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Foreign direct investment in Spain and Hungary: main patterns and effects with a special regard to foreign trade

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Ph.D. Thesis

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To the memory of my mother

Introduction

After the collapse of the old political and economic system in Central and Eastern Europe it has been popular to compare these countries to the present peripheral members of the European Union, in most cases to the Iberian countries. The broad objective of the thesis is also to explore the likely analogies in the economic development induced by foreign direct investment existing between Spain and Hungary. There are good reasons for choosing Spain as an object of comparison. Spain is already over its first decade of integration within the European Union where Hungary also aims to integrate itself. At the time of economic opening the development level of both Spain and Hungary was significantly inferior to that of the Union and both countries were after a long period of state interventionism. Since accession Spain has registered a remarkable process of development within the EU, and thanks to its impressive improvement in nominal convergence has became a founding member of the Economic and Monetary Union, which can be considered the highest level of integration ever reached in Europe. Hungary has been going through a rapid period of liberalisation and its macroeconomic performance during the following decade has shown certain features similar to those of Spain.

Apart from all above mentioned reasons, the key role that the foreign direct investment (FDI) seems to have played in shaping Spanish economic development - as it appears to be happening in the case of Hungary - justify our choice of Spain as a reference country.

There are however important internal and external differences between the two countries' situations. The main internal difference is that even before the opening Spain had been a market economy with dominating private ownership, while in Hungary market economy and its institutional framework had to be recreated recently. The main external difference can be found in the changed international environment (the high degree of globalization, the creation of the Economic and Monetary Union, etc.) which exerts influence on the countries.

The structure of the thesis is the following. The first chapter provides an overview of the main theories concerning the determinants of FDI. Apart from this, also the effects of foreign direct investment on trade, technology level, production structure and growth are taken into account here. After the description of the theoretical background, the discussion follows in further three chapters.

The second chapter describes the general trend and patterns of foreign direct investment in the two countries. Both Spain and Hungary have been favourite targets of foreign investors within their sub-region (Southern-Europe and Central-Eastern Europe), attracting high amounts of foreign capital. We describe the main trends of FDI-inflow, its geographical origin and sectoral pattern in the case of Spain and Hungary.

The third chapter of the thesis aims to discover the reasons why these countries have been so attractive to foreign investors. That is to say: what are their respective location-specific advantages and how they have changed over the last years. Apart from the economic policy background similarities and differences in the motivations of foreign investors are pointed out. For that purpose, we offer a detailed survey of the statistical and econometric evidence on the issue.

The fourth chapter examines the likely effects of foreign direct investment inflow on the domestic economic and manufacturing structure. In both countries important changes have taken place in this respect after the liberalisation. Performance and efficiency indicators of foreign investment enterprises have to be analysed as well as their contribution to the increase of the technological level in the country.

Further on, this chapter focuses on the analysis of the changes occurred in the foreign trade structure and discusses the extent to which they may have been induced by FDI. The more in depth analysis of the effects of FDI on foreign trade is reasoned by the importance of foreign trade in a small open country like Hungary but also in Spain, where the heritage of a closed economy has been a burden. Our main focus is on the trade with the European Union, which is justified by its overwhelming share on the total trade of the two countries and also by the availability of homogeneous data provided by Eurostat. For the sectoral analysis we have grouped the manufacturing sectors according to their technology-

intensity. The industry classification follows the method of OECD [1993] and the same classification system is applied to Spain and Hungary in order to ensure comparability.

Particularly, given that it is widely believed that the CEE countries and the Iberian countries can mainly be competitive in the labour-intensive fields, special emphasis is put on exploring the extent to which this statement is true. In order to assess the main features of the structure of comparative advantages, the concept of revealed comparative advantage introduced by Balassa [1965] is used. Trade-balance-based revealed comparative advantage (RCA) indices are calculated for the 1990-97 period using the technology-level classification.

Still in this chapter the share of intra-industry trade (IIT) in Hungarian and Spanish foreign trade with the EU is calculated. As known, the measurement of the share of this type of trade is an essential piece of information on the assessing of the nature of trade adjustment cost induced by an economic integration process. It can be said that our methodology for the analysis of IIT is rather new in Hungary, because it is better than those used in previous studies on the issue for Hungary. Thus, apart from the fact that a more detailed classification (SITC 5 digit level with 3464 products) is applied, also unit value calculations are made in order to separate horizontal (two-way trade of similar type, similar quality-products) and vertical type (similar type products differing in quality) of IIT. Data are afterwards aggregated to the sectoral groups according to technology level.

I. Brief theoretical and empirical overview

To begin, it is useful to clarify what is called foreign direct investment. According to the standard definition of the OECD and the IMF[1] foreign direct investment reflects the lasting interest of a resident entity in one economy in an entity resident in another economy. The lasting interest implies a long-term relationship between

[1] See for example the OECD Detailed Benchmark Definition of Foreign Direct Investment [1992] and IMF Balance of Payments Statistics Yearbook series.

the investor and the enterprise and a significant degree of influence by the investor on the management of the enterprise. Thus, the purpose of FDI is to obtain ownership and control over companies abroad. Direct investment transactions are sub-classified into equity capital, reinvested earnings and other capital (intra-firm borrowing and lending).

Measurement and registration of FDI differs across countries, even across developed OECD countries. Usually, following the IMF guidelines the qualification of FDI is controlling 10% or more in the foreign firm (if this share is less, the investment belongs to the portfolio category), but countries can deviate from this. Furthermore, many times it is difficult to define the nationality of an investment made by a multinational company, because a part of FDI is carried out by firms that are not the ultimate source of capital (via regional affiliates or tax "havens"). More details on definition and measurement problems of FDI can be found in Bellak [1998]. In any event, in our analysis the Spanish and the Hungarian FDI-statistical system will be followed.

In general there are three statistical sources on FDI. The first is balance of payment statistics, which collects capital flows without including reinvested earnings. The second one is the official statistical registration as a result of previous authorisation. The third data source are the enterprise surveys, providing mainly stock data.

1. Determinants of FDI

The issue of the determinants of FDI was addressed in the framework of the neo-classical trade theory. Thus, Mundell [1957] was the first to include the international movements of capital in this framework and explained them on the basis of the factor proportion theory. Then by extending the Heckscher-Ohlin model he showed that - under the basic assumptions of this model - an increase in trade barriers stimulates capital movements and an increase in restrictions on capital movements stimulates trade (see point 2.1.).

However, this approach did not seem to be very useful in explaining the observed

performance of multinational firms, an inseparable phenomenon of FDI flows. Therefore another approach to FDI was developed in the framework of the industrial organisation field.

In this sense the seminal work in the theory of multinational companies was the paper of Hymer[1960] where the author, after clarifying the distinction between direct and portfolio investment[2], looks for the reasons of international operations. Thus, taking into account the ideas of Coase [1937] and Penrose [1959][3] he introduces the argument that certain firms have considerable advantages in particular activities relative to other firms. The possession of these advantages may cause them to have extensive international operations. The same theoretical line was further developed by Kindleberger [1969] detailing foreign firm specific advantages in product and factor markets, economies of scale and government limitations.

Another important "milestone" of FDI- theory is that of Vernon [1966] who used the micro-economic concept of the well-known product-cycle theory[4] to explain the foreign investment of US multinational companies. As the product -originally produced only in the innovative developed country- is being more matured and standardised, instead of exports, its production is being transferred to less developed countries. In this way, international trade of products was linked here with international investment, also explaining partly the development of multinational companies (see Gál-Simai [1994] more detailed).

These new approaches promoted several followers treating the issue of FDI or multinational companies. The work of a huge number of economists is collected and organised in the book of Caves [1996], who also makes a distinction between three types of multinational enterprises. The first is the *horizontally integrated* multinational firm with plants in different countries producing the same or similar

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[2] Already Marx differentiated between “working capital” and “loan capital”, see Szentes [1995] p.434. for more details

[3] The definition and development of multi-plant enterprises has the roots in the work of Coase [1937] who founded the notion of transaction costs seeking the answer to the question why can be more costly to use market prices than establishing a firm. Another aspect is the expansion of the firm. As emphasized by Penrose [1959], market size can limit the exploitation of firm capacities.

[4] See the description of this theory for example in Szentes [1995] p.306.

goods. Its existence requires certain location-specific advantages and also some transactional advantages of placing the plants under common control. The second type is the *vertically integrated* multinational company, where the different stages of the production process are located in different nations. In other words the output of one plant is the input of another plant, the market of intermediate products is in this way internalised. The third, type is the *diversified* multinational company, whose plants' products are neither horizontally, nor vertically related. The goal here is to spread (diversify) business risks.

Using this above-mentioned typology Krugman [1983] constructed the models of horizontal and vertical multinational companies allowing for imperfect competition. In explaining horizontal multinationals the author concludes that firms by R&D spending acquire the ability to manufacture different products, they can export this technology either by establishing foreign subsidiaries or by embodying technology in goods. Which route they take depends on economic incentives, which may be distorted by tariffs. In the vertical case a monopsonistic firm keeps the price of its raw material down and thus distorts the production decisions of its suppliers. By going multinational and integrating backward, distortion is eliminated and there are efficiency gains.

The previous theories of FDI were organised into a general framework referring to the determinants of multinational companies' activity by Dunning [1993][5]. He constructed the famous eclectic paradigm. The main hypothesis of this paradigm is that if foreign investment fits in the long-term management strategy of the firm, this foreign activity of a firm will depend on the existence of three types of advantages. The first is the so-called *ownership-specific* (O) advantages mainly in the form of intangible assets or from common governance. Among others property rights, product innovations, production management, marketing system belong here. A considerable part of these advantages are firm-specific, knowledge-based assets[6]. If the enterprise perceives it to be in its interest to add value to its O advantages rather than to sell them, then the second type of advantages called *internalisation* (I) advantages exist. An aim can be here to avoid government

[5] See also his previous works: Dunning [1974], [1980].
[6] The importance of these assets is emphasized by Markusen [1995], [1998] and in his other

intervention, cost of negotiation, broken contracts, to control supplies and conditions of sale, market outlets, etc. In order to utilise the O advantages in a foreign location rather than at home, the so-called *location-specific* (L) advantages should exist. Examples of such advantages are natural and created resource endowments, transport costs, investment incentives, infrastructure, language and culture, institutional framework.

The three types of advantages are equally important[7] - as Dunning [1998] writes: "the OLI triad of variables determining FDI may be likened to a three-legged stool; each leg is supportive of the other". In this research the focus will be on location-specific advantages (see Chapter III.), given that our main purpose is to explore the patterns and effects of FDI inflows on the economic performance of two specific host countries: Spain and Hungary. Moreover, in the following we will focus on three types of L advantages which have an important theoretical and empirical background: knowledge or human skills, agglomeration economies and the provision of government incentives.

The importance of location-specific advantages is growing at the international level. As Dunning [1998] points out there are significant changes, new trends in the world economy in the 1990s. The intellectual capital has emerged as a key asset in most industrial economies. Knowledge-intensive assets are *created assets* of an intangible nature, which are mainly generated by investing in R&D and education. They include among others skills, attitudes, business culture, innovation or learning and managerial capabilities, stock of information (UNCTAD, [1998]). Markusen [1998] argues that the knowledge-based assets are more closely associated with multinationals than physical capital, because the services of knowledge capital can be more easily transported to foreign production facilities and because knowledge capital (blueprints, chemical formulaes) often has a joint-input nature within the firm. In relation to the increased role of knowledge, the boom of mergers and alliances, collaborations, demonstrates the growth of strategic asset-seeking FDI. Location needs of corporations shifted towards access to knowledge-intensive assets.

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works.

[7] Although there are opinions according to which internalization is the key factor explaining

The *agglomeration economies* make that the spatial concentration of economic activities provides greater rentability to the following investment located in the area. The advantages of geographic concentration of economic activities due to the existence of agglomeration economies has received a renewed interest in the context of the so called "new trade" and "new economic geography" theories[8]. For the purpose of the present research the most interesting studies are those which link the location strategies of (multinational) firms with the factors explaining the existence of the agglomeration economies. Thus Venables [1996] proves that firms like to be close to each other because of direct input-output (forward-backward) linkages among themselves. Having a larger number of upstream firms in a location benefits downstream firms who obtain their intermediate goods more cheaply leading to clustering of vertically related industries.

The new geography-ideas have brought about a large number of empirical studies. As an example Kozul-Wright-Rowthorn [1998] confirms that FDI is influenced by strong neighbourhood effects. Audretsch [1998] points out that - although globalisation combined with the telecommunication revolution reduced the cost of transporting information across space - given the tacit nature of knowledge (transmitted only informally, demands direct and repeated contacts) technological spillovers are spatially restricted and clustered. And Ottaviano-Puga [1998] concludes that the combination of increasing returns to scale and trade costs encourage firms to locate close to large markets with high economic activity.

In that sense, it has been argued that *economic integration* affect the location strategies of firms, as trade costs decrease. The European Union is particularly interesting case study in this respect. In fact, it is the reference of many papers. Amiti [1998] uses the case of the EU to prove that as for vertical linkages are stronger when the proportion of intermediate goods is higher in production, the level of geographic concentration is higher in industries that use more intensively intermediate inputs in final production. According to the computations of Brühlhart [1998a] for 11 EU countries between 1980-1990, an increasing manufacturing specialisation is manifested. At the same time he found that internal

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FDI, see Ethier [1986].

[8] See for example Krugman [1990] and [1991], Venables [1996].

scale-sensitive industries are localised at the EU-core, labour-intensive industries are relatively dispersed and high-tech industries are highly localised but not along the centre-periphery.

There is also some evidence on that economic integration can promote FDI. For example based on a three-country, three-firm model, Motta-Norman [1996] shows that integration, by improving market accessibility, will induce foreign firms to invest in the integrated regional bloc. In this respect integration is likely to lead to intra-regional export platform investments, but if there is intra-regional FDI prior to integration, increased market accessibility after the integration may lead to rationalisation.

Policy of host countries towards multinational companies and FDI is a debated issue since the sixties. Several aspects of host government policies are treated in Dunning [1993] and in Simai [1996]. As a consequence of globalization and agglomeration tendencies, the role of FDI policies and incentives within the L advantages has increased. Countries and regions compete for attracting FDI and regulations have become more and more liberalised. According to the World Investment Report (UNCTAD [1998]) 94 per cent of the 151 FDI policy changes occurred between 1991-1997 created more favourable conditions for FDI. The number of activities in which FDI is restricted has been significantly reduced, ownership requirements and control are limited to certain strategic industry and most countries replaced authorisation with registration. Privatization policy and trade policy is strongly attached to FDI, but investment policy framework has been extended to other policy fields that may also affect FDI. These are, on the one hand, macro-economic policies (monetary-, exchange rate-, fiscal-, tax-policy) and on the other hand macro-organizational policies (industry-policy, labour market-, education, R&D-policy and infrastructure facilities.). The totality of these and other legal and political factors contribute to determine the level of the so-called "country-risk" which is always crucial in investment decisions, often preceding profit considerations (Simai [1996]).

Another possible classification is given by Brewer [1993] who argues that government policies affect FDI via their effects on market imperfections. There are policies that increase market imperfections and increase FDI also (protectionist

import policy, undervalued currency, subsidies on inbound FDI, etc). There are policies that increase market imperfections but decrease FDI (price controls, restrictions on inbound FDI, trade restrictions of inputs and outputs of FDI projects, etc). A further group consists of those policies that decrease market imperfections and increase FDI (liberalisation, privatisation, currency convertibility, etc) and the last (very small) group of policies decrease market imperfections and also decrease FDI (vigorous enforcement of antitrust policies). The effects of policies on FDI also depend on the scope of the policy (selective or general), on the relative position compared to other countries and on the relation between the FDI host and home country.

Investment promotion has also increased rapidly. Various incentives are further means to attract FDI. Incentives are "any measurable economic advantage afforded to specific enterprises or categories of enterprises by a government in order to encourage them to behave in a certain manner" (UNCTAD[1998]p.102.) These incentives can be fiscal incentives (tax reduction, accelerated depreciation, duty-exemption, etc.), financial incentives (grant, subsidised credits, etc.), market preferences (protection from import competition, preferential government contracts, monopoly rights, etc.) and other incentives (like subsidised infrastructure and services). According to survey evidence incentives play a relatively negligible role compared to other factors in investment decisions, although if the broad region (for example EU or Central Europe) has already been chosen, incentives offered by countries within this region can be important. The strength of FDI-incentives is in their "uniqueness", it means that the more widespread they are, the less effective they are.

Regarding location-specific advantages, finally the *infrastructure facilities* should be mentioned. Infrastructure can be defined as the group of public services (energy, water, telecommunication, waste water treatment), public works (roads and dams) and other transport (railroads, ports, waterways, airports, city-transport).The importance of infrastructure in increasing growth and productivity was first emphasized by Aschauer [1989] who based on econometric analysis of data between 1949-1985 found that public capital stock is important in determining productivity, having the “core” infrastructure (roads, airport, electricity, water) the greatest explanatory power. Kessides [1993] argues that

infrastructure contributes to economic growth through reduced production costs, better access to modern technology, increasing productivity and contributes to raising the quality of life also. The beneficial effects are realised however on certain conditions: adequate macro-economic climate, sufficient complement of other resources, existence of reliable, good quality infrastructure and user charges. All the direct effects of infrastructure and public capital can be complemented by its indirect impact via fostering private investment (Sanchez-Robles [1998]).

2. Effects of FDI on host countries

Apart from the determinants of foreign direct investment, another part of the literature concentrates on the host country analysing the effects of inward FDI on the host countries. Foreign direct investment have both macroeconomic and microeconomic effects on the host countries. Thus, first FDI affects the level and structure of investments and the balance of payment, but it also has many other repercussions such as: the domestic competition, the structure of the market and consumption, employment and wages, etc. In this respect, "FDI-spillovers" is a concept used to integrate all kinds of impacts of the multinational enterprises have on their suppliers, competitors and customers, and more generally on the host economies in which they operate.

Here we focus on three main effects. The first one is foreign trade, the second is a group of effects on technology, human capital and productivity and the third one (a consequence of the previous ones) is its impact on production structure and growth.

2.1. Effects on trade

Within the early theories of foreign direct investment and multinational firms FDI and foreign trade were considered to be *substitutes*. First Mundell [1957] built a model where both FDI and foreign trade is based on the price differences of products and production factors determined by the different factor endowments of

the countries.

The already mentioned product-cycle theory of Vernon [1966] was also based on this substitution principle. Foreign direct investment replaces the export as the product matures. Still based on the traditional comparative advantage theory, Kojima [1975] introduced the concept of trade-oriented (pro-trade) and anti-trade-oriented FDI based on the theory of comparative advantages. According to this, we can speak about *trade creating, or pro-trade FDI* if the investment is undertaken from the home country's comparatively disadvantaged industries into the host country's comparatively advantaged industries. Both countries gain from the following trade creation. In the case of *anti-trade FDI*, however, investment is undertaken by a firm of the home country's comparative advantage industry into the host country's comparative disadvantage industry. In this way the home country has an excess demand for importable goods and an excess supply of exportable goods. The two countries are competing in importing and exporting capacities, thus FDI can even destroy trade.

At the end of the seventies "new international trade" theories emphasise, however the *complementary* relationship between FDI and foreign trade (see for example Krugman [1990] and [1991], Venables [1996].) This is the result of introducing new aspects in the models like increasing returns to scale, product differentiation, technology-differences among nations. Allowing for these factors and assuming identical relative factor endowments Markusen [1983] proved that factor (capital) movements between two economies lead to an increase in the volume of trade.

Thus, depending on the circumstances FDI can have trade substituting or trade creating effects. Regarding the strategies of investors, really two main distinct investor types can be differentiated. One is the export-oriented investor and the other is the market-oriented type.[9] (The subtypes of these two groups are described by Dunning [1993][10]). The *export-oriented* investment aims to exploit the low cost resources, relative factor abundance, institutional structure, economic policy etc. of the local market, and to provide export markets by concentrating

[9] The final goal of both type is the same: to sell the most.
[10] He call these groups as efficiency-seekers, resource-seekers, market seekers and strategic asset seekers.

production to a few locations.

Those companies belong to the *market-oriented* investors, which invest in a country or into a region in order to supply these markets with their goods or services. The increase of the market or economic policy changes in the aimed country can promote the foreign company to invest. The aim of the investment is to preserve or gain market shares. The products made by the affiliate are sold in the local or regional market.

The effect on the foreign trade depends on whether the investment is oriented towards exports (trade creating effect) or towards the domestic market (trade creating or substitutive). These two kinds of investment have different effects on the host-country's balance of trade. Export-oriented investments may improve the trade balance, even if case studies show that many firms tend to import most of their inputs initially. Market-oriented firms, on the other hand, may worsen the trade balance, if their exports are negligible and many of their inputs are imported. In principle, the *size of the host country* is likely to influence the trade strategy of foreign investors. Thus, big countries tend to be more suitable for market-oriented companies. Whereas small host countries appearing to be more suitable for export-oriented FDI because, apart from having a small domestic market, they use to have a higher degree of openness (ratio of trade to GDP) then large countries.

