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Regional Integration, Foreign Direct Investment and Specialization

-a case study of Hungary and the European Union-

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Abstract

This paper deals with the effects of regional integration on the flows of FDI in the case of north-south integration, that is integration between countries with different development levels. The focus of the study is Hungary's integration with the European Union. It is shown that EU-integration has had positive effects on the inflows of FDI in Hungary due to strong environmental change and Hungary's locational advantages. The main part of the FDI can be found in the electric, electronic and automotive industries and it is therefore also explored whether Hungary has specialized in these goods. Calculations of comparative advantage show vertical specialization in the majority of the goods belonging to these industries. The result is also supported by the availability of factors used intensively in the production of the goods.

Keywords: North-South integration, Foreign Direct Investment, Hungary, Locational advantages, Vertical specialization.

Table of contents

1. INTRODUCTION.....	6
1.1 THE TOPIC	6
1.2 STATEMENT OF PURPOSE AND LIMITATIONS	7
1.3 FOREIGN DIRECT INVESTMENT.....	7
1.4 PLAN OF THE PAPER	8
2. FDI AND REGIONAL INTEGRATION –THEORIES	9
2.1 TRADE THEORY	9
2.1.1 <i>Regional Integration and Trade Barriers –Effects on FDI.....</i>	<i>10</i>
2.1.2 <i>Problems with the Trade Theory Approach.....</i>	<i>12</i>
2.2 THE THEORY OF INTERNATIONAL PRODUCTION	12
2.2.1 <i>Why Do Firms Produce Abroad?</i>	<i>13</i>
2.2.2 <i>Locational advantages.....</i>	<i>13</i>
2.2.3 <i>Regional Integration and Strategic Decisions of Firms</i>	<i>14</i>
2.2.3 <i>Problems with the Internalization Theory Approach.....</i>	<i>15</i>
2.3 SYNTHESIS	16
3. FDI IN HUNGARY –VOLUME AND ORIGIN	18
3.1 INFLOWS AND STOCK OF FDI	18
3.2 ORIGIN OF FDI	19
3.3 DISTRIBUTION BY INDUSTRY	21
4. INTEGRATION EFFECTS ON FDI IN HUNGARY	23
4.1 THE EFFECTS OF TRADE LIBERALIZATION	23
4.2 LOCATIONAL ADVANTAGES –WHAT DOES HUNGARY HAVE THAT OTHERS DON’T?	24
4.2.1 <i>Availability and Costs of Factors</i>	<i>25</i>
4.2.2 <i>Geographic Location.....</i>	<i>25</i>
4.2.3 <i>General Investment Climate</i>	<i>25</i>
4.2.4 <i>Export Processing Zones.....</i>	<i>26</i>
4.3 THE EFFECTS OF INTEGRATION	26
5. FDI AND TRADE SPECIALIZATION.....	28
5.1 MEASURING COMPARATIVE ADVANTAGE.....	28
5.2 REVEALED COMPARATIVE ADVANTAGE FOR HUNGARY	29
5.2.1 <i>Comparative Advantage on the Two-Digit Level.....</i>	<i>29</i>
5.2.2 <i>Comparative Advantage on the Three-Digit Level</i>	<i>30</i>
5.3 FACTOR INTENSITIES.....	32
5.4 CHAPTER SUMMARY	33
6. CONCLUSIONS	34
REFERENCES.....	36
APPENDIX.....	38

List of Figures and Tables

Figures

2.1 Classification Dimensions	16
3.1 Inflows of FDI to Hungary 1991-2000	18
4.1 Inter- and intra-regional FDI in Hungary 1992-2000	23

Tables

3.1 FDI in Hungary, 1990-2003	19
3.2 EU and USA: percentage share of Hungarian FDI stock	20
3.3 The largest MNEs operating in Hungary	21
5.1 RCA index for Hungary, SITC two-digit level	30
5.2 RCA index for SITC group 761-764	31
5.3 RCA index for SITC group 771-776 and 778	31
5.4 RCA index for SITC group 781-784	31

Appendix

A.1 Goods in groups 76, 77 and 78 of the SITC rev. 3, two- and three-digit level
A.2 Factor intensities according to the UN classification
A.3 Export statistics for Hungary and EU15

List of Abbreviations

CEE	Central and Eastern Europe
EU	European Union
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GFCF	Gross Fixed Capital Formation
MNE	Multinational Enterprise
OECD	Organization of Economic Cooperation and Development
OLI	Ownership, Location, Internalization
RCA	Revealed Comparative Advantage
R & D	Research and Development
RIA	Regional Integration Agreement
SITC	Standard International Trade Classification
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development

1. Introduction

1.1 The topic

Regional integration has been present in the world economy for decades. So far, it has mostly involved industrialized countries, albeit there are some examples of so called “south-south” integration between developing countries. However, in recent years the trend seems to be increasingly towards north-south integration between developing and developed countries. One example is the creation of NAFTA (North American Free Trade Association) in 1992 with Mexico joining the free trade agreement between Canada and The United States. Another example is the recent expansion of the European Union to involve a number of Central and Eastern European countries of which the national incomes differ substantially from those of the EU15¹.

Regional integration is generally expected to lead to economic development by promoting, among others, trade and investment. Regional integration agreements (RIAs) therefore often contain provisions concerning foreign direct investment (FDI) as it is perceived to generate a number of benefits for the host countries e.g. generation of jobs and income, technological spillovers and, in the long run, economic growth (see for example Lipsey, 2002). The effects of regional integration on FDI is a complex matter and depend on a number of factors, e.g. whether the integration involves similar or different countries, whether the investment is vertical or horizontal, whether it is the effects on the receiving or investing countries that are considered, the investment climate, the macroeconomic situation, the degree of integration of the economies before integration etc. Furthermore, a regional integration agreement (RIA) can be very different from another and can have various impacts within the integrating area (Blomström & Kokko 1997, p. 1). Therefore it is difficult to generalize and make predictions based on the existing theory and empirical results, especially about the effects of any specific RIA or on a specific country.

¹ With the European Union, EU and EU15 that will be used interchangeably, I refer to the 15 countries making up the European Union prior to the 2004 enlargement.

Since the fall of the iron curtain, Hungary has been the target of substantial FDI from EU as well as non-EU countries and the inflows of FDI have played an important role in the development of the Hungarian economy. In 2003, the stock of FDI amounted to 42.9 billion dollars making up 51.8 % of the country's GDP (UNCTAD 2004). Most likely, the country's integration with the European Union has had effects on the flows of FDI to Hungary.

1.2 Statement of Purpose and Limitations

This paper focuses on the effects of regional, north-south integration on the inflow of foreign direct investment. More specifically it will explore how the flows of FDI to Hungary have developed parallel with EU-integration and whether the FDI flows have given rise to any specialization in trade. It is a case study dealing with the specific situation of Hungary joining the European Union. Formally, Hungary has been an EU-member since May 2004; needless to say that too little time has elapsed in order to draw any conclusions on the FDI effects of the accession. However, the country signed an association agreement with the European Union in 1991, gradually introducing free movement of goods, services, labor and capital. This means that Hungary can be considered as part of a regionally integrated area from that point on. In addition, the agreement was concluded with the explicit intent to join the European Union and served as preparation for the accession (Hungarian Foreign Ministry). It can therefore be argued that already the prospect of joining could have had effects on the flows of FDI. The timeframe considered is 1990 to 2003, with variations within this period depending on the availability of data. The welfare effects of FDI will not be addressed in this paper, nor the changes of distribution that might occur due to the integration with the EU.

