment, and Herrera and Mellina (2001) have used it to study the FDI situations of less developed countries that located in Latin America.

This paper will focus on the FDI situations in Scandinavia countries, in order to find out whether these countries have followed the investment development path. If the IDP framework turns out to be able to explain the patterns of their FDI development, the next step is to find out at which state they stay.

2.2 THE QUADRATIC MODEL

Dunning (1981, 1986), Tolentino(1987, 1993), Denning andNarula(1996), Peter J. Buckley and Francisco B. Castro(1998), and Suneeta Sathye (2008) have used a quadratic model to describe the IDP curve due to the "U" shape of this curve. Keeping in line with previous studies, this paper will continues to apply this model to analysis the FDI development of Scandinavia countries.

The formula of this quadratic model holds the following pattern (Suneeta Sathye (2008)):

$$\mathrm{NOFDI} = \mathrm{C} + \alpha\ \mathrm{GDPpc} + \beta\ \mathrm{GDPpc}^2 + \mu$$

Where

NOFDI= A country's net outward FDI

GDPpc= A country's GDP per capita

2.3 EMPIRICAL ANALYSIS

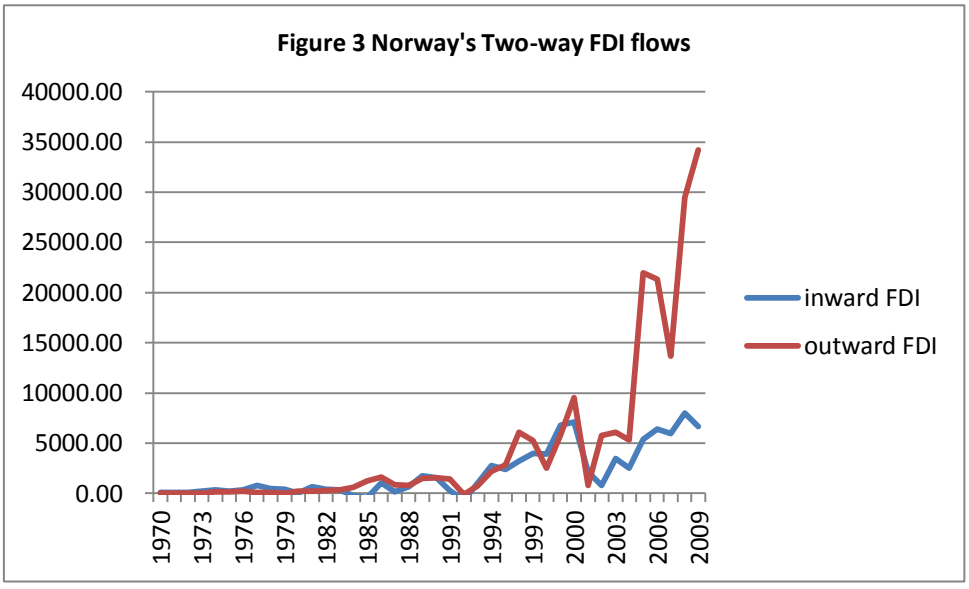
In this part, the quadratic function above will be applied to the real data of Norway, Sweden and Denmark. The results of the regressions will show how well that the IDP theory can explain the development pattern of FDI in these countries. All the data used are coming from the UNCTAD database (UNCTADstat).

2.3.1 THE CASE OF NORWAY

The UNCTAD database offers the data of inward FDI flows, outward FDI flows and also the GDP per capita.

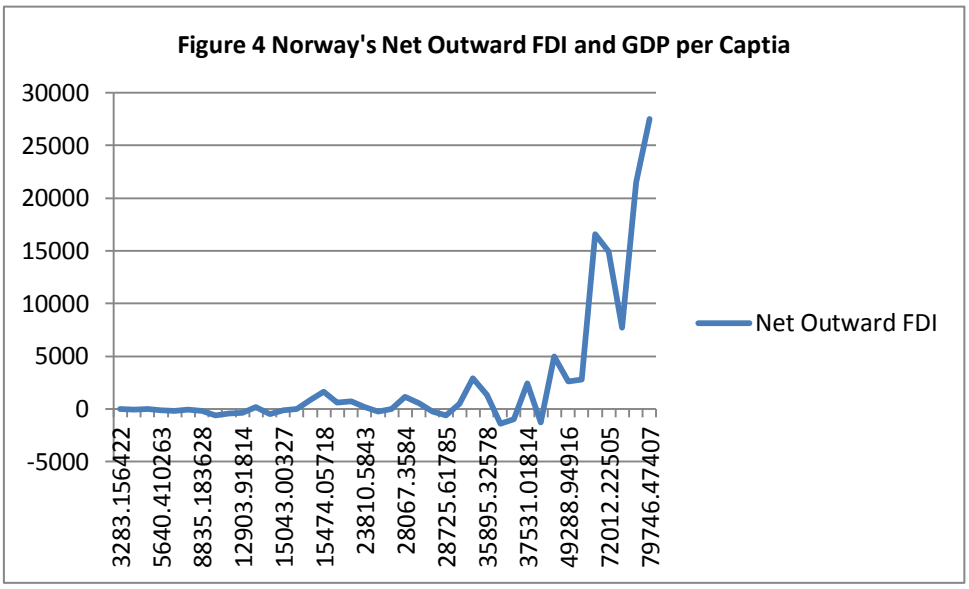
Table 1 (Appendix 1) lists the data of outward FDI and GDP per capita of Norway during the year of 1970 to 2009. The measure of GDP per capita is "US Dollars at current prices and current exchange rates", while the measure of FDI is "US Dollars at current prices and current prices and current exchange rates in millions."(UNCTADstat)

Figure 3 represents the movement of two-way FDI flows of Norway based on the data from table 1:



The movement of Norway's two-way FDI flows from 1970 follows the description of transformation from stage 3 to stage 4 in IDP framework. The outward FDI flow was smaller than the inward FDI flow at first and made the net outward FDI a negative number. Then, the outward FDI flow exceeded the inward FDI flow and the net outward FDI became to be positive. In the later periods, distance between outward FDI flow and inward FDI flow keeps increasing. Therefore, it is probable that the IDP theory is able to explain the two-way FDI development in Norway and Norway's pattern is in stage 4.

The next step is to test the reliability of the IDP theory in the case of Norway with the quadratic model.



The curve in Figure 4 can be seen as the right part of an opening upward parabola or as the left part of an opening downward parabola. Therefore, it is possible that the data of Norway can fit the quadratic model.

$$\text{NOFDI} = 305.8157 - 0.097831\text{GDPpc} + 3.71 * 10^{-6}\text{GDPpc}^2$$

$$\text{t} = (0.233) \qquad (-1.286) \qquad (4.464)$$

$$R^2 = 0.780 \qquad \text{Adjusted } R^2 = 0.768$$

$$\mathrm{F} = 63.961 \quad \mathrm{Pro(F-statistic)} = 0.000$$

$$\mathrm{Durbin-Watson\ stat} = 1.855$$

(The details of the regression result can be found in Appendix 2.)

According to the regression result above, the value of R^2 is 0.780, which means that the model can explain 78% of the movement of net outward FDI. The t-statistics of the coefficients of constant term and GDPpc are not significant at 10 percent, while the t-statistic of GDPpc square is strongly significant at 1 percent. The p-value is 0.000 thus the model as whole is significant at 1 percent. Meanwhile, the D.W value does not seem to be a problem.

Therefore, the regression above supports the hypothesis that Norway has followed a predictable path that has been stated in IDP theory. The next step is to check at which stage of IDP framework that Norway reaches.

Firstly, calculate the GDP per capita when net outward FDI equals to zero. The zero net outward FDI point is regarded to be the critical point between stage 3 and stage 4 in investment development path.

Solve the equation that $0 = 305.8157 - 0.097831\mathrm{GDPpc} + 3.71 * 10^{-6}\mathrm{GDPpc}^2$, and the result turns out to be PGDP=25997.305.

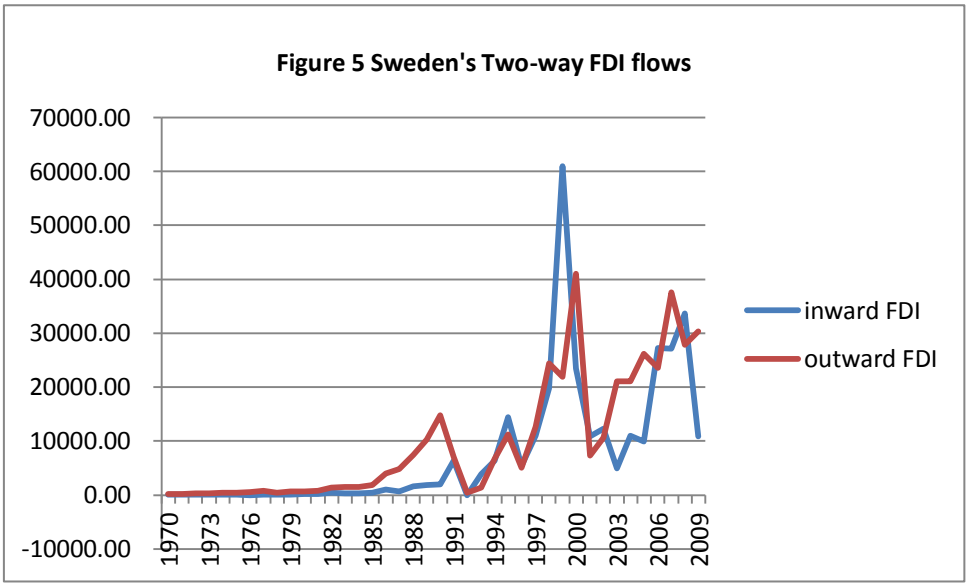
Searching in table 1 (Appendix 1), Norway has obtained GDP per capita of 27731.72694 US dollars in 1990, which is larger than the critical point of 25997.305 US dollars. Therefore, according to the IDP theory, Norway entered stage four at the beginning of 1990s.

In a sum, the IDP theory can be used to explain the Norway's pattern of the two-way FDI development and Norway is in stage four.

2.3.2 THE CASE OF SWEDEN

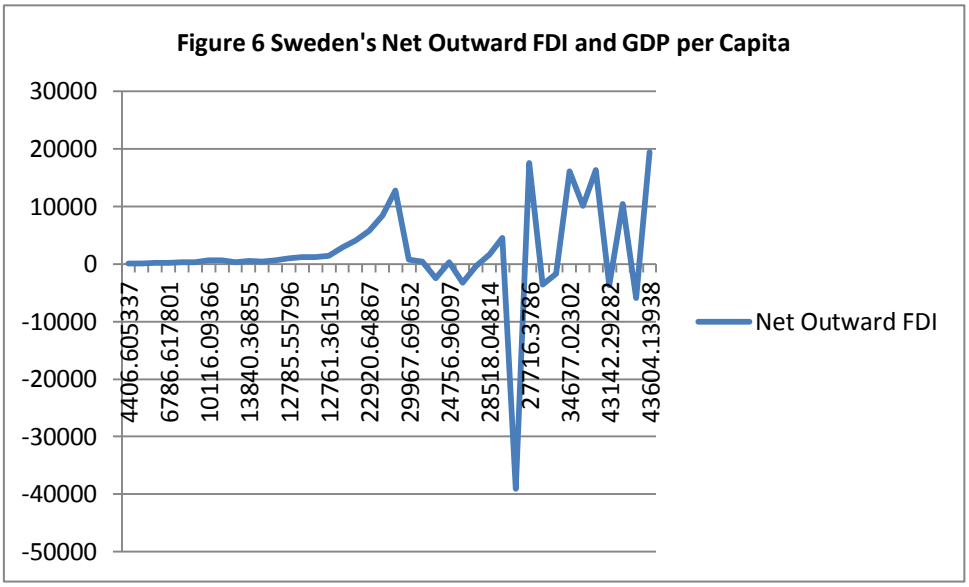
Table 2 (Appendix 1) lists the data of outward FDI and GDP per capita of Sweden during the year of 1970 to 2009.

Figure 5 represents the two-way FDI flows of Sweden based on the data from table 2:



From figure 5, Sweden holds a very different way of the movements of the two-way FDI flows from Norway (see figure 3). Compared to the IDP framework, Sweden's pattern has no common points with any stage of the former 4 stages in investment development path, because the outward FDI flow took the lead at first, however, the inward FDI increased a lot afterwards. There has not existed any trend that the outward FDI can precede the inward FDI completely so far. However, the feature of Sweden's two-way FDI development does not follow the description of stage 5, either. Therefore, the IDP framework may be not appropriate to explain and forecast Sweden's two-way FDI development.

The correlation curve of the net outward flow and GDP per capita also reveals the fact that the quadratic relationship between them is not distinct. See figure 6:



However, it is necessary to check the fitness of the quadratic model to offer the conclusion above an empirical support.

$$\text{NOFDI} = 1153.491 - 0.114946\text{GDPpc} + 4.45 * 10^{-6}\text{GDPpc}^2$$

$$\text{t} = (0.217) \qquad (-0.254) \qquad (0.532)$$

$$R^2 = 0.036 \qquad \text{Adjusted } R^2 = -0.0172$$

$$\text{F} = 0.679 \qquad \text{Pro(F} - \text{statistic)} = 0.513$$

$$\text{Durbin} - \text{Watson stat} = 2.523$$

(The details of the regression result can be found in Appendix 2)

The value of R^2 is 0.036, which is small enough to indicate that the quadratic model can hardly represent the relationship between net outward FDI and GDP per capita of Sweden. The t-statistics of the coefficients of constant term, GDPpc and GDPpc square are not significant at 10 percent, which means that both the changes in GDP per capita and GDP per capita square cannot explain the change in net outward FDI flow. The p-value is 0.513 thus the model as whole is not significant.