In any event, although the impact on net trade balance of host countries may differ depending on the trade strategy of FDI, the bulk of the studies support that foreign investment firms are more export-intensive and more import-intensive than domestic firms. Dunning [1993] argues that they are likely to be more trade-oriented than national companies partly because foreign production cannot take place without some trade in intermediate products. Looking at European periphery countries, this has been confirmed by empirical studies on Ireland, Portugal (Barry and Bradley [1997], Corado [1996]) and, as we will see in chapter IV., also on Spain.

As Kozul-Wright-Rowthorn [1998] points out the relationship between FDI and foreign trade can also be affected by economic *integration* of countries. Within regional blocks FDI and trade are often complementary, as a consequence of internal division of labour within the same firm. Between regional blocks

however, FDI and trade are more likely to be alternatives, as for distance, culture create barriers to inter-block trade, which is often overcome by setting up local facilities.

It is important to remark that FDI affects not only the volume of trade but also the composition of trade flows or, in other words, the trade patterns of specialisation. In order to ascertain the way in which FDI influences the trade patterns of the host countries it is common to examine the changes registered in both inter-industry and intra-industry trade. For assessing the former, one may use the concept of *revealed comparative advantages* was introduced by Balassa [1965] based on the assumption that if countries are specialised according to their comparative advantages, this should be manifested (revealed) in their foreign trade. There are two basic types of revealed comparative advantage (RCA) indices. One compares the export and import structure of a given country, the other compares the export structure of a given country to the export structure of a country group or the world.[11]

As for the analysis of the impact of FDI on *intra-industry trade* (IIT)[12], the index of Grubel and Lloyd [1975] is used. However, since the work of Greenaway and Milner [1994] two types of intra-industry trade are distinguished. The first is called vertical IIT, when the products traded are of the same type but different in

[11] It should be mentioned, however that both types of indices were criticised, because state interventions, protectionism or monoculture can distort the relation between real comparative advantages and the revealed ones (see Szentes [1995] for more details). The disadvantage of the index of first type is that contains data only for one country and does not show its export performance compared to others. The index can rise even then if domestic demand and import is restricted but export remains the same (Török, [1986]). There are critics also concerning the second type of index, see Yeats [1985].

[12] Intra-industry trade is characteristic for the sophisticated manufactured products. Monopolies, increasing returns to scale, homogeneous consumer preferences in partner countries explain this type of trade. Intra-industry trade is especially intensive among developed countries, which trade with similar, diversified manufactured products. This type of trade can be the exchange of the same goods on the basis of different packing or seasonal effects, can be the exchange of differentiated or substitutive goods or can be induced by intra-industrial cooperation. The more similar the factor endowments of the partner countries are, the greater the extent of IIT is. It should be mentioned that intra-industrial trade is often mixed with trade within the production vertical. Thus, if a country imports motors and exports cars, it is not intra-industry trade although in a high enough aggregation level both products belong to the "vehicles and components" category. Therefore proper disaggregation is very important in the measurement of intra-industry trade. It should be clarified that intrafirm trade - between a multinational parent company and affiliates - can be of intra-industrial type but not necessarily, intrafirm trade is not a part of intra-

quality, the other is the horizontal IIT, when also the quality of products is very similar. Definition of the types (quality judgement) is made by the calculation of the export and import unit values (see chapter IV, point 3.2.)

Separating vertical and horizontal IIT is important from more points of view. Regarding the effect of integration, in the case of countries which are of different development level, integration can enhance vertical IIT. In this case, products of the less developed country, which are of lower quality can be crowded out by better quality import of more developed countries, thus the costs of adjustment can be high. Regarding theory, empirical verification of the role of scale economies in creating IIT remained rather poor. Calculations showed that generally vertical IIT is much more significant than horizontal IIT, therefore interest has grown in analysing and explaining vertical IIT.

And here a turn towards the traditional comparative advantage explanation can be observed.[13] Falvey [1981] pointed out that difference in quality among similar goods (that is vertical IIT) on the supply side is caused by the differing capital/labour ratio of their production. High-quality products require more capital-intensive production techniques. On the demand side there is an aggregate demand for a variety of differentiated products, low-income consumers will buy lower quality products, high-income consumers high quality products. A relatively labour abundant country will export the lower quality/labour intensive version of the product (aiming low-income consumers abroad) and will import the higher quality product (for high-income consumers on the domestic market). Thus IIT is explained by comparative advantages. From another aspect Davis [1995] also shows that IIT can take place without increasing returns and imperfect competition. Here the emphasis is on technical differences between the countries which determine specialisation on one or other type of intra-industry product.

The available evidence on how FDI affected trade specialisation patterns of host countries is however rather scarce. According to the studies it seems that FDI increases the share of IIT. But, apart from the fact that empirical evidence is small, it is far from being conclusive. As an illustration it is interesting to quote

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industry trade and vice versa.(Fontagné et al.[1995]).

[13] See detailed in Blanes-Martín [2000]

Aturupane-Djankov-Hoekman [1997]: "the relationship between FDI and IIT is ambiguous. Vertical IIT is likely to be associated with the presence of inward FDI as foreign firms combine their technological knowledge with local endowments to produce goods of varying qualities that are then exported. In the case of horizontally differentiated products, FDI may substitute for exports of the goods that were previously produced in the investor's home country. Whether this would reduce IIT depend on the export structure of the industry in the host country prior to entry by the multinational. If the industry did not produce similar goods or if the foreign entrants have positive net exports, horizontal IIT may increase". (Aturupane-Djankov-Hoekman [1997] p.6.)

What seems to be more clear is the significant impact of FDI on intra-firm trade. The propensity for intra-firm trade differs according to industries and also depends on firm and country-specific factors.[14] Applying intra-firm trade multinational companies can manipulate the terms of trade, tackle the different tax systems of governments. Intra-firm trade in itself is not good or bad, its costs and benefits for the host country depend on the particular circumstances.

2.2. Effects on technology, human capital and productivity

Perhaps the most often mentioned and debated FDI spillover is the transfer of technology. (The process, period, growth and welfare aspects of international technology and productivity transfer by multinational enterprises is thoroughly analysed by Caves [1996] also surveying the relevant literature.) Several empirical studies exist on FDI spillovers on technology, training and productivity (see Blomström-Kokko [1998 a,b] for references). In this respect it has been argued that FDI can help host countries to reduce their gaps in productivity.

In the eighties and nineties multinational companies account for the majority of research activity and 90% of the trade in technology or technology-intensive products (Dunning [1993]). Physical investment is increasingly accompanied by

[14] Referring to studies Dunning [1993] enumerates four factors that generate intra-firm trade. The first is the technological intensity of the products, the second is the size of FDI involved, the third is the divisibility of the production process and the fourth is the need to control after-sales service and maintenance. The role of regional or country-specific L-advantages is also important,

intangible investment to which technology, research and training belongs together with design, advertising, marketing, management (Hatzichronoglou [1993]). Although Patel-Pavitt [1991] found that production of technology is highly centralised in the headquarters of multinational firms, there are some signs of a tendency in multinational enterprises towards a certain decentralisation of their R&D activities around the world (Dunning [1993], Simai [1996], OECD[1998]). According to data for 15 OECD countries, in 1994 R&D handled by foreign affiliates accounted for more than 12% of the total industrial R&D spending of these countries. The strength of this phenomenon is country- and industry-specific (for example in Ireland the share is 62%, in Spain 31%, in Finland 7%).[15] Outsourcing of R&D activity appears to be basically motivated either by supporting foreign production via adaptations to the specific markets or by cost considerations, rationalisation (Kumar [1996]).[16] Factors contributing to increased multinational R&D activity abroad have been grouped under three heading by Cheng-Bolon [1993] namely: conditions (internal or external factors that make foreign R&D possible or rational), motivations (organizational benefits a firm can obtain from foreign R&D activities) and precipitating circumstances (inside or outside events that trigger foreign R&D activity). The relative influence of the factors vary from company to company.

The early model of international diffusion of technology is the already mentioned product cycle theory of Vernon [1966]. Innovation and the location decision of multinational companies are linked here. Later the author explained losing of power of his theory for the US investments and large companies regarding the changing international environment, namely the spreading of multinational networks and the shrinking differences in income levels of major developed

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a good example for this is the deepening of EU-integration.

[15] OECD, [1998] p. 16.

[16] Kumar [1996] examined what determines the overseas distribution of R&D activity of US multinationals. He looked for explanatory factors of R&D intensity of majority owned US affiliates in 54 countries in 1977, 1982, 1989. Regarding the whole sample market size, national R&D efforts and extent of patent protection in the host country proved to be the most important significantly positive determinants. Results were different for only the developing countries, here the scale of FDI in the host country, market size, host country sales share of US affiliates, national R&D efforts, communication infrastructure and tariff+non-tariff barriers on intermediate inputs proved to be important explanatory factors. This shows that in developing countries R&D activity is mainly directed towards the product-adaptation for local market.

countries (Vernon[1979]). However for smaller firms he considered it still relevant.

As far as empirical studies about technology diffusion are concerned, based on the experience of OECD countries, it was first observed in Pavitt [1971] that the multinational firm became an increasingly important agent for international technology transfer, which had considerable effects on economic growth and trade patterns in high-tech industries. The transfer process was influenced by national technological capabilities and specialisation. Concerning the less developed countries the author states that "key technologies" for these countries are very different from those for the advanced countries and the sophisticated technologies of the MNEs may not be appropriate to the needs of the less developed countries[17]. Adaptation of technologies is induced by local factor-price differences, scale-motivations (smaller output produced by local affiliate) local material and supply availability, and different consumption patterns. However, as the markets of these countries are often a very small part of the multinational firm's total market, the MNEs may be reluctant to make efforts of adaptation. Therefore the given country may have to promote the realisation of the necessary changes.

Teece [1977] surveyed 26 cases of technology transfer from the point of view of their *costs*. He differentiated between embodied knowledge (physical items) and unembodied knowledge (information) and concentrated on the transfer-costs of the latter. He found that these costs vary from case to case, they tend to be higher for the first time and for new technologies and lower the more experienced the recipient is. This differentiation between the two types of technical knowledge (physically embedded, explicit and tacit knowledge) has been kept and developed further later on in works analysing the costs, methods and mobility of technology transfer (Kogut-Zander [1993], Tsang [1997], Sölvell-Zander [1998]). Regarding the costs, they depend on the type of knowledge and on the method of transfer. The more tacit the technology is, the more likely will be transferred to a wholly

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[17] Inappropriate modern technology for the developing countries was especially heavily criticised and debated in the sixties by post-keynesianist scholars like Singer and others (analysed and cited by Szentes [1995].

owned subsidiary. Regarding the mobility, although recently skilled human capital is more mobile than before, there is still an important part of formal and informal tacit knowledge which cannot be taken out of local systems without losing its value. Knowledge embedded in machinery is more mobile than tacit knowledge.

The *leakage period* of technology was measured by Mansfield and Romeo [1980]. Based on a sample of US firms they calculated the average period between the introduction of a new technology at the firm and its transfer abroad. They found that if the transfer is directed toward subsidiaries in developed countries this period is 6 years but in case of less developed countries 10 years. In certain cases the transferred product or process was imitated at least 2.5 years earlier than the firms would have expected if the technology had not been transferred to the overseas subsidiary.

According to Lall [1983] four level or type of technology development can be distinguished: one is the *know-how* (assimilation of imported techniques, quality control, etc) the second is the *know-why* (deepening and extending the first) the third is applied research and the fourth is basic scientific research. The contribution of multinationals in the host country can take place at any or all of these levels, positive and negative effects may coexist, the range of potential permutations is big.

The *relation between local and foreign* firms, or impact of multinationals on technology development can be assessed by three ways (Lall [1983]): a, within the affiliate and the parent company (transfer of know-how and outsourcing of research activity), b,. developments of the foreign affiliate relative to similar local firms (differences in R&D intensity, innovation) and c,. direct or indirect effects of the multinational affiliate on related, -vertically linked or competitive - firms in the host country (transfer of skills, design, incentive for local firms to improve their technology).

Blomström-Kokko [1996] describes spillovers from transnational companies focusing on productivity and technology spillovers in host countries. They define three types of spillovers: the first is the case when a local firm improves its productivity by copying some technology used by multinational affiliates in the local market. The second type occurs as a consequence of increased competition

because of the entry of multinationals which forces local firms to use the existing technology more efficiently. The third kind of spillover forces the local firms to search for new, more efficient technologies.

In a later work Lall [1990] emphasises an aspect of technology transfer from the recipient side. He claims that countries differ in their *technological capabilities*, which directly affects their success in industrial productivity and competitive position in international trade. A country's existing technological capability supported by specific policy measures will also determine its ability to cope with new future technologies. Technological capabilities are present on national and on firm-level. The determinants of national technological capabilities are the rate of growth of physical capital, human capital, technological effort and policies, trade and competition policies and macro-economic environment. The final manifestation of a nation's capabilities in industry is the competitiveness of its manufacturing firms in the international market. Firm-level technological capabilities mean entrepreneurial, managerial and technical capabilities.

Technological capacity of the host country is also crucial according to Cantwell-Dunning [1991]. Where this capacity is weak, the investments of multinational companies may drive out local competition in the given industry, gaining markets from local firms who do not have enough resources to invest in R&D. Local technological capacity may even be reduced further, thus, a vicious circle can be created. If, however the local environment is innovative, and technological capacity is adequate, the foreign investment can act as a catalyst to bring about a virtuous circle, because the multinational affiliate increases local technological dissemination, and the increased competition promotes local rivals to realise further innovations.[18] The important role of the local level of technological development on the possibilities of taking advantages of the FDI spillovers was also confirmed by the empirical study of Perez [1998] who examined the innovative activity of American and Japanese multinationals in the EU. He found that the technological content of their activity differs considerably among the countries and innovative activity is concentrated in the more developed EU-

[18] Econometric analysis of Narula-Wakelin [1996] also showed that the share of inward FDI is positively influenced by technological capability and human capital availability in industrialised

countries.[19]

The impact of FDI on human capital accumulation is likely to be relatively small, because the existence of such a stock (well trained labour force) seems to be a kind of precondition for FDI. However if the host country has passed a development threshold, the transfer of technology by FDI increases the human capital. The econometric results of Borensztein et al. [1995] prove that the effect of FDI on economic growth is dependent on the human capital available in the host country. The authors found a strong positive interaction between FDI and the level of educational attainment.

Blomström et al [1994] suggests enhancing technological capabilities and transfer by foreign multinationals by a *host country policy* which supports the efforts of domestic firms to learn from foreigners. Thus increased competitiveness in local firms narrows the technological gap with respect to foreign affiliates, this reduces the demand for the affiliates'products and motivates them to bring in new technology to restore or maintain their advantages. Government policy creating competitive climate and improving labour quality proves to be important. The importance of human resources is also stressed in the study of Kuemmerle [1999] where after the analysis of the data from R&D laboratory investments the results showed that a firm's propensity to invest in R&D activities abroad rises with the quality of the human resource pool and with the level of scientific achievement in relevant sciences. Mello [1997] also confirms that the transfer of technology and knowledge to the host countries is expected to be highest, the higher the level of education of the labour force in the host country, the tougher the competition with existing firms and the fewer the legal and institutional impediments to the operation of foreign companies.

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economies. Countries with strong national systems of innovation attract more FDI.

[19] Apart from that the results also showed that the sectoral structure of R&D activity of American multinationals in Europe does not correspond to the known strengths and weaknesses of the given country's industrial system, but rather to the investor country-characteristics and previous investment patterns. Japanese firms however are highly active in the leading sectors of the national productive and innovative system ofthe host country.

2.3. Effects on the production structure and growth

Several studies examine the effect of FDI on the host country's production and industry structure. Foreign firms can change the internal structure of a branch and influence in this way production patterns. A major question here is whether the entry of foreign firms explain industry structure or whether industry structure determines if foreign firms enter or not. A further problem can be that there is some confusion regarding effects endemic to multinational firms and those effects that are only speeded up by the presence of such firms (Blomström-Kokko [1996]).

A lot of studies are able to establish a positive correlation between foreign entry and seller concentration in host country industries, however the causal links are more difficult to prove. Blomström-Kokko [1996] points out that the general assumption is that competition improves efficiency and welfare but there are cases where it must not necessarily be the case. If foreign entry increases concentration in relatively small national industries, resource allocation and efficiency (economies of scale) may improve from the increase in average firm size. Local circumstances are also important, for instance a fall in the number of competitors from thirty to twenty is less harmful than from three to two. Apart from that, increased concentration is worse in protected industries than in a liberal environment.

The impact of FDI on growth can depend on the *nation size*. The two examined countries in this thesis are different to this respect, Hungary is a small, while Spain is a large economy. (Smallness is defined usually by small population and geographic area and possibly by little or no market power.) Small nations are generally open, trade dependent countries. The effects of FDI in these countries can be bigger than in large ones and generally trade-augmenting (Castello et al. [1997])[20]. On the macro-economic level small economies high propensity to

[20] An example of a small nation's export-led growth via FDI is Ireland. O'Sullivan [1993]: concludes that Irish capital formation is positively linked to foreign direct investment and that foreign-owned firms have contributed significantly to the expansion and diversification of Irish merchandise exports. Generally, by reducing tariff barriers, subsidizing FDI and importing modern technology, the Irish economy enlarged its industrial base, reduced some of its export dependence from the UK, and achieved a remarkable GDP growth. However, FDI exacerbated the dualistic structure of the manufacturing sector, increased the import-dependence, could not

engage in foreign businesses implies a larger shift in the mentioned investment development path than in the case of large countries, because small countries are more dependent on inward investment in their early stages of development and then become more strongly oriented to outward investment. In the case of small countries FDI can help to overcome economic constraints, can bring new contacts, new markets, access to new technologies, promote further openness.[21]

The empirical study of Balasubramanyam et al.[1999], by using data of 46 countries between 1970-1985 found that the effectiveness of FDI in promoting growth depends also on the type of the trade regime applied in the host country. The efficiency of FDI is higher (the coefficient of FDI is significantly higher in the growth equation) in countries with export promoting policies than in those pursuing import substitution strategy.

The connection between FDI and growth appears in those works which apply a *stages approach* to the economic development. Such approach is the idea of an "investment development path" introduced by Dunning [1981], which means an association between a country's level of development (GDP/capita) and its international investment (net FDI) position. The main assumption is that as the country develops the conditions for domestic and foreign companies change affecting the flows of inward and outward FDI. However, FDI affects the economic structure as well, there is a dynamic interaction between the two. According to the investment development path (IDP) theory countries may be

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significantly decrease unemployment and the profit of the owned firms is repatriated. The example of Ireland warns to the costs of this strategy.

[21] In the case of the small Central and East European Countries (CEEC's), Bellak [1997] points out that these countries have a long-term interest in inward FDI. They can import technology via the multinational companies, which can be applied in a flexible way by domestic small firms also, productivity increase and favourable location factors (like relatively cheap skilled labour) create an appropriate environment for large multinational companies for outsourcing and subcontracting. For today it is evident that the activity of large, capital-rich multinational companies has connected the CEEC's in the process of globalization. Similarly to other developing countries we can speak also here about an asymmetric interdependence. As for the CEEC's are on the "weaker side" of this interdependence, it has several negative effects for these countries. However, as Szentes [1999] veriFIE's the real alternative for these countries is not to stay out (the so-called "delinking") but to strive for making these asymmetric relations more symmetric. The role of national policies, the development of human capital is crucial in this respect.

classified into four main groups corresponding to four stages of development. In the *first stage* there is almost no inward and outward FDI, domestic market is very small, infrastructure is inadequate, labour force is mainly unskilled. There are insufficient location specific advantages offered. The development of some location advantages (like infrastructure) by local policies leads to the *second stage* with more inward investment mostly aiming to the domestic market. Outward investment is very little, domestic firms lack ownership advantages. In the *third stage* the growth of inward FDI is less pronounced, at the same time outward FDI is increasing, so the net inward investment per capita starts to fall.. Domestic firms will be more competitive and stronger in domestic and international fields. These tendencies will turn countries into a net outward investor position which is the *fourth stage.* Ownership advantages of domestic firms are strong, and they have an increasing propensity to exploit them internally in a foreign rather than a domestic location. Intra-industry type trade is growing as a result of the growing similarity to other countries' economic structure. As follows from this theory, the graphical picture of the net outward investment curve is U or J formed if GDP/capita of the countries is on the X axis.[22]

The analysis of Dunning [1981] is based on cross-sectional country data. It is however difficult to fit the general theory of the IDP on a given country with long time series data, because of country-specific factors which influence FDI.[23] Another problem of this theory that it does not deal with the extent of causality between FDI and GDP, the two trends are put beside each other. (According to our view therefore this theory is rather a sort of speculative concept trying to apply one scheme on the development of different countries.)