1.3 Foreign Direct Investment

The term *foreign direct investment* refers to foreign ownership, partly or entirely, of a firm operating in a country's domestic market. The investment can be conducted by starting up a foreign affiliate or through a merger or acquisition. There is no international consensus on how large the share of the foreign company needs to be in order to be considered as FDI. A holding of at least 10 % of the foreign affiliate's voting share is used by UNCTAD (United

Nations Conference on Trade and Development) as well as by the Hungarian Central Statistical Office. These two organizations provide most of the empirical data in the paper, therefore, this definition will be used. The forms of investment normally considered as FDI are equity capital, reinvested earnings and intra-company loans (UNCTAD 2003).

1.4 Plan of the Paper

In chapter 2 a theoretical framework will be drawn up as the basis for the analysis. Two main theories will be referred to; the theory of trade and the theory of international production. Chapter 3 presents an overview of FDI in Hungary. The inflows and stocks as well as the allocation between investing countries and targeted industries will be considered. Chapter 4 assesses to what extent the empirical findings support the theory. In chapter 5 it will be explored whether any specialization in production can be traced by calculations of comparative advantage. Chapter 6 summarizes and concludes.

2. FDI and Regional Integration –Theories

Two main theories can be of assistance when analyzing the investment effects of regional integration: the theory of trade and the theory of international production (Dunning 1997, p. 6). The theory of trade offers explanations on how trade barriers and the removal of them, e.g. by economic integration, affect economic activity. The theory of international production is concerned with strategic locational decisions of firms and can provide insights on how firms may react to the changes brought about by regional integration. These theories are useful since they are connected to the two main motives behind FDI in the literature: investment to overcome trade barriers and investment to internalize firm-specific assets when operating in another country (Blomström & Kokko 1997, p. 4). Just as FDI can be the result of a mix of the two motives, the theory of trade and the theory of international production should not be seen as mutually exclusive or competing theories. Rather they provide different approaches to the complex matter of investment and economic integration. This chapter outlines what the two theories imply for the investment effects of regional integration as well as some critical thoughts on them.

2.1 Trade Theory

Trade theory tends to see FDI and exports as alternative ways of serving a foreign market (Blomström & Kokko 1997, p. 3). The cost of investing is often high compared to that of exporting. However, barriers to trade also represent a cost for the firm. Trade barriers take the form of tariffs or non-tariff barriers such as quantitative restrictions, product standards, environmental standards, excessive formalities in customs, clearance by authorities etc. If the access to a foreign market is restricted, firms may choose to open an affiliate to serve the market in question and thus avoid the trade barriers. Substantial barriers to trade can therefore be said to create an incentive for FDI. Conversely, if trade barriers were to diminish, exports would be facilitated, inducing firms to supply the market in this way instead.

2.1.1 Regional Integration and Trade Barriers –Effects on FDI

Regional integration agreements normally imply trade liberalization by reducing the trade barriers between the member countries and are therefore expected to have an effect on FDI. At this point it is useful to distinct intra-regional FDI, that is FDI coming from the members of the integrated area, from inter-regional FDI originating in countries outside the area, as the effects differ from one type to the other. Considering intra-regional FDI, it can be expected to decrease due to a RIA. As trade barriers are reduced within the area, firms need not invest; they can supply the market via exports, which have been made easier. The opposite should occur regarding inter-regional FDI. Fearing increased protection and diminishing exports due to intra-regional trade, firms from outside create affiliates in the integrated area. In addition, the larger market created by the integration should also attract investors from outside the region. Consequently, inter-regional FDI should increase due to a RIA (Blomström & Kokko 1997, p. 3-4).

These conclusions however only tell part of the story and need to be nuanced. The first comment concerns the allocation of FDI within the integrating region. Whatever the effects of a RIA on the flows of FDI, the entire integrating area will most likely not be affected in the same way. Some parts may experience increased flows of both inter and intra-regional FDI, while they decrease in others² (Blomström & Kokko 1997, p. 3-4). Although the reduction of trade barriers should diminish the flows of intra-regional FDI in accordance with the reasoning above, it is also possible that this type of FDI actually increases after a RIA, at least in certain parts of the area. A more liberal trade environment can enable multinational companies to concentrate investment in some part of the integrated area, resulting in increased FDI flows to that part. Other parts of the region will see diminishing FDI and will instead be served by exports. This effect is likely to be observed when considering inter-regional FDI as well (Blomström & Kokko 1997, p. 4).

Kindleberger (1966) introduced the terms *investment creation* and *investment diversion* to describe these phenomena. They serve as possible responses to *trade creation* and *trade diversion* used in international integration theory to describe the effects of regional integration. Trade creation arises when the removal of trade barriers within a preferential

² Where FDI actually is located depend on the locational advantages of a particular country or region. This will be discussed in subsequent paragraphs.

trading area increases trade within the region. Trade diversion is the effect of shifting the source of supply from a more cost efficient third country to a less cost efficient partner within the preferential trading area (see for example Robson 1998). Investment creation can be seen as the response to trade diversion; a firm in a third country outside the region fears diminishing exports due to the RIA, which creates incentives to invest in the region. Investment diversion can be a consequence of trade creation and denotes the regrouping of investment within the integrated area. This will most likely happen in the presence of economies of scale, since firms can make substantial efficiency gains by concentrating their investments to fewer locations with longer production runs.

Another distinction often made in the literature that nuances the effects of integration is vertical and horizontal FDI. *Vertical* FDI refers to investment on different levels of the production process. The firm locates each stage of the production in the country or region where it is most cost efficient, i.e. where the inputs are relatively low-cost. Therefore, vertical FDI is also referred to as resource seeking FDI. *Horizontal* or market seeking FDI implies replicating plants that perform the same activities in several locations. It enables the firm to exploit the advantages of being closer to the market, for example by lowering transportation costs and avoiding trade barriers. In addition, products and services can be adapted to the local environment and preferences (Shatz & Venables 2000, p. 5-9). Vertically integrated firms are dependent on smooth trade flows since the production process is fragmented and located in different countries. It follows that a reduction of trade barriers due to regional integration should lead to more vertical FDI. Horizontal FDI within the region can on the other hand be expected to decrease because of facilitated trade and investment diversion. Considering the inter-regional flows, they depend on the level of protection after the RIA. In line with the precedent reasoning, increased protection should discourage vertical investment and encourage horizontal FDI. The latter is also affected by increased market size.

To sum up, the reduction of trade barriers can have a somewhat contradictory effect on the flows of FDI. Furthermore, these effects also depend on the initial situation and pre-RIA level of trade barriers, which makes predictions particularly difficult. Nevertheless, Blomström and Kokko (1997) draw the conclusion that, for the region as a whole, the effect on intra-regional FDI is unclear while inter-regional FDI should increase due to regional integration.

2.1.2 Problems with the Trade Theory Approach

This trade-theory approach to the investment effects of regional integration has some weaknesses. One has already been briefly mentioned; the theory is not strong enough to provide general conclusions that can serve to predict the effects on FDI. If the outcome of a RIA depends on factors such as the pre-integration situation, the economic structure of the participating countries, the content of the specific integration agreement etc., the results obtained in earlier research can only be said to be valid for the particular situation studied and can not be used to predict the effects of some other RIA. Furthermore, also mentioned above, the theory gives ambiguous results. The effect on FDI may differ whether the region as a whole or certain parts of it is considered. Another critical point is provided by Dunning (1997, p. 6): trade theory does not take into account the nationality of the ownership of investments, it considers only whether a market is served by local production or exports. If one wants to determine the effects on *foreign* investment, the local production needs to be broken down into foreign and domestic firms. Finally, trade theory as outlined above studies the static effects of integration. Regional integration can also have a number of dynamic effects, such as increasing growth in the region, improved economic efficiency, technology spillovers, improved competition, economies of scale etc. These can have positive effects on FDI. Not taking them into account may therefore underestimate the impact of regional integration (Blomström & Kokko 1997, p. 7). In other words, the trade theory approach is not versatile enough to fully capture the complexity of FDI. Therefore I now turn to the theory of international production.