Therefore, Sweden's two-way FDI development has not followed the investment development path. This may due to Sweden's unique FDI policies or some other reasons, which will be discussed in details in the next chapter.

In this case, the IDP framework fails to explain and forecast Sweden's two-way FDI development, which means that the IDP framework cannot be treated to be a norm of a country's FDI development, since each country has its own unique policies and investment environments. Actually, the practical applicability of the IDP theory has been discussed and mentioned before. For instance, Buckley and Castro have found that the IDP framework cannot be used as a prediction mechanism in Portuguese (Buckley and Castro 1998).

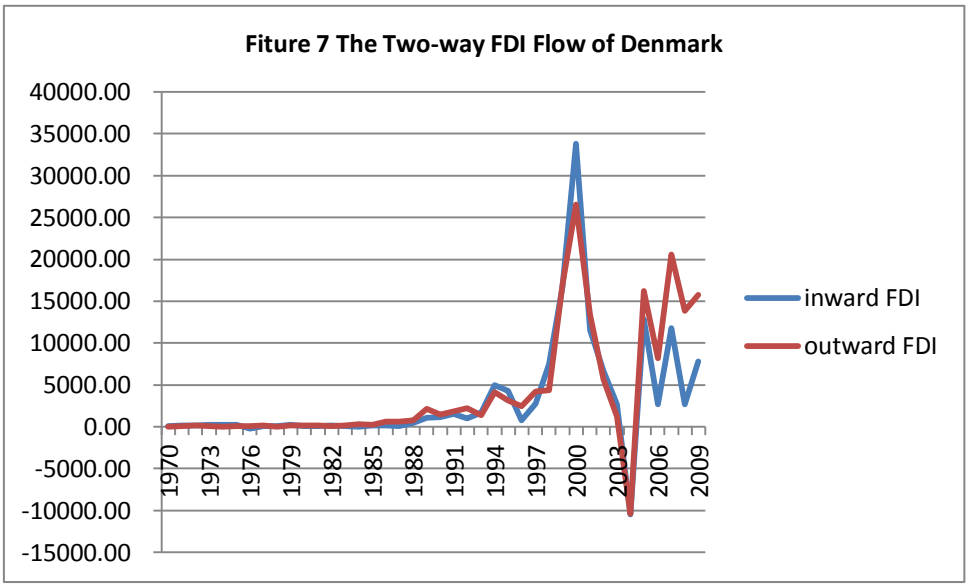
2.3.3 THE CASE OF DENMARK

According to the previous discussion, Norway and Sweden have experienced quite different patterns of the two-way FDI development, because Norway's pattern can be explained and forecast by the IDP framework, while Sweden's case has nothing to do with the investment development path. However, Norway and Sweden locate closely to each other and both of them are treated as the same pattern of economics, which are addressed to be welfare states and hold similar level of economic development. Therefore, the huge differences between their patterns of the two-way FDI development become attractive.

Following is the study of the third Scandinavia country - Denmark's way of developing its two-way FDI, in order to find out whether the Danish pattern is close to the Norwegian one, the Swedish one, or holds its own characteristics.

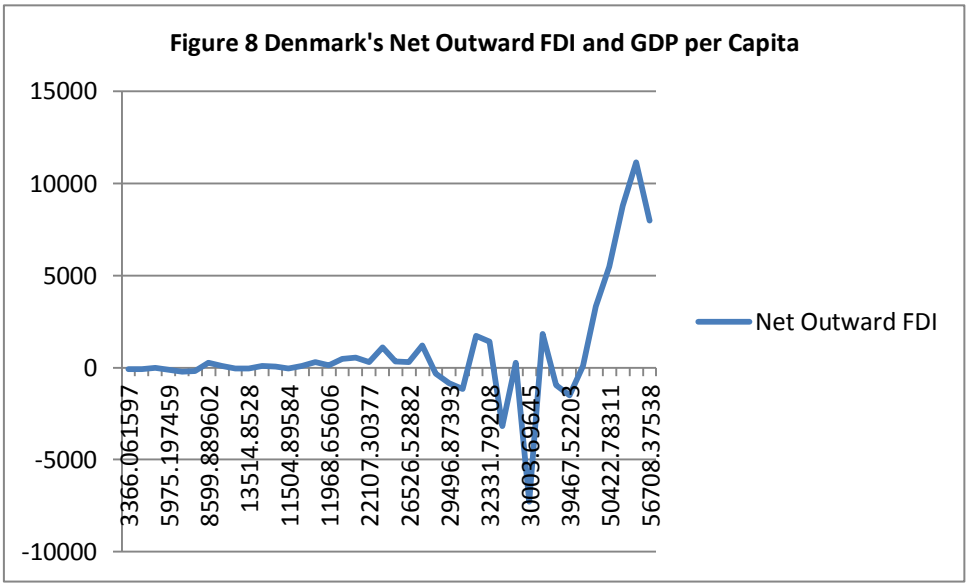
Table 3 (Appendix 1) lists the data of outward FDI and GDP per capita of Denmark during the year of 1970 to 2009.

Based on table 3, the movements of the two-way FDI flows of Denmark are shown in figure7:



The inward FDI flow and the outward FDI flow of Denmark change in the same direction all the time. It can be seen that there are increasing trends in both the inward FDI flow and the outward FDI flow except a huge crash in the beginning of 2000. Although outward FDI flow exceed inward FDI flow completely in recent years, unlike Norway, the differences between them do not have an obvious increasing trend. However, the movements of Denmark's two-way FDI flows have reflect some characteristics that are in accordance to the transformation from stage 3 to stage 4 in IDP framework. The outward FDI flow is less than the inward FDI flow in the beginning and made the net outward FDI flow a negative number, then the outward FDI flow grew to be larger than the inward FDI and the net outward FDI became to be positive.

The correlation curve of net outward FDI flow and GDP per capita of Denmark is shown in Figure 8. Similar to the correlation curve in Norwegian case, the curve in figure 8 can also be seen as the right part of an opening upward parabola or as the left part of an opening downward parabola.



Therefore, the quadratic model expects that the IDP framework can largely explain the pattern of Denmark's two-way FDI development and Denmark has entered stage 4 in investment development path.

$$\text{NOFDI} = 2066.819 - 0.285091\text{GDPpc} + 6.69 * 10^{-6}\text{GDPpc}^2$$

$$\text{t} = (2.622) \qquad (-4.587) \qquad (6.629)$$

$$R^2 = 0.698 \qquad \text{Adjusted } R^2 = 0.681$$

$$\text{F} = 42.7196 \qquad \text{Pro}(\text{F} - \text{statistic}) = 0.000$$

$$\text{Durbin} - \text{Watson stat} = 1.862$$

(The details of the regression result can be found in Appendix 2)

The value of R^2 is 0.698, which means that the model can explain 69.8% of the movement of net outward FDI. All the t-statistic of the coefficients strongly significant at 1 percent thus the changes in the GDP per capita and the GDP per capita square can perfectly explain the change in net outward FDI flow. The p-value is 0.000 thus the model as whole is significant at 1 percent. Meanwhile, the D.W value does not seem to be a problem.

Therefore, the regression above supports the expectation that Denmark has followed a predictable path that has been stated in IDP theory.

Solve the equation that $0 = 2066.819 - 0.285091\text{GDPpc} + 6.69 * 10^{-6}\text{GDPpc}^2$, and the result turns out to be GDPpc=32884.903, which means that when GDP per capital is 32884.903 US dollars(in current exchange rate), the net outward FDI will be zero.

According to table 3, after 2000, Denmark has maintained GDP per capital that above 32884.9 US dollars, which means that Denmark has completely entered the stage 4 in investment development path after the year of 2000.

Although the result of Denmark is similar to that of Norway, Denmark has shown its own individuality. In fact, before the year of 2000, net outward FDI flow of Denmark had kept fluctuating between positive and negative during a long period, which is not coincident to the description of stage 3 in IDP framework, where the net outward FDI should keep negative in this period. This situation, again, reveals the fact that the IDP theory sometimes holds deviation in prediction. However, the IDP theory can partially explain the Denmark pattern as indicated in the result of regression.

2.4 CONCLUSION: THE IDP THEORY AND TWO-WAY FDI IN SCANDINAVIA COUNTRIES

According to the analysis above, the IDP theory can largely explain the two-way FDI developments in Norway and Denmark; however, this framework completely fails to fit the Swedish pattern. In addition, the regression results indicate that both Norway and Denmark are in stage four of investment development path, in which outward FDI is taking the lead. However, the two-way FDI of Denmark has behaved differently from the description about stage 3 in the IDP theory. Therefore, the investment

development path cannot be regarded as a standard of a country's two-way FDI development.

It becomes very interesting that the three Scandinavia countries stand for three different patterns with different responses to the IDP framework. Norway has a pattern which is highly coincident with the IDP framework, while Denmark has a pattern that partly follows the investment development path but with its own features. The Swedish pattern, as an extreme example that goes against the IDP theory, will be paid high attention in the next chapter.

Therefore, the consequential question is to study the causes behind these patterns to see if possible to answer the question that to which extent can the IDP theory explain a country's two-way FDI development.

CHAPTER 3: CAUSES BEHIND – OWNERSHIP ADVANTAGE & LOCATION ADVANTAGE

As mentioned in Dunning (1988), the concept of the eclectic paradigm of international production (the OIL theory) and the concept of the investment development path are highly relevant, as the former intends to offer a framework to identify and evaluate the factors that influence the foreign production by enterprise, while the latter consider the foreign direct investment in the aspect of countries rather than firms. In fact, the IDP framework has been considered to be a complement of the eclectic paradigm of international production and the five phases in the investment development are derived according to the two factors in the OIL framework, which are ownership advantage and location advantage.

3.1 THEORY REVIEW- THE OIL THEORY

3.1.1 THE OIL THEORY

The concept of the eclectic paradigm of international production was fully developed by Dunning in Dunning (1981) after its first appearance in 1976 at a presentation to a Nobel Symposium in Stockholm (Suneeta Sathye, 2008).

The eclectic paradigm (the OIL theory) stated that for enterprises to participate in international production activities, three sets of advantages must be fulfilled, which are ownership-specific advantage, internalization advantage and location advantage.

The ownership-specific advantage

There are three types of ownership-specific advantages. Firstly, a firm will gain advantages if it possesses or gets access to particular income generating assets. Secondly, compared to a newly born firm, the firm with a branch plant can also hold advantages. Thirdly, geographical diversification or multinationality of a firm will enable it to own advantages.

The internalization advantage

The internalization advantage is the reason for the enterprises, which have ownership-specific advantages, choosing to transfer their ownership-specific advantages across national boundaries within their internal organization instead of selling them. The internalization advantage rises if there have kinds of market failures, such as risk and uncertainty, imperfect market situation, and high costs of external transaction. When confronted with market failures, the firms with ownership-specific advantages will prefer to make foreign direct investment rather than licensing trade.

The location advantage

The location advantage determines the place of the production, which may contain the following factors:

(1) *Labor cost.* Generally speaking, the firms prefer to invest their capital in locations where the labor cost is relatively lower than the home country in order to seek low cost advantage.
(2) *Market potential.* The host country must hold a market that is able to attract the foreign capital and has potential to develop.
(3) *Trade barriers.* This is one of the factors that have impact on the multinationals' decisions on whether to export or invest directly.

(4) *Government policy.* The government's attitude toward the foreign capitals is the main reason to determine the risk of the foreign direct investment.

3.1.2 THE OIL THEORY AND THE IDP THEORY

Dunning (1988) has pointed out that the IDP theory is especially relevant to the OIL theory analysis as the IDP theory focus on the perspective of countries rather on firms when study the foreign direct investment. Look back the descriptions about the IDP theory, it can found out that the IDP theory involves two important elements of the OIL theory, which are ownership advantages and location advantages.

To retell the IDP theory by using the changes in ownership advantages of a country's firm and location advantages of the exactly the same country, the IDP theory can be presented as the following statement.

The first phase is a period in which both the location advantage of a country and the ownership advantage of this country's firms are quite low. Thus neither the country is able to support the foreign investment nor do the domestic firms obtain the ability to invest abroad, which make the net outward FDI zero or a small negative number.

In the second phase, as the country's location advantage grows while the domestic firms are still lack of ownership advantages, the country will absorb more inward FDI than outward FDI. Therefore, the net outward FDI is still negative and the absolute value keeps increasing.

The following is the third phase, where the domestic firms has accumulated enough ownership advantages and begin to invest abroad. Meanwhile, the country starts loss location advantages due to the increase in domestic labor cost. The outward FDI increases and the inward FDI falls down, however, the inward FDI is till larger than

the outward FDI in this stage and make the net outward FDI an increasing negative number.

In the firth phase, as the domestic firms achieve more ownership advantages and participate in more foreign investments, while the country's location advantages become even weaker, the outward FDI exceed the inward FDI and the net outward FDI becomes to be positive and keeps increasing.

In the fifth phase, due to the reasons such as redundancy organizations, the firms begin to loss ownership advantages and the outward FDI will decrease.

Figure 9 represents the five phases in the IDP framework measuring by the changes of ownership advantage and the location advantage. Notice that the curves in figure 9 only indicate the trends but not have any numerical meaning.