Similarly to the IDP theory, also four stages of competitive development of nations were described in the often cited work of Porter [1990]. The initial stage is the *factor-driven* stage, where the nation draw its advantage from the basic factors

[22] More recently a *fifth stage* was included also into the theory which is characterised by high cross-border trade within multinational companies, converging economic structures of countries with more balanced international direct investment positions (see Dunning-Narula[1996]).

[23] Buckley-Castro [1998] for example after analysing the Portuguese case concludes that a careful observation of the individual elements behind the IDP is necessary and that integration (joining to EFTA, EU) and political factors (end of dictatorship, changes in Central Europe) can be more important for the evolution of inward and outward FDI than domestic growth.

of production (natural resources or cheap labour pool, etc.). The range of internationally successful industries is limited. Foreign firms provide most of the access to foreign markets. Technology is sourced from other nations, the economy is sensitive to world cycles. The second is the *investment-driven* stage, where firms invest aggressively in modern facilities with modern technology. Foreign technologies not just applied but improved upon by increasingly skilled workers. At this stage firms still compete with relatively standardised products, production is almost solely based on foreign technology, equipment. The role of FDI is crucial. The next stage is the *innovation-driven* one, where firms not only improve technology from other nations but create them. Research facilities and infrastructure become more sophisticated, firms compete in more differentiated industry segments. Services (marketing, engineering) are well developed. The last phase is the *wealth-driven* stage, which leads to decline. Attention is paid to preserve the achieved wealth, firms lose their competitive advantage, investment declines, innovation is slowing down. Mergers and acquisitions are widespread to reduce rivalry. Foreign firms begin to acquire domestic ones. The loss of manufacturing positions leads to the rising share of services in GDP. It is important in this theory that each country's trajectory differs within the stages, they can jump phases and return to previous ones.

In general it seems reasonable to think that developing countries - especially open countries - learn from those ones already advanced. The process of learning means the existence of a hierarchy of economies in terms of stages of economic development. The advanced countries transfer their knowledge and skills down to the hierarchy (Ozawa [1992]). Regarding underdeveloped countries (neither Spain nor Hungary belong to this group) however there can be cases when FDI hinders domestic economic development and helps to maintain the old structures. Negative effects of foreign capital inflow on the developing (third world and Latin-American) countries are stressed by several post-keynesianist scholars[24]. In the underdeveloped countries foreign investments can create enclaves, isolated industries with foreign control and profit repatriation. The activity of multinational companies can maintain or increase the dependence of underdeveloped countries

[24] Main representatives are Myrdal,G.,Prebisch,R.,Singer,H.,Furtado,C., Hirschman,A.O.

from the developed ones. (About these and other views see Szentes, [1995] more detailed).

The theoretical literature on the impact of FDI on growth is well surveyed by de Mello [1997]. As he states, the basic shortcoming of the neo-classical growth models as far as FDI is concerned is that FDI can only affect output growth in the short run (while in the long run under the assumption of diminishing returns to capital inputs the recipient economy would converge to its steady state). The endogenous growth theory opened the way to research the effects of FDI on growth in the long run. The impact of FDI is greater the greater the value-added content of FDI-related production and productivity spillovers of FDI, which leads to increasing returns in domestic production. FDI is also considered to be a source of human capital augmentation and technological change in developing countries. Via capital accumulation, FDI is growth-enhancing by helping the introduction of new inputs and technologies in the production of the recipient countries. Technology and knowledge transfer also leads to process innovations leading to increasing returns and enhance different types of externalities.

The conventional way to model the impact of human capital accumulation on growth is to define total factor productivity growth as a function of the level of education or human capital stock. The contribution of FDI to economic growth takes place in two ways (Borensztein et al. [1995]). On the one hand FDI increases the overall level of investment and on the other hand FDI is more productive than domestic investment which depend on the interaction with human capital. As far as the overall level of investment is concerned, it can be influenced differently depending on the type of FDI. Greenfield investments with new production facilities have bigger contribution than acquisitions of interest in already existing companies (Kozul-Wright-Rowthorn [1998]).

In his conclusions, de Mello [1997] points out that the association between growth rates and FDI does not prove the causality or temporal precedence between the two variables. FDI may take place in a developing economy because of its growth prospects. The direction of causation between FDI and growth may also depend on existing factor endowments, shortly: on the determinants of FDI.

II. General patterns of FDI inflows

Before we begin the examination of FDI patterns in Spain and Hungary it seems advisable to offer a general picture of both economies. In this respect Table 1. shows certain indicators of size, openness and development.

Table 1. Country profiles

1998 (percentage data based on current prices if not otherwise indicated)	**Spain**	**Hungary**
Population, million persons	39.371	10.135
GDP per capita, USD	11506	4694
Share of agriculture in GDP	3.7	6.3
Share of industry in GDP	22.8	27.7
Share of services + construction in GDP	73.5	66.0
Import/GDP	28.2	55.1
Export/GDP	29.0	49.3
Share of agriculture in employment	8.0	8.2
Share of industry in employment	20.5	27.1
Share of services+construction in employment	71.5	64.7
Savings rate, % of disposable gross national income	21.6	25.9

Source: Banco Bilbao Vizcaya Informe Anual 1998, Central Statistical Office of Hungary

It is well shown that the size (territory and GDP) of Spain is about four times bigger than that of Hungary. It also turns out from the table, that in accordance with the general belief, the small Hungary is a more open country than Spain in terms of the significance of foreign trade. The structure of the economy is somewhat different, the agricultural sector has two times a larger weight in the Hungarian GDP than in the Spanish one (the share in employment is however not so different, which can hint to efficiency differences). The role of the service sector is bigger in Spain than in Hungary.

Now that we have a general image of both countries, the characteristics of the registration method of FDI in each one should be mentioned. In Spain there are differences between two sources of data, the Directorate General of Foreign Transactions (DGTE) and the Balance of Payments. The Balance of Payments made by the Banco de Espana (from 1991) collects the net flows of investment, does not include contributions in kind and the investments of foreign affiliates

residents in Spain. The DGTE registers authorised FDI projects, which are sometimes quite different from the realised ones in that year and only considers projects with more than 50% foreign ownership. As a third source two enquiries to firms should be mentioned: the firm balance sheet survey elaborated by the bank of Spain („Central de Balances") and the questionnaire-survey called „Encuesta sobre Estrategias Empresariales" (ESEE) elaborated for the Ministry of Industry and Energy.

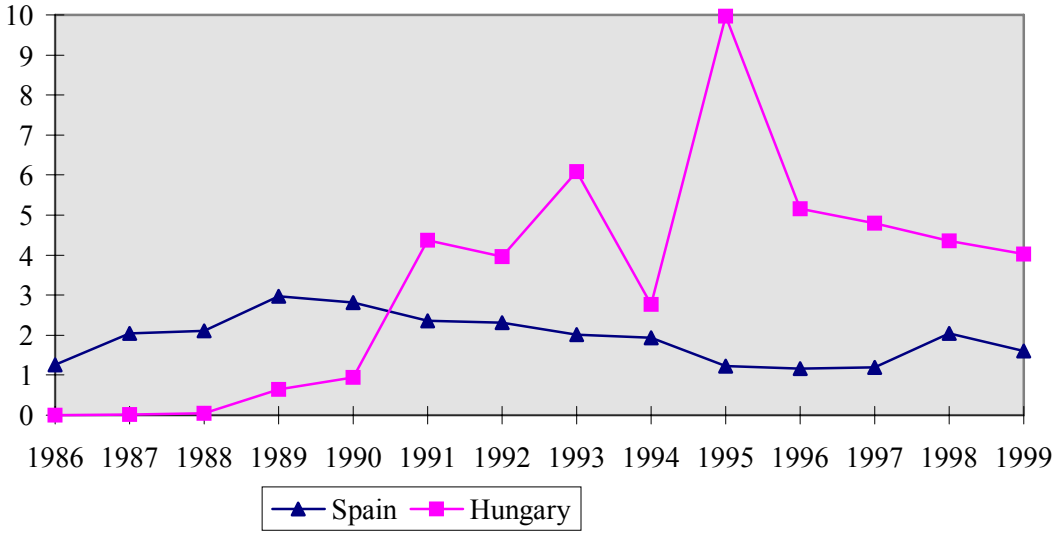
In Hungary the National Bank registers FDI inflows as a part of the Balance of Payment, including equity capital and intra-firm loans from 1996. Data referring to the stock of FDI are derived from yearly national currency inflows cumulated since 1989 and converted at year-end exchange rate. Contribution in kind is registered by the Ministry of the Economy. Another source of data is the Hungarian Central Statistical Office (CSO), which collects FDI data based on the annual corporation tax declarations, which include the value of the stock of issued capital and its distribution by sector of ownership. The CSO also makes an annual survey covering 5000 foreign investment enterprises.

1. Trends and main features of FDI inflows in Spain and Hungary

During the hard dictatorial period of Franco there was hardly any foreign investment inflows in Spain. Since the sixties, however, following the Stabilisation Plan of 1959, foreign investment has been growing at a rather high path with a boom in the years after the adhesion of Spain to the EU. During the eighties, besides the United Kingdom Spain was the country within the EU which attracted the most foreign direct investment. Yearly FDI inflows has amounted to 1-3% of GDP (see graph 1). FDI inflows are also significant expressed as a percentage of gross fixed capital formation, fluctuating between 5-10% (see table A1 in annex). Regarding the composition of the flows, between 1990-1996 on average approximately 5% of FDI inflows were greenfield, 48% take-over, 41% capital increase in existing firms and 6% intra-firm loans[25]. Concerning the stock of FDI in Spain, it made up 23% of the GDP in 1999 (see table A1).

[25] Ministry of Industry and Energy data

Graph 1. FDI inflows in percentage of GDP



Source: IMF Financial Statistics Yearbook 1998 and national bank data for 1999

In the case of Hungary, as in the other Central European countries, the real activity of foreign investors began only after the collapse of the communist system, so later than in Spain. In the first half of the nineties, Hungary was the most attractive Central European country for the foreign investors. Thus, at the end of 1999 FDI stock per capita in Hungary was around USD 2000, the highest in the region. The stock of FDI is very high in relation to the GDP as well (40%), higher than in the Spanish case (see table A1 in annex). According to national bank data, in end-1999 the stock of FDI without contributions in kind amounted to US$ 19,5 billion, while FDI stock with contributions in kind accounted for US$ 20,9 billion. Regarding FDI inflows, two years, 1993 and 1995, show outstanding results attributable to large privatisation deals (see graph 1. and table A3). Since 1996 there were no big privatisation projects of this kind, although FDI inflows have been stabilised around yearly USD 2 bn.

As far as the composition of FDI is concerned, until the end of 1996 approximately 20% of the foreign capital inflows in Hungary took the form of greenfield investments, which is a relatively high share in the CEEC region. The 220 greenfield projects represented a value of US$ 3,05 billion, more than half of which stemmed from only seven multinationals[26] (Dicházi [1996]). Until 1996 the

[26] Guardin Glass, Philips, GM, Audi, Suzuki, Ford and IBM

majority (41%) of the FDI inflows took place within the framework of privatization, but later on, as privatisation has been completed this share decreased. The intra-firm loans, which are considered to be also an FDI has been fluctuating, being 9% of the FDI inflow registrated in the balance of payments in 1996, 27% in 1998 and 13% in 1999[27].

Regarding the *geographical origin* of foreign investments in Spain, the OECD countries have always had the an almost 100% share. After Spain became a member of the EU, the share of the member states increased by almost 20%. The EU has become for today the most important source of FDI (Table A2). The main investors are France, Germany, the UK and the Netherlands (this latter mainly as a transit country because of the tax allowances there)[28]. The share of the United States has decreased radically: while between 1960-79 it represented on average 33,4% of total FDI, between 1991-96 it was only 6,8%. However, the reinvestments of foreign (many American) affiliates already resident in Spain made up 23% in the latter period. Regarding the whole FDI stock, Germany and the USA are the main investors. In the case of Hungary Germany, Austria, the United States and the Netherlands are the largest investors, the latter having the same transit role as in Spain. Reinvested capital is not registered in Hungary, but regarding the FDI via privatisation between 1990-1999 we do have a geographical distribution of investments: 25.3% came from Germany, 13.2% from the USA, 8.9% from France and 5.2% from Austria.[29]

Regarding the *sectoral distribution*, up to the eighties, foreign capital preferred the Spanish industrial sector, 70% of the total FDI flowed into the industry between 1960 and 1985. After the second half of the eighties (after the adhesion of Spain to the EU) however, the service sector (mainly financial services) took the leading role. As a relatively recent phenomenon, the position of the industry as a destination of FDI seems to strengthen again, which coincides with the general reinforcement of Spanish industrial development and the slowing down of the desindustrialisation process. The food, electronic, automobile, chemical branches have been the manufacturing sectors most favoured by FDI. Penetration of foreign

[27] Data of the Hungarian National Bank

[28] In 1996 for example 23% of FDI inflow came statistically from the Netherlands into Spain, but only 4.6% had the real origin in the Netherlands (Ministry of Industry and Energy data).

capital is the highest in rubber and plastic-producing sectors and in transport equipment (see table 2).

Regarding Hungary, partly as a consequence of the privatisation process, manufacturing sector has been the most attractive for FDI but also the role of energy sector and services is important in this respect. It is interesting to observe from table 2. that the distribution of FDI among manufacturing sectors have been rather similar in Spain and in Hungary: food, vehicle, electrical machinery and chemical sectors have been the main target. This phenomenon, (which is regardless of country size) can be explained by the fact that these are such „globalised" sectors, which are everywhere attractive for foreign investors. However there are certain differences. For example the share of food and electrical machinery sector is greater in Hungary, while in Spain the share of chemicals and motor vehicles is higher.

Table 2. Distribution of FDI among manufacturing sectors

	Spain 1988-1990	**Spain 1991-1997**	**Hungary end 1997**
High demand and technology	**26.2**	**27.7**	**23.3**
Chemicals	17.4	18.5	11.1
Office machinery	4.0	0.6	0.7
Electrical mach., radio, TV sets, medical, precision instruments	4.8	8.6	11.5
Medium demand and technology	**26.4**	**27.2**	**20.0**
Rubber and plastic	5.6	3.8	4.5
Machinery and equipment n.e.c.	2.2	2.5	5.1
Motor vehicles, transport equip.	18.3	20.2	9.4
Furniture, manufacturing n.e.c.	0.3	0.7	1.0
Low demand and technology	**47.4**	**45.1**	**56.7**
Food, beverages, tobacco	10.9	16.3	26.2
Textiles, clothing, leather	2.2	1.7	4.7
Wood, paper and printing	13.6	7.1	6.5

[29] Data from State Privatisation Agency (www.apvrt.hu)

Minerals and non-met minerals	14.6	16.6	6.3
Ferr. and non-ferrous metals	1.5	1.0	5.6
Basic and fabricated metals	4.6	2.4	7.4
MANUFACTURING	100	100	100

Note: Data for Spain are the distribution of accumulated FDI inflows into the manufacturing industry in the period indicated. Data for Hungary show the distribution of foreign capital in the manufacturing enterprises as of the end of 1997.

Source: Hungarian Central Statistical Office, Martín [2000]p.188.

Data on the weight of foreign investment enterprises in the manufacturing sectors (foreign penetration) could be especially interesting. In the Spanish case however, any information of this kind is only available for the end of the eighties and the beginning of the nineties. These data were obtained by the estimations made by studies. According to Iranzo [1991] foreign investment enterprises represented 27.7% of the manufacturing value-added in 1988. Martinez-Myro [1992] estimated that 36.5% of Spanish industrial production was controlled by foreigners in 1990. On the basis of the results of Martín-Velázquez [1993] foreign investment enterprises (defined as having more than 10% of foreign capital) had a 59.4% share in the production, 58.7% in the value-added and 50.5% in the employment of the manufacturing sector in 1989. According to Merino-Salas [1995] who use enterprise survey data and consider as foreign enterprises those where the share of foreign capital was higher than 30% in the social capital of the company, the 30.7% of manufacturing value-added in Spain was controlled by foreigners in 1991. The latest estimation elaborated by Martín-Velázquez [1996] for the year 1993 obtained that 44.5% of manufacturing social capital was in foreign hands.

Foreign penetration (defined as the pure foreign share in the total nominal capital of the sector) in the Hungarian manufacturing industry increased rapidly in the nineties. In manufacturing as a whole, the share of foreign capital was 59.7% in 1998 (see table A4). If we take the total capital of foreign investment enterprises into consideration, their share in the sectoral nominal capital is even higher: in 1998 it was 72.7%. Regarding the value-added of the manufacturing industry, 69%

of it was given by foreign participation firms in 1998[30].

Table 3 shows the most penetrated branches (where the share of foreign capital is above 50% of the total capital of the sector) in Spain (here the latest available year is 1993) and in Hungary. First it can be seen that the number of such branches is much higher in Hungary than is Spain and second that certain branches are similarly highly penetrated in both countries. Presumably in Spain the number of the most penetrated branches increased since 1993 considerably.

Table 3. Manufacturing sectors above 50% share of foreign capital

Spain, 1993	**Hungary, 1997**
Rubber and plastic (79.8%)	Tobacco (92.0%)
Transport material (68.1%)	Electrical machinery (78.7%)
Chemicals (57.9%)	Office machinery (73.9%)
Industrial and agricultural machines (51.4%)	Motor vehicles (72.0%)
	Other non metallic minerals (71.2%)
	Paper products (66.7%)
	Chemicals (60.3%)
	Food (60.1%)
	Rubber and plastic (57.3%)
	Radio, TV sets (53.2%)
	Textiles (53.1%)
	Wood (52.1%)

Note: Data in Spain refer to the social capital of the sector, in Hungary refer to the nominal capital.

Source: Martín-Velázquez [1996] p. 169. and calculations from Hungarian Central Statistical Office data (see table A4)

In Hungary the share of foreign investment enterprises (FIE's) in the employment of the manufacturing sector has slightly grown, it was 31.6% in 1993 and 44.8% in 1998. FIE's share in employment has increased much less than their share in nominal capital. There are some branches where almost all of the workers are employed by FIE's (tobacco, electrical machinery). As Table A5 shows FIE's also have a determining role in the net sales revenue (70%), and total export of the branches (85.8%). As far as capital intensity is concerned, in general FIE's are

[30] Central Statistical Office data

better endowed with capital than domestic companies in the manufacturing industries. FIE's are relatively more capital intensive and function with fewer employees than domestic firms.

Overall, considering the role of FDI in both countries we can state that the macroeconomic weight of foreign direct investments in terms of GDP and GFCF is higher in Hungary than in Spain. The picture is similar at the level of manufacturing industries where foreign penetration seems to be also much higher in Hungary (although comparison is difficult because of the lack of Spanish data on this topic). As far as the distribution of FDI is concerned, similar, also internationally popular branches proved to be attractive for foreign investors in both countries.

III. Location-specific advantages of Spain and Hungary

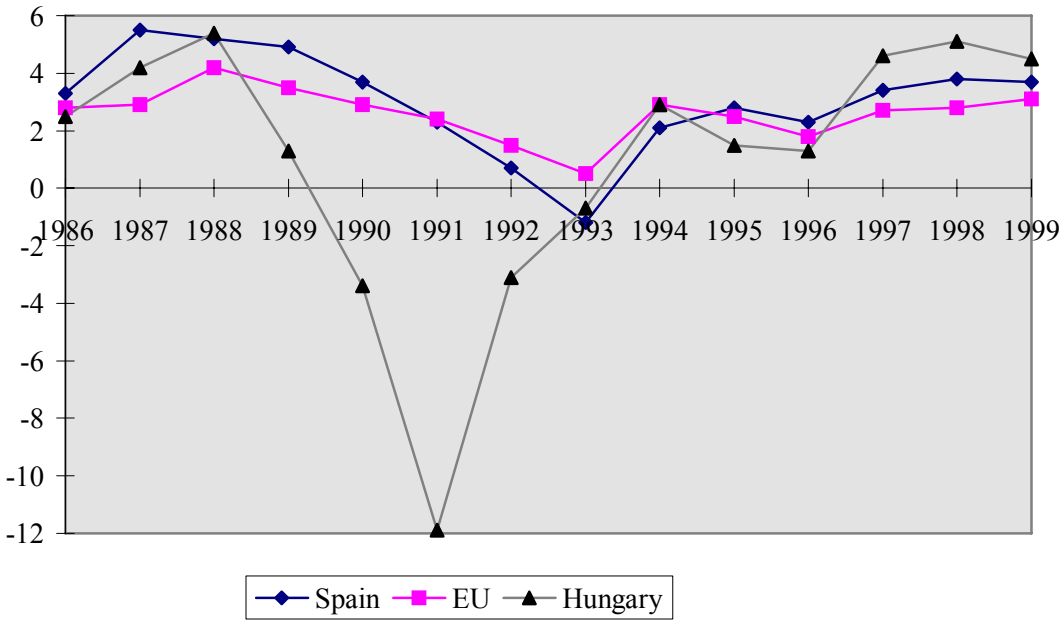
In terms of the mentioned OLI framework of determinants of FDI, in this chapter we concentrate on the location-specific advantages of Spain and Hungary as two host countries. In both countries we observed an upsurge of FDI-inflows in the periods after the major economic liberalisation. Apart from the degree of liberalisation of the economy and other regulatory issues with a direct influence on FDI, other factors such as the macro-economic (monetary- and fiscal policy) and macro-organizational policies (industrial-policy, R&D-policy and infrastructure development), which seem to determine the location attractiveness of a country for FDI will be a analysed here.