2.2 The Theory of International Production

Implicit in the theory of trade lies the assumption that trade and FDI are substitutes (Yannopoulos, 1990, p. 248). Consequently, avoiding barriers to trade could be seen as the main motive to invest in foreign markets. However, “tariff jumping” does not explain FDI alone; firms have other reasons to engage in foreign production. In recent literature, the exploitation of intangible assets, sometimes termed *internalization*, is emphasized as an important motive behind FDI (Blomström & Kokko 1997, p. 3). These issues are related to strategic decisions of firms and are dealt with in the framework of the theory of international production.

2.2.1 Why Do Firms Produce Abroad?

A firm operating in a foreign market faces several disadvantages compared to the domestic firms in that market. A domestic firm is more familiar with the local market, the consumers, the business community and the rules and laws of the country. Activity in a foreign country incurs costs on firms such as communication and transportation costs, costs for adapting to a new environment and costs related to risk, e.g. exchange rate changes or expropriation (Markusen et al., 1995 p. 395). Despite this, firms often choose to set up affiliates in foreign markets instead of supplying them by export or licensing to domestic firms. According to Dunning (cited in Markusen et al., 1995, p. 396) three conditions should be met for a firm to undertake FDI.³ First, the firm must have an *ownership advantage*, that is be in possession of something (e.g. a patent, trademark, blueprint, good reputation or special management skills) that gives it a competitive advantage over domestic firms despite the difficulties with operating in a foreign country. Ownership advantages arise from so called knowledge capital, which is easily transferred between production facilities in different countries as opposed to physical capital (Markusen, 1998 p. 739). Second, the market where the investment is made should have enough *locational advantages* to make it more profitable to produce there than to supply the market via exports. Low factor-prices, low transportation costs and proximity to the consumers are examples of locational advantages, but the general political and economical situation also plays an important role. Third, there should be an *internalization advantage*, meaning that the firm's specific assets are better exploited if remaining within the firm as opposed to being licensed. The reason for this is that the assets in question are often intangible and/or have public good characteristics, which means that once developed, they can easily be reproduced at a very low cost. They are usually internalized to avoid dissipation and to maintain their value. Dunning (cited inter alia in Robson 1998, p. 114 and Yannopoulos 1990 p. 249) argues that FDI will be undertaken only if a firm can exploit all three advantages at the same time, otherwise the foreign market will be served by other means.

2.2.2 Locational advantages

Since regional integration can have different effects on different parts of the region and the final location of economic activity depends on the locational advantages of the country in question, I will explore these in greater detail. Locational advantages arise when a country has

³ This is known as the OLI-framework.

certain characteristics making it more profitable for a firm to produce there. Depending on the type of investment, vertical or horizontal, different country characteristics are regarded as advantageous.⁴ Vertical FDI involves, as mentioned, placing each stage of the production chain where it is most cost efficient. Hence, availability and low cost of factors used intensively in production are an important advantage. As vertical FDI typically involves intra-firm trade, low trade barriers and low transportation costs are also important. Horizontal investment seeks new markets and is therefore influenced by market size and geographic location as well as income levels in the host country (Ekholm & Markusen 2002, p. 4-5). All types of investment are affected by general political and economical factors, such as the physical, legal and educational infrastructure, investment incentives, the business climate and macroeconomic stability (Blomström & Kokko 1997, p. 5, 8). A country with clear locational advantages is less likely to suffer from investment diversion and can attract as well intra- as inter-regional FDI.

2.2.3 Regional Integration and Strategic Decisions of Firms

If firms' investment decisions are driven by the OLI-advantages we need to examine the impact that regional integration has on those to supplement the insights given by trade theory. In addition to trade liberalization, a number of other effects are expected from regional integration that can influence the OLI-advantages. Some dynamic effects have already been briefly mentioned. The larger market created through integration can sustain the high costs for investment which may not have been possible for the fragmented national markets. A larger market also allows for larger R&D and marketing costs that may result in new intangible assets for the firm (Blomström & Kokko 1997, p. 7). The possibility to exploit economies of scale gives rise to cost reduction effects and increased competition should improve the productive efficiency, which combined with multiplier effects can have a positive effect on growth in the region (Yannopoulos 1990, p. 249-250). Furthermore, the specific provisions in a RIA can affect the OLI-advantages, thereby influencing FDI decisions. Liberalization of capital flows obviously facilitates foreign investment. Specific investment provision measures, such as reduction or elimination of restrictions on FDI, equal treatment of foreign and national firms, strengthened investor property rights and dispute settlement mechanisms should also encourage FDI to the region (Blomström & Kokko 1997, p. 5).

⁴ Most of the locational advantages can be important for both types of investment, but the distinction is useful for analytical reasons.

An alternative model to Kindleberger's investment creation and diversion is provided by Yannopoulos (1990, p. 251). By linking the static and dynamic effects of regional integration to the strategic responses of firms, Yannopoulos tries to explain how integration affects OLI-advantages. The model identifies four possible responses. The trade diversion effect is balanced by *defensive import-substituting investment* where the firm changes from a trade-based strategy to an investment-based strategy, thereby trying to maintain its market share in the integrating region. Trade creation encourages reallocation of activity within the region in line with comparative advantage and leads to *reorganization investment*, meaning that investment is regrouped inside the region. So far, this corresponds to Kindleberger's investment creation and diversion effects. In addition, Yannopoulos distinguishes *rationalized FDI* and *offensive import substituting investment* as responses to dynamic effects of regional integration. The former is the result of the improved economic efficiency within the region originating from lower production costs, making it more "rational" for a firm to produce there. The latter is motivated by the larger market and income growth due to integration and is simply an opportunity for the firm to take advantage of increasing demand and new markets.

Regional integration can thus increase the overall attractiveness of a region by enhancing its locational advantages. It can also affect other OLI-advantages, thereby influencing the strategic decisions of firms. The overall effect on both intra- and inter-regional FDI should be positive, that is resulting in increased investment flows to the region (Blomström & Kokko 1997, p. 3-4). However, as pointed out earlier, this does not mean that the inflows of FDI will be evenly distributed within the region. They will most likely be concentrated to the parts with the strongest locational advantages, whereas other parts may experience decreasing FDI.

2.2.3 Problems with the Internalization Theory Approach

The internalization theory approach and Dunning's OLI-framework provides insights on how investment is affected when firms are driven by cost and efficiency considerations alone. It offers an additional tool that helps understanding a complex reality. However, this approach may not be more useful for making predictions than trade theory. For that it would be necessary to make it operational by specifying thresholds and values that can be measured (Robson, 1998 p. 116). Furthermore, even though this approach does take dynamic effects into consideration, specification problems are also present when it comes to the link between those and regional integration (Blomström & Kokko 1997, p. 6). It is possible that regional

integration leads to dynamic effects that have a positive outcome for FDI, but it is also possible that FDI creates some of these dynamic effects (ibid).