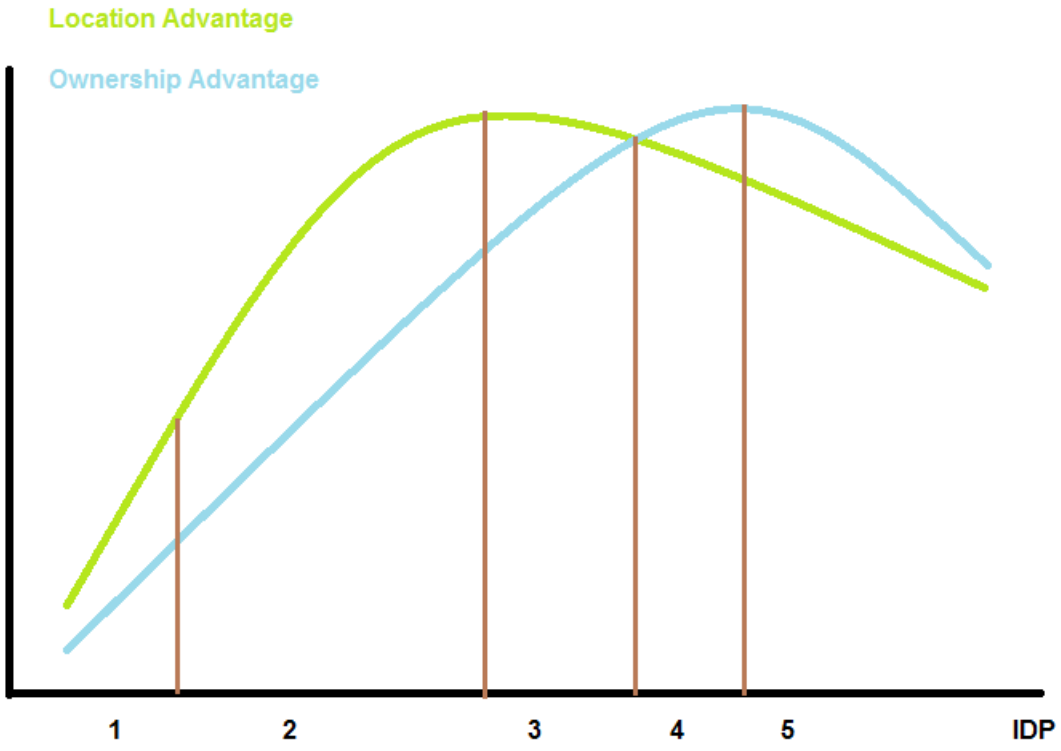


Figure 9 The IDP framework and ownership advantage and location advantage

(**Notice:** the curves in the figure only indicate the trends in changes but not have any numerical meaning.)

3.2. LOCATION ADVANTAGE

To make this study more meaningful, it is necessary to study the FDI policies of these countries in case that some of them may not welcome inward FDI. Appendix 3 lists out the FDI policies against inward FDI of the three countries. As it stated in "National Policy Framework" of each country, "Norway's attitude toward FDI is positive and welcoming", "Sweden's policy environment for FDI improved considerably during the 1990s" and "Denmark FDI policies are aimed to attract FDI flows". Therefore all three countries hold positive attitudes toward inward FDI. (UNCTAD, FDI country profile)

When studying the location advantage, two FDI indexes offered by UNCTAD can be relied on, which are the inward FDI performance index and the inward FDI potential index. The former measures a country's performance on attracting inward FDI, while the latter has been calculated according to the variables that supposed to be the elements of an economy's location advantages. The inward FDI performance is decided by two aspects: one is the strength of the host country's location advantage, the other one is the foreign investors. Therefore, the following analysis of location advantages is based on the inward FDI performance index and the inward FDI potential index, and then the matrix of inward FDI performance and potential will be discussed.

3.2.2 UNCTAD: THE INWARD FDI PERFORMANCE INDEX

UNCTAD has introduced the Inward FDI Performance Index (IND index) to measure and compare the inward FDI performances among countries. It is the ratio of a country's share in global FDI inflows to its share in global GDP. This performance index is shown for three-year periods in order to counteract annual fluctuations in the data. (UNCTAD, the Inward FDI Performance index – Methodology)

Since the Inward FDI Performance Index indicates country's inward FDI performance relative to its economic size, the formula definition of IND index could be shown as the following expression:

$$INDi = \frac{FDIi / FDIw}{GDPi / GDPw}$$

where:

INDi= the inward FDI performance index of country i

FDIi= the inward FDI flow of country i

FDIw= the inward FDI flow of the whole world

GDPi= GDP of economy i

GDPw=GDP of the whole world

(Resource: UNCTAD, the Inward FDI Performance index – Methodology)

According the expression above, on one hand, if a country's IND index is larger than 1, compared to its economic size, this country absorbs more FDI; on the other hand, if its IND index is smaller than 1, this country attracts less FDI with aspect to its economic size. For the same reason, when IND index equals to 1, the country has gained FDI inflows with the amount that in accordance with its economic performance.

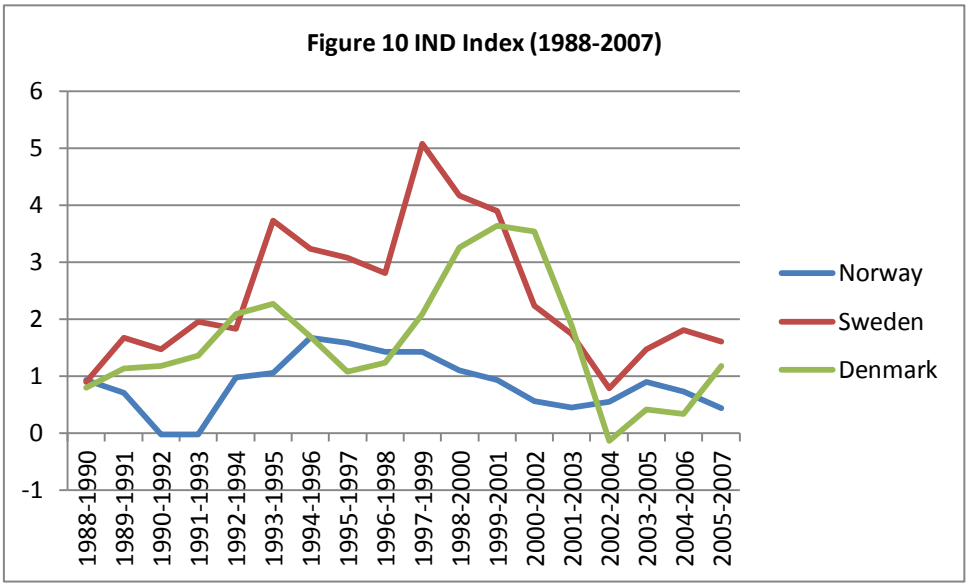
Table 4 shows the IND index of Norway, Sweden and Denmark from the year of 1988 to 2007 in both rank and index value measures:

Table 4 Inward FDI Performance Index (IND Index 1988-2007)

Year	Norway		Sweden		Denmark	
	rank	score	rank	score	rank	score
1988-1990	50	0.926	52	0.896	55	0.794
1989-1991	64	0.708	39	1.672	52	1.134
1990-1992	128	-0.023	60	1.473	63	1.176
1991-1993	129	-0.028	51	1.953	65	1.363
1992-1994	77	0.981	51	1.832	45	2.086
1993-1995	61	1.053	23	3.729	42	2.267
1994-1996	61	1.67	29	3.238	59	1.692
1995-1997	58	1.581	28	3.075	84	1.076
1996-1998	65	1.431	29	2.806	72	1.231
1997-1999	55	1.429	6	5.075	31	2.092
1998-2000	57	1.099	6	4.169	12	3.254
1999-2001	69	0.928	9	3.896	10	3.642
2000-2002	93	0.555	23	2.233	11	3.545
2001-2003	108	0.452	42	1.745	40	1.896
2002-2004	103	0.554	93	0.788	139	-0.132
2003-2005	98	0.899	76	1.473	123	0.419
2004-2006	106	0.732	57	1.805	128	0.334
2005-2007	119	0.438	58	1.604	79	1.176

(Resource:http://www.unctad.org/Templates/WebFlyer.asp?intItemID=2471&lang=1)

From table 4, at the initial point of the period (1988-1990), Norway, Sweden and Denmark ranked closely to each other, which were 50, 52 and 55 respectively, while the latest rank were 119, 58, and 79. During this period, the FDI inward performance of Sweden increased first to the highest point of rank 6 and then declined. The trend of IND index for Denmark is similar to that of Sweden, which first turns out to be a fluctuant increase to rank 10 and later a decrease. However, Norway suffered a fluctuant decrease through the whole period and fell to rank 119 in the end. Besides, we should notice that during a period from the year of 1997 to 2001, all the countries experienced an obvious increase, in which Sweden and Norway achieved their best performance especially.



From Figure 10, Sweden took the lead most of the time, while Norway held the smallest IND index during most of the periods. In addition, the IND index of Sweden only fell below 1 twice, which means that Sweden always attracted larger amount of FDI compared to its economic size. Denmark's IND index line is above 1 in most of the years, which means that its inward FDI performance is comparatively higher than its economic performance. Nevertheless, half of the IND index line of Norway is below 1, which indicates that in most of the period, Norway's development of inward FDI fell behind its economic development. However, the decline trend in the later period reflects a decreasing attraction to inward FDI within Scandinavian region.

3.2.2 UNCTAD: THE INWARD FDI POTENTIAL INDEX

The discussion of the inward FDI performance index came to the conclusion that Sweden has been held the highest inward FDI performance among the three countries and Norway has been held the lowest. In this section the inward FDI potential index will be studied in order to see if the inward FDI performance has positive relationship to inward FDI potential, which in other words, to see whether high inward FDI potential means high inward FDI performance.

The Inward FDI Potential Index has been introduced to measure several factors that are expected to affect an economy's attractiveness to the foreign investors, including political, institutional, social and economic variables. It is an average of normalized values of these variables, which could be calculated by (UNCTAD, the inward FDI potential index- Methodology):

$$\text{the value of a specific variable of economy i} = \frac{V_i - V_{min}}{V_{max} - V_{min}}$$

where

V_i= a specific value of economy i

V_{min}= the minimum value of this specific value among economies

V_{max}= the maximum value of this specific value among economies

This normalized methodology will generate a score between zero, for the lowest scoring country, to one, for the highest scoring country.

UNCTAD has listed out 12 variables that contained in the Inward FDI Potential Index:

(1)GDP per capita is an indicator of local demand. We expect higher income economies have relatively higher local demand for products and services thus will be able to attract relatively more FDI.

(2)The rate of GDP growth over previous 10 years is a proxy for expected economic growth. A higher rate of GDP growth over previous 10 years reflects relatively higher expectations and abilities of the economy to gain economic growth in the future.

(3)The share of exports in GDP indicates an economy's openness and competitiveness.

(4)The average number of telephone lines per 1,000 inhabitants and mobile telephones per 1,000 inhabitants reveals an economy's modern information and communication infrastructure.

(5)Commercial energy use per capita is an indicator for the availability of traditional infrastructure.

(6)The share of R&D spending in GDP is an indicator that reflects the local technological capabilities.

(7)The share of tertiary students in the population indicates the availability of high-level skills.

(8)County risk, including political and economic risks, indicates the factors that affect the risk perception of investors.

(9)The world market share in exports of nature resources is a proxy for the availability of resources of extractive FDI.

(10)The world market share of imports of parts and components for automobiles and electronic products reflects the status of participation in the leading TNC integrated production systems.

(11)The world market share of exports of services has been included because FDI in the services sector accounts for two thirds of world FDI.

(12)The share of world FDI inward stock is a broad indicator of the attractiveness and absorptive capacity for FDI, and the investment climate.

(Resource: UNCTAD, the inward FDI potential index- Methodology)

The Inward FDI Potential Index contains most of the important factors that determine an economy's location advantages, therefore, this paper will use the Inward FDI Potential Index to represent the status of the location advantages of the Scandinavia countries, and will study these twelve variables that contained in the potential index in details in order to find out the specific location advantages of each country. However, the Inward FDI Potential Index should be treated carefully, because it cannot reflect the unquantifiable social, political and institutional factors, which can affect FDI, or economic and competitiveness factors such as market access, the strength of local suppliers and the perceptions of individual transnational corporations. In spite of its insufficient, the Inward FDI Potential Index and its components can at least reveal the overall perspective of an economy's location advantages that attract the foreign investments.

3.2.2.1 INWARD FDI POTENTIAL INDEX OF SCANDINAVIA COUNTRIES

Table 5 shows the Inward FDI Potential Index of Norway, Sweden and Denmark from 1998 to 2006.

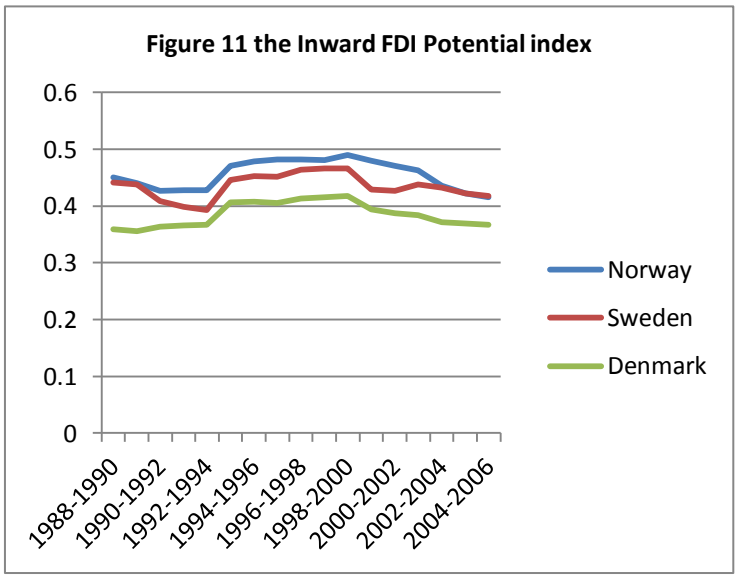
Table 5 Inward FDI Potential Index

	Norway		Sweden		Denmark	
period	rank	score	rank	score	rank	score
1988-1990	5	0.45	6	0.441	16	0.359
1989-1991	5	0.44	6	0.438	16	0.356
1990-1992	6	0.427	7	0.408	14	0.363
1991-1993	6	0.428	8	0.398	15	0.366
1992-1994	5	0.428	12	0.393	16	0.367
1993-1995	5	0.47	9	0.446	16	0.406
1994-1996	4	0.478	8	0.453	16	0.407
1995-1997	4	0.482	8	0.451	16	0.405
1996-1998	3	0.482	7	0.464	16	0.413
1997-1999	5	0.481	6	0.466	15	0.415
1998-2000	4	0.49	7	0.466	16	0.417
1999-2001	2	0.479	9	0.429	18	0.394
2000-2002	2	0.471	10	0.427	19	0.387
2001-2003	2	0.463	6	0.438	18	0.384
2002-2004	6	0.436	7	0.432	21	0.371
2003-2005	7	0.422	8	0.422	19	0.369
2004-2006	9	0.415	8	0.418	23	0.367

(Resource: http://www.unctad.org/templates/webflyer.asp?intitemid=2472&lang=1)

From table 5, Norway has maintained the highest rank, which indicates that it has larger potential to attract inward FDI than the other countries. Sweden ranked slightly lower than Norway, while Denmark located at the bottom among Scandinavia countries. However, all of the three countries have been at the top of the list if we take the other economies into consideration. Therefore, the Scandinavia countries keep strong potential to attract foreign investments, in other words, they possess great location advantages.