1. Macro-economic environment and economic policy

Before the accession to the EU, between 1975-1985 the Spanish economy was in a deep recession caused mainly by the oil-price crisis. Level of unemployment jumped above 20%, inflation increased. Until 1982 there was also a political uncertainty characterised by conflicts among parties, constitution building and the attempt of military coup. From 1982 on, the socialist party strove for overcoming the crisis and preparing the country to integration. Between 1986 and 1991 came a new growth period already within the European Union (see graph 2). At that time

the economy boomed, investment rate was extremely high, unemployment decreased. In 1992-93, following the crisis in the European Monetary System, Spain was hit by the recession, which was overcome from 1994.[31]

Graph 2: Real GDP (percentage change from previous period)



Source: OECD Economic Outlook 1998, IMF Financial Statistics Yearbook 1998

Before the accession the Spanish economy used to suffer from some macroeconomic problems: high inflation, high public and foreign trade deficit, excessive state intervention (Fuentes Quintana [1999]). Traditionally high unemployment also should be mentioned here, to which the high share of young people, women and long-time unemployed is characteristic. As far as the foreign trade deficit is concerned (see later in chapter IV), it should be noted that in the balance of payments this has been to a large extent counterbalanced by revenues from tourism, FDI inflows and financial transfers from EU funds.

Regarding the chronic problem of public deficit and debt, public deficit could be reduced between 1985-89, because of increases in state revenues (for example

[31] It should be mentioned that the amplitude of the growth cycles is always larger in Spain than in the EU, partly caused by the fact that the EU cycle is an aggregation of 15 countries, but partly caused by the specific economic and political factors in Spain.

from VAT introduced). At the end of the eighties, however the industrial reconversion programmes, the deficits of public companies, the state investments (celebration of 1992) contributed to the increase of the public deficit. As an achievement of the consequent application of the National Convergence Plan, public deficit decreased constantly from 1995. In 1998 its level was only 1.5% which was another major achievement on the road towards EMU. The deficit of the Social Security system could be reduced. Also, the social and health system was reformed. Subsidies to certain state companies were abolished, wages of the public sector were fixed, some public investment projects were cancelled. Revenues were increased from privatisation. Restrictive measures could be made acceptable to the people, because EMU membership was perceived as a common aim. In this respect the economic policy of the government was successful: in May 1998 the country was qualified to be among the 11 founding members of the EMU. In 1999 the public deficit was further reduced to 1.1% of the GDP.

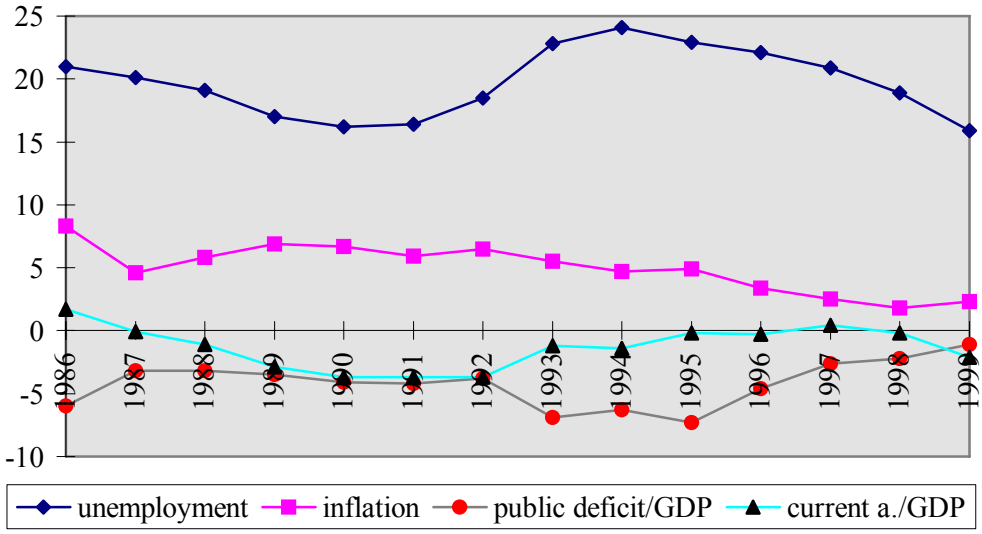
Inflation has been another chronic problem of the Spanish economy. One important aim of the monetary policy has been its curbing. The most important characteristic of the Spanish inflation is its duality, which means that the increase of service sector prices tend to be significantly and increasingly higher than that of the industry (Fuentes Quintana, [1999]). This tendency could be observed since the seventies and did not improve after 1986. This duality of prices can be mainly explained by two reasons: the higher improvement of the productivity in the industry and by the higher level of protection and the stronger regulated framework prevailing in the service sector. More recently, however the service sector has been experiencing a process of liberalisation and deregulation. The latter combined with strong monetary policy, contributed to the spectacular decrease of the inflation along 1995-98, which has been one of the most salient features of the convergence process. In 1998 the rate of inflation was only 1.4%. The year of 1999 brought a certain increase in the inflation to 2%.

During the first years after the accession the peseta depreciated substantially but when in 1989 Spain became a member of the European Monetary System, the strengthening of the inflow of capital lead to an appreciation of the peseta. So that in the early nineties the peseta had to be devalued: between 1992-93 it was devaluated three times (by 5%, 6% and 8%) under the speculation attacks. In June

1994 the Parliament approved legislation granting the Bank of Spain autonomy according to the spirit of the Maastricht Treaty. The target of reducing inflation was announced. In the beginning of 1995, following the turbulence in the international capital markets a further devaluation of the peseta became necessary, this time by 7%. Since then, however the Spanish currency is stable and has remained close to the central parity. In 1998 the exchange rate of one euro was fixed in 166, 386 pts.

With the accession of Spain to the EU, a trade liberalisation program was adopted[32]. Export tariffs had to be immediately abolished. Import tariffs for industrial goods were gradually reduced to zero by 1992. Tariffs for agricultural goods coming from the EU also had to be reduced to zero in seven years except for fruits and vegetables (here the transition period was ten years). Spain also had seven years to apply the Common External Tariff of the EU. Quantitative restrictions also had to be reduced drastically with EU-membership.

Graph 3. Selected macro-economic indicators of Spain



Source: European Economy 1998 no.65 and national bank data for 1999

[32] The first liberalization program was introduced in 1959 with the economic Stabilization Plan. Steps were made towards the convertibility of the peseta, the progressive abolition of the quantitative import restriction was decided and regulations concerning foreign capital were liberalised (free repatriation of capital and profit). The Stabilisation Plan based the growth of the following decades.

After giving a rather short overview of the macro-economic situation, let us see the characteristics of the *legal framework for FDI***.** The first normative rules concerning FDI were defined in 1974 by the 3021/74 Decree of Regulation of Foreign Investments, which laid the basics of a liberal regulation. With the entrance in the EU, a Law on Foreign Investments was created by the Royal Decree of 2077/1986, which established the principles of regulation. According to these, more than 20% capital foreign ownership in a company was considered as FDI. Investments of foreign residents in Spain were only considered foreign investment if it was realised with foreign capital. Basically three type of foreign investments were defined: direct investments, portfolio investments and investment in real estates (Fernández,Y. [1993]).

After EU-adhesion, foreign investments were further liberalised. Spain had to adopt EU Directive 1988/361 on foreign investments. The only restrictions remain towards non-EU investors in sectors with special regulation, such as gambling, television, radio, defence sectors and air transport (Duce, [1995]). Investment in these sectors are regulated by separate legislation, prior authorisation is necessary. From the 1st of February 1992, Spain eliminated every restriction on capital movements. The Royal Decree 671-672/1992 of July changed and simplified foreign investment regulations. The number of cases requiring prior government approval was reduced by raising the value and control criteria for foreign investments. All investments in Spain undertaken by non-residents are considered foreign investments, irrespective of the source of the funds. The classification of FDI was also changed, following the IMF and OECD regulations above 10% of foreign equity share can be considered as direct investment. Also real estate investment is registered as FDI (Gual-Martín, [1996]).

Regarding the incentives of investment, these do not depend on the nationality of the investor. The same rules are applied for domestic and for foreign investors. Discrimination of any kind is not allowed by the EU-rules. Foreign investors, equally like national ones, can benefit from general types of incentives. One type is the general state incentives in the tax system (possibility of several kinds of deductions).

Another type is the regional incentives in specific economic zones. These are

called Economic Promotion Zones (regions with the lowest amount of economic activity and income) where a certain part of the investments can be subventioned by the state (in 1996 for the 373 approved projects the average share of state subvention was 15.8% in these areas[33]). National level incentives are coordinated by the Ministry of the Economy. Local authorities and regional governments can also provide incentives. Regarding the high level of regional autonomy, these incentives have a significant role in Spain.

It can also be considered a further type of incentive that participation in EU programmes and application for structural fund support is viable also for foreign participation firms.

An important form of acquisition of domestic companies by foreigners can be *privatization*. The privatization process in Spain accelerated in the mid-nineties. A major reason for this was the necessity for state revenues to decrease the public deficit, which was a condition of the EMU. Between 1985-1996 the number of privatized companies was 77 and the revenues reached 19 billion USD. In 1996 the Modernisation Program of the Public Enterprise Sector was accepted which gave an impetus to privatization (Ferreras [1998]). The programme was based on separating the management and the ownership of the public enterprises, applying transparency and favouring those bids which maintain employment and make investments[34]. Between 1996 and 1998 21 companies were privatized for USD 18 bn.[35]

Regarding the new owners of the privatised companies, it is interesting to note that there are hardly any foreign (strategic) investors. The majority of the firms were privatised on the stock exchange, or were sold to national firms or groups. Spanish banks obtained important shares in these companies, maintaining the strong links

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[33] Informe sobre la Industria Espanola 1996-1997, vol.I. p.328.

[34] The privatisation programme divides public companies into four groups. To the first belong companies with natural monopoly and good profitability. These companies have been already sold. In the second group are those which are in potentially competitive sectors. To the third group belong those, which were not to be privatized because of social or strategic reasons, but despite that certain companies have already been given to private hands. The fourth group consists of companies which are downsizing and need to be restructured before selling. The national airlines, Iberia is also in this group.

[35] The state sold its remaining shares in Telefónica, Repsol (oil), Gas Natural, aluminium and steel company, bank group Argentaria, in Endesa (electricity), Tabacalera and in Retevisión (telephone).

between banks and industry. Up to certain periods (3-10 years) the state still holds a so-called "golden share" in the privatized blue-chip companies, which means a prior authorisation of strategic decisions or control of more than 10% shares in these companies.[36]

Turning now to the Hungarian case, it is worth mentioning that as shown in Graph 1, Hungary suffered a deep recession in the beginning of the nineties stemming from the transformation shock. The GDP growth recuperated for 1994 and since 1996 an intensive increase can be observed. Economic policy concentrated on the establishment of a market economy in the first years after the political changes and this policy has generally been favourable to foreign investors.

In macro-economic terms, two main areas have been of major concern in the nineties: the current account balance and inflation. The external position of the country took a serious turn in 1994/95. The current account deficit reached 9% of GDP and debt service obligations accumulated alarmingly. The periodically returning speculative attacks, the worsening external financial conditions and the reversal of capital flows reflected ever-increasing macro-economic problems. Ultimately, these developments induced the government to introduce tough stabilisation measures, promote rapid privatisation and take initial steps towards reforming the public sector. These measures met their objectives of improving the external and internal equilibrium. In 1998, the current account deficit was 4.8% of GDP and a new phenomenon was the significant, nearly 1 billion USD profit transfer of FIE's from the country. This transfer was realised by only a few multinational affiliates. It is no wonder that as the major investments matured, production and exports increased, significant profit was created. Furthermore, the mother companies may have compensated the losses caused by the Asian crisis in that year by drawing on profits from other regions. The inward FDI/repatriated profit ratio in Hungary is still not low in international comparison, in 1998 it was 1.6, which can be compared to the Spanish figure of 1.8 in 1997. (Hunya [1999]).

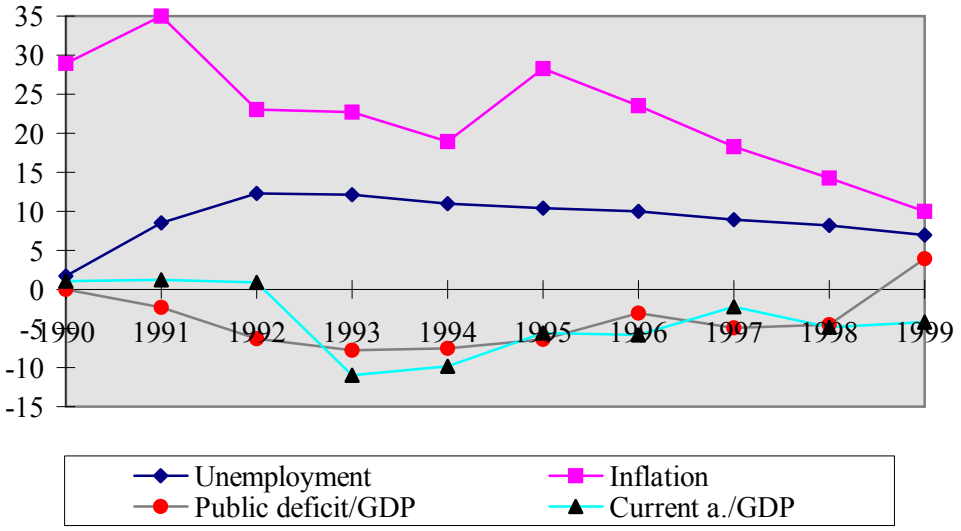
[36] This “golden share” was criticized by the European Commission in its memorandum to the Spanish Government in July 1999 considering it as a restriction for the free circulatuion of capital.

In 1999 the repatriated profit from Hungary was less than in 1998.[37]

Since 1990 the main emphasis in Hungarian monetary policy has been on restraining inflation as liberalisation in the early 1990's bore inflationary consequences. Exchange rate policy was also directed towards reducing inflation. Reducing inflation is important also from the foreign investor's point of view. According to one survey (Éltető-Sass [1997]), inflation was the greatest barrier to the proper functioning of joint ventures in Hungary. 85% of the companies in the survey considered inflation to have an essentially negative impact on investment. Inflation and the anticipation of future policy actions to control inflation increase the uncertainty of the economic environment and can depress investment.[38]

Regarding trade policy, as a consequence of the free-trade agreements and the application of the Uruguay Round results, the greater part of Hungarian foreign trade is already free of customs duties; free trade of industrial goods with the EU has already been achieved. For agricultural and food products, EU-membership will determine the rules.

Graph 4. Selected macro-economic indicators of Hungary



Source: OECD Economic Outlook, National Bank of Hungary

[37] USD 883 million, according to National Bank data

[38] As Buiter et al. [1996] write: "Any factor influencing the cost to firms of entering into contracts.....will affect enterprise performance. The macro-economic environment is an important determinant of the transaction costs incurred among enterprises". (Buiter et al [1996] p. 19) High inflation is one of the factors responsible for high transaction costs.

As far as the *general legal framework for FDI* is concerned, companies with foreign participation are treated in principle as national companies; they are subject to the Hungarian legal system. Since 1972 it has been legally possible to establish companies with foreign capital. However, the "breakthrough" in this aspect came with the *XXIV/1988 law* pertaining to foreign investments in Hungary. This law displayed very liberal features. Apart from basic legal guarantees, it provided important allowances for foreigners. [39]

Some specific activities may only be carried out by foreigners under a specific concession, such as the defence industry or essential services (for example transport, gambling and mining). Reservations towards foreigners apply to acquisition of a license for domestic air transport, a license to operate in international waters and to the provision of asset management services to domestic compulsory private pension funds. Investments by foreign investors enjoy full protection and security, dividends received by a foreign investor can be freely transferred.

A very important regulation of the *XXIV/1988 law* of foreign investment is the provision governing customs-free zones. Companies with foreign participation may establish their own customs-free zones under the control of the customs authorities, within which they are regarded as foreigners for the purposes of exchange control and foreign trade. They maintain their accounts in foreign currencies but are subject to Hungarian taxation with the exception of VAT. These zones have proved to be especially attractive for foreign companies which export significant quantities of finished or semi-finished goods made from imported raw materials and components (see Chapter IV.).[40]

From January 1998 on, a new foreign investment law was enacted replacing the

[39] Until November 1995 the foreign investment law provided for exemption from customs duties in cases of contribution in kind.

[40] The regulation of these zones will have to be be changed after the adhesion of the country to the EU. According to the "Avis" on Hungary: "the exact scope of the activities performed in these numerous free trade zones will require close examination in relation to Community legislation". Therefore probably these zones will function until the moment of accession and then converted to normal firms without retroactive cost burden.

law that had been in force for the past ten years.[41] The fundamental principle of the law is that foreigners enjoy the same protection as domestic firms. Granting permission to establish foreign branches is a new feature incumbent upon members of the OECD. These branches (mainly branches of banks and financial investment companies) are part of the foreign company, but individual organisations at the same time. The regulations no longer make a distinction between affiliates and branches of foreign companies.

For foreign participation enterprises the most important part of the taxation system is the corporate profit tax. Until the end of 1994 enterprises paid a 36% corporate profit tax (down from 40% in 1993). From January 1995, the corporate profit tax was set at 18%, which is not high by international standards.

In the beginning foreign investors received important tax allowances.[42] These remained generous up until the 31. of December 1993 when they were abolished altogether. In 1994, however, individual tax allowances could be obtained in respect of foreign investments of outstanding size and importance. The *CVI/1995 law* amending the corporate tax law already referred in equal terms to domestic companies and joint ventures.[43] From 1998 on, new incentives entered into force. These incentives are related to the companies in underdeveloped areas where unemployment had stood at more than 15% for one or two years prior to investment. In this instance, the investor is exempt from payment of corporate tax for *ten years* if: 1. The value of investment is more than HUF 3 billion, 2.

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[41] It describes three forms of foreign investment or presence: (i). companies with foreign participation (they can establish or buy other companies); (ii). branches without legal entity; and (iii) representation office (not entitled to conduct any business).

[42] The *XXIV/1988 law* provided foreign investors a 20% reduction in corporate tax if the foreign share in the base capital was at least 20% or HUF 5 million. A tax-reduction of 60% during the first five years and of 40% for the following five years was available if more than half of the company's net sales revenue was earned from manufacturing activities and the total base capital exceeded HUF 25 million, of which at least 30% was held by foreigners. These allowances were increased to 100% and 60% for qualifying companies engaged in one or more priority activities specified in the annex to the law. These priority activities included electronics, production of components for vehicles, production of machine tools, machinery components, production of pharmaceuticals, production of food-processing products, agricultural production, tourism, public telecommunication services and production of equipment and products for environmental protection.

[43] Firms became eligible for a 50% tax exemption, if they effected an investment after 31 December 1995 to the value of at least HUF 1 billion and if they yielded a 25% or at least HUF 600 million increase in exports. In addition to that, if firms invested in regions where the unemployment rate was at least 15%, they could under certain conditions obtain a 100% tax

Company turnover increases by at least 5% of the investment value; and 3. At least 100 new workers are employed. The ten-year exemption is not regionally limited if the investment exceeds the value of HUF 10 billion and 500 new jobs are created.[44]

Apart from the tax system, *investment promotion* measures are also important. These play a diversionary role in regional and sectoral investment. The government has established a number of funds with the objective of promoting both domestic and foreign direct investment. These funds are financed, some partly, others entirely, from the state budget and provide mainly cash support or subsidised loans for investors.[45]

A recent incentive facility for investors, among them foreigners, has been provided with the possibility of settling in industrial parks. In 1996, the government approved a three-year programme for the creation of a country-wide network of industrial parks. At the end of 1999 the number of firms in industrial parks is 668, they employ 60 000 persons and their productivity is higher than the average in the manufacturing sector[46].

A further important form of incentive is the local support provided by the authorities at the county and city level. They lend particular assistance to new projects or those which are likely to revitalise failing enterprises. Possible examples are the provision of cheap land; assistance in finding and training employees; provision of infrastructure investments; and introductions to other reliable local suppliers.[47]

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rebate.

[44] IBM Storage Products benefited from this allowance because of its US$40 billion investment in extending its factory. General Electric and the Japanese Sinwha also realised major investments in East-Hungary.