2.3 Synthesis

So far I have examined two theoretical approaches that offer explanations on how regional integration can affect FDI. Although both theories provide insights on what might happen to the flows of FDI following integration, neither of them produce any unambiguous results. In order to continue with my analysis of the FDI flows to Hungary following the integration with the EU, some systematization is necessary. For that I will use a matrix presented in Blomström & Kokko (1997) linking the effects of the integration process with the locational advantages of the region. Countries can then be placed in the different areas of the matrix giving an idea of the probable effects of integration on the FDI flows.

Figure 2.1: Classification Dimensions

	Locational advantages Strong → weak	
Environmental Change		
Strong	1	2
↓		
Weak	3	4

Source: Blomström & Kokko 1997, p. 8.

“Environmental change” refers to the change resulting from integration, i.e. “the degree to which trade and investment flows are liberalized” (Blomström & Kokko 1997, p. 8). Thus, a strong environmental change means that integration has a large effect on the liberalization of trade and investment. “Locational advantages” indicate how profitable it is to locate production in the region in question. The attribute incorporates the availability and cost of production factors, geographic location (proximity to important markets for example) and the general macroeconomic environment. A movement to the left in the figure means stronger locational advantages.

Area 1 represents a situation where integration gives rise to substantial environmental change and where the locational advantages are strong. It is therefore reasonable to expect positive inflows of FDI. In area 2, integration still leads to significant liberalization but due to weaker locational advantages countries here risk decreasing investment flows. In area 3, the locational advantages are strong but integration has a small effect on the flows of trade and investment. This is often the case for countries between which the initial barriers are low before integration. Consequently, the post-integration effect on FDI is small. Finally, countries in area 4 have few locational advantages and experience little environmental change from integration, therefore inflows of FDI will probably not be affected by regional integration (Blomström & Kokko 1997, p. 9). In the following chapter, some empirical data on FDI in Hungary will be presented.

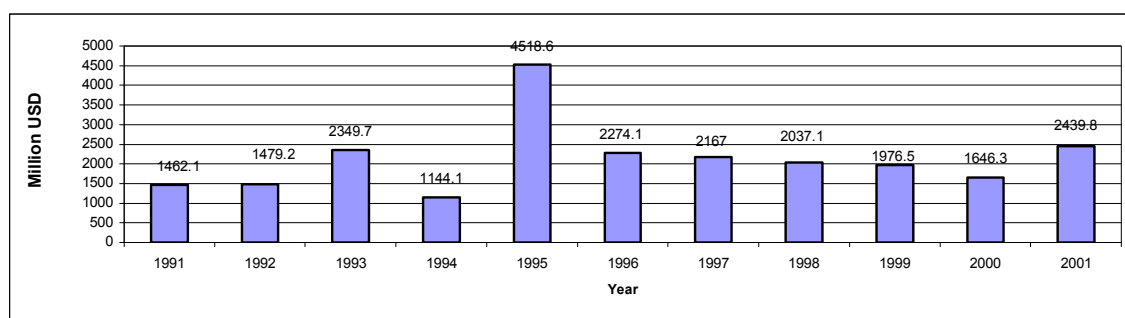
3. FDI in Hungary –Volume and Origin

Since the fall of the iron curtain Hungary has been the target of substantial FDI. In 2003, the inflow of FDI amounted to 2470 million USD, making the country the fourth largest recipient in the Central and Eastern Europe (CEE) region (UNCTAD 2004). This chapter gives an overview of FDI in Hungary. The timeframe ranges from 1990 to 2003 with variations depending on the availability of data. The inflows and changes in FDI stock, the origin of FDI and the distribution between industries will be considered.⁵

3.1 Inflows and Stock of FDI

Foreign investments were present in the Hungarian economy already before the political changes of 1989; investment was liberalized in 1972 allowing foreign companies to establish joint ventures with Hungarian firms (ITD Hungary). Between 1985 and 1995 the average annual inflow of FDI was 1096 million dollars (UNCTAD, Country Fact Sheet). The annual inflow of foreign investment increased after democratization, reaching its peak in 1995 at 4518.6 million dollars, followed by a decline and stabilization at around two billion dollars per year.⁶

Figure 3.1: Inflows of FDI to Hungary 1991-2001



Source: Diagram based on UNCTAD, Country Profile Hungary.

⁵ The sources of data for this chapter are UNCTAD, the Hungarian Central Statistical Office and Investment and Trade Development Hungary (ITD Hungary), a government agency supporting trade and investment in Hungary.

⁶ There is some divergence between the data supplied by Hungarian sources and UNCTAD on the actual size of the inflows. The trend however is essentially the same.

The increasing flows during the ten-year period can also be traced in the stock of FDI in the Hungarian economy. From 1991 to 2001, the stock of FDI increased from 2.1 billion dollars to 22.6 billion (UNCTAD, Contry Profile Hungary). Setting this in relation to the country's GDP reveals the growing importance of FDI in the Hungarian economy. In 1990, the share of FDI stock in the country's GDP was 1.7 %; by 2003 it had reached 51.8 %. Thus, simultaneously with the integration with the EU, a tremendous increase in FDI can be observed.

Table 3.1 FDI in Hungary, 1990-2003

	1990	1995	2000	2002	2003
FDI stock (billion USD)	0.57	11.3	22.9	35.9	42.9 ^c
FDI stock/GDP (%)	1.7	25.3	49.3	55.3	51.8
FDI inflows/GFCF^a (%)	-	33 ^b	24.5	19.1	13.5
FDI inflows/GFCF, CEE (%)	-	6.9 ^c	18.3	16.8	9.5

^a Gross fixed capital formation ^b Annual average 1992-1997 ^c Estimation

Source: UNCTAD, World Investment Report 2004.

The two final rows of table 3.1 show FDI over gross fixed capital formation (GFCF). This measure illustrates the share of foreign investments in total investments made. Compared to the CEE region as a whole, foreign capital is clearly relatively more important in the Hungarian economy.

3.2 Origin of FDI

As discussed in chapter 2, theory distinguishes between intra-regional FDI coming from the partners within the integrating area and inter-regional FDI from countries outside it. In the case of Hungary, the investments from EU countries would be intra-regional FDI whereas those from other countries are of the inter-regional type. The USA is the largest non-EU investor in Hungary and is therefore chosen to represent inter-regional investment.

Since the beginning of the 1990's, the main foreign investors in Hungary have been Germany, Austria, the Netherlands and the United States. Together they account for between 65% and 71% of the total stock of FDI in Hungary (Hungarian Central Statistical Office). Table 3.2 depicts the geographical origin of the stock of FDI in Hungary in 1992 and 2000. Albeit some partners' investments in Hungary have decreased, in sum, intra-regional FDI increased from 70.6 % to 80.3 % during this period. Investment from American companies, here representing inter-regional FDI, decreased from 12.4 % to 8.2 % of total FDI. It is however to be noted that the decrease is in *relative* terms; in absolute numbers both US and EU investments have increased.

Table 3.2: EU and USA: percentage share of Hungarian FDI stock

	1992	2000
Austria	25.1	12.2
Belgium/Luxembourg	3	5.3
Denmark	0.3	0.5
Finland	0.3	1.6
France	5	6.5
Germany	18.5	25.8
Greece	0.1	0
Ireland	0.2	0.7
Italy	3.2	2.7
Netherlands	8.9	22.5
Portugal	0	0.1
Spain	0.1	0.4
Sweden	1.1	0.9
UK	4.9	1.1
Total EU	70.6	80.3
USA	12.4	8.2

Source: Hungarian Central Statistical Office/UNCTAD.