To analysis the development of location advantages, figure 11 displays the score lines of each country based on the data from table 5.



Norway has maintained the highest level of inward FDI potential among the Scandinavia countries, which indicates that Norway has the strongest location advantages to attract foreign investments, while Sweden and Denmark ranks second and third position respectively.

Although confronted with a tiny decline during the period from 1990 to 1992, the score line of Norway showed an increasing trend before the period of 1998- 2000 and then decreases. Meanwhile, Denmark's score line went up first and then descent after the period of 1998-2000. Different from the others, Sweden's score line

suffered a decline during the period of 1991-1994, and then it kept climbing till the period of 1998-2000, after which it came down except an increase during the period of 2001-2003. Besides, Norway's inward FDI potential is the one who decreases the most from 0.49 of 1998-2000 to 0.415 of 2004-2006 by 15%, while Sweden's inward FDI potential decreases the least from 0.466 in 1998-2000 to 0.418 in 2004-2006 by 10%. The Inward FDI potential index of Denmark decreases from 0.417 of 1998-2000 to 0.367 of 2004-2006, decreased by 12%.

Compare the three potential lines in figure 9 with the location advantage line in figure 11, both potential lines of Norway and Denmark has almost the same pattern with the location advantage line, which is increasing first and decreasing later. Although the potential line of Sweden has basically followed the shape of location advantage line, it also indicates obvious decreases in the beginning period and apparent increases during the decreasing trend. Therefore, the developments of location advantages in Norway and Denmark have complied with the description of development of location advantage in the IDP framework, while the Sweden's location advantage has not followed the IDP theory strictly. It is noticeable that all the three countries have obtained remarkable increase of inward FDI potential from the period of 1993-1995 and experienced decline since the period of 1998-2000.

The year of 1994 is the beginning of the recovery of the global economy from the big recession in 1980s. World Trade Organization (WTO) has been set up in this year. Therefore, the blossom of the global economy and trade during this period contributed a lot to the increase of inward FDI potential with improved global investment environment and diversified FDI sources. The decline of inward FDI potential after the year of 2000 is, for the same reason, because of the global slowdown of the world economy from 2001. In 2001, according to a report by the United Union on Oct. 10th, the growth rate of the world economy was only 1.4%. (China economic times, Dec 18th, 2001)

3.2.2.2 ANALYSIS OF THE VARIABLES INCLUDED IN THE UNCTAD INWARD FDI POTENTIAL INDEX

As stated before, UNCTAD has listed out 12 variables that contained in the Inward FDI Potential Index, which constitute the dominating part of an economy's location advantages. Studying these 12 variables in details will help us to understand the specified location advantages of each country.

The following analysis is based on the reports of "Raw data and scores for the variables included in the UNCTAD inward FDI Potential Index, 2002-2004,2003-2005,2004-2006" from UNCTAD.

(1) Real GDP Growth

Table 6 shows the amount and score of real GDP growth over previous 10 years of each country. This variable reflects the expectations for the market growth and potential. Besides, a higher rate of real GDP growth means a higher level of production, which will be attractive to the FDI.

Table 6 Real GDP Growth

	Norway		Sweden		Denmark	
Period	%	score	%	score	%	score
Average 1994-2004	2.8	0.459	2.9	0.462	2.1	0.397
Average 1995-2005	2.6	0.445	2.8	0.463	1.9	0.397
Average 1996-2006	2.4	0.405	2.9	0.441	1.9	0.376

(Resource: UNCTAD, Raw data and scores for the variables included in the UNCTAD inward FDI Potential Index, 2002-2004, 2003-2005, 2004-2006)

According to table 8, followed by Norway, Sweden has the highest real GDP growth rate and score, while Denmark has the smallest real GDP growth rate over previous 10 years. Therefore, in the aspect of economic growth, Sweden takes the greatest advantage to attract inward FDI among Scandinavia countries.

(2) GDP per Capita

Table 7 concerns the GDP per Capita of each country. GDP per Capita indicates the level of an economy's economic development and its demand for the commodities and services. A high level of GDP per Capita is always accompanied by advanced public institutions and living conditions. In addition, more GDP per Capita stand for more efficient productivity and stronger innovation ability, which both are important factors that attract the FDI.

Table 7 GDP per Capita

	Norway		Sweden		Denmark	
Period	dollars	score	dollars	score	dollars	score
Average 2002-2004	48 153.0	0.814	33 057.2	0.558	38 517.8	0.651
Average 2003-2005	56 034.3	0.779	37 453.4	0.520	44 178.6	0.614
Average 2004-2006	64 014.4	0.807	41 159.3	0.518	47 812.8	0.602

(Resource: UNCTAD, Raw data and scores for the variables included in the UNCTAD inward FDI Potential Index, 2002-2004, 2003-2005, 2004-2006)

From Table 7, Norway has the highest amount and score of GDP per Capita, while Sweden, in this turn, has the lowest amount and score. Thus in respect of GDP per Capita, Norway has more location advantage than Sweden and Denmark.

(3) Total Export (as a percentage of GDP)

Table 8 lists out the total export as a percentage of GDP of each country. As we know, total export, including commodity and service export, reveals the levels of an economy's openness, competitiveness when attract FDI, and participation in international productions.

Table 8 Total Export (as a percentage of GDP)

	Norway		Sweden		Denmark	
Period	%	score	%	score	%	score
Average 2002-2004	42.2	0.185	45.0	0.199	46.5	0.206
Average 2003-2005	43.0	0.152	46.2	0.166	46.4	0.167
Average 2004-2006	45.0	0.155	48.9	0.172	48.9	0.173

(Resource: UNCTAD, Raw data and scores for the variables included in the UNCTAD inward FDI Potential Index, 2002-2004, 2003-2005, 2004-2006)

Denmark maintains the highest total export to GDP ratio and score, while Sweden and Norway fall behind this time. Therefore, the excellent performance on total export can be regarded as a location advantage of Denmark to absorb inward FDI.

(4) Telephone mainlines and Mobile Phones

Table 9 and Table 10 show information of telephone mainlines and mobile phones respectively. These two indicators reveal an economy's modern information and communication infrastructure.

Table 9 Telephone mainlines

	Norway		Sweden		Denmark	
Period	per 1 000 inhabitants	score	per 1 000 inhabitants	score	per 1 000 inhabitants	score
Average 2002-2004	631.1	0.788	737.6	0.921	667.4	0.833
Average 2003-2005	475.1	0.656	723.8	1.000	645.4	0.892
	per 100 inhabitants		per 100 inhabitants		per 100 inhabitants	
Average 2004-2006	45.9	0.663	60.3	0.871	61.2	0.884

(Resource: UNCTAD, Raw data and scores for the variables included in the UNCTAD inward FDI Potential Index, 2002-2004, 2003-2005, 2004-2006)

Table 10 Mobile phones

	Norway		Sweden		Denmark	
Period	per 1 000 inhabitants	score	per 1 000 inhabitants	score	per 1 000 inhabitants	score
Average 2002-2004	877.5	0.775	969.3	0.856	891.3	0.787
Average 2003-2005	967.8	0.691	1001.6	0.715	950.5	0.679
	per 100 inhabitants		per 100 inhabitants		per 100 inhabitants	
Average 2004-2006	103.2	0.680	101.4	0.669	101.2	0.667

(Resource: UNCTAD, Raw data and scores for the variables included in the UNCTAD inward FDI Potential Index, 2002-2004, 2003-2005, 2004-2006)

From table 9, Sweden took the lead in number of telephone mainlines before 2006 because Denmark exceeded Sweden slightly in the average of 2004-2006. Table 10 shows that Sweden had more mobile phones per 1000 inhabitants than the others in first two average numbers and Norway caught up and exceed Sweden in the average of 2004-2006. However, the amounts and scores of each country are close to each other. Hence in this case, all the three countries have achieved similar levels of location advantages in information and communication infrastructure.

(5) Energy Use

Table 11 displays the energy use per capita in each country. The variable of energy use is an important indicator for the availability of energy, which is not only the crucial input of production, but a significant factor that can affect inward FDI.

Table 11 Energy use

	Norway		Sweden		Denmark	
Period	Per capita	score	Per capita	score	Per capita	score
Average 2002-2004	5 770.0	0.268	5 822.0	0.270	3 748.0	0.174
Average 2003-2005	5832.2	0.263	5893.7	0.266	3733.0	0.168
Average 2004-2006	6350.2	0.322	5800.7	0.294	3739.5	0.189

(Resource: UNCTAD, Raw data and scores for the variables included in the UNCTAD inward FDI Potential Index, 2002-2004, 2003-2005, 2004-2006)

Sweden had achieved the highest level of energy use per capita in first two average numbers and then Norway exceeds Sweden to be the top one among the three countries. Denmark maintains the smallest number of energy use per capita.

Therefore, both Norway and Sweden have represented strong availabilities of energy, which turn into one of their location advantages.

(6) R&D expenditures (as a percentage of GDP)

Table 12 gives out the R&D expenditures as a percentage of GDP in Scandinavia countries. The share of R&D spending in GDP is an indicator that reflects the local technological capabilities.

Table 12 R&D expenditures (as a percentage of GDP)

	Norway		Sweden		Denmark	
Period	%	score	%	score	%	score
Average 2002-2004	1.7	0.334	4.1	0.827	2.5	0.494
Average 2003-2005	1.7	0.379	3.9	0.841	2.6	0.573
Average 2004-2006	1.6	0.323	3.9	0.804	2.5	0.512

(Resource: UNCTAD, Raw data and scores for the variables included in the UNCTAD inward FDI Potential Index, 2002-2004, 2003-2005, 2004-2006)

The share of R&D spending in GDP in Sweden is higher than that of Norway and Denmark, which means that Sweden would be regarded to be more innovative and have stronger technological capabilities than the others. On the other hand, Norway invested the least into R&D compared to its economic size.

(7) *Students in tertiary education (as a percent of total population)*

Table 13 reflects the information of students in tertiary education as a percent of total population in each country. The share of tertiary students in the population indicates the availability of high-level skills, which is another important factor that attracts foreign investment.

Table 13 Students in tertiary education (as a % of total population)

	Norway		Sweden		Denmark	
Year	%	score	%	score	%	score
2003	4.64	0.685	4.62	0.682	3.74	0.550
2005	4.65	0.688	4.77	0.705	4.01	0.592
2006	4.62	0.689	4.66	0.695	4.20	0.626

(Resource: UNCTAD, Raw data and scores for the variables included in the UNCTAD inward FDI Potential Index, 2002-2004, 2003-2005, 2004-2006)

In this case, Denmark fell behind Norway and Sweden, of which the scores are close to each other. Thus the high shares of students in tertiary education in total population in Norway and Sweden guarantee them to have more high skill labors than Denmark.

(8) ***Country Risk***

Country risk, including political，financial and economic risks, indicates the factors that affect the risk perception of investors. The variable of country risk used by UNCTAD is coming from "*The International Country Risk Guide (ICRG)"*, which is developed by the PRS (Political Risk Services) Group. The assessment is based on a set of 22 components grouped in to three major categories, which are political risk, financial risk and economic risk. The political risk contains 12 components that are *Government Stability, Socioeconomic Conditions, Investment Profile, Internal Conflict, Corruption, Military in Politics, Religious Tensions, Law and Order, Ethnic Tensions, Democratic Accountability and Bureaucracy Quality.* Economical risk contains 5 components, which are *GDP per Head, Real GDP Growth, Annual Inflation Rate, Budget Balance, and Current Account as a Percentage of GDP*. Financial risk also contains 5 components, which are *Foreign Debt as a Percentage of GDP, Foreign Debt Service as a Percentage of Exports of Goods and Services, Current Account as a*

Percentage of Exports of Goods and Services, Net International Liquidity as Months of Import Cover and Exchange Rate Stability. The composite scores are risking from zero to 100, where 80 to 100 indicate very low risk and zero to 49.9 indicates very high risk.

Table 14 country risk

	Norway		Sweden		Denmark	
Period	Composite risk rating	score	Composite risk rating	score	Composite risk rating	score
As of December 2004	92.3	1.000	88.0	0.925	86.8	0.903
As of December 2005	92.5	1.000	85.3	0.852	85.8	0.862
As of December 2006	91.5	1.000	88.3	0.930	85.5	0.871

(Resource: UNCTAD, Raw data and scores for the variables included in the UNCTAD inward FDI Potential Index, 2002-2004, 2003-2005, 2004-2006)

From table 14, all of the Scandinavia countries have very low risk, since their composite risk ratings are larger than 80. Norway achieved the lowest country risk by maintaining the highest variable score of 1. Such low country risk contributed a lot to the relatively high inward FDI potential within the Scandinavia region.

(9) ***Exports of natural resources (As a percent of world total)***

Table 15 exhibits the Exports of natural resources as a percent of world total, which is a proxy for the availability of resources of extractive FDI.