[45] The main fund available for the support of foreign investments in 1991-1994 was the Investment Incentive Fund. This fund was established specifically to support inward-oriented investment in high technology. In 1995 the Government created the Economic Development Fund managed by the Ministry of the Economy which supports domestic and foreign entrepreneurs alike. In 1998 several partly foreign owned companies received support from this fund.

[46] Ministry of Economy data

[47] Apart from the official programmes, several organisations and associations of foreign investors help to improve domestic conditions for foreigners and represent the interests of investors. The most important organisations are the mixed chambers and the Joint Venture Association which can examine and comment on draft acts and amendments as well as make suggestions. It can also enter into direct contact with lawmakers and authorities. It also provides

Privatisation policy as such began in 1990. As of 1998 the vast majority of the state's assets had already been privatised. The first privatisation concept was based on selling firms for cash on a competitive basis (through public and private tenders or capital market operations). As Hungarian investors had practically no capital, foreigners participated in the privatisation process. After a period of relative slowdown, from 1995 onwards the privatisation process speeded up as government strategy was defined: the aim being to increase cash revenues, augment capital investments and promote the participation of foreign capital in the process. These principles were applied in the privatisation of some "strategic" branches such as electricity, gas, petroleum, telecommunications and banks. The group of firms in long-term state ownership was reduced. Between 1990-1997 revenues from privatisation reached USD 13 billion. In 1998-1999 privatization revenues were around 1 billion USD[48].

2. Technological capacity

A major concern of industrial policy in both countries is to raise the level of research and development. As mentioned in Chapter I., the technological level and technological capacity of the host country is of crucial importance in the technological transfer process realised by FDI. Regarding Spain, since the Law of the Science and Technology approved in 1986, the government has been paying more attention to the goal of increasing R&D expenditures. In fact, since then R&D expenditures increased spectacularly. With the adhesion to the EU, Spain was connected to the international and European research and development activity.
However, in 1998 still 0.9% of the GDP was allocated to R&D (the EU-average is 1.91%), in which the share of the companies was 49%. Even smaller, 12% was the share of the innovative companies within the firms. As Martín [2000] points out, the stock of technological capital in Spain represented only 37% of the EU-average in 1998, in spite of the convergence realised from 1986 (then it was 21%) in this respect. Regarding the "output" side, in the case of scientific publications

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first-hand information to members, establishes contacts with prospective partners and organises social events.

and number of patents Spain is also behind the European average, despite the improvements in the last decade.

The government realised that one way to produce higher value-added and to increase competitiveness is to promote technological development and innovative efforts. Therefore the National Plan of Technological Research Development and Innovation for 2000-2003 aims to increase R&D expenditures to 1.2% of the GDP and to raise the participation of the enterprise sector to 60%[49].

The role of human capital endowment in attracting FDI and in the technology-transfer is unquestionable. This also belongs to the technological capabilities of a country, which affects productivity and growth. Measured by the population with superior or alike formation, Martín [2000] estimates that the stock of Spanish human capital was 65% that of the EU-average in 1997. This stock however increased at a much bigger pace in the last decade than in the EU. In 1982 the number of researchers for 1000 persons was 1, and in 1998 it was 3.3. Researchers are younger than the EU-average, which brings dynamism to the innovation system. The share of Spanish scientific publications in such publications of the world increased from 0.8 to 2.3 between 1982 and 1995 (Dorado-Rojo [1991] and Martín [1999]. In certain fields (biology, health, chemistry) Spanish scientific results are outstanding. Campa-Guillén [1996] enumerates three fields of Spanish technological strength: industrial machinery, motor vehicles (firms make more than 90% of R&D expenditure here) and fabricated metals (here the government share of R&D expenditures is approximately 20%).

Table 4 shows certain indicators of technological background of Spain and Hungary. It can be seen that the figures are not very different in the case of the two countries, with the exception of the education indicator, where Spain was more backward in 1996 than Hungary. The share of enterprise sector in the R&D expenditures is higher in Spain.

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[48] Source: Privatization State Agency

[49] Promotion of entrepreneurial R&D activities is carried out in frames of concerted projects of the National Plan. A considerable part of the budget is directed towards medium or small sized enterprises. From 1989 a company making R&D activity can receive a tax allowance can decrease its corporate profit tax by the sum of 30% of its invested capital into new products or processes.

Table 4. Selected indicators of technology level and human capital

1996	**Hungary**	**Spain**
Total R&D expenditures in % of GDP	0,66	0,87
Share of government in R&D expenditures %	50,0	43,9
Share of enterprise sector in R&D expenditures %	38,9	45,5
Share of foreign financing in R&D expenditures %	4,6	5,6
R&D employees/1000 inhabitants	4,9	5,4
Scientists & engineers in R&D per million people 1985-95	1033	1217
Number of patents/10000 inhabitants	0,8	0,6
Public expenditure on education in 1996	4.7	4.9
Share of population with at least secondary school in total population between age 25-64,%	63	30

Source: OECD Main Science and Technology Indicators 1998 and OECD: Education at a Glance 1998, World Bank World Development Report, 1999/2000

In Hungary R&D expenditures accounted for 1.61% of the GDP in 1990 and for a mere 0,70% in 1998. The majority of expenditures (52%) is funded by the state; the role of firms is relatively small, 40% and 8% stems from abroad.[50] However, the share of companies in R&D expenditure has been growing since 1993 after a period of decline.

As an incentive for companies, tax regulations in force since 1997 provide one allowance: R&D costs of 120% are tax-deductible. As of 1988, the government launched a new incentive for companies investing at least HUF 500 million in R&D and employing at least 30 researchers. These companies are eligible for state support up to 25% of the amount invested in R&D. Support can be obtained via tender.

As far as human capital endowment is concerned, the CEECs have their own peculiarities stemming from the old regime, which is true for Hungary also (Inzelt [1998]). The adaptation level of companies was low, and firms were left outside

[50] Hungarian Central Statistical Office data for 1998.

the international networks and alliances, technology remained outdated, etc. Despite the distortions of the system, its collapse left a very substantial human capital endowment. As Dyker [1997] (p.447.) says: "however distorted the science and technology systems of the socialist countries may have been, they did train millions of men and women to a high level of scientific and technical knowledge". As case studies show, Western engineers coming to Hungary after the systemic changes experienced the outstanding capabilities and creativity of the workers. High levels of creativity have been "forced" by the mentioned shortcomings, without modern tools and machines good ideas were indispensable. Individual achievements however have not been synthesised or summed up on a firm level because of organizational problems (Szalavetz [1999]). Privatization and foreign ownership therefore several times gave an impetus to productivity increases.

The continuous improvement of human resources is important. The share of high school and university students has grown in the nineties, as well as the role of the universities in R&D activity. The number of researchers has declined, but the number of scientific publications has increased in the first half of the 90s. As shown by Inzelt [1998] Hungarian scientific performance is outstanding in the CEEC region regarding scientific publications and patent applications.

There are signs that the development of human capital is helped by foreign companies. Already there is formation of certain number of students in the universities according to the needs of multinational companies together with their financial support (Mosoniné [1998]). There is however a danger of "internal brain-drain" also, which means that the multinational affiliates divert the qualified labour force from domestic companies.

3. Labour costs and productivity

Apart from the qualification of the labour force another important factor is the cost of labour. As already mentioned, in EU-comparison Spain has been considered a low labour cost country. The advantage of Hungary is however bigger in this respect (see table 5a.)

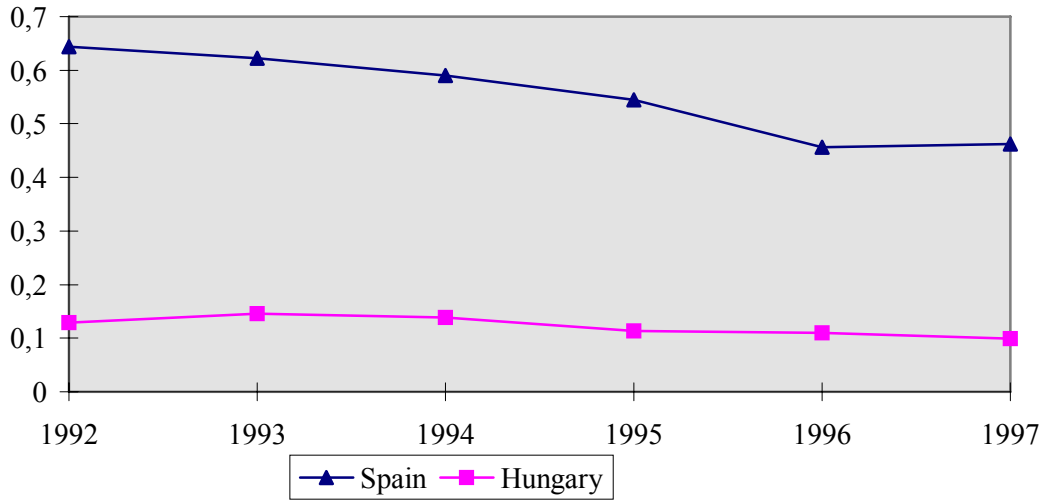
Table 5. Labour costs in manufacturing, hour/USD on current prices

	1992	**1993**	**1994**	**1995**	**1996**	**1997**
Spain	19.6	16.8	16.6	18.7	15.9	14.3
Hungary	3.4	3.5	3.7	3.7	3.6	3.5
Germany	30.1	29.8	31.3	36.8	36.8	31.7

Source: ILO Yearbooks of Labour Statistics, own calculations

As a part of location-specific advantages, not only labour costs but also productivity is taken into account in foreign investment decisions. Therefore focus is mostly on the development of unit labour costs which also take productivity into account.

Graph 5: Level of unit labour costs in manufacturing in Spain and Hungary



Source: own calculations from Table 5 and OECD National Accounts series, OECD Labour Force Statistics series, Statistical Yearbook and National Accounts of Hungary series

The labour productivity in the Spanish economy has been increasing after the EU-adhesion at a higher rate than the EU average. Examining productivity (value-added per capita) in sectoral division it turns out that the productivity growth has been different among sectors. In this sense it is clear that the performance of the aggregate productivity is not only influenced by the productivity of the sectors but also by labour force migration between them, that is to say by the changes in the employment structure. According to the results of Maté Rubio [1995] who tried to separate the two effects, between 1981-85 mainly the productivity of the sectors

determined the overall Spanish productivity trend. However, between 1985-91 the effect of employment changes (migration) was the most important.

Apart from the direct costs there are special features of the Spanish labour market, which can be characterised with one word: rigidity. Although this has been considerably alleviated in the past decade, certain aspects remained. When the adhesion of Spain to the EU took place, the major peculiarities of the labour market were the following: 1., The costs and bureaucratic procedure of firing were extremely high for the companies. 2., Only one state employment agency was allowed. 3., Strict regulations (so-called "ordenanzas laborales") stemming from the fifties concerning job-types were still in vigour, so mobility among branches and among regions was very low. Flexibilization of the labour market is still going on since the mid-eighties as a constant task of the governments. From 1984, contracts for definite periods were allowed. As a consequence, short and part-time jobs boomed. The 1994 labour market reform introduced new forms of temporary contracts and eased firing for the firms. The monopoly of the employment agency was dissolved, and the "ordenanzas laborales" were gradually abolished. As a result of the labour reforms a high grade of duality developed in the Spanish labour market, which means the coexistence of a stable, protected workforce with contracts for indefinite time and a much less organised rotating workforce with temporary, or definite period-contracts. At the peak, in 1995 the share of this second group in the labour force was 35%, while the EU-average was 12% (Éltető[1996]).

Wages in Hungary are considered to be low by international standards (gross nominal average monthly earning of blue-collar workers in the industry was 225 USD in 1997[51]). However, the wage-related burden on employers in the form of mandatory social-security contributions is high by international standards and increases employment costs by more than 50 percent. This high non-wage burden is often criticised by companies.

Improvement of productivity in the first half of the nineties was due primarily to the abolition of hidden unemployment and the termination of loss-making activities. Thus, the increase in productivity has been largely attributable to a decrease in employment (termed ‘contractive productivity increase’ by Ternovszky [1996]) and to a lesser degree to an improvement in the organisation

of productive work and modernisation of the technologies employed. In 1996-98 this, however, seemed to change because employment increased. The productivity increase (and therefore declining unit labour costs) in this period is already a real phenomenon. Examining the development of wage costs (without social contributions) and unit labour costs in Hungary compared to Poland and the Czech Republic (where real ULC have increased), Szanyi [1997] concludes that one of the most important reasons for the increased international competitiveness of the Hungarian economy is the decline in real unit labour costs, which is based on both increased productivity and decreased real wages.

4. Infrastructure facilities

Apart from costs and productivity, the development and modernisation of infrastructure can also be an attractive factor for investments. After adhesion to the EU, community financial support contributed to the development of Spanish infrastructure. 80% of the means of the structural fund ERDF (regional development) and a great part of the Cohesion Fund (created in 1993) are directed towards infrastructure. The Spanish government also made efforts in this respect. From the mid-eighties public spending on infrastructure increased significantly.

Table 6. Indicators of infrastructure dotation

	Hungary	**Spain**
Motor ways /1000km2, 1996	3.9	15.3
Railway lines operated/1000km2, 1996	82.9	24.2
Electrified railway/total, %, 1996	30	56
Population connected to water sewage system in%, 1995	32	48
Number of cars/1000 person, 1996	222	376
Telephone main lines/1000 person, 1997	304	403
Mobile phones/1000 p.,1997	69	110

[51] Hungarian Central Statistical Office data

Costs of international phone calls, $, 1995	3.34	4.05
Personal computers/1000 persons,1997	49	122

Source: UN Annual Bulletin of Transport Statistics 1998, World Bank World Development Report 1999/2000

The most spectacular development is to be observed in the case of public roads in Spain. In 1986 177 million peseta and in 1993 786 million peseta were spent on such construction. Thus, the length of the public roads more than doubled[52]. Improvement in the endowment of transport infrastructure is well illustrated by the fact that in 1986 it was 71% of the EU average, but in 1997 it was already 92% (Martín, [2000]). (This is especially appreciated if we take into account that in 1986 the EU consisted of 12 countries but in 1995 three well-developed countries joined.)

If there is no adequate infrastructure available, it can be a bottleneck of economic modernisation. From the other side, development of the infrastructure directly or indirectly affects positively the economic growth of the country and improves productivity. Such effects were proved also in the case of Spain. Argimón et al [1993] found that public infrastructure -mainly the "core" transportation and communication infrastructure- played an important role in the acceleration of private sector productivity after 1985 in Spain. Considering also transport and telecommunication infrastructure Más et al [1995], and Rus-Roman-Trujillo [1995] observed spillover effects stemming also from the network characteristics of infrastructure. More recently Flores et al [1998] analysed Spanish data between 1964-1992 and found that a transitory increase of one percentage point in the rate of growth of public capital stock implies a permanent increase in the level of output by 2.8, of employment by 0.3, and private capital by 3.1 percentage points.

In the field of telecommunication important steps were made, several million new phone lines were installed and the process of digitalisation advanced. Despite this, the level is still below the EU-average, and because of the until recently quasi-monopolistic position of the national phone company, international phone costs remained the highest in OECD comparisons.

Regarding the state of the infrastructure in Hungary, the general picture is rather disappointing. Rail, road, water management systems remained obsolete compared to the EU-average despite the investment carried out in this field (thorough analysis of the infrastructure heritage and its development is done by Ehrlich [1997]). There are important regional differences, Budapest and Western Hungary continues to have a relatively developed infrastructure. There are however successful fields, like air transport, tourism and where the catching-up has been spectacular: telecommunication. As characterised by Ehrlich [1997], Hungary has undergone a telecommunications revolution since the systemic changes. Also such services are available which are relatively new in Europe. Mobile phone service for example began in 1989, at the same time as in Southern Europe and for today the density and usage is much higher than the EU-average. As Fleischer [1998] indicates, mobile phones partly substituted the basic telephone dotation.

As far as transport infrastructure is concerned, the present government seems to puit an emphasis on motorway building. In April 2000 the Ministry of Economy elaborated a national development plan which aims to spend considerable amount of money (HUF 120 bn in 2001-02) to motorway building. The development of transport infrastructure can be attractive for investors as it is proved by economic literature and international experience.

5. Empirical evidence on FDI determinants

The location-specific factors enumerated so far, like size and rapid growth of the market, economic liberalisation, and price stability could all have been attractive factors to foreign investors during the eighties. As we have seen, EU membership of Spain facilitated the finance of education and skill development, such as the improvement of infrastructure, which belong to the "created assets" of the country and mean further incentives to FDI. Empirical evidence on FDI-determinants consist mainly of econometric studies. There is only one survey we can mention (see table 7).

This survey is of Buesa-Molero-Casado [1995], which was made among German and Dutch investors in Spain. According to the results, the size and characteristics

[52] España en la Unión Europea - Diez ańos desde la firma del Tratado de Adhesión (1995)

of the domestic market were ranked by far the most important attractive factor for the German investors. The Dutch investors appreciated cost-related factors, fiscal incentives, legal framework more. This shows that the location advantages of the same country can vary according to the origin of the investor.

Table 7. Determinants of FDI in Spain

Study	Method	Data	Period	Resulting determinants of FDI
Bajo [1991]	econometric model, time series	FDI inflow in Spain	1961-1988	*GDP/capita *inflation *integration effect
Egea-Lopez [1991]	cluster analysis	FDI inflow into the Spanish manufactuing sectors	1985-1989	*major economic role of the sector (weight in demand, production , export) *dinamic development of the sector (growth of production, export and demand)
Bajo-Sosvilla [1992]	econometric model, cointegration analysis	FDI inflow in Spain	1961-1989	*Real GDP *inflation *integration effect
Bajo-Torres [1992]	econometric model, time series	FDI/capita in Spain	1961-1988	*GDP/capita *real increase of GDP *integration effect
Buesa-Molero-Casado [1995]	survey	German and Dutch investors in Spain		*for German investors: size of the market * for Dutch investors: cost factors, fiscal incentives, legal framework
Martin-Velázquez [1996b]	econometric panel model	bilateral flows of FDI among OECD countries	1983-1992	*technological superiority of the investor *distance *transport infrastructure *human capital *legal framework
Campa-Guillén [1996]	econometric model	FDI inflow to Spanish manufacturing	1988-1992	*GDP/capita *trade with investor country
Diaz de Sarralde-Martinez [1996]	econometric model, time series	FDI inflow to Spain	1970-1992	*real GDP *integration effect *relative exchange rate
Martin-Velázquez [1999]	econometric panel model	bilateral flows of FDI among OECD countries, 3 year moving average	1987-1995	*technological superiority of the investor *relative abundance of physical capital *transport infrastructure *human capital *size of the host country

In the beginning of the nineties studies were made to analyse the determinants of FDI in Spain, also taking the possible effects of EU-adhesion into account. The studies of Bajo [1991], Bajo-Torres [1992], Bajo-Sosvilla [1992] belong to this line. According to the results FDI was attracted by the domestic market (GDP or GDP/capita) and economic stability (inflation decrease). The integration effect (measured by a dummy variable from 1986) proved to be also one of the major determinants of FDI. Integration was an important determining factor in the later study of Diaz de Sarralde-Martinez [1996] also together with market size and relative exchange rate position. In all these works, contrary to the general belief, it was found that labour costs were not significant determinants, not even in the manufacturing sector.

Regarding the manufacturing sector, the study of Egea-Lopez [1991] looked for the determinants of distribution of FDI among manufacturing sectors. It was shown that those sectors were attractive which had a major economic role and dynamic development within the total manufacturing industry. Campa-Guillén [1996] analysed FDI in Spanish manufacturing broken down by investor countries first, and found that GDP per capita of the investor country and the intensity of trade with this country affect positively the amount of inward FDI. Secondly, the regression of inward FDI by destination sectors showed that inward FDI tends to be more intense in manufacturing industries with high levels of profitability, intangible assets (measured by nominal expenditure on advertising) and relatively high export orientation (trade balance to industrial production ratio).

Another line of econometric research analysed FDI-determinants not only in Spain but in OECD countries (Martín-Velázquez [1996b], [1999]). Results are similar to the previous studies to that respect that it was found that in general the investment flows cannot really be explained by the differences in remuneration (labour costs). There were however other factors with much more explanatory power. These were the following: technology level of the investor country compared to the host country, distance, dotation in transport infrastructure and human capital and the legal framework of the host country.

Considering the case of Hungary -as for capital inflow boomed in the nineties, it is understandable that the analysis of FDI in the CEE countries by surveys is relatively recent. In 1995-98 some surveys with more than 100 companies in the

sample were made. These are shown in the table[53].