3.3 Distribution by industry

An important factor behind the relatively large amount of FDI that Hungary has received is the privatization strategy of the government in the beginning of the 1990s. Privatization was from the start open to foreign as well as domestic investors in contrast to other CEE countries where domestic investors were preferred (UNCTAD 2003). As many of the state owned firms belonged to the manufacturing sector, initially FDI was higher there than in services. During the second half of the 1990s however, investment in the service sector became more important as also banks, telecommunications and utilities were privatized. According to UNCTAD, the share of the secondary sector (i.e. manufacturing) of total FDI stock is about one third whereas ITD Hungary reports manufacturing to account for nearly 50 %.⁷ Within the manufacturing sector the automotive, electric and electronic industries dominate according to both sources. The main targets for FDI in the tertiary sector are in finance and other business activities (UNCTAD 2003).

As FDI is often conducted by multinational enterprises (MNEs), another way of detecting the distribution of FDI by industry is to look at the main MNEs operating in Hungary. The five largest MNEs are all in the industrial or tertiary sector, as depicted by table 3.3.

Table 3.3: The largest MNEs operating in Hungary (based on sales, year 2000)

Name	Industry	Home country
Audi Hungarian Motors Kft.	Motor vehicles	Germany
Philips Magyarorszag Kft.	Electronic equipment	Netherlands
IBM Storage Products Kft.	Electronic equipment	United States
MATAV	Telecommunications	Germany
Flextronics International Kft.	Electronic equipment	United States

Source: UNCTAD, World Investment Directory 2003.

To sum up, FDI is very present in the Hungarian economy. Relative to its size and compared to its neighbours in the region, the country has received large amounts of foreign capital since

⁷ One reason for this divergence is that different definitions are used in the industrial breakdown. ITD Hungary uses the classifications manufacturing, services and other while UNCTAD refers to the United Nations International Standard Industrial Classification (ISIC), distinguishing primary, secondary and tertiary sectors.

the beginning of the 1990s. The trend has mostly been increasing and has occurred parallel to the integration with the European Union. Most of the investment is intra regional, stemming from the EU countries, but US firms are also large investors. Investment in the manufacturing sector dominates, services have however become increasingly important. After having surveyed the theory on the effects of regional integration on FDI and the development of foreign investment in Hungary during the past decade, I will now proceed with an analysis of the findings.

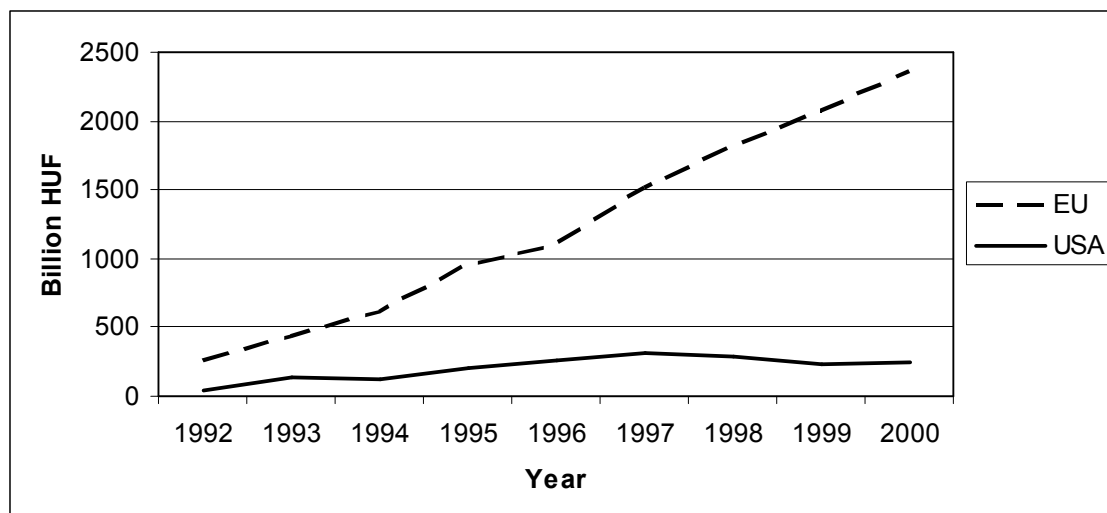
4. Integration effects on FDI in Hungary

The purpose of this paper is to examine the effects of EU integration on FDI in Hungary. Although the theories presented have some weaknesses, they provide some conclusions on impacts that regional integration can be expected to have on FDI. This chapter follows the outline of the theoretical discussion in chapter 2. First, the impact on FDI in Hungary will be analyzed in light of the trade liberalization model followed by the internalization model. The results will be synthesised with the help of the matrix presented in section 2.3.

4.1 The Effects of Trade Liberalization

The simple trade liberalization model predicts that regional integration decreases intra-regional investment and increases inter-regional FDI to the region. Looking at the investment data for Hungary, both types of investment have increased. Investment from the EU has almost ten-folded from 264.5 billion HUF⁸ in 1992 to 2358.5 billion HUF in 2000, while that from the USA has shown a more modest increase over the period (see figure 4.1).

Figure 4.1 Inter- and intra-regional FDI in Hungary, 1992-2000



Source: Diagram based on Hungarian Central Statistical Office/UNCTAD.

⁸ 1 HUF= 0.0055 USD (Hungarian National Bank, February 23, 2005).

The integration effects on FDI is however a complex question and there are several possible explanations for the results observed in Hungary. First, it should be kept in mind that Hungary can be characterized as a transition economy with very little openness towards trade and investment before the beginning of the 1990s. Starting from a very low level it is natural that the increase of FDI has been large. Second, the predicted effect in theory concerns a *region as a whole*. It has been pointed out that the outcome for an individual country is difficult to foresee. Third, there are investment creation and diversion effects following integration. In this case, we may see an investment creation effect in intra-regional FDI. With the Agreement on Association concluded in 1991, free trade in industrial products was established and followed by the gradual liberalization of capital, labour and services. As the barriers of trade were removed, EU firms may have decided to invest in Hungary instead of for example Portugal or Greece. However, it should also be noted that in the case of transition economies the investment creation and diversion effects tend to be less important; the increased investments can more likely be attributed to the change from a closed to an open economy. By distinguishing vertical and horizontal investment a fourth explanation is possible. Looking at the distribution of FDI by industry it can be argued that investment in Hungary is mostly vertical. A substantial part of it is in the manufacturing sector and the largest MNEs can be found in the automotive and electronic industries, suggesting production of components, i.e. production fragmentation. As mentioned in section 2.1.1, vertical FDI can be expected to increase when trade barriers are removed. This would then explain the increase in intra-regional FDI. Finally, it is possible that the investment flows to Hungary are not governed by the tariff jumping motives assumed in trade theory but by strategic considerations of firms. Therefore I move on to consider the implications of the internalization model.

4.2 Locational Advantages –What Does Hungary Have That Others Don't?

So far it has been argued that regional integration can affect different parts of a region in different ways, due to investment creation or diversion, among other things. What then decides which countries experience the former or the latter? The internalization model with the OLI-framework examines the motives for firms to go abroad. While the ownership and

internalization advantages are essentially the same regardless of the chosen country, the locational advantages clearly are not. It is these that determine whether a firm chooses to invest in one place or another. Locational advantages are often related to factor costs, geographic location and the general investment climate. Let us briefly examine each of these with respect to Hungary.