Table 15 Exports of natural resources (As a % of world total)

	Norway		Sweden		Denmark	
Period	%	score	%	score	%	score
Average 2002-2004	5.76	0.576	0.73	0.072	0.65	0.065
Average 2003-2005	4.62	0.552	0.61	0.073	0.53	0.064
Average 2004-2006	4.40	0.461	0.63	0.066	0.52	0.054

(Resource: UNCTAD, Raw data and scores for the variables included in the UNCTAD inward FDI Potential Index, 2002-2004, 2003-2005, 2004-2006)

It is obvious from table 15 that Norway has the largest share of exports of natural resources in world market, which means that compared to the other two countries, Norway obtained greater advantage in the availability of natural resources.

(10) ***Imports of parts/accessories of electronics and automobiles***

The world market share of imports of parts and components for automobiles and electronic products reflects the status of participation in the leading TNC integrated production systems.

Table 16 Imports of parts/accessories of electronics and automobiles

	Norway		Sweden		Denmark	
Period	(As a % of world total)	score	(As a % of world total)	score	(As a % of world total)	score
Average 2002-2004	0.33	0.021	1.37	0.086	0.48	0.030
Average 2003-2005	0.30	0.021	1.28	0.089	0.44	0.031
Average 2004-2006	0.29	0.021	1.23	0.089	0.42	0.030

(Resource: UNCTAD, Raw data and scores for the variables included in the UNCTAD inward FDI Potential Index, 2002-2004, 2003-2005, 2004-2006)

According to table 16, it is clear that Sweden has greater involvement in the leading TNC integrated systems than Norway and Denmark.

(11) ***Exports of services (As a percentage of world total)***

Because FDI in the services sector accounts for two thirds of world FDI, the world market share of exports of services has been included when calculating the Inward Potential Index by UNCTAD.

Table 17 Exports of services (As a % of world total)

	Norway		Sweden		Denmark	
Period	%	score	%	score	%	score
Average 2002-2004	1.169	0.071	1.643	0.100	1.689	0.103
Average 2003-2005	1.145	0.074	1.699	0.111	1.666	0.108
Average 2004-2006	1.147	0.076	1.735	0.115	1.726	0.114

(Resource: UNCTAD, Raw data and scores for the variables included in the UNCTAD inward FDI Potential Index, 2002-2004, 2003-2005, 2004-2006)

Although the scores of three countries are relatively small, which are around 0.1, they can still tell that Norway fell behind Sweden and Denmark in exports of services.

(12) ***Inward FDI stock (As a % of world total)***

The share of world FDI inward stock is a broad indicator of the attractiveness and absorptive capacity for FDI, and the investment climate.

Table 18 Inward FDI stock (As a % of world total)

	Norway		Sweden		Denmark	
Period	%	score	%	score	%	score
Average 2002-2004	0.583	0.034	1.937	0.112	1.189	0.069
Average 2003-2005	0.6	0.036	1.9	0.117	1.2	0.072
Average 2004-2006	0.8	0.050	1.8	0.121	1.1	0.075

(Resource: UNCTAD, Raw data and scores for the variables included in the UNCTAD inward FDI Potential Index, 2002-2004, 2003-2005, 2004-2006)

From table 18, none of the Scandinavia countries has achieved large share of inward FDI stock in the world total. However, among the three countries, Sweden has the biggest share and score, while Norway has the smallest.

3.2.3.3 CONCLUSION OF SPECIFIED LOCATION ADVANTAGES – COMPARISON WITHIN SCANDINAVIA COUNTRIES

According to the analysis of each variable that contained in the Inward FDI Potential Index in last section, table 19 generates a summary of specified location advantages of each country. The specified location advantages concluded in this section are based on the comparisons among Scandinavia countries but not taking the other economies in the world into consideration. Take the variable of country risk for instance, all the three countries can be regarded as low risk countries because all of them has achieved the composite scores that are higher than 80. However, we can still tell that Norway has the lowest risk because its composite scores is higher than 90. Therefore, in the following analysis, country risk will be considered to be one of the strongest advantages of Norway. Because this paper is focused on the comparison of different patterns of FDI developments among the Scandinavia countries, any differences among the variables of location advantages should be taken carefully because this will be helpful to explain the causes behind their FDI development patterns.

Table 19 lists out the ranking of specified location advantages of each country clearly. Country gains three stars means that this country has more advantages in that specified variable than the others. Two stars represent a medium rank among the three countries and one star indicates the lowest score of a variable.

Table 19 Ranking of Specified location advantages

Variables	Location advantages	Norway	Sweden	Denmark
GDP per capital	Local demand	☆☆☆	☆	☆☆
Real GDP growth	Economic Growth expectation	☆☆	☆☆☆	☆
Total exports	Openness and competitiveness	☆	☆☆	☆☆☆
Telephone lines	Modern information and communication infrastructure	☆	☆☆☆	☆☆
Mobile telephones	(ditto)	☆☆☆	☆☆	☆☆
Energy use	Availability of traditional infrastructure	☆☆☆	☆☆	☆
R&D spending	Local technological capabilities	☆	☆☆☆	☆☆
Tertiary students	Availability of high-level skills	☆☆	☆☆☆	☆
County risk	Factors of Risks for investors	☆☆☆	☆☆	☆
Exports of nature resources	Availability of resources	☆☆☆	☆☆	☆
Imports of parts and components for automobiles and electronic products	Participation in the leading TNC integrated production systems	☆	☆☆☆	☆☆
Exports of services	Development of service industry	☆	☆☆☆	☆☆
FDI inward stock	Attractiveness and absorptive capacity for FDI, and the investment climate	☆	☆☆☆	☆☆

(☆☆☆: highest score; ☆☆: medium score; ☆: lowest score)

Norway

Norway's location advantages has been reflected in variables of local demand, availability of traditional infrastructure, availability of traditional infrastructure, County risk and availability of resources. It fell behind Sweden and Denmark in fields of openness and competitiveness, local technological capabilities, participation in the leading TNC integrated production systems, development of service industry and investment climate.

Sweden

Sweden has more advantages in aspects of economic growth expectation, modern information and communication infrastructure, local technological capabilities, availability of high-level skills, participation in the leading TNC integrated production systems, development of service industry, and investment climate, while it only lacks of local demand expectations compared to both of the other two countries.

Denmark

Denmark has maintained medium ranks in more than half of the variables. It achieved highest score in total export, which means that it is superior in openness and competitiveness.

3.2.3 MATRIX OF INWARD FDI PERFORMANCE AND POTENTIAL BY UNCTAD

Comparing the inward FDI performance and inward FDI potential of Scandinavia countries, it can be found that high inward FDI potential does not mean high inward FDI performance, since Norway has the highest inward FDI potential score but the

lowest inward FDI performance. Therefore, to draw a matrix about the comparison between inward FDI performance and potential is reasonable.

UNCTAD has introduced a 2*2 matrix of inward FDI performance and potential, which separates the economies into four categories: *Front-runners, Below potential, Above potential, and Under performers*.

Figure 12 Matrix of inward FDI performance and potential

(Resource: UNCTAD, matrix of inward FDI performance and potential)

Where:

Front-runners: countries with high potential and performance.

Above potential: countries with low FDI potential but strong FDI performance. The reason for this is that the variables that consisted in the inward FDI potential index of these countries are relatively weak. In other words, above potentials do not have strong structural economic indicators.

Below potential: countries with high FDI potential but low FDI performance. If the inward FDI programs introduced to the host country are not able to express the location advantages of this country, the inward FDI performance will below the inward FDI potential.

Under-performers: countries with both low FDI potential and performance.

UNCTAD has also published the matrixes for the period of 1988-1990, 1993-1995, 1999-2001, 2000-2002, 2001-2003, 2002-2004, 2003-2005 and 2004-2006. To study the changes in the position of the countries will be helpful to understand the inward FDI development in these countries.

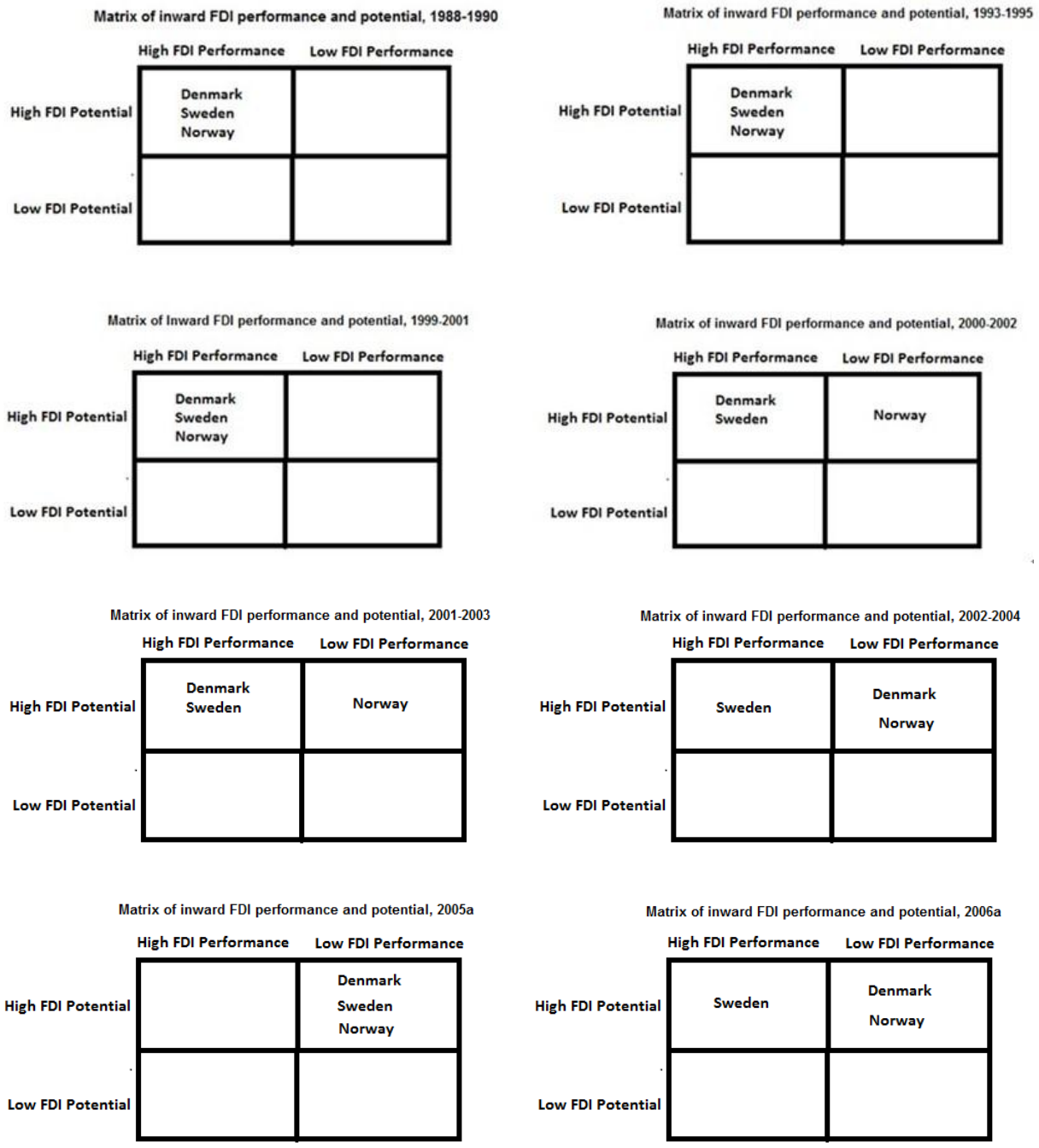


Figure 13 Matrix of inward FDI performance and potential

During the periods of 1988-1990, 1993-1995 and 1999-2001, all three countries belonged to the group of front-runners, which means that all of them had both high inward FDI potential and performance in these periods. Then Norway and Denmark became to be below potential during the period of 2000-2002 and 2002-2004. Different from the others, except in the period of 2003-2005, Sweden has maintained the position of front-runners.

Countries with high inward FDI potential but low inward FDI performance, such as Norway and Denmark, need to do more research on its foreign investors, for example the foreign multinationals, therefore to adjusted its main effort directions in order to fully take advantages of their location advantages.

Based on the analysis above, relationships among location advantages, inward FDI potential, and inward FDI performance can be shown as the figure below:

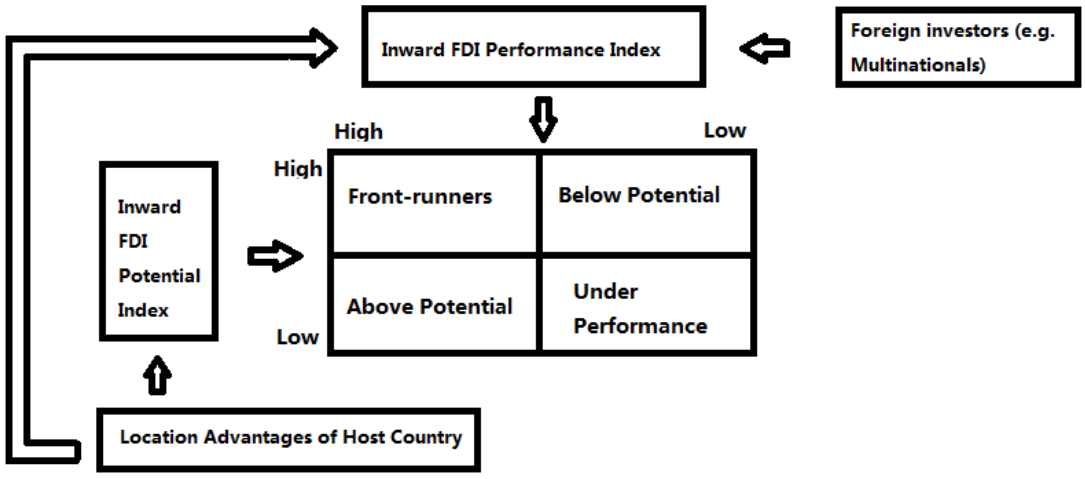


Figure 14 Inward FDI Potential Index and Inward FDI Performance Index

3.3 OWNERSHIP ADVANTAGE

In last section, the location advantages of Scandinavian countries have been concluded based on the analysis of the inward FDI performance index and the inward FDI potential index by UNCTAD. In this section, the outward FDI performance index, which to some degree can reflect the abilities of a country's firms to invest abroad, will be studied. However, when study the specific ownership advantages, there have not such kind of "outward FDI potential index" to measure the specified ownership advantages of each firm in each country directly, because the ownership advantages are diversified and different between each firm, therefore are hard to identify and quantify. Moreover, only aggregated data on assets, value added and wages and salaries could be reported, since the data of transnational corporations (TNCs) have been treated as confidential and no further information is currently available on the activities of TNCs (UNCTAD, FDI country profiles, Norway). Nonetheless, the existing data can still reflect a lot of information about the ownership advantage growth. Therefore, after analysis the outward FDI performance index, the paper will find the industries that have participated in the outward FDI activities in each country in order to identify the typical industries that have invested abroad, and try to figure out their characteristics if possible.