There are three of these surveys, which treat investors as a homogeneous group. Konings-Janssens [1996] found that as a main motivation exploring new markets was chosen by 43% of the investors, achieving strategic positions by 37% and cheap labour by 26%. According to the results of Pye [1996], 40% of the answers put "access to market" (share, growth, development) as a first motive, and it was the most frequent answer even in the second place. Followed this in less proportion (12-16%) the "improvement of strategic position of the investor company" (being present), "investment climate" and "financial efficiency" (like profits, labour costs). In the study of Engelhard-Eckert [1994], market access goals were important or very important for 81% of the sample. Profit chances and risk diversification were also important, cost advantages were in fourth place (being important or very important for 31%).

In the other surveys the main principle was the differentiation among certain groups of investors. Joint ventures are different in motivation, aims, and reaction to policy measures. What can be important for one, need not be important for the other. The main aim was to examine what differences can be observed in the activity and motivation of the companies according to their group characteristics. The grouping was made according to the export-orientation or domestic market orientation of investors. In this way, these surveys wanted to highlight the different determinants of the two main types of investments mentioned in chapter I.

In Éltető-Sass [1998] as it was expected, the export-oriented companies ranked higher the motivating factors concerning foreign markets than those not export-oriented. The Association Agreement, the export basis towards the EU and its facilitation (tax reductions, customs-free zones) were ranked higher in importance for the export-oriented group. At the same time, the flexibility of the labour force proved to be more important and the most important factor of all was the qualified labour force for the export-oriented firms. Factors concerning the labour force were more important for the export-oriented firms than for the domestic market-oriented ones. This shows that on the foreign markets (which mainly the European Union) the high quality and other rules require qualified labour force. The not

[53] A thorough literature overview of foreign investors'motivation is provided by Szanyi [1998].

export-oriented companies considered first of all the acquisition of domestic market shares, economic prospects and stability by their decisions to invest. Former contacts with Hungarian companies also proved to be more important for them than for the export-oriented firms.

The differing motivations of the different investor groups can be detected in the surveys of Meyer[1996] and Lankes-Venables[1996] also. Among the market-oriented investments examined by Meyer, the size of the market is in first place. It is followed by the quality of political-economical environment (stability), previous contacts, no competitors in the given market and the revenues of consumers (purchasing power). As far as the factor-price oriented investments are concerned, by far the most important are the low labour costs, followed by the qualification of the workers, access to local markets, favourable political-economic environment and former contacts. Also the former contacts among firms are very important for market-oriented investors in Meyer's survey.

In case of the groups of Lankes-Venables[1996] there is a difference in motivations also. Examining the first five main motivations for "local suppliers" market share is the main motivating factor followed by the access to regional market, production costs, opportunities in privatisation programme and qualified labour costs. For the "exporters" lower production costs were the most important, followed closely by the entrance in local and regional markets, qualified labour force an possibility of entering the EU market.

Regarding FDI determinants, we can also draw conclusions for Hungary from the econometric literature dealing especially with determinants of FDI inflow in the CEE region. The two most important studies in this respect are Lansbury et al [1996] and Holland and Pain [1998]. Lansbury et al [1996] examines investment by 14 OECD countries into Poland, Hungary and the Czech Republic from 1991-1993. According to their results relative labour costs within the Visegrád economies have influenced the distribution of foreign investment within those economies more than costs relative to Southern Europe. They also found that domestic technology (proxied as the stock of patents granted) had a positive impact on the level of FDI. Concerning trade effects, the results showed that trade with the investor country is positively associated with FDI. As for one important attracting factor in the CEE countries was privatisation, the authors included this

also. They found that inward FDI is higher in those countries with a higher private sector share.

Holland and Pain [1998] using a panel model observes 11 transition economies between 1992-1996. They found that wages relative to other transition economies have a significant impact on FDI although wages relative to the EU did not have this impact. Productivity relative to the regional average was found important. Regarding trade barriers and distance it turned out that those countries which have common border with the EU received relatively higher levels of FDI. Privatisation was included here also as a factor, but it was found that privatisation method was more important than the private sector share. The results implied that countries with a programme of direct privatisation through cash sales have attracted higher inward investment than those countries using voucher privatisation.

One phenomenon however is missing from all three econometric studies. As it turned out from the survey results, the main attracting factor of investors is generally the local market or expansion (growth) prospects of the host country. This is difficult to confirm by an econometric analysis as the inflows of FDI in the beginning of the nineties coincided with a deep recession period in the CEE countries, suggesting a negative correlation between FDI and growth, which is not the case.

Table 8. Determinants of FDI: Hungary

Study	**Method**	**Data**	**Resulting determinants of FDI**	
Engelhard -Eckert [1994]	survey	268 German firms active in CEEC's/ FSU, 1992	*local market *profit possibilities *risk diversification	
Konings-Janssens [1996]	survey	281 Belgian companies investing in CEEC's	*local market *obtaining strategic positions *cheap labour force	
Pye [1996]	survey	334 FIE's in the CEEC's region	*local market *strategic positions *investment climate *financial efficiency	
Meyer [1996]	survey, grouping of investors[1]	139 British and 130 German firms invested in CEEC's 1995	For DO: *market size *political,economic stability *previous contacts	for EO: *cheap labour *qualified labour *local market
Lankes-	survey,	145 western	For DO:	for EO:

Venables [1997]	grouping of investors[1]	investments in CEEC/ FSU 1995	*market share *regional market *production costs	*production costs *local+regional markets *qualified labour
Éltető-Sass [1998]	survey, grouping of investors[1]	125 FIE's functioning in Hungary 1996	For DO: *local market *prospects for development *legal stability	for EO: *political,legal stability *qualified labour *flexibility of labour
Lansbury et al. [1996]	econometric model, time series	FDI by 14 OECD countries in CEECs between 1991-1993	*labour costs relative to the region *domestic technology *trade with the investor country *privatisation	
Holland-Pain [1998]	econometric panel model	FDI in 11 transition countries between 1992-1996	*wages * productivity (relative to other host countries) * common border with EU * privatization method	

Note: The main groups are: domestic market-oriented (DO) and export-oriented (EO)

In this chapter the main location specific advantages of Spain and Hungary and their development have been described. In the macroeconomic field, after the recession in the beginning of the nineties, both countries performed well at the second half of the nineties. Spain successfully became a founding member of the EMU and Hungary made important steps to enhance growth and curb inflation. This - together with several types of incentives - created a safe environment for foreign investors. Regarding the local background of investments technological capacity, infrastructure and labour costs were examined more closely. Spain has shown considerable development in the former two factors, which has been promoted by EU financial transfers. Hungary has a significant advantage in the costs of qualified labour. The mentioned location-specific advantages are manifested in surveys and econometric studies deling with determinants and motivations of FDI. These results first of all emphasized the importance of access to market and to relatively cheap qualified labour force.

IV. The effects of FDI on Spanish and Hungarian economies with special emphasis on foreign trade

As it was mentioned in Chapter I., effects of FDI on the host economy can be various. In this chapter we put the emphasis first on technological development, productivity and growth and then, above all on trade performance and trade specialisation.

1. Effects of FDI on the technological level

International experience showed that for today technology development can be bound to the activity of multinational companies. Related to this, one of the major effects FDI can exert on host economies - in our case Spain and Hungary - is the transfer of technology. According to Buesa-Molero [1993] there are four types of strategies of multinational affiliates concerning technology and R&D in Spain (and also elsewhere). First is a passive adaptation of the technology transferred by the parent company. Second is an active adaptation of the same, employing improvements or changes. Third is a technological cooperation with the parent company and the fourth is a partially autonomous technological strategy of the affiliate where the own R&D activity is the highest.

R&D expenditures of Spanish firms increased significantly after EU-entry. The small average size of Spanish companies, however, does not facilitate R&D activity. Investment in R&D and innovation is risky, and brings returns only in the long run. This can explain that expenditure on R&D among Spanish firms remains below the EU average in spite of the developments of the last decade in this field. 80% of the R&D expenditures of firms are concentrated in three sectors: the extracting and chemical industry, metal processing and other manufacturing industries. Metal processing is the most significant, representing 50% of total expenditures. Dividing this further on subsectors it turns out that the companies that spend the most on research and development can be found in transport equipment, electronics, and the computer industry. These are sectors with significant foreign penetration and several multinationals.

Data show that companies with foreign (mainly majority) ownership spend more on R&D than domestic firms and FIE's tend to import more technology. The strong demand manufacturing sectors (which received more FDI) are also much stronger in R&D activity. The technological and financial apport of multinational

companies helped Spanish industrial development, first of all via the import of technology. FDI had a positive effect on technology, although empirical analyses (based on balance sheet data of firms) showed that this positive effect was relatively small (Martín-Velázquez, [1996]). However, multinational companies had a certain demonstration effect on the R&D activity of domestic companies (this is one of the spillovers described in chapter I.). Before the massive inflow of FDI, domestic companies mainly realised copying activity, but the penetration of multinationals and growing competition induced them to realise the importance of own R&D and innovation activity (Éltető, [1994]). Econometric analysis using production quota measures of multinationals González [1997] showed that once the firms decided to realise R&D activity, the presence of multinationals stimulates this activity. If the market quota of the foreign companies increases by 10 percentage points, the realised R&D efforts of domestic companies increase by 0.8 percentage points if the market is large and by 0.5 points if it is small.

As mentioned, R&D activity is concentrated in certain sectors. If we eliminate the sectoral effect and observe the companies within the sectors then the results of González [1999] are interesting. This study is based on a survey among approximately 2000 manufacturing enterprises between 1990 and 1994. The innovative effort (R&D expenditures/total sales) of the companies were in the focus. The firms were divided according to the grade of foreign participation, by size and by the technological level of the sectors. In every category, a negative effect of FDI was found on the innovative effort. This effect was the most apparent in the high technology sector and among small companies. Apart from that, where the participation of foreign capital was small (smaller than 30%) the effect was more negative than in those companies where foreign participation was large (more than 50%). The author explain this by the integration of firms into multinational networks, where mostly the parent company realises the innovative activity and the Spanish affiliate is technologically dependent, making complementary activities. (Another explanation can stem from the nature of the R&D intensity indicator, because total sales of multinationals can be much higher than that of other companies so even if they spend more on R&D, the value of the index will be less.)

The analysis of the structure of R&D expenditures showed that these mean first of

all expenditure on technology import, licensing, which increased technological dependency. This kind of dependency is higher in the case of foreign investment enterprises. In her earlier study, González [1997] differentiates between two types of R&D activity, one is the own activity of the firm and the other is the import of technology. Regarding minority FIE's, the impact of FDI is positive both on own R&D activity, both on technology import. This can mean that the foreign owner does not share completely its knowledge with the affiliate but the foreign capital helps to finance R&D activity. Regarding those companies where the participation of foreign capital was more than 50%, the effect of FDI proved to be negative on own R&D activities and positive on technology import. It means that the majority foreign companies are more likely to by technology from abroad (from the parent company) than to develop it in the firm[54]. This suggests that FDI increases technological dependency. Indeed, defining the grade of technological autonomy as ((expenditure on R&D/ expenditure on R&D + technology import)*100), the regression results showed that the majority FIE's present 12 percentage points less technological autonomy.

Spanish companies participate in several EU programs in the field of R&D and technology. Regarding the EU's IV. Framework Program, the share of Spain here (6.3%) is similar to the share of its GDP (6.5%) and its contribution to the community budget (6.5%) (Martín-Sanz [1999]). According to the analysis of Martín-Sanz [1999], those companies that are more productive, invest more in R&D, belong to an association, have already received national or international support and are bigger in size have a greater probability of getting access to EU support or participate in EU programs.

In the case of *Hungary*, research and development activity and the technological level have been also influenced by the past regime. New generic technologies, flexible production systems, digitalisation was missing. In this respect, the effects of foreign investment enterprises, the behaviour of multinational companies is important. Hungary also participates in the IV. Framework Programme of the EU

[54] However, there are examples of own R&D centers of multinationals in Spain. Recently for example Siemens decided to move its multimedia mobile phone research centre from Munich to Spain based on the positive experiences they have already had in the country.

with 163 projects.

As we have seen R&D expenditure compared to GDP has been decreasing in the nineties, and company expenditures have been decreasing at the largest pace.[55] Business enterprise R&D expenditure within the manufacturing industry is concentrated on certain sectors, as in Spain. In 1997 the 69.4% of manufacturing R&D expenditure of the firms was realised in the chemical sector and 24.3% in the machinery industry. The pattern of this concentration has been changing in favour of the machinery sector, in 1993 the share of the chemical sector was 76.4% and that of the machinery sector was 18.4%.[56]

According to a survey[57] of innovation and R&D activities among companies, expenditure on R&D in proportion to net revenues is generally low: between 1 and 5%. Expenditures were mainly directed towards product innovation. The major aim of innovation was to improve product quality and expand the range of products and also to improve access to the domestic market. Technological innovation was a characteristic feature in the electricity, wood-processing and paper and basic chemicals industries. By far the largest factor hindering R&D activities was the lack of financial resources. Based on another survey Farkas [1998] points out that the main barrier of R&D and innovative activity in the case of Hungarian companies is mainly the lack of capital and credit. Also the lack of markets and proper marketing, weak infrastructure, low wages and brain-drain was mentioned.

Regarding foreign investment enterprises, their R&D expenditures in 1997 made up 45% of the total R&D expenditures of the firms. The expenditures are growing much faster in FIE's than in domestic companies.[58] The Hungarian experience shows that R&D intensity of FIE's is much higher than that of the domestic companies (see for example Farkas [1995], Inzelt [1998], Szalavetz [1999]) The analysis of the statistical data of 478 companies carrying out R&D activity between 1992-95 showed that FIE's investing most in R&D are in the food-,

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[55] One part of the decrease of R&D expenditures is not necessarily negative phenomenon if it means at the same time an improvement in the utilisation (efficiency) of the money spent.

[56] Calculations based on Central Statistical Office (KSH[1999]) data.

[57] The survey based on questionnaires examining 110 companies was made by the Innovation Research Centre at the beginning of 1994. Results were published in Külgazdaság 1995/7-8

[58] In 1997 the following foreign investment firms spent the most (above HUF 2 mn) on R&D: GM, Ford, Siemens, IBM, Hitachi, Toyota and Matshushita Electric.(B.Horváth [1999]).

chemical and machinery branch (Inzelt[1998]). In the first two industries adaptation-aimed research dominates, while in the machinery industry smaller licence changes, innovations also take place. The activity of FIEs contributed to the fact that the share of imported material among the sources of R&D increased from 19% to 38% between 1994-97.

The role of foreign investors in shaping the Hungarian innovation and the R&D process is open to debate. There are good examples (in the software and electric lighting industries, for example) of foreign companies bringing their R&D centres to Hungary and utilising the qualified workforce in the country[59]. Possible negative and positive effects (like crowding out domestic R&D but bringing new technologies) of FDI in domestic R&D is enumerated in Farkas [1995] who also provides pro and contra case studies. A thorough analysis of technology-transfer, absorption, innovation, horizontal and vertical contacts is made by Szalavetz [1999] using case studies of German-owned manufacturing companies.
Information available on R&D and technology transfer made by foreign investors is rather scarce. Inzelt [1998] points out that case studies in themselves cannot provide an overall picture. Szalavetz [1999] argues that statistical indicators strongly undervalue the quantity of technology transfer accepted by Hungarian companies because of not measurable knowledge and because of neglecting the wide application of new technologies in certain joining areas (services, packaging industry, etc). Apart from that, as the technological capabilities (see Chapter I.) of the country improve, the characteristics of technology transfer, innovation-cooperation also change.

2. Impact on productivity and growth patterns of the manufacturing industry

[59] General Electric maintained the laboratory (created in 1921) of the privatized Hungarian company, Tungsram, and brought additional research tasks. Another example is the Knorr-Bremse affiliate with a 30 employee innovation department. In the software field Oracle, Microsoft and Ericsson also make research and even IBM has begun to develop some R&D activity. In 1997 some companies established or announced to establish an innovation base in the country. The Finnish Nokia created a 530 employee base and applied research department for mobile phones and closes its "birthplace" in Finland. The new investments are due to the good human capital and to the already described government incentive valid in 1998.

As we have seen in Chapter II, in both Spain and Hungary FDI inflow has been significant into such similar sectors, which are also internationally attractive for investors. Therefore we can suppose that FDI seems to have helped approaching the structure of production and value-added in manufacturing towards the EU patterns in both countries.

During the eighties and the nineties the internal structure and the characteristics of Spanish industry changed[60]. Between 1981-1991 certain sectors decreased their shares in the value-added of the manufacturing sector (minerals, metal products, textiles) and others increased (rubber and plastic, food, electric equipment). Despite these tendencies, Martín [1995] compared the Spanish industrial specialisation to that of the EU. In 1991, Spain was still underspecialised to the sectors of machinery, equipment, chemicals (strong demand and technology sectors) and also in paper and printing but food, non metallic products, minerals and textile (low demand and technology sectors) had bigger weight in the manufacturing value-added than they had in the EU. This situation remained the same in 1997. However in the case of the medium demand and technology sectors a certain convergence could be observed, which suggests a move towards the European average. This trend was the most apparent in the transport material sector (owned mainly by foreign participation enterprises), which relative weight even surpassed the EU average (Martín [2000]). The changing technological structure of Spanish manufacturing industry is shown in table 9.

Table 9. Share of sectors in the value-added of manufacturing industry (percentage)

Sectors	**EU**		**Hungary**		**Spain**	
	1986	**1997**	**1992**	**1997**	**1986**	**1997**
High demand and technology	**21.3**	**25.8**	**16.4**	**25.1**	**16.8**	**19.7**
Chemicals	9.0	10.6	8.4	10.3	8.2	9.4
Office machinery	3.3	4.4	0.4	3.5	2.2	1.8

[60] After adhesion, the process of "de-industrialization" was exacerbated in Spain. The manufacturing sector in 1986 represented 17.5% of the GDP which decreased to 16.5% in 1996 (Oporto del Olmo, [1997].)

Electrical mach., radio, TV sets, medical, precision instruments	9.0	10.8	7.6	11.3	6.4	8.5
Medium demand and technology	**29.5**	**28.0**	**18.0**	**21.7**	**23.1**	**25.2**
Rubber and plastic	3.8	4.3	2.3	3.7	4.4	4.8
Machinery and equipment n.e.c.	10.2	8.9	8.9	7.4	4.7	4.5
Motor vehicles, transport equip.	10.3	10.0	3.2	8.5	8.8	11.5
Furniture, manufacturing n.e.c.	5.2	4.8	3.6	2.1	5.2	4.4
Low demand and technology	**49.2**	**46.3**	**65.6**	**53.2**	**60.1**	**55.2**
Food, beverages, tobacco	14.7	13.8	21.4	15.6	21.2	20.5
Textiles, clothing, leather	8.2	6.5	9.9	7.8	11.1	8.2
Wood, paper and printing	8.1	8.3	8.2	8.1	6.5	6.1
Minerals and non-met minerals	5.2	5.0	4.3	4.2	8.2	8.5
Minerals and non-ferrous metals	4.4	4.3	13.6	8.6	5.5	4.5
Basic and fabricated metals	8.6	8.4	8.2	8.9	7.6	7.4

Source Martín [2000]p.17. and own calculations from Central Statistical Office data

Regarding *Hungary*, table 9 shows that manufacturing is still strongly specialised on low demand and technology sectors. However, the share of high demand and technology sectors in value added increased spectacularly and during five years surpassed the achievement of Spain in ten years. Main driving force here was the chemical and electrical machinery sector. At the same time low-technology branches (mainly food and minerals) lost from their importance. The increased share of technology-intensive branches (which is even more apparent in the export structure, see point 3.) is an important phenomenon regarding output data too.

Analyses of industrial production data between 1992-1998 reinforce the structural changes among the manufacturing branches. The motor of the production growth was the machinery sector, mainly motor vehicle, telecommunication equipment

and computer electronics branch has gained rapidly force (the base of production increase was export), while precision tool, and agricultural machinery branch for example lost from their weight (see annex table A6). The chemical sector still remains one of the biggest sector in Hungarian manufacturing industry. Within the chemical industry an internal shift has been realised from oil refining towards the plastics branch and the production of the pharmaceutical branch had only a small increase. The performance of the food industry stagnated and that of the textile branches has been decreasing except for the dynamic confection clothing branch.

As far as the effect of foreign investments is concerned, it would be very difficult statistically to detect a significant correlation between the foreign penetration and the growth pattern of the production of the sectors given the high level of aggregation. There are sectors with significant foreign capital where production has stagnated (chemicals) and there are branches where production has increased almost without FDI (base metals). However in the case of the production and export activity of the machinery industry the effect of FDI can be confirmed given the ownership structure of the branches. The domination of multinationals in the high- and medium technology sectors and their importance in the export activity is evident. (see point 3.).

One field where the role of FIE's is obvious to contribute production is investment. Official statistics show that FIE's are responsible for an ever increasing share of investments in Hungary. The empirical evidence (Hunya [1997], Szanyi - Szemlér, [1997], Szanyi, [1997]) indicates that foreign capital involvement acts as a catalyst and triggers substantial investments in joint ventures. In the manufacturing industries there were industries where basically only FIE's invested: computers and business machines, road vehicles, electrical engineering, and instruments. Manufacturing investments were already dominated by FIE's in 1992, when they took 50,8 % of the total. This share increased to 78% in 1998.