4.2.1 Availability and Costs of Factors

Low factor costs, particularly for labour, are often given as one of the main motives for firms to move production abroad. Indeed, the gross monthly average salary in Hungary is well below the EU15 average; 408 € in Hungary compared to 2191 € in the EU in 2001 (UNCTAD 2004 p. 77). However, even when adjusted for productivity, Hungary offers labour cost advantages. The low factor costs are coupled with a highly skilled workforce, particularly in sectors with high value added, making the country a profitable location for companies in high technology industries (ITD Hungary). As depicted in table 3.3, the largest MNEs are all in sectors that can be ranged in this category.

4.2.2 Geographic Location

Hungary is situated in Central Europe, bordering to Western Europe (Austria), Eastern Europe (Ukraine, Romania) and the Balkans. Taking transportation costs into account, the proximity to these major consumer markets and sources of low cost factors is an important locational advantage. For inter-regional investment, EU integration means that locating in Hungary gives access to the entire internal market. The country can also serve as a platform for further expansion to the east and south.

4.2.3 General Investment Climate

The general investment climate is a broad term that can include many components such as infrastructure, legal and political stability, macroeconomic situation, the business climate, investment incentives, investment protection, corporate tax rates etc. Hungary has enjoyed relative political stability since the start of the transition period. The legal and institutional change has been influenced by the preparations for EU accession, providing credibility and continuity. The macroeconomic situation has generally been good with positive growth rates often higher than other CEE countries. There has also been an explicit effort from the

government's side to attract foreign investors with a number of investment promoting measures, tax breaks and development of the infrastructure (ITD Hungary).

4.2.4 Export Processing Zones

One of the tools used by governments to attract FDI is the creation of *export processing zones, EPZ*. An EPZ is a limited zone on a country's territory offering favourable trade conditions and a liberal regulatory framework designed to attract investment, mainly in the manufacturing sector. Goods produced in the EPZs are principally intended for export, therefore the incentives often include exemption from import duty on inputs used in production, exemption of sales tax on domestically purchased goods and services used in production, tax breaks and provision of subsidized services such as land, office space and utilities (UNCTAD 2002, p. 214). EPZs have played an important role in the large FDI flows to Hungary as well as for the export growth of the country; in 2001, the exports from the zones accounted for 44 % of the total exports (UNCTAD 2002, p. 216). The investing firms choose the location for the zone which is then separated from the national territory by a license issued by the government. The advantages offered are e.g. exemption of duty and VAT on imports to the zones, profitable rents for land and facilities and tax breaks.

Taking the above mentioned circumstances into consideration, it can be said that the general investment climate in Hungary is good and that the country does have certain locational advantages, making the country eligible for attracting FDI.

4.3 The Effects of Integration

At this point, I will return to the matrix in figure 2.1 to summarize the effects of EU integration on FDI in Hungary. With respect to the above, it would be reasonable to place Hungary in area 1, where both the environmental change and the locational advantages are strong. Before the 1990s, Hungary was a centrally planned economy, integrated only to a limited extent in the international trade network. Not only did the Association Agreement of 1991 liberalize trade and investment flows; it also served as preparation for the accession to the EU. With it came the transformation of institutions, adaptation of laws and regulations and development of infrastructure. The environmental change can therefore be considered strong

as Hungary moved from central planning with virtually no trade to gradually taking part in the European internal market. As developed in the previous section, Hungary also has strong locational advantages of which EU-integration itself is one. For intra-regional FDI this means a cost efficient alternative to other locations and a starting point for further expansion. For inter-regional FDI, in addition to other advantages mentioned, it means access to the entire EU market. Following Blomström & Kokko, placing a country in area 1 of figure 2.1 implies relatively strong, positive capital flows, i.e. increasing FDI following integration. As shown in chapter 3, this has occurred in Hungary.

5. FDI and Trade Specialization

So far it has been established that Hungary has received substantial FDI parallel with EU integration and that this likely can be attributed to the locational advantages of the country. From the data in chapter 3 it also appears as most of the investment is of the vertical type and can mainly be found in the automotive, electric and electronic industries. It can therefore be argued that Hungary has locational advantages that especially attract this type of investment, resulting in vertical specialization in production. In this chapter it will be explored whether any vertical specialization can be traced by calculating comparative advantage in the automotive, electric and electronic industries.

5.1 Measuring Comparative Advantage

Economic theory suggests that countries specialize according to their comparative advantage; revealing these can thus show whether specialization occurs or not. One of the measures that can be used for computing comparative advantage is Balassa's revealed comparative advantage (RCA) index (Balassa 1989).

$$RCA = (x_{ij}/x_{wj})/(\sum_j x_{ij}/\sum_j x_{wj})$$

Comparative advantage can thus be calculated using export data by dividing country i 's share of exports of good j (x_{ij}/x_{wj}) with country i 's share of total exports ($\sum_j x_{ij}/\sum_j x_{wj}$). The subscript w denotes the rest of the world or any other entity of countries that are used in the comparison. If the RCA index is above 1, the country exports relatively more of one good which can be seen as an indication of comparative advantage. However, the use of this measure is not unproblematic. It is solely based on export data and can therefore give distorted RCA indexes. If country i 's share of world exports is small and the country only exports a few commodities, the index will show high levels of comparative advantage for these goods (Hakkala & Nilsson 1997, p. 45-46). As the calculation of comparative advantage in this paper mainly aims at showing whether or not specialization exists in certain industries

and the question of the size of the comparative advantages will not specifically be addressed, the measure can be used nevertheless.

5.2 Calculating Comparative Advantage for Hungary

Adapting Balassa's RCA index to this paper means relating Hungary's share of exports in the automotive, electric and electronic industries to the share of the country's total exports. To identify goods belonging to these sectors the United Nations Standard International Trade Classification (SITC), revision 3 is used. The electronic industry is referred to as *Telecommunications and sound recording equipment* in the SITC and the automotive industry is represented by group 78, *Road vehicles*. Calculations will be conducted on the two- and three-digit levels (see appendix A.1 for details). Trade statistics are drawn from the Source OECD database.

5.2.1 Comparative Advantage on the Two-Digit Level

Telecommunications equipment, electrical machinery and road vehicles belong to SITC group 76, 77 and 78 respectively. In subsequent calculations, x_{ij} denotes Hungary's exports of goods in group 76, 77 or 78. x_{wj} are the EU15 exports of the same goods. $\sum_j x_{ij} / \sum_j x_{wj}$ is Hungary's share of total exports of all goods compared to the European Union. The EU15 is chosen to represent w since the aim of the exercise is to see whether Hungary has specialized in certain goods compared to the European Union, which could be the result of the inflow of FDI to those industries. Ideally, the RCA index should be calculated for the beginning of the 1990s and for approximately 10 years later to see if and how Hungary's comparative advantage has changed parallel with EU-integration. However, comparing with the EU15 restricts the availability of data. Therefore the period covered will be 1995-2003. An average of the 1995/1996 exports will be compared to the 2002/2003 average in order to eliminate annual fluctuations. The results are presented in table 5.1. An index above 1 is highlighted.

Table 5.1 RCA index for Hungary, SITC two-digit level

SITC	1995/1996	2002/2003
76	0.91	4.79
77	1.56	1.62
78	0.53	0.78

Source: Calculations based on trade statistics from Source OECD.

Calculated with Balassa's RCA index, Hungary seems to have a comparative advantage in the telecom and electrical industries. The country's comparative advantage has increased in all industries over the period considered, but most remarkable is the change in the telecom industry where the index increased from 0.91 to 4.79. It may seem surprising not to find any comparative advantage in the automotive industry, where production often is highly fragmented and at least some parts tend to be placed in countries such as Hungary. Indeed, according to the data in chapter 3, Audi is the largest MNE operating in the country, therefore some comparative advantage in the automotive industry would have been expected. The answer may lie in the level of aggregation; the two-digit level may not be disaggregated enough. An examination of the index on the three digit-level can give additional information.