3.3.1 UNCTAD: THE OUTWARD FDI PERFORMANCE INDEX

Similar to the inward FDI Performance Index (IND index), outward FDI Performance index (OND index) has been reported by UNCTAD to indicate a country's outward FDI performance relative to its economic size, since it is more reasonable to take the economic size into consideration when making comparisons among countries (UNCTAD, outward FDI performance index- Methodology).

The formula definition of OND index could be shown as the following expression:

$$ONDi = \frac{FDIi / FDIw}{GDPi / GDPw}$$

where:

ONDi= the outward FDI performance index of country i

FDIi= the outward FDI flow of country i

FDIw= the outward FDI flow of the whole world

GDPi= GDP of economy i

GDPw=GDP of the whole world

(Resource: UNCTAD, outward FDI performance index- Methodology)

The economic meaning of OND index could be also explained in three situations: if a country achieves an OND index which is larger than 1, this means that the amount of its investment abroad is relatively larger than its economic size; if a country obtain an OND index which is smaller than 1, then it has invested less abroad compared to its economic size; finally, if the OND index is equal to 1, this indicates that the country has the same performances on investment abroad and GDP development.

Table 20 shows the OND index shown for three-year periods of Norway, Sweden and Denmark from the year of 1988 to 2007 in both rank and score:

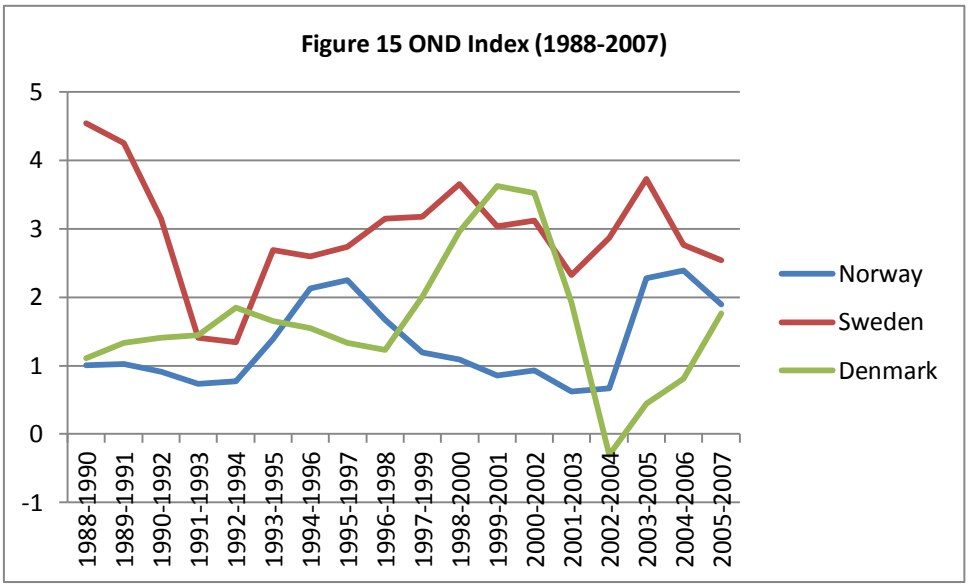
Table 20 Outward FDI Performance Index (OND Index 1988-2007)

Year	Norway		Sweden		Denmark	
	rank	score	rank	score	rank	score
1988-1990	19	1.005	2	4.540	17	1.107
1989-1991	16	1.025	3	4.256	15	1.336
1990-1992	23	0.914	6	3.145	15	1.410
1991-1993	32	0.734	14	1.409	13	1.444
1992-1994	36	0.767	17	1.345	12	1.845
1993-1995	15	1.390	6	2.688	12	1.650
1994-1996	18	2.128	15	2.592	22	1.552
1995-1997	10	2.253	8	2.734	15	1.335
1996-1998	14	1.674	9	3.153	20	1.227
1997-1999	17	1.193	9	3.181	11	2.007
1998-2000	18	1.087	7	3.658	8	2.960
1999-2001	20	0.857	9	3.035	5	3.624
2000-2002	21	0.933	8	3.120	7	3.524
2001-2003	33	0.619	7	2.329	12	1.921
2002-2004	29	0.666	8	2.870	129	-0.307
2003-2005	14	2.280	11	3.727	43	0.445
2004-2006	16	2.395	13	2.763	33	0.810
2005-2007	18	1.896	12	2.539	20	1.764

(Resource:http://www.unctad.org/Templates/WebFlyer.asp?intItemID=3241&lang=1)

All three countries have maintained higher ranks on outward FDI compared to that of their inward FDI performances. Sweden has never fallen out of top 20 and stayed within top 10 in half of these years. Although Norway has never climbed up to top 10, its rank kept to being within top 30 in most of the years. Denmark also has done a good job besides in the period of 2002 to 2004, with the rank that maintained within top 20 in most of the time.

Again, a line graph based on table 20 has been made in order to make the comparison more convenient and intuitive:



From figure 15, all three countries have achieved OND index that above the line where OND equals to 1 during most of the periods. Sweden, as which has been stated before, again, took the lead in outward FDI performance. Norway's rank is relatively stable, while Denmark suffered a big crash during 2002 to 2004 and fortunately recovered soon. Such good performances reveal a fact that Scandinavia countries possess strong incentives and abilities to invest abroad.

3.3.2 INDUSTRY STUDY

The analysis above draws an overall picture of outward FDI performance in Scandinavian countries. In this section, the industries that participated in foreign investment in each country will be studied.

Norway

Table 21 lists Norwegian industries that invest abroad and their investment amount from 1998 to 2009.

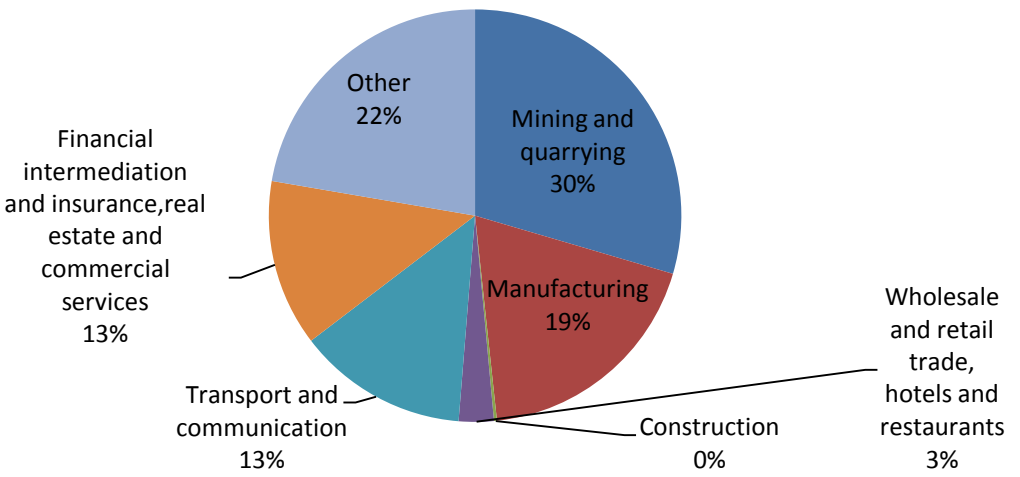
Table 21 Norway's foreign investment abroad in million NOK, by industry, 1998-2009

Year	Total	Mining and quarrying	Manufacturing	Construction	Wholesale and retail trade, hotels and restaurants	Transport and communication	Financial intermediation and insurance, real estate and commercial services	Other
1998	180 266	51 859	53 474	218	6 369	11 025	37 394	19 927
1999	239 691	62 356	64 971	95	7 855	16 017	50 119	38 278
2000	301 076	64 713	78 936	876	11 744	47 730	47 055	50 022
2001	337 629	76 640	98 981	866	13 337	47 026	47 369	53 410
2002	327 916	74 521	112 203	434	11 962	31 751	41 299	55 746
2003	381 316	90 287	122 735	543	13 234	43 466	39 820	71 231
2004	488 827	106 201	143 979	789	20 506	68 210	52 166	96 976
2005	629 089	170 602	191 660	1 352	16 814	79 345	56 805	112 511
2006	754 070	221 474	162 253	2 206	19 704	132 561	71 472	144 400
2007	789 184	193 867	167 078	1 568	27 018	125 143	97 333	177 177
2008	933 543	221 745	195 181	2 291	28 375	155 243	122 283	208 425
2009	946 416	279 667	177 479	2 206	25 914	126 392	123 642	211 116

(Resource: Statistic Norway, Foreign direct investments abroad, 1998-2010)

Since 1998, the FDI flows abroad from all the industries listed in the table above have been increasing obviously. FDI outflows from the Industries of mining and quarrying accounted for the largest share of the total flow, which for instance, in 2009, held 30%, followed by that from the industries of manufacturing which contributed 19% to the total flow.

Figure 16
Norway's FDI abroad by industry, 2009



Industry of mining and quarrying has been traditional superior industry of Norway. According to the report of "Accounting statistics, public non-financial corporations, 2004-2009" from Statistic Norway, the high profit that about NOK 283 billion to the profit before tax was mainly attributed to enterprises in mining and quarrying, which have been dominated by SDFI and Statoil ASA.

Table 22 lists out Norway's largest industrial home-based TNCs in the year of 2003.

Table 22 Norway's Largest Industrial home-based TNCs, 2003

(Millions of Euros and number)

Company	Industry	Sales	Employees
Statoil	Petroleum	29 617	19 326
Norsk Hydro AS	Metal products	20 471	42 911
Orkla	Foods	5312	31826
Yara International	Chemicals	4568	7543
Norske Skogindustrier	Wood products	2868	8326
Elkem	Metal products	2215	10643
Kongsberg Gruppen	Aircraft manufacture	793	4176
Jotun A/S	Chemicals	642	3934
Kverneland	Machinery equipment	480	3100
Fjord Seafood	Foods	479	3014
Rieber & SON	Foods	384	3357
Leroy Seafood Group	Foods	347	331
Prosafe ASA	Petroleum AND GAS	347	1947
Pan Fish Asa	Foods	326	1582
Tomra Systems ASA	Machinery equipment	293	1976
Unitor	Machinery equipment	257	1330

(Resource: UNCTAD, FDI country profiles, Norway)

Most of the Norway's largest industrial home-based TNCs were concentrated in raw and processed materials industries, such as petroleum, metal and food. Therefore, the development and accumulation of ownership advantages in Norwegian TNCs could be derived from the rich endowment of natural resources of Norway. For example, the abundant resources of oil and gas enable the establishment and development of the petroleum firms.

Sweden

Table 23 lists Swedish direct investment assets abroad from 2000 to 2009. Engineering and Banking have been the top 2 largest industries that invest abroad.

Table 23 Industry breakdown of Swedish direct investment assets abroad, SEK billion

Industry	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Manufacturing	614	683	605	618	642	759	821	1004	1211	1178
Food industry	23	30	24	31	23	30	29	35	35	36
Wood, paper and graphical industry	62	72	72	71	60	..	69	90	103	132
Chemicals and pharmaceuticals	54	79	83	121	..	..	..	249	312	316
Engineering*	400	424	382	348	344	401	436	537	674	609
Other manufacturing	75	77	43	47	..	56	..	93	88	84
Electricity, gas, heating, and water	21	28	40	46	28	32	55	64	73	97
Construction and property	77	88	76	38	33	39	50	78	93	78
Trade in goods	60	67	84	75	93	109	117	120	170	186
Banking	133	157	169	218	214	238	303	261	336	296
Other financial services	36	33	36	81	98	116	103	103	110	124
Insurance	52	..	..	..	53	52	48	..	66	65
Hotels and restaurants	..	..	..	..	..	..	..	..	8	13
Transport, storage, communications	63	71	79	..	..	152	131	201	170	138
Other service	21	..	28	20	26	44	66	102	144	148
Other industries	..	57	88	..	..	..	..	105	81	97
Total	1146	1279	1261	1298	1374	1610	1760	2080	2462	2421

(Resource: Statistic Sweden, foreign direct investment 2009)

In 2009, a large proportion of the assets abroad can be found in the engineering, chemical and pharmaceutical industries and in the banking sector.