There are different methods to distinguish „strong" and „weak" industries. One possible way is applied by Borsi et al.[1998] who apply the output per domestic demand ratio. It means that those sectors which produce more than their domestic demand (the ratio is above 100), can find foreign markets for their products and feature strong specialisation. The definition of domestic demand is: output+import-export. According to the results in 1996 food, tobacco, fur, wood,

electrical machinery, motor vehicles were the strong sectors. These either remained strong since 1993 or became strong rapidly. However as the authors themselves say, this measurement is very simplifying, because the sectors characterised by export led growth can fall in the „weak" category although they are in a lot of cases internationally competitive. (This is the case of office machinery for example where the mentioned ratio increased spectacularly since 1993 but still remained slightly below 100 in 1996).

Regarding the effect of FDI on industrial productivity, in Spain studies showed that firms with foreign capital are more productive than domestic companies. In Farinas et al [1999b] based on the ESEE survey among 2000 companies, regression results proved that the presence of foreign capital is associated with a higher efficiency of labour (higher production/employees ratio). The effect of foreign capital as a determining factor was also detectable in the increase of productivity between 1991-94.

In the case of Hungary Borsi et al. [1998] point out that in general, productivity (value added per number of employees) of the manufacturing sectors improved significantly between 1993-96. This improvement originated by a simultaneous growth in the value added and by a shrinking in employment in the case of the food, tobacco, paper, leather, chemical industry, motor vehicles and other transport equipment. Both value added and employment increased together with productivity growth in the case of textile, wood, rubber and plastic, machinery, office machinery, electrical machinery medical, precision instruments and radio, TV sets (so almost in all high-tech branches).

Regarding the effect of FDI on productivity, table A7 in annex justifies that firms with majority or 100% foreign ownership are more productive in almost all sectors than domestic companies. (The picture is similar for firms with minority foreign ownership too.) Not only the absolute level of productivity but also its increase is spectacular in certain cases of FIEs: 100 percent foreign owned firms in the office machinery branch increased their productivity by 8100% between 1993-96, and by 480% in the motor vehicle sector.

3. The effects on trade balance and trade specialisation

Our analysis puts a special emphasis on the effects of FDI on the foreign trade. The main reason for this is that for a small, open economy like Hungary, the development of the foreign trade is crucial. Although Spain is a larger market, foreign trade has an important role here also in the external balance and economic development.

3.1. Trade balance

The balance of Spanish foreign trade deteriorated rapidly after the adhesion to the EU. Mainly manufactured goods have been responsible for the serious increase of deficit in EU-relation after 1985, as for the foreign trade balance of energy products remained the same and that of agricultural products even improved after the EU-entry. Within the manufactured products there are product groups, in case of which foreign trade deficit was a new phenomenon: these are mainly textile products (yarns, clothing, knitwear, carpets) and furniture.

As for the general deterioration of the foreign trade balance and the increase of FDI inflows coincided, no wonder that several studies tried to follow the role foreign investment enterprises played in the increasing foreign trade deficit of Spain. Based on FDI and trade data between 1977-1992 Bajo-Munoz [1996] estimated export and import equation separately and found that a higher Spanish investment abroad would lead to higher exports and a higher foreign investment in Spain would result in higher imports.

According to Martín-Velázquez [1993] and Bajo-López [1996], enterprises with foreign capital register a larger ratio of exports and imports to total sales (which is the definition of export and import propensity) than domestic ones. What is more important, their import propensity is even higher than their export propensity, mainly of those companies with majority foreign ownership. Their results are further confirmed by Moreno-Rodríguez [1998] who find a significant effect of foreign participation on the probability to export and import. Apart from that, the foreign trade balance of FIE's is worse than that of the domestic companies. Export and import propensity is anyway much higher in the strong demand sectors (which attracted more FDI) than elsewhere.

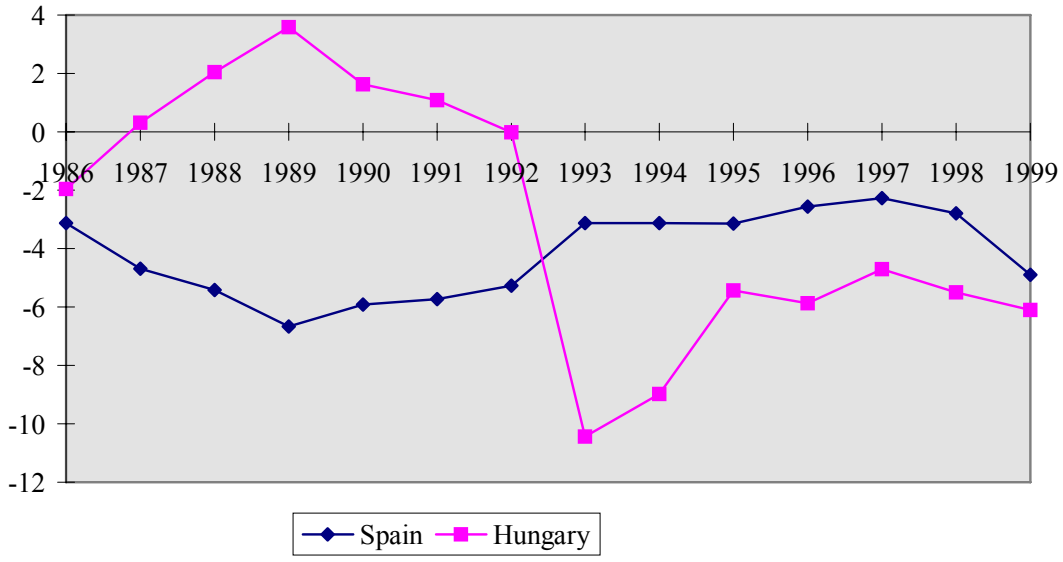
Export and import propensity is further analysed in another study of Moreno-Rodriguez [1999]. According to the results company size has a significant influence on both import and export probability and propensity, bigger companies export and import more. Examining the probability to import, the effect of FDI is bigger in this respect in the case of small companies than in large ones. Majority small FIE's are similar to large FIE's regarding import propensity. This means that the penetration of FDI has a similarly important influence on import propensity as the company size. Regarding exports, further differentiation is made among companies depending on whether they have own means of market access or not. The effect of FDI-penetration is not very different according to the company size. So, the effects of FDI are much bigger on the probability and propensity to import than on the probability and propensity to export. Therefore it confirms the negative effects of FIE's on the trade balance.

Increased imports could have been counterbalanced by growing export activity, but this was hindered by several factors. One factor is the domestic economic situation with booming consumption and domestic demand, which held companies at home. Increased domestic demand attracted foreign investors also, which increased competition on the Spanish market, so Spanish companies had to defend their positions. Another factor is the appreciation of the peseta from 1987 on, which meant a heavy burden for exporters.

A third factor is the traditional characteristics of Spanish companies (see e.g. Alonso-Donoso, [1989]). Firms are smaller than the European average, in terms of capital and employees. This makes the exploitation of scale revenues, the finance of company financing and export activity difficult. Thus the small and medium sized Southern companies have always been relatively less oriented towards foreign markets and more toward the domestic market. They had no foreign distribution network. According to a survey, in the beginning of the nineties, 56% of the companies had no expenditure on export development, 20% of them realised foreign investments at all, and less than 30% of Spanish companies realised any export activity.[61] These results are confirmed by the balance sheet data analysed by Valero [1997], which show that the percentage of exporting companies in the total decreased constantly from 1986 to 1991 (from 39% to 25%) and increased

afterwards again to 40% in 1995. The 1992-93 European recession made these shortcomings of Spanish enterprises more apparent. Therefore, in the economic policy of the government, at the chambers, professional organizations, and in the press a campaign was launched to "internationalise" Spanish companies. This coincided with the devaluation of the peseta, which helped Spanish exports. Developments in the last three-four years show that a real quality change did occur in the strategy of companies. They discovered other parts of the world. As it is seen on the graph, the foreign trade deficit improved significantly between 1994-1998. The main aimed area of investors is Latin-America, more than half of Spanish investments are directed here. Not only banks and large companies like Telefónica, Tabacalera, Repsol, Iberdrola, Endesa have built networks there, but also small family enterprise ventures. As a consequence, Spain became the largest European investor in the region. Marocco, Portugal and the South of France are also popular destinations. (The effect of the internationalisation of Spanish companies is also manifested on the macro-economic level: in 1998 Spain was already a net capital investor country instead of being a net recipient.)

Graph 6. Foreign trade balance in percentage of the GDP



Source:IMF Financial Statistics Yearbook series, national bank data, own calculations

[61] Información Comercial Española 1992/710

As can be seen in graph 5, the foreign trade balance of Hungary deteriorated deeply in the nineties. This deterioration was more severe than that of Spain after liberalisation. The trend was reversed from 1995-97 but since 1998 the deficit has been slightly increasing again. The development of the foreign trade balance has also been influenced by the activity of foreign-owned firms. In accordance with international experiences (and as was the case in Spain), the propensity of FIE's to export and import is higher than that of domestic firms. If we define export intensity as the export sales share in total sales, in almost every manufacturing sector FIE's are more export intensive than domestic companies.

On the import side, surveys and case studies show that FIE's are also more import-intensive than domestic firms. Regarding the whole economy, the export-intensity of FIE's was 29.5% in 1997, while that of the domestic companies was 8.8%. Import-intensity was 32.2% at the FIE's, and 10.3% among domestic companies[62]. These figures show that import-intensity is higher than export-intensity to the same extent, both in the case of FIE's and domestic companies. This is also confirmed by regression figures based on an empirical survey of Hungarian manufacturers, which illustrated that majority foreign ownership does not increase the probability of greater imports. There is no significant difference in the import-propensity of two firms with the same parameters, one of which is in majority foreign ownership (Kopint [1997], p. 146.).

Considering the effect of FIE's on the Hungarian trade balance, presumably two periods can be separated. In the first half of the nineties, companies with foreign investment, especially large greenfield projects, realised high import activity, which was necessary to establish their production capacities. Later on, however, although imports remained high, export activity strengthened to such an extent that the trade balance of a large part of FIE's in manufacturing became positive.

3.2. Trade specialisation: inter-industry and intra-industry trade

According to the traditional approach to international trade based on the theory of comparative advantage, factor endowments induce countries to specialise their production and trade in goods the production of which is intensive in factors they

possess in abundance. The reduction of trade barriers and integration promote this specialisation and inter-industry type trade increases. According to the "new" international trade theories - that introduced more realistic assumptions like product differentiation, oligopolistic competition, increasing returns to scale,- among countries with rather similar endowments and production structures integration enhances intra-industry type trade.

In both Spain and Hungary, the abundant factor is said to be the skilled, relatively cheap labour force, so these countries have usually had comparative advantages in labour-intensive industries (and sometimes resource-intensive ones). In the following parts we examine what kind of changes in foreign trade specialisation have taken place due to liberalisation in Spain and Hungary. Our hypothesis is that liberalisation (integration) and the inflow of FDI induced important changes in specialisation and an increase in intra-industry trade in Spain and in Hungary.

The integration of Spain into the EU increased the openness of the country. Spanish exports have increased constantly to the world, but even more rapidly to the EU. Import penetration (share of imports in domestic demand for manufacturing products) also increased drastically, from 17.4% to 35.9% between 1986 and 1997[63]. Adhesion to the EU also modified the direction of foreign trade, which became more intensive with the Union.

Today, France, Germany, Italy, the UK and Portugal are the most important EU-partners of Spain (see table A8 in annex). The rapid intensification of trade with the neighbouring Portugal was due to the accession, because economic relations between the two countries had been insignificant before. As a non-EU partner in trade, the USA is the most important for Spain, although with a decreasing share since 1986. Among the developing countries, Latin-America as a traditional partner and the Maghreb countries are significant. Trade decreased with these regions in the decade after the adhesion but recently has revived again.

Apart from geographic structure, the product composition of foreign trade has also changed. We have grouped the manufacturing sectors according to their technology-intensity. The industry classification is based on the method of OECD

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[62] Own calculations based on Central Statistical Office data

[63] Martín [1999].p.74.

(1993, p.84) which used ISIC Rev2. classification[64]. Three groups have been created: high-technology, medium-technology and low-technology intensive products[65]. The SITC 5 digit trade data (3464 items) given by the Eurostat Comext database were converted to ISIC Rev2 classification, which was corresponded to the presently used ISIC Rev3 classification.[66]

The following tendencies can be observed in exports to the EU for Spain and Hungary. [67]

In Spanish exports to the European Union, the weight of medium technology sectors increased between 1990-98, which was first of all due to the transport equipment branch. (see table 10). This was a continuation of the tendencies in the eighties (Martín[1999]). The share of low technology sectors decreased, for which the main responsible were the textile-clothing, iron and steel and alimentation branches. These products had been traditionally important in Spanish exports, but after the adhesion they lost some of their importance. However, at the end of the period, these traditional branches, mainly the food and textile branches, reinforced their role again.

Regarding the high technology-level sectors, their share in exports to the EU has been constantly but slowly increasing from 1980. Between 1993-98 a certain fluctuation can be observed.[68]. Regarding the import side (not shown in the table), in 1998 the share of high-tech products was 20.85%, that of medium-tech products was 51.21% and the share of low-tech products was 27.94%.

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[64] The indicator of technological intensity (weighted according to sectors and countries) is the share of R&D expenditures in production or value-added.

[65] At the end of the nineties based on the experiences the OECD revised the grouping (Hatzichronoglou [1997]) and divided the medium-tech group into two parts. Medium-high and medium-low groups were created, precision instruments and electrical machinery were put into the former one. However, the application of the old grouping is still more frequent.

[66] ISIC Rev3. classification is used in the Hungarian industrial statistics, Spanish data were grouped into this scheme for the sake of comparison.

[67] In the database the EU is the reporter country, so „export to the EU" means the EU import from the country.

[68] In the non-EU relation, the share of low-technology sectors are much higher and that of medium technology sectors are much lower than in the EU-relation. The share of high-technology branches increased much more rapidly here than in the export towards the EU (Martín [1999])

Table 10.: Share of industries in Spanish manufacturing export to the EU (%)

ISIC	**sectors**	**1990**	**1993**	**1996**	**1997**	**1998**
	High technology	**11.25**	**12.82**	**12.53**	**12.76**	**13.50**
2423	Pharmaceuticals	0.55	0.38	0.51	0.46	0.51
30	Office machinery	2.41	2.51	2.08	1.71	1.89
32	Radio, TV sets	1.82	2.55	2.52	2.84	3.06
31	Electrical machinery and appliances	4.73	4.77	4.71	5.01	4.75
353	Aircraft, spacecraft	0.82	1.62	1.44	1.55	2.05
33	Medical, precision, opt. instruments	0.93	0.99	1.26	1.19	1.24
	Medium technology	**50.86**	**54.54**	**54.79**	**54.08**	**54.36**
241	Organic, inorganic basic chemicals	4.62	4.47	4.50	4.32	4.04
251	Manufacture of rubber products	2.12	2.46	2.36	2.31	2.45
252	Manufacture of plastic products	0.94	0.87	0.99	1.02	1.10
272-73	Non-ferrous metals. aluminium	1.62	1.78	2.17	2.21	1.76
29	Machinery and equipment	7.15	5.18	5.13	5.08	5.19
352	Railway and tramway locomotives	0.06	0.08	0.05	0.19	0.21
34	Motor vehicles, trailers	31.38	36.36	36.17	35.44	35.75
354	Manufacture of bicycles and motorcycles	0.18	0.54	0.49	0.60	0.70
355	Manufacture of transport equipment n.e.c.	0.01	0.01	0.00	0.01	0.01
36,37	Other manufacturing industries	1.09	1.05	0.98	0.96	0.97
242-2423	Chemical products except pharmaceuticals	1.69	1.74	1.93	1.94	2.18
	Low Technology	**37.89**	**32.65**	**32.68**	**33.16**	**32.14**
15,16	Food, beverages, tobacco	9.00	9.33	9.67	10.49	9.79
17-19	Textile, clothing, leather	8.45	7.24	7.25	7.44	7.26
20	Wood and wood products	2.12	1.70	1.82	1.84	1.96
21-22	Paper and printing	3.52	2.82	2.92	2.75	2.66
231	Manufacture of refined	2.27	1.65	1.06	0.95	0.75

	petroleum products					
232	Coal and petroleum products	0.45	0.36	0.21	0.16	0.11
26	Other non-metallic minerals	3.36	3.09	3.07	3.04	2.90
271	Manufacture of basic metals	5.28	4.05	3.87	3.64	3.63
28	Fabricated metals	3.13	2.38	2.74	2.81	3.04
351	Building and repairing of pleasure and sporting boats	0.30	0.04	0.08	0.05	0.04
D	Manufacturing	100	100	100	100	100

Source: own calculations based on Eurostat Comext data

If we observe Spanish exports to the European Union on the SITC 5 digit product level (table A9 in annex), we can see that in 1998 the first ten product group (from the 3464 items) represented 35% of total Spanish exports. Even among the first ten, there is a high concentration to the first article (17%), which is "motor vehicles for the transport of persons (SITC 78120)". Parts and accessories for motor vehicles and motor vehicles for the transport of goods occupy the second and third places, which prove the high role of the automotive industry in the Spanish exports. This branch has been one of the most important targets of foreign investors and it is completely in foreign hands. Statistical calculations also confirm the above mentioned high concentration: the Herfindahl-Hirschmann index[69] for EU-imports from Spain was 0.175 in 1990, 0.217 in 1993 and 0.188 in 1998.[70]
Analyses of the Spanish foreign trade structure (Gordo, [1996]) reinforce that after the adhesion, Spain remained weak in producing products of high technological content, and strong in producing consumer goods, which sector however has been vulnerable to the liberalisation process.

As in other CEEC's, the reorientation of *Hungarian* foreign trade towards the EU took place around 1990–91.The reorientation process in Central Europe has been thoroughly analysed by others (Gács [1994], Landesmann [1994], Brenton-Gros

[69] $HHI= [\Sigma_i s_i^2]^{1/2}$, where s_i is the share of the product group in total exports. The index varies between $1/n^{1/2}$ and 1 (full concentration).
[70] Own calculations based on SITC 5-digit nomenclature, Eurostat Comext.

[1997] and Havlik [1996] etc.) The collapse of the Comecon markets obliged firms to seek new markets. Much of their production capacity had to be closed down or restructured. The main direction of exports became Western markets as early as 1991. From our point of view, the question can be raised whether or not foreign direct investment played a role in this reorientation process. Some foreign investment was already taking place in 1990. However, major flows of FDI and massive production by FIE's can be said to have begun about 1991–92. So the FIE's cannot be said to have played a big role in the geographical reorientation of trade as such. They only intensified (and later modified) an already existing structure.

Turning to the present geographical distribution of trade, 76.2 per cent of the exports and 64.4% of imports were realised with the EU in 1999 (table A10 in annex). The EU share has been increasing steadily since the major reorientation of trade, partly because of the accession of EFTA countries and partly through a real growth of trade. FDI contributed to the latter in two ways. On the one hand, US, Japanese and other non-EU multinationals have set out to penetrate the EU market through the associated CEE countries. (The association agreements with the EU set out to establish industrial free trade, while applying rules of origin for products.) On the other hand, export-oriented firms and multinationals from the EU found good opportunities for outsourcing some of their activity to the four countries. Foreign investment provided new markets and contacts for privatized firms.

FIE's also play a role in increasing trade among Hungary and the neighbouring countries. Foreign investors have been able to utilise earlier contacts of the acquired domestic firms. Those aiming to conquer new markets, have established a base in one of the four countries, intending to supply the whole region from there. FIE's have contributed strongly to a revival of intra-regional trade in recent years. They are active especially in chemicals, foods and raw materials, where they treat the whole region as a domestic market.

For today, the most important characteristic of Hungarian foreign trade is the activity of industrial customs-free zones. Since 1994, two new trends can be

observed.[71] From one side domestic companies relocated their activity to customs-free zones, and from the other side foreign "follower" supplier firms invested in such zones. It seems, thus, that there is a self-increasing trend of customs-free zones. There were around 100 industrial customs-free zones spread throughout Hungary in 1998, the majority of which belong to the machinery industry. Investments in these zones are mainly 100% foreign-owned and greenfield investments. In 1996 these areas produced a 318 million USD trade surplus, in 1997 1026 million USD, in 1999 2091 million USD, so they have increasingly contributed to the improvement of the foreign trade balance of the country. In 1999, 43% of the Hungarian exports and 30% of the imports stemmed from customs-free zones. These zones give the dynamic of the exports, in 1999 the extent of export increase here was 30% (compared to the previous year), while it was a 3.2 % decrease in the case of the traditional exports. Regarding the direction of customs-free trade, two-thirds of this export and more than half of this import is carried out only with Germany. The share of Spain and the UK is also important. The share of customs-free exports to the CEEC region is very small but has been increasing and the balance in this direction is also positive (Baghy [1999]). Concerning the product composition of customs-free trade, almost 100% of this export is given by group SITC 7 (machinery and transport equipment). The role of customs-free zones is thus the pure manifestation of the effect of FDI on foreign trade in Hungary. The impact of customs-free trade on the foreign trade structure and development is entirely due to foreign investments and capital.