5.2.2 Comparative Advantage on the Three-Digit Level

Appendix A.1 details the subgroups of the telecom, electric and automotive industries. In the calculations of the RCA index on the three-digit level, j denotes each of these subgroups. $\sum_j x_{ij}/\sum_j x_{wj}$ is as above Hungary's share of the total exports of all goods, compared to the EU15. The RCA indexes are presented in tables 5.2, 5.3 and 5.4 below. An index above 1 is highlighted.

Calculated on the three-digit level, Hungary has strong or very strong comparative advantage in the majority of the goods. In the beginning of the period, only groups 764, 774, 776, 781 and 782 have an index below 1. Seven years later the comparative disadvantage remains for four of these groups, while telecommunication equipment and parts (group 764) show an index above 1, meaning Hungary has acquired comparative advantage in their production over time. At the same time, comparative advantage in production of other motor vehicles (group 783) have been lost.

Table 5.2 RCA-index for SITC group 761-764 (telecom industry)

SITC	1995/1996	2002/2003
761	3.14	12.53
762	4.65	19.39
763	2.98	21.10
764	0.67	1.95

Source: Calculations based on trade statistics from Source OECD.

Table 5.3 RCA-index for SITC group 771-776 and 778 (electric industry).

SITC	1995/1996	2002/2003
771	1.01	1.12
772	1.42	1.79
773	4.00	4.81
774	0.32	0.31
775	1.68	1.96
776	0.17	0.42
778	3.00	2.53

Source: Calculations based on trade statistics from Source OECD.

Table 5.4 RCA-index for SITC group 781-784 (automotive industry)

SITC	1995/1996	2002/2003
781	0.17	0.61
782	0.23	0.07
783	3.07	0.63
784	1.09	1.49

Source: Calculations based on trade statistics from Source OECD.

The RCA indexes have increased substantially in most cases. The exceptions are electrical apparatus and equipment, motor vehicles for transport of goods and the above mentioned other motor vehicles (groups 778, 782 and 783 respectively). The change in apparatus for medical equipment (774) is marginal and could therefore be attributed to other causes than

changes in comparative advantage. Increasing RCA indexes can be interpreted as increased comparative advantage and thereby increased specialization over the period considered.

The RCA indexes for subgroups 761-763 are exceptionally high and have shown the largest increase over the period considered. The high index can be a result of the measure used; as pointed out earlier, the omission of imports in the Balassa index may result in distorted values. However, the group includes goods such as television and radio receivers, telecommunications equipment and parts, i.e. goods that can be considered technology and skill intensive and that are often produced in a fragmented fashion. Furthermore, the telecom industry has gone through considerable development during the period studied. Investments specifically targeting these high-tech industries could have enhanced the comparative advantages. It is therefore not inconceivable that Hungary does have a large comparative advantage in their production.

Moving on to the automotive industry, calculations on the three digit level reveal that Hungary does, as suspected, have some comparative advantage. However, this can be found in the production of parts and accessories (group 784), not in the motor vehicles themselves. This supports the hypothesis that the country has specialized in a certain section of the production process, i.e. vertical specialization.

Conclusively, calculations of comparative advantage thus suggest specialization of production in the automotive, electric and electronic industries. As these industries can be vertically sliced in production, we have vertical specialization. Calculations on a more disaggregated, four- or five-digit level would most likely better capture and confirm this result, but due to the scope of the paper this will not be explored any further here.

5.3 Factor Intensities

Specialization is not guided by comparative advantage alone; factor endowments play an important role as well in the process. According to a UN classification of the factor intensities of the goods in the SITC rev. 3, the goods belonging to groups 76-78 are manufactures with medium or high skill and technology intensity (UNCTAD 2002). The availability of a skilled

workforce in Hungary gives additional support to the thesis that the country has specialized in the production of these goods.

5.4 Chapter Summary

In this chapter, it has been shown that the inflow of FDI to certain industries has led to vertical trade specialization by calculations of revealed comparative advantage in the automotive, electric and electronic industries in Hungary. RCA indexes for these three industries show that Hungary does have a comparative advantage in most of them compared to the European Union and that this advantage has increased parallel with EU integration. Specialization is also supported by the availability of the factors that are used intensively in production of the goods in question.

6. Conclusions

The aim of this paper was to see what effects regional integration had on the FDI flows to Hungary and whether any specialization could be traced following integration with the EU.

The main theories dealing with the issue are the theory of trade and the theory of international production. Although they give some insights on what can be expected following regional integration, the effects on FDI largely depend on a number of factors giving ambiguous results and making predictions difficult, especially for a particular country. The matrix in chapter 2 does however give an organizational template in which countries can be placed depending on the level of change due to integration and their country characteristics. The expected effects for Hungary would, following this reasoning, be positive flows of FDI.

A survey of FDI data for Hungary reveals substantial and increasing flows of inter- as well as intra-regional FDI throughout the period of integration. Hungary being a transitional economy, the increase in FDI flows are more likely the result of the strong environmental change brought about by the transition to market economy and EU integration than investment creation effects in the traditional theoretical sense, although the gradual trade liberalization and the privatization strategy of the government surely played an important role as well. Paired with the locational advantages of the country, such as a favourable geographic location, a low-cost and well educated workforce, establishment of export processing zones and a stable economical and political environment cemented through the EU accession process resulted in the strong positive FDI flows that can be observed.

The lion's share of the foreign capital has gone to the manufacturing sector, into industries with vertical production fragmentation. In chapter 5 it was explored whether Hungary has any comparative advantage in the three sectors having received most of the FDI giving rise to vertical specialization. Following the calculations, it can be concluded that on the three-digit level, comparative advantage can be observed in most of the groups of goods examined. In the beginning of the period (1995/1996), Hungary had comparative advantage in 10 of the 15 groups. Calculated for the 2002/2003 average, i.e. the end of the period, the RCA index has

increased in all but four subgroups. Increasing RCA indexes can be interpreted as increased specialization in production, therefore it can be said that with increasing FDI flows, Hungary has become specialized in production of goods in the electric and electronic industries and in the production of parts in the automotive industry compared to the European Union.

Although now an official EU member, Hungary's integration with the EU continues. Full integration in the internal market will facilitate trade and investment flows further, but as the "transition effect" decreases and the economic situation of the country becomes more inline with the EU15, the inflows of FDI will likely stabilize at a level lower than during the first years of integration. Some of the locational advantages of the country will gradually fade; the labour costs are increasing and some of the investment incentives created by the government proved to be inconsistent with EU-regulation and are phased out. In terms of the matrix in figure 2.1, it can therefore be argued that Hungary will slowly move from area 1 to area 3 with positive but lower FDI flows to be expected in the future. However, the investments already made are sunk costs for the firms in question, therefore they are likely to stay in the country. As a consequence, the observed trade specialization is likely to remain and deepen due to learning by doing and endogenous effects. Not specifically addressed in this paper is investment in research & development and services which are becoming increasingly important. Hungary is already hosting the R & D departments of some multinationals as well as a number of foreign firms in the service sector. In the years to come, this is likely where the largest increase in FDI flows and specialization can be expected.