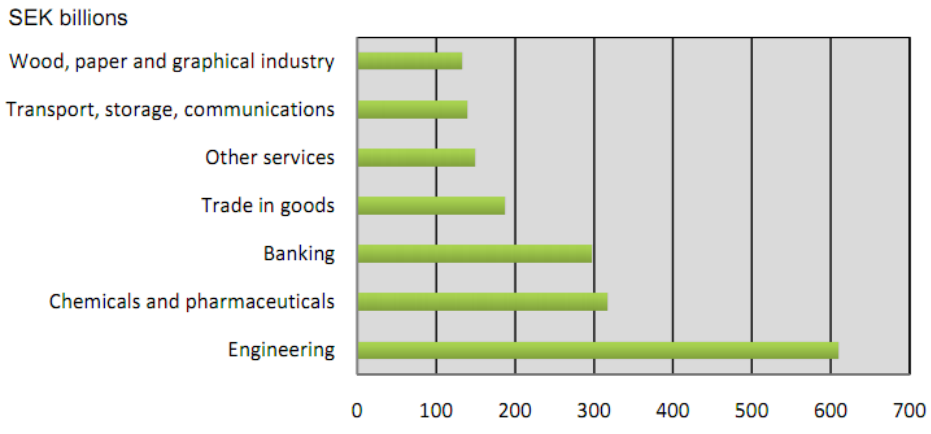


Figure 17 Swedish direct investment assets abroad broken down in 2009

(Resource: Statistic Sweden, foreign direct investment 2009)

Sweden's superiority in Engineering reflects the advanced technology development and the ability of innovation of Swedish firms. Therefore, unlike the petroleum industry in Norway whose ownership advantage could be derived from the resource endowments, the engineering industry in Sweden develops its ownership advantage through contribution to technology development and innovation.

Denmark

Table 24 Denmark's FDI abroad by industry, 1990 – 2004

(Millions of Kroner)

Sector / industry	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Total	10 085	13 190	9 161	4 009	7 457	17 167	14 606	27 781	29 990	118 577	214 673	111 306	44 893	7 415	-62 088
Primary	61	2 481	39	5	129	- 77	300	- 100	1 200	3 041	399	2 979	891	-3 971	-1 177
Secondary	1 990	3 205	4 846	4 908	3 713	6 173	3 600	10 800	10 000	7 826	15 407	12 481	1 433	-2 921	177
Food, beverages and tobacco	241	1 476	2 169	1 858	- 2	1 661	2 900	6 500	4 600	5 147	1 091	7 424	184	1 018	4 653
Textiles, clothing and leather	-	-	-	-	-	-	-	100	-	-	-	-	-	-	-
Wood and wood products	-	-	-	-	-	-	-	200	-	-	-	-	-	-	-
Chemicals and chemical products	832	452	1 430	1 566	1 947	898	1 000	200	700	624	9 920	3 820	- 193	-5 316	-5 643
Rubber and plastic products	..	..	..	..	..	..	..	700	..	..	..	..	..	..	..
Metal and metal products	1 031	706	754	995	1 393	2 857	-1 400	2 300	2 200	843	4 174	756	637	893	- 727
Motor vehicles and other transport equipment	-	-	-	-	-	-	-	200	-	-	-	-	-	-	
Motor vehicles, trailers and semi-trailers	-	-	-	-	-	-	-	100	-	-	-	-	-	-	
Other transport equipment	-	-	-	-	-	-	-	100	-	-	-	-	-	-	
Unspecified secondary	- 114	571	493	489	375	757	1 100	600	2 500	1 212	222	481	805	484	1 894
Tertiary	7 824	7 221	4 073	-1 063	3 610	10 205	7 100	16 960	18 700	104 433	179 618	91 231	37 930	10 853	-69 644
Electricity, gas and water	-	-	-	-	-	-	-	100	-	-	-	-	-	-	-
Construction	260	67	166	- 252	74	- 153	700	100	- 100	- 222	585	384	- 780	380	835
Trade	2 253	1 460	1 279	611	4 078	2 466	-1 000	3 300	4 200	5 872	7 253	10 004	12 841	9 029	-10 074
Transport, storage and communications	189	171	139	199	272	853	6 500	4 000	1 100	8 095	8 654	23 606	-3 334	- 75	-5 686
Transport and storage	-	-	-	-	-	-	-	400	-	-	-	-	-	-	-
Water transport	-	-	-	-	-	-	-	100	-	-	-	-	-	-	-
Air transport	-	-	-	-	-	-	-	300	-	-	-	-	-	-	-
Telecommunications	-	-	-	-	-	-	-	3 600	-	-	-	-	-	-	-
Finance	5 122	5 523	2 489	-1 621	- 814	-	-	3 400	-	90 688	163 126	57 237	29 203	1 519	-54 719
Financial Intermediation	-	-	-	-	-	-	-	3 200	-	-	-	-	-	-	-
Insurance and Pension Funding	-	-	-	-	-	-	-	200	-	-	-	-	-	-	-
Business activities	-	-	-	-	-	7 039	900	5 060	13 500	..	..	..	..	..	..
Real estate	-	-	-	-	-	-	-	420	-	-	-	-	-	-	-
Computer and related activities	-	-	-	-	-	-	-	..	-	-	-	-	-	-	-
Research and development	-	-	-	-	-	-	-	..	-	-	-	-	-	-	-
Other business activities	-	-	-	-	-	-	-	3 840	-	-	-	-	-	-	-
Business activities n.e.c.	-	-	-	-	-	-	-	3 500	-	-	-	-	-	-	-
Other services	-	-	-	-	-	-	-	400	-	-	-	-	-	-	-
Unspecified	210	283	203	159	5	866	3 606	121	90	3 277	19 249	4 615	4 639	3 454	8 556

Notes: For all years but 1997, Chemical products include mineral oil and plastics, Trade include hotels and restaurants, Finance includes business activities.

(Resource: UNCTAD, FDI country profile, Denmark)

Unlike Norway and Sweden, whose largest outward FDI resources have been firms in secondary industry, such as petroleum and engineering firms, Denmark's outward FDI has been dominated by firms in tertiary industry, especially in trade, finance and business sectors.

Conclusion

According to the analysis above, Norway's outward FDI are mainly from mining and quarrying industry, while Sweden's are largely coming from the engineering industry. Instead of developing the first and secondary industries, Denmark focuses on developing its tertiary industry. Therefore, the production and development of the ownership advantages in each country is different from each other. Norway's firm gain their ownership advantages primarily from its rich endowment of natural resources, which can be labeled as resource-originated type. Sweden's firm maintain their ownership advantages based on technology development and innovation, which can be regard as technology-based type. In the end, Denmark's maturely developed service industry enables service firms to gain enough competitive advantages to invest abroad.

3.4 MATRIX OF INWARD AND OUTWARD FDI PERFORMANCE INDEX

In previous sections, the inward FDI performances and the outward FDI performances of Scandinavian countries have been studied separately. In this sector, the paper will make a conclusion of former findings by drawing a matrix of inward FDI performance and outward FDI performance in order to see if it is possible to answer the question that why the IDP theory reflects different applicability in each country's situation.

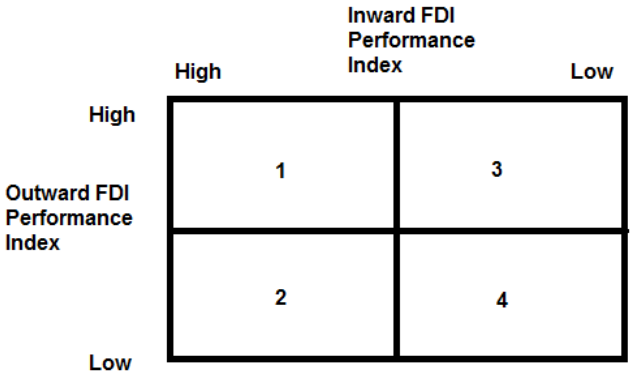


Figure 18 Matrix of inward and outward FDI performance index

-1. High inward and high outward FDI performance: country with both the inward and outward FDI performance that ranked above half of the whole sample.

-2. Low inward but high outward FDI performance: country with inward FDI performance ranked below half of the whole sample but outward FDI performance that ranked above half of the whole sample.

-3. High inward but low outward FDI performance: country with inward FDI performance ranked above half of the whole sample but outward FDI performance that ranked below half of the whole sample.

-4. Low inward and low outward FDI performance: country with both the inward and outward FDI performance that ranked below half of the whole sample.

Table 25 IND Rank and OND Rank of Scandinavian Countries

Year	Norway		Sweden		Denmark	
	IND RANK	OND RANK	IND RANK	OND RANK	IND RANK	OND RANK
1988-1990	50	19	52	2	55	17
1989-1991	64	16	39	3	52	15
1990-1992	128	23	60	6	63	15
1991-1993	129	32	51	14	65	13
1992-1994	77	36	51	17	45	12
1993-1995	61	15	23	6	42	12
1994-1996	61	18	29	15	59	22
1995-1997	58	10	28	8	84	15
1996-1998	65	14	29	9	72	20
1997-1999	55	17	6	9	31	11
1998-2000	57	18	6	7	12	8
1999-2001	69	20	9	9	10	5
2000-2002	93	21	23	8	11	7
2001-2003	108	33	42	7	40	12
2002-2004	103	29	93	8	139	129
2003-2005	98	14	76	11	123	43
2004-2006	106	16	57	13	128	33
2005-2007	119	18	58	12	79	20

(Note: The medium rank of IND index is 70 since the whole sample contains around 140 countries, and the medium rank of OND index is 62 since the whole sample contains around 125 countries. Resource: UNCTAD, IND index and OND index)

It will be very tedious to draw each matrix for each year, therefore this paper uses the number “1, 2, 3, 4” to indicate 4 zones in the matrix. (See figure 18)

Table 26 Performance Matrix zone

Year	Norway	Sweden	Denmark
1988-1990	1	1	1
1989-1991	1	1	1
1990-1992	2	1	1
1991-1993	2	1	1
1992-1994	2	1	1
1993-1995	1	1	1
1994-1996	1	1	1
1995-1997	1	1	2
1996-1998	1	1	2
1997-1999	1	1	1
1998-2000	1	1	1
1999-2001	1	1	1
2000-2002	2	1	1
2001-2003	2	1	1
2002-2004	2	2	4
2003-2005	2	2	2
2004-2006	2	1	2
2005-2007	2	1	2

Except during the period of 1990-1994, Norway had been in zone 1 till the period of 2000-2002, after then it became to be within zone 2. In other words, before the period of 2000-2002, Norway had almost maintained both high inward and outward FDI performance, and then its inward FDI performance dropped to be poor but its outward FDI performance still keeps at a high level. Denmark's situation is similar to that of Norway, since Denmark had maintained a position within zone 1 during most of the periods before 2002-2004, and then its position fell to be within zone 2 except a decline to be located in zone 4 in 2002-2004. Unlike Norway and Denmark, Sweden has preserved its position within zone 1 through nearly the whole period, which means that both the inward and outward FDI performances of Sweden have retained at high levels. Recall the previous study of matrix of inward FDI performance and potential indexes, both Norway and Denmark have experienced position changes

from front-runners to below-potential but Sweden has always been front-runners. Therefore, the answer to the question that why the IDP theory has good fitness with cases of Norway and Denmark but poor applicability with the Sweden case could be that the IDP theory does not suitable to explain the FDI development in countries like Sweden, who can maintained both strong inward and outward FDI performance through a long period, which in this paper, of twenty years, because the IDP theory itself describes a story about the process that the inward and outward FDI rise and decline alternately.

CHAPTER 4 CONCLUSION

This paper studies two-way FDI development in Scandinavian countries. The two-way FDI structures in these three countries have been identified, by using a quadratic model based on the IDP framework. Then the paper concluded the location and ownership advantages of each country according to three important FDI indexes offered by the UNCTAD, which are the inward FDI performance index, the inward FDI potential index and the outward FDI performance index.

According to the analysis, Sweden's pattern shows different features from the other two countries'. The main finds of this paper are:

(1) The IDP theory can largely explain the two-way FDI structure development in Norway and Denmark; furthermore, both Norway and Denmark are in stage four of the IDP framework. However, the IDP theory failed to explain the two-way FDI structure development in Sweden.

(2) Sweden held the highest inward FDI performance among the three countries. Norway held the highest inward FDI potential index but the lowest inward FDI performance. The specific location advantages of each country have been concluded.

(3) Sweden has maintained to be front-runners through nearly the whole period, while Norway and Denmark suffered decline in position from the front-runners to below-potential.

(4) Sweden achieved the highest outward FDI performance either. The main sources of its outward FDI are coming from engineering industry, of which the ownership advantages could be regarded as technology-based type. Norway's largest TNCs are concentrated in mining and quarrying industries. The ownership advantages of Norway's firms were derived from its rich endowments of natural resources, which could be defined as resource-originated type. Instead of developing first

and secondary industries, Denmark has built a maturely tertiary industry that has become the largest source of investment abroad.

(5) IDP theory fails to explain the Sweden case because the IDP theory itself is a story about the process that the inward and outward FDI rise and decline alternately, which is not suitable to discuss the FDI development in countries like Sweden, who can maintained both strong inward and outward FDI performance through a long period.

These findings also derive new questions that can be discussed deeper in the future:

(1) The relationship between inward FDI potential and inward FDI performance can be discussed for one more step. A clear question is why Norway held the highest inward FDI potential but worst inward FDI performance.

(2) Based on the source of ownership advantage, the international division of labor can be discussed. The three Scandinavian countries indicate different process of production and accumulation of ownership advantages. Norway is resource-originated, Sweden is technology-based, and Denmark focuses on developing the tertiary industry.

(3) The reason for why Sweden is able to maintain both high inward and outward FDI performance through a long period can be discussed.