References

- Balassa, Bela (1989) *Comparative Advantage, Trade Policy and Economic Development*. London: Harvester Wheatsheaf.
- Blomström, Magnus & Kokko, Ari (1997) "Regional Integration and Foreign Direct Investment" *Working Paper Series in Economics and Finance no. 172* May 1997.
- Dunning, John H. (1997) "The European Internal Market Programme and Inbound Foreign Direct Investment" *Journal of Common Market Studies* Vol. 35, No. 1, March 1997, p. 1-30.
- Ekholm, Karolina & Markusen, James R. (2002) "Foreign Direct Investment and EU-CEE Integration" Background paper for the conference *Danish and International Economic Policy*, Institute of Economics, University of Copenhagen, May 2002.
- Hakkala, Katarina & Nilsson, Per Ola (1997) *Trade Liberalization under Transition in Vietnam – A Study on Trade and Specialization*, Department of Economics at the University of Lund, Minor Field Study Series no. 76.
- Hungarian Central Statistical Office (2002) *Foreign Direct Investment in Hungary 1999-2000*, Budapest.
- Kindleberger, C.P. (1966) "European Integration and the International Corporation" *Columbia Journal of World Business* Vol. 1, No. 1, Winter 1966, p. 65-73.
- Lipse, Robert E. (2002) "Home and Host Country Effects of FDI" *Working Paper w9293*, National Bureau of Economic Research, Cambridge.
- Markusen, James R. - Melvin, James R. – Kaempfer, William H. – Maskus, Keith E (1995) *International Trade – Theory and Evidence*. Singapore: McGraw-Hill International Editions.
- Markusen, James R. (1998) "Multinational Firms, Location and Trade" *The World Economy* Vol. 21, issue 6, p. 733-756.
- Robson, P. (1998) *The Economics of International Integration*. London: Routledge, fourth edition.
- Shatz, Howard J. & Venables, Anthony J. (2000) "The Geography of International Investment" *World Bank Policy Review Working Paper 2338*, World Bank, Washington DC.
- UNCTAD (2002) *Trade and Development Report 2002*, United Nations, New York and Geneva.
- UNCTAD (2004) *World Investment Report 2004*, United Nations, New York and Geneva.

UNCTAD (2003), *World Investment Directory*, Central and Eastern Europe, Volume VIII, United Nations, New York and Geneva.

Yannopoulos, George N. (1990) "Foreign Direct Investment and European Integration: The Evidence from the Formative Years of the European Community" *Journal of Common Market Studies* Vol. 28, No. 3, March 1990, p. 235-260.

Electronic sources

Hungarian Foreign Ministry: "Hungarian-EC Agreement on Association"
http://www.kum.hu/euint/index_keydoc.html, October 13, 2004.

The Hungarian Investment and Trade Development Agency
www.itdh.hu, October 13, 2004.

Source OECD, www.oecd.org, February 7, 2005.

UNCTAD, World Investment Directory
Country Profile: Hungary
Country Fact Sheet: Hungary
FDI in Brief: Hungary
<http://www.unctad.org/Templates/Page.asp?intItemID=3198&lang=1>, December 14, 2004.

United Nations Statistics Division
<http://unstats.un.org>, February 7, 2005.

Appendix

A.1: Goods belonging to groups 76, 77 and 78 of the SITC rev. 3, two- and three-digit level.⁹

76	Telecommunications and sound-recording and reproducing apparatus and equipment
761	Television receivers
762	Radio-broadcast receivers
763	Television image and sound recorders or reproducers
764	Telecommunications equipment and parts
77	Electrical machinery, apparatus and appliances
771	Electric power machinery
772	Electrical apparatus for switching or protecting electrical circuits
773	Equipment for distributing electricity
774	Electrodiagnostic apparatus for medical purposes
775	Household-type electrical and non-electrical equipment
776	Thermionic, cold cathode or photo-cathode valves and tubes
778	Electrical machinery and apparatus
78	Road vehicles
781	Motor vehicles for the transport of persons
782	Motor vehicles for the transport of goods
783	Other road motor vehicles
784	Parts and accessories of the motor vehicles of group 781-783

⁹ United Nations Statistics Division, shortened version.

A.2 Factor intensities according to the UN classification¹⁰

SITC	Factor intensity	SITC	Factor intensity
761	High skill (E)	781	Medium skill (D)
762	High skill (E)	782	Medium skill (D)
763	High skill (E)	783	Medium skill (D)
764	-	784	-

SITC	Factor intensity	SITC	Factor intensity
771	Medium skill (D)	775	-
772	Medium skill (D)	776	High skill (E)
774	Medium skill (D)	778	Medium skill (D)
774	Medium skill (D)		

- No information available

A.3 Export statistics used for RCA calculations¹¹

Export of goods, Hungary to World, 1000 USD

SITC	1995	1996	Average	2002	2003	Average
78	682 626	557 696	620 161	2 980 239	3 520 787	3 250 513
77	1 251 265	1 496 723	1 373 994	3 841 540	5 129 222	4 485 381
76	436 163	309 827	372 995	5 351 928	7 368 926	6 360 427
761	84453	31076	57764,5	533907	817582	675744,5
762	20326	30201	25263,5	300315	358234	329274,5
763	49888	6204	28046	622764	775323	699043,5
764	281496	242346	261921	3894942	5417787	4656364,5
771	50705	77741	64223	182055	239479	210767
772	286655	294290	290472,5	916432	1389059	1152745,5
773	250741	351504	301122,5	897939	1175059	1036499
774	22135	18080	20107,5	55026	82285	68655,5
775	152617	184231	168424	436885	611532	524208,5
776	34028	39462	36745	301072	359267	330169,5
778	454358	531404	492881	1052112	1272512	1162312
781	186452	52731	119591,5	1481283	1513362	1497322,5
782	20334	21881	21107,5	19693	21762	20727,5
783	114838	113452	114145	78645	101414	90029,5
784	249539	256372	252955,5	1172520	1614121	1393320,5
Total X:	12 867 038	13 144 614	13 005 826	34 336 643	43 007 722	38 672 182,5

¹⁰ UNCTAD 2002

¹¹ Source OECD

Export of goods, EU15 to World, 1000 USD

SITC	1995	1996	Average	2002	2003	Average
78	68052500,9	71440442,5	69746472	99300991,9	121272151	110286571,5
77	49714637	54780398,3	52247517,7	66812541,1	80180531,7	73496536,4
76	22212 122,8	26562403,2	24387263	32998303,5	37384783,1	35191543,3
761	996719,3	1177159,1	1086939,2	1322118,7	1536206,5	1429162,6
762	319494	323586,4	321540,2	438992,3	461065,2	450028,8
763	501617,2	613262,9	557440,05	709304,2	1047195	878249,6
764	19462298,3	23257528,9	23257528,9	29738230,8	33643653,1	63381883,9
771	3407322,8	4099674,1	3753498,5	4628692,4	5344155,8	4986424,1
772	11587316,5	12604834,6	12096075,6	15253365,5	18867979,4	17060672,5
773	4168045,9	4753953,5	4460999,7	5280193,8	6141695,6	5710944,7
774	3648747,7	3835957	3742352,4	5343541,5	6357747,9	5850644,7
775	5588560,1	6298276,4	5943418,3	6587264,3	7620142,9	7103703,6
776	11939962,3	13101171,1	12520566,7	18373054,4	22828448,2	20600751,3
778	9374681,7	10086531,7	9730606,7	11346429,3	13020361,9	12183395,6
781	40867862,7	42616420,5	41742141,6	60088594,1	70686777,2	65387685,7
782	5152740,4	5729125,2	5440932,8	7040465,9	9214220,5	8127343,2
783	2061476,5	2342516,1	2201996,3	3157197,4	4448582,6	3802890
784	13036666	14425455,8	13731060,9	21522785,6	28154723,6	24838754,6