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APPENDIX 1 TWO-WAY FDI AND GDP PER CAPITA OF NORWAY, SWEDEN AND DENMARK (1970-2009)

Table 1 Norway's Two-way FDI and GDP per Capita (1970-2009)

YEAR	Inward FDI	Outward FDI	Net Outward FDI	GDP per Capita
1970	64.00	32.00	-32.00	3283.16
1971	94.00	32.00	-62.00	3705.80
1972	121.00	..	..	4376.57
1973	209.00	50.00	-159.00	5640.41
1974	346.00	148.00	-198.00	6743.56
1975	219.68	171.52	-48.16	8126.57
1976	371.39	192.71	-178.68	8835.18
1977	768.30	125.09	-643.21	10157.14
1978	489.81	65.74	-424.07	11338.37
1979	401.36	43.66	-357.70	12903.92
1980	59.82	253.23	193.41	15594.70
1981	684.90	196.71	-488.19	15338.34
1982	425.47	316.55	-108.92	15043.00
1983	343.18	354.56	11.38	14736.07
1984	-220.55	610.55	831.10	14764.78
1985	-394.66	1227.72	1622.38	15474.06
1986	1033.71	1604.25	570.54	18522.74
1987	146.05	890.40	744.35	22093.08
1988	636.95	807.74	170.78	23810.58
1989	1740.60	1467.59	-273.01	23872.42
1990	1563.80	1583.29	19.49	27731.73
1991	302.33	1448.73	1146.39	28067.36
1992	-668.11	-120.20	547.91	29932.36
1993	991.52	718.48	-273.04	27414.85
1994	2776.45	2171.85	-604.60	28725.62
1995	2409.41	2856.28	446.87	34162.56
1996	3211.10	6104.68	2893.57	36536.69
1997	3981.54	5289.11	1307.57	35895.33
1998	3934.87	2542.31	-1392.56	34097.17
1999	6789.95	5832.54	-957.41	35677.59
2000	7090.45	9504.83	2414.38	37531.02
2001	2122.64	807.30	-1315.33	37893.39
2002	791.10	5761.06	4969.95	42293.13
2003	3470.65	6062.52	2591.87	49288.95
2004	2543.75	5316.26	2772.51	56220.87
2005	5412.96	21966.01	16553.05	65152.43

2006	6414.92	21325.58	14910.66	72012.23
2007	5940.12	13646.11	7706.00	82297.98
2008	7980.67	29506.21	21525.53	94791.24
2009	6657.41	34203.20	27545.79	79746.47

(Resource: UNCTADstat)

Table2 Sweden's Two-way FDI and GDP per Capita (1970-2009)

YEAR	Inward FDI	Outward FDI	Net Outward FDI	GDP per Capita
1970	108.25	212.63	104.38	4406.61
1971	84.10	175.58	91.48	4783.45
1972	65.31	264.57	199.26	5610.75
1973	83.96	293.09	209.13	6786.62
1974	76.59	430.24	353.65	7519.36
1975	80.22	434.43	354.21	9413.12
1976	4.86	596.24	591.38	10116.09
1977	81.45	737.30	655.85	10658.57
1978	69.71	415.48	345.77	11746.63
1979	112.47	617.61	505.14	13840.37
1980	250.91	624.55	373.64	15903.55
1981	181.12	825.36	644.24	14500.41
1982	394.14	1360.10	965.97	12785.56
1983	282.49	1522.63	1240.14	11752.91
1984	321.68	1558.50	1236.81	12212.17
1985	429.58	1827.17	1397.59	12761.36
1986	1079.54	3947.73	2868.19	16823.64
1987	645.08	4789.84	4144.76	20403.07
1988	1671.05	7470.86	5799.81	22920.65
1989	1808.22	10286.48	8478.26	24033.36
1990	1971.18	14746.23	12775.06	28592.35
1991	6353.20	7054.65	701.45	29967.70
1992	-41.04	408.67	449.71	30832.78
1993	3845.88	1358.02	-2487.86	23130.30
1994	6349.66	6701.14	351.48	24756.96
1995	14448.29	11215.43	-3232.87	28742.26
1996	5437.40	5025.53	-411.87	31221.46
1997	10967.55	12647.73	1680.18	28518.05
1998	19835.54	24370.59	4535.04	28607.03
1999	60960.57	21926.52	-39034.06	29053.10
2000	23429.59	40964.15	17534.56	27716.38
2001	10914.72	7354.78	-3559.93	25343.26
2002	12273.22	10600.74	-1672.47	27859.56
2003	4975.53	21108.93	16133.40	34677.02

2004	11019.35	21118.93	10099.58	39606.79
2005	9913.10	26211.20	16298.09	40369.66
2006	27261.43	23536.25	-3725.18	43142.29
2007	27157.04	37630.48	10473.44	49493.54
2008	33703.58	27806.31	-5897.27	52034.99
2009	10851.33	30286.93	19435.60	43604.14

(Resource: UNCTAD database)

Table 3 Denmark's Two-way FDI and GDP per Capita (1970-2009)

YEAR	Inward FDI	Outward FDI	Net Outward FDI	GDP per Capita
1970	104.00	29.00	-75.00	3366.06
1971	125.00	52.00	-73.00	3733.56
1972	164.00	148.00	-16.00	4529.24
1973	212.00	98.00	-114.00	5975.20
1974	240.00	8.00	-232.00	6618.40
1975	266.94	78.81	-188.13	7825.04
1976	-190.30	63.54	253.84	8599.89
1977	75.80	161.27	85.47	9589.08
1978	89.47	33.22	-56.25	11608.55
1979	223.89	167.36	-56.53	13514.85
1980	104.12	195.65	91.53	13606.96
1981	99.45	138.79	39.34	11781.27
1982	133.85	81.72	-52.13	11504.90
1983	60.13	150.12	89.99	11565.58
1984	-15.36	288.86	304.22	11282.30
1985	124.10	254.61	130.52	11968.66
1986	161.29	645.66	484.37	16887.72
1987	88.01	618.10	530.09	20983.31
1988	503.75	792.39	288.64	22107.30
1989	1083.56	2187.23	1103.67	21455.73
1990	1132.15	1482.23	350.08	26428.11
1991	1552.52	1851.99	299.47	26526.53
1992	1017.39	2236.05	1218.66	29056.20
1993	1712.77	1373.00	-339.77	27109.37
1994	5006.18	4161.78	-844.40	29496.87
1995	4328.92	3181.94	-1146.98	34810.72
1996	749.57	2487.22	1737.65	35135.19
1997	2786.56	4187.38	1400.81	32331.79
1998	7517.16	4353.57	-3163.59	32804.17

1999	16756.88	17014.90	258.02	32726.20
2000	33823.49	26549.09	-7274.40	30003.70
2001	11522.54	13360.86	1838.32	29972.34
2002	6630.26	5686.59	-943.67	32371.99
2003	2709.15	1214.85	-1494.31	39467.52
2004	-10441.56	-10363.27	78.28	45299.54
2005	12884.47	16192.34	3307.87	47566.89
2006	2678.76	8160.89	5482.13	50422.78
2007	11804.29	20597.02	8792.73	56942.74
2008	2717.07	13870.58	11153.50	62519.94
2009	7800.04	15797.44	7997.40	56708.38

(Resource: UNCTAD Database)

APPENDIX 2 REGRESSION RESULTS OF THE QUADRATIC MODEL

Norway

Dependent Variable: Y1
Method: Least Squares
Date: 04/19/11 Time: 00:32
Sample: 1970 2009
Included observations: 39

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	305.8157	1313.900	0.232754	0.8173
GDPpc	-0.097831	0.076057	-1.286286	0.2066
GDPpc2	3.71E-06	8.32E-07	4.464034	0.0001

R-squared	0.780384	Mean dependent var	2666.144
Adjusted R-squared	0.768183	S.D. dependent var	6423.404
S.E. of regression	3092.700	Akaike info criterion	18.98528
Sum squared resid	3.44E+08	Schwarz criterion	19.11325
Log likelihood	-367.2130	Hannan-Quinn criter.	19.03119
F-statistic	63.96125	Durbin-Watson stat	1.854985
Prob(F-statistic)	0.000000		

Sweden

Dependent Variable: Y1
Method: Least Squares
Date: 04/19/11 Time: 00:45
Sample (adjusted): 1970 2008
Included observations: 39 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1153.491	5320.475	0.216802	0.8296
GDPpc	-0.114946	0.452470	-0.254040	0.8009
GDPpc2	4.45E-06	8.37E-06	0.531970	0.5980

R-squared	0.036356	Mean dependent var	1578.722
Adjusted R-squared	-0.017180	S.D. dependent var	8703.918
S.E. of regression	8778.366	Akaike info criterion	21.07177
Sum squared resid	2.77E+09	Schwarz criterion	21.19974
Log likelihood	-407.8995	Hannan-Quinn criter.	21.11768
F-statistic	0.679095	Durbin-Watson stat	2.523229
Prob(F-statistic)	0.513453		

Denmark

Dependent Variable: Y1
Method: Least Squares
Date: 04/19/11 Time: 00:51
Sample: 1970 2009
Included observations: 40

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2066.819	788.2400	2.622068	0.0126
GDPpc	-0.285091	0.062150	-4.587184	0.0001
GDPpc2	6.69E-06	1.01E-06	6.629374	0.0000

R-squared	0.697810	Mean dependent var	781.1610
Adjusted R-squared	0.681475	S.D. dependent var	3049.679
S.E. of regression	1721.177	Akaike info criterion	17.81144
Sum squared resid	1.10E+08	Schwarz criterion	17.93811
Log likelihood	-353.2289	Hannan-Quinn criter.	17.85724
F-statistic	42.71976	Durbin-Watson stat	1.861848
Prob(F-statistic)	0.000000		

1. Norway

1. National policy framework

Norway's attitude toward FDI is positive and welcoming. As of June 2004, the main features of the national FDI regime include the following:

Entry and establishments: Norway continues with its policy of liberalizing FDI. The acquisition of qualifying holdings (10 per cent or more) in financial institutions, may only take place in accordance with prior authorization given by the Ministry of Finance. This authorization requirement applies regardless of nationality of the investor. FDI restrictions exist in industries such as basic utilities, the arms industry and in sectors where the government has a monopoly (including postal service, railways, and the domestic production and retail sale of alcohol).

Ownership and control: In some industries and activities ownership by foreign investors is limited in terms of quota ranging from 20 per cent to 33.3 per cent of voting shares. Ownership and use (excluding rental) rights, pertaining to mining, forestry, tilled land and water falls, need prior concession. Foreign investors are accorded national treatment for acquisitions in the manufacturing sector.

Operational restrictions: Generally there are no performance requirement imposed on foreign investors, although employment requirements are sometimes imposed. In the offshore petroleum sector the use of domestic goods and services are encouraged.

Foreign exchange: There are no foreign exchange restrictions, although the Norwegian Foreign Exchange Registry must be notified for statistics and control purposes. Capital, dividends and profits can be remitted freely. Royalties and services fees may also be transferred without restriction. The central bank must be notified for tax purposes.

Incentives: Incentives are granted for investments in the Northern region, mainly to stimulate research and development, and exports.

Source: The Economists Intelligence Unit. *Country Commerce Norway, June 2004*. Internet.

2. Sweden

1. National policy framework

Sweden's policy environment for FDI improved considerably during the 1990s. As of February 2004, the main features of the FDI regime include the following.

Entry and establishment: With the abolition of the rule that required foreign investors to obtain permission to do business in Sweden, investing is Sweden - both in the form of greenfield and or mergers and acquisitions - has been greatly facilitated. There are no general restrictions to entry and establishment. The Invest in Sweden Agency (ISA) provides information about economic and legal requirements for the establishment of FDI projects and facilitates the process.

Ownership and control: There are no ownership restrictions except in companies involved in defence and other sensitive areas.

Operational requirements: Sweden requires permits and authorisations to engage in many activities. Foreign investors are subject to the same operational conditions and rights as domestic investors. There are no performance requirements imposed on foreign investors. Approval from the Board of Trade is required if more than half of the board members or the managing director of a company are not residents in the EEA.

Exchange controls: There are no restrictions on remittances of profits, capital, proceeds from the liquidation of an investment, or of royalties and license fees. A foreign affiliate may also raise foreign currency loans both from its parent corporation and from credit institutions abroad.

Incentives: A range of incentives are granted for various purposes including support for research and development, export promotion, employment and training, and environmental friendly energy systems. Incentives are also available to set up businesses in various targeted depressed areas. These include a range of regional support programmes which provide loans on favourable terms, location and employment grants, reduced payroll taxes, low-rent industrial parts and economic free zones.

Source: The Economist Intelligence Unit. *Country Commerce Sweden, February 2004*, Internet.

3. Denmark

1. National policy framework

Denmark FDI policies are aimed to attract FDI flows. As of August 2001, the main features of the national FDI regime include the following:

Entry and establishment: As a rule there are no restrictions or screening of FDI, except for national security considerations. All manufacturing and services industries are open to FDI.

Ownership and control: There are few limitations on foreign ownership. The government must participate (on a "non-carried interest" basis) with a contribution of 20 percent in hydrocarbon exploration. Foreigners may hold only up to 40 percent equity and 20 percent of voting rights in arms production. Non-European Union persons (physical or otherwise) are not allowed to own aircraft registered in Denmark. Foreigner investors are allowed to own a ship only if a Danish person (legal or otherwise) owns a significant share and exercises a significant control (20-25 percent) over it. Acquisition of real estate by non-residents (non- European Union -residents) is restricted.

Operational conditions: Foreign investors are granted national treatment. There are no performance requirements except for investments in hydrocarbon exploration. At least half of the Board of Directors must be Danish or European Union residents.

Foreign exchange controls: There are no restrictions on bank accounts (foreign or local currency) held locally by non-Danish residents; no restrictions on transfer of royalties and fees, and on transfer of capital and profits, but tax authorities must be notified.

Incentives: A number of specialized agencies offer a variety of incentives to stimulate investment, R&D, exports and to develop less favored areas and protect the environment. These are generally granted to foreign and domestic firms.

Sources: The United States Commercial Service. *Denmark Commercial Guide FY 2002*, Internet, (http://www.usatrade.gov/website/ccg.nsf/CCGurl/CCG-DENMARK2002-CH-7:-00497A7E)

(Resource: UNCTAD, FDI country profile, Norway, Sweden and Denmark)