Based on the importance of export-oriented investments and the increased weight of the above mentioned customs-free zones, our hypothesis is that FIE's have had a strong influence on the change of the product composition of exports. It is worth examining how significant these changes were in the whole structure of Hungarian exports to the EU in 1990-98. The Finger similarity index[72] provides a certain view of the structural changes. The value of the index shows the extent to which the export structure in 1998 resembled that of 1990. Clearly, considerable changes have taken place over these years, as the value of the index is 0.40. This means

[71] See Antalóczy [1999].

[72] $F=\Sigma\min(Xi_{90},Xi_{98})*100$, where X_{90} and X_{98} are the shares of the commodity i in total exports in 1990 and 1998.

that the export structures are only 40 per cent similar.

Observing the structural changes in Hungarian exports after having divided the examined period into sub-periods, it turns out that one major part of the structural changes happened between 1990-1991 (see Éltető, 1998b). This means that in Hungarian exports, huge structural changes took place during one year. The main driving factor was the above-mentioned forced reorientation of trade and not FDI. However, afterwards there is a second, longer and smoother period of structural changes where the effects of FDI are already important, taken into account the growing activity of greenfield investments described above. Changes in the export structure manifest interesting trends if we group the manufacturing sectors according to technology level (Table 11.)

Table 11.: Share of industries in Hungarian manufacturing export (%)

ISIC	sectors	**1990**	**1993**	**1996**	**1997**	**1998**
	High Technology	**9.73**	**16.26**	**25.84**	**32.57**	**34.54**
2423	Pharmaceuticals	0.37	0.29	0.12	0.11	0.08
30	Office machinery	0.18	0.90	3.22	6.99	9.22
32	Radio, TV sets	1.47	2.02	6.56	9.81	10.97
31	Electrical machinery and appliances	7.05	11.74	14.74	14.48	13.01
353	Aircraft, spacecraft	0.04	0.18	0.03	0.02	0.03
33	Medical, precision, opt. instruments	0.62	1.14	1.17	1.16	1.23
	Medium technology	**23.52**	**24.62**	**32.92**	**34.66**	**37.12**
241	Organic, inorganic basic chemicals	7.55	5.36	4.01	3.50	2.65
251	Manufacture of rubber products	1.42	1.31	1.25	1.17	1.20
252	Manufacture of plastic products	0.45	0.84	0.90	0.95	0.81
272-73	Non-ferrous metals. aluminium	3.74	2.37	2.77	2.68	2.00
29	Machinery and equipment	7.94	7.01	5.92	5.41	5.26
352	Railway and tramway locomotives	0.02	0.14	0.22	0.24	0.37
34	Motor vehicles, trailers	1.25	5.21	16.30	19.51	23.71
354	Manufacture of bicycles	0.01	0.04	0.08	0.05	0.05

	and motorcycles					
355	Manufacture of transport equipment n.e.c.	0.00	0.00	0.01	0.01	0.01
36,37	Other manufacturing industries	0.69	0.89	0.66	0.60	0.52
242-2423	Chemical products except pharmaceuticals	0.44	1.44	0.80	0.56	0.54
	Low Technology	**66.75**	**59.12**	**41.24**	**32.76**	**28.34**
15,16	Food, beverages, tobacco	19.94	13.96	8.53	6.21	4.77
17-19	Textile, clothing, leather	24.79	27.22	16.42	13.54	11.68
20	Wood and wood products	4.83	4.68	3.89	3.26	3.22
21-22	Paper and printing	1.26	1.18	1.01	1.05	0.96
231	Manufacture of refined petroleum products	2.53	1.59	2.50	1.53	1.16
232	Coal and petroleum products	0.51	0.25	0.11	0.07	0.03
26	Other non-metallic minerals	2.37	2.90	1.81	1.51	1.40
271	Manufacture of basic metals	6.88	2.27	2.85	2.02	2.04
28	Fabricated metals	3.48	4.65	4.11	3.54	3.07
351	Building and repairing of pleasure and sporting boats	0.16	0.43	0.02	0.03	0.01
D	Manufacturing	100	100	100	100	100

Source: own calculations from Eurostat Comext database

The first striking phenomenon is the extremely rapid increase of high-technology sectors in manufacturing exports. This share more than tripled during seven years and in 1998 reached 34%. This trend is due to three subsectors, electrical machinery, telecommunication equipment and office machinery. Meanwhile, the traditionally important pharmaceutical sector lost some of its importance. Medium-technology sectors also increased their share (although to a much smaller extent) for which the motor vehicle branch is entirely responsible. The share of low-technology sectors, however rapidly decreased, mainly due to the food and beverage, textile-clothing and basic metal branches[73]. (These results are in line with those of Eichengreen-Kohl (1988) who find that among CEEC's, Hungary

[73] The decrease refers to the share, the absolute value of the low-tech exports has increased.

displays huge increases in R&D, capital and skill-intensive sectors and corresponding drops in low R&D and low skill-intensive sectors.) Török-Petz [1999] constructed an econometric model and proved the explaining role of R&D-intensity in shaping export structure change and development. Regarding the import side (not shown in the table), the share of high-tech groups in Hungarian imports from the EU was 20.85% in 1998. The share of medium-tech and low-tech groups were 51.21% and 27.90% respectively.

Observing the total Hungarian-EU trade on the SITC 5 digit product level (table A11 in annex), it turns out that the first ten product groups were responsible for 35.6 per cent of the total exports to the EU in 1998 with a considerable increase from 1990 (then 13%). Meanwhile the structure of the top ten completely changed. The leading export product in 1990 (footwear) and the agricultural and other non-machinery products completely vanished from the list. The top product group with by far the largest share in 1998, 12 per cent, is reciprocating piston engines for cars of a cylinder capacity exceeding 1000 cc's. Computer storage units and video recording apparatus are in second and third place with 4.37% and 3.48% respectively. These are high-tech products such as several other products in the top ten: telecommunications equipment, storage units for automatic data processing and electrical machinery products. These products are produced by a small number of multinational affiliates (mainly in customs-free zones). In 1998, three companies (IBM, Phillips, GE) produced 61% of total high-tech exports for Hungary.

Since the top ten groups account for a large and increasing share in exports at such a detailed product level, concentration can be called an important characteristic of Hungarian exports to the EU. This can be underlined also by statistical calculations on concentration. Values for the Herfindahl-Hirschmann index increased significantly between 1990 and 1998. In 1990 the HHI index was 0.068. In 1993 it was 0.077 and in 1998 it was 0.157.[74]

As it turns out from the product structure, the increasing concentration of exports was caused by the activity and export growth of FIE's in certain branches. Other branches did not manifest such a rapid rate of increase, so that their weight in total exports has fallen. The data show a general trend for two groups of products still

important at the beginning of the 1990s to lose export shares in the period up to 1996. One group consists of textile, clothing and leather products, which are strongly associated with outward-processing and not dominated by FDI. The other group, whose share tended to decrease is iron and steel and raw-material products (wood, fossil fuels, cement). Meanwhile there was an already mentioned increase in the electrical, office and transport machinery groups, where foreign investment had taken place.

Inter-industry trade

The concept of revealed comparative advantages was introduced in Chapter I. The RCA index we apply here is also-called a "specialisation index" (Török, [1986]) or "net export index" (Balassa-Noland, [1987])) and its definition is:

RCA = 100*(Xi-Mi)/(Xi+Mi), where Xi is the exports of sector i and Mi is its import. We can speak about advantages, or specialisation if the value of the index is positive.

For the EU-Spain relation Martín [2000]calculated the above defined RCA index and concluded that there have been certain changes after the adhesion. There has been a deterioration of RCA values in almost every sector until 1994. This tendency was especially strong in the case of certain branches which had traditionally strong comparative advantages. In the transport equipment and non-metallic mineral branch, specialisation existed in each observed year. Revealed comparative disadvantage decreased from 1989 in high-tech sectors, and in low-tech sectors. Slight comparative advantages are shown in medium-tech sectors. As Martín [2000] points out, major changes (deterioration) in Spanish RCAs took place between 1985 and 1989, and in certain branches these were rather drastic. As mentioned, these are those labour and resource intensive sectors where traditionally and even one year before the adhesion Spain still had comparative advantages, like textiles, food and beverages, rubber, etc. The reason for this phenomenon is that before the accession Spanish specialisation patterns were distorted because of the protective tariff structure. Once this was removed the distortions also gradually ceased.

Our analysis refers to the nineties. Table 12 shows that from 1990 to 1998 the

[74] Own calculations based on Eurostat Comext

mentioned tendencies were slowly reversed, the food sector showed positive RCA values again, and that of textile products has improved since 1993. At the same time, improvement in the field of high-technology goods was much slower, and no new revealed comparative advantages appear there. It seems, thus, that after a period of "shock" caused by the liberalisation measures and import boom Spain has - to a certain extent - respecialised itself in those traditional branches where it had revealed comparative advantages before EU-membership.

As described in chapter II., the most popular manufacturing sectors for foreign investors were food and beverages, transport equipment, non-metallic minerals, paper and printing. All of these sectors possessed revealed comparative advantages in 1985 but had deteriorating RCA values afterwards. Some of them later recuperated.

Table 12. RCA indices, Spain-EU relation

ISIC rev3	**sectors**	**1990**	**1993**	**1996**	**1997**	**1998**
	High technology	**-40.81**	**-33.34**	**-36.29**	**-35.25**	**-35.19**
2423	Pharmaceuticals	-27.89	-40.94	-31.33	-33.10	-20.15
30	Office machinery	-46.38	-40.81	-38.23	-49.83	-48.90
32	Radio, TV sets	-50.62	-31.75	-43.36	-35.75	-39.37
31	Electrical machinery and app.	-26.40	-27.26	-26.77	-24.51	-26.01
353	Aircraft, spacecraft	-27.82	6.96	-30.39	-22.88	-17.21
33	Medical, precision, opt. instruments	-63.04	-61.09	-51.44	-53.16	-51.40
	Medium technology	**-19.81**	**-9.49**	**-6.88**	**-9.64**	**-12.00**
241	Organic, inorganic basic chemicals	-33.67	-33.56	-30.04	-34.75	-36.17
251	Manufacture of rubber products	5.35	4.23	0.32	0.42	1.31
252	Manufacture of plastic products	-8.71	-30.33	-25.28	-26.23	-24.67
272,273	Non-ferrous metals, aluminium	-29.25	-15.76	-3.82	-7.69	-15.84
29	Machinery and equipment	-48.45	-43.54	-46.26	-48.78	-50.60
352	Railway and tramway locomotives	-17.24	-29.54	-37.89	27.96	17.11
34	Motor vehicles, trailers	-2.10	10.62	13.90	11.53	7.49

354	Manufacture of bicycles and motorcycles	-69.21	-12.90	-3.18	-0.63	-0.35
355	Manufacture of transport equipment n.e.c.	-53.16	-63.61	-74.63	-69.01	-71.97
36,37	Other manufacturing industries	-40.63	-43.66	-36.69	-36.84	-36.49
242-2423	Chemical products except pharm.	-37.34	-44.56	-35.61	-38.50	-33.49
	Low technology	**-2.53**	**-10.33**	**-6.56**	**-6.64**	**-8.04**
15,16	Food, beverages, tobacco	2.59	-7.27	3.70	8.94	5.22
17,18, 19	Textile, clothing leather	-0.52	-15.68	-7.39	-5.91	-6.66
20	Wood and wood products	-3.18	-8.42	-7.90	-9.16	-8.82
21,22	Paper and printing	-11.37	-20.01	-27.61	-29.45	-30.76
231	Manufacture of refined petroleum	18.52	-3.48	3.93	-23.84	-19.99
232	Coal and petroleum products	54.65	60.19	48.72	27.19	20.54
26	Other non-metallic minerals	11.84	12.55	14.70	13.69	14.35
271	Manufacture of basic metals	-7.99	-0.19	-8.53	-16.74	-17.04
28	Fabricated metals	-23.43	-32.80	-24.08	-20.16	-19.94
351	Building and repairing of boats	-25.06	-65.40	-45.24	-59.97	-71.05
D	**Manufacturing**	**-17.56**	**-13.71**	**-11.88**	**-13.10**	**-14.93**

Source: own calculations from Eurostat Comext database

Table 13. Revealed comparative advantages, Hungary-EU relation

ISIC rev3		**1990**	**1993**	**1996**	**1997**	**1998**
	High technology	**-23.82**	**-20.47**	**-5.22**	**6.38**	**8.57**
2423	Pharmaceuticals	-31.49	-45.62	-66.20	-62.42	-64.58
30	Office machinery	-85.07	-63.83	-16.04	14.00	13.94
32	Radio, TV sets	-47.24	-50.70	-13.76	9.31	13.62
31	Electrical machinery and app.	17.62	13.82	12.94	12.66	12.34
353	Aircraft, spacecraft	7.44	-29.91	-82.41	-88.00	-86.13
33	Medical. precision. opt. instruments	-71.73	-58.81	-47.86	-46.66	-40.14
	Medium technology	**-36.80**	**-41.37**	**-19.39**	**-19.10**	**-17.82**

241	Organic. inorganic basic chemicals	-9.06	-18.47	-21.48	-21.46	-25.40
251	Manufacture of rubber products	11.34	5.03	-0.02	-5.09	-0.13
252	Manufacture of plastic products	-36.31	-38.69	-37.44	-34.12	-41.95
272.273	Non-ferrous metals. aluminium	64.88	24.97	33.31	24.54	16.26
29	Machinery and equipment	-51.35	-48.24	-47.58	-46.42	-47.19
352	Railway and tramway locomotives	-46.55	-12.36	-42.84	0.74	41.47
34	Motor vehicles. trailers	-70.85	-55.37	6.21	-0.86	-0.67
354	Manufacture of bicycles and motorcycles	-78.51	-77.63	-31.70	-42.39	-36.09
355	Transport equipment n.e.c.	-94.48	-85.03	-15.88	-5.72	-8.56
36.37	Other manufacturing industries	-51.45	-52.68	-52.30	-55.33	-57.73
242-2423	Chemical products except pharm.	-82.42	-58.15	-66.96	-73.70	-71.42
	Low technology	**28.52**	**9.86**	**3.24**	**-2.14**	**-2.91**
15.16	Food. beverages. tobacco	68.90	30.46	39.22	26.35	28.82
17.18.19	Textile. clothing leather	10.53	9.06	3.89	3.55	3.18
20	Wood and wood products	68.34	25.92	28.04	24.24	24.86
21.22	Paper and printing	-39.61	-53.65	-68.53	-63.30	-61.52
231	Manufacture of refined petroleum	88.13	64.99	45.03	33.51	44.23
232	Coal and petroleum products	88.53	32.39	-2.96	-16.88	-47.50
26	Other non-metallic minerals	-4.14	-3.15	-25.59	-28.48	-27.01
271	Manufacture of basic metals	36.52	-10.00	5.08	-10.90	-9.51
28	Fabricated metals	-1.23	-6.87	-13.69	-18.63	-23.84
351	Building and repairing of boats	66.11	81.78	-17.17	-20.32	-54.80
D	**Manufacturing**	**-1.89**	**-13.87**	**-7.44**	**-6.50**	**-5.81**

Source: own calculations based on Eurostat Comext database.

In the case of *Hungary*, the findings in Table 13. reveal some interesting trends. A

radical and then milder decrease can be observed in the labour-intensive, low technology sectors. Traditionally well-performing sectors like textiles, food, wood, petroleum have still conserved comparative advantages but to a much smaller extent than in 1990. On the other hand, there is a rapid improvement of the index for high technology-intensive products. The RCA index has even turned positive since 1997, which already shows a clear specialisation. This is caused by the office machinery sector (that means by the automatic data processing storage units), radio,TV, video sets and electrical appliances.

On that basis, one can say that Hungary has maintained its specialisation (although to a lesser extent) in labour-intensive, low technology goods, but at the same time has been able to develop an important export activity in high technology goods. Since the RCA index used here is calculated from the export and import ratios of products, the RCA value will rise if exports are increasing considerably faster than imports. This is just what happened in some high and medium-technology products (cars and components, electronic equipment, etc.) between 1990 and 1998. The production of these goods is already dominated by efficiency-seeking FIE's. Changes in RCA values seem to have mainly been due to the increase of exports in a few dominant goods produced by multinationals. Improvement in the high-technology field shows that foreign investors invested in those sectors where they could utilise a qualified labour force.[75] Due to the activity of FIE's, skilled labour intensity is increasingly manifest in foreign trade.

Intra-industry trade

As mentioned in Chapter I., by intra-industry trade we mean the exchange of the same type of goods. In the case of trade partners with similar factor endowments, integration can promote this kind of trade. We analyse now the Spanish and Hungarian -EU relation from this aspect.

The basic indicator used to measure intra-industry trade is the Grubel-Lloyd index based on the work of Grubel and Lloyd [1975]. The definition of the index for a given product group i is the following:

$Bi = 1-[(Xi-Mi)/(Xi+Mi)]*100$

The index for the whole economy (or a sector group) is the weighted average of the product group indices according to the weight of the product groups in foreign trade (Wi). X and M are export and import respectively:

$Biw = \Sigma Wi\ Bi$ where

$Wi = (Xi+Mi)/ \Sigma(Xi+Mi)$

The value of the index can change between 0 and 100, a higher index means a higher level of IIT. Note that the less detailed aggregation used, the higher the value of the index is, IIT should therefore be calculated at a very detailed level of classification.[76]

As mentioned in Chapter I., intra-industry trade can be separated into horizontal (HIIT) and vertical (VIIT) types based on the unit value of exports. This method proxies quality differences of export and imports.[77] If the export and import unit value differ by less then 15% then IIT is horizontal (the traded goods are of the same quality), if the difference is bigger in such a way that export unit values are higher then IIT is high quality vertical, otherwise IIT is low-quality vertical.[78]

In the case of Spain Martin-Gordo [1996], Carrera [1997], Blanes-Martín [2000] and Martín [2000] examined intra-industry trade patterns. In line with the above mentioned aggregation problems Carrera [1997] found that IIT values for Spain vary between 25% and 63% depending on the classification details used. He also finds that the major part of Spanish IIT is of the vertical type, independently from the election of commercial partners analysed. Within the vertical type, low quality dominates. Carrera [1997] also concludes that as for the specialisation patterns of Spanish trade with less developed countries differ from the patterns with more developed countries, bilateral IIT values are much lower in several cases than the aggregated one. Blanes-Martín [2000] calculated IIT between Spain and the OECD countries and non-OECD countries separately for the 1988-1995 period. They found that IIT has been constantly growing, vertical type is more significant

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[75] This statement is reinforced by the survey results on motivations described previously.

[76] The GL indicator was "dynamised" by Brülhart (1994) who introduced the concept of marginal IIT, which takes the change of export and import into consideration. About problems of the GL indicator and other types of measures see Vona (1991) more detailed.

[77] The principle of "bigger price, bigger quality" can be criticised (for example the products can be overpriced), however there is no better method found out for signing quality differences.

[78] If $0.85 \leq UVx/UVm \leq 1.15$ than IIT is horizontal

than the horizontal one particularly with non-OECD countries. What is more, low quality VIIT is greater with OECD countries and high quality VIIT is greater with non-OECD countries. IIT patterns thus also depend on the development level of the trade partner.

Regarding the EU-relation, which is in our focus, Martín [2000] aggregated indicators from an SITC 5 digit level. It turned out that intra-industry trade increased after the adhesion to the EU. In 1985 the index was 43.6, in 1992 it was 57.5 and in 1997 it was 57.8 for the total manufacturing industry. In the second half of the eighties in Spanish-EU trade, vertical IIT was everywhere higher than horizontal IIT and within vertical IIT, generally low quality dominated.[79]

Using the same method we calculated total, vertical and horizontal IIT indices for 1990 and 1998 in Spanish-EU trade. We apply the sectoral grouping according to technology level as before. The results are shown in table 14.

Table 14. Intra-industry trade between Spain and the EU, 1990 and 1998

sectors	**IIT**		**Horizontal**		**Vert. low**		**Vert. high**	
High technology	**1990**	**1998**	**1990**	**1998**	**1990**	**1998**	**1990**	**1998**
Pharmaceuticals	55.4	49,0	0.2	22,2	17.1	25,2	37.1	1,6
Office machinery	53.1	48,7	20.5	2,7	25.1	4,7	7.5	41,3
Radio, TV sets	47.6	43,1	31.2	1,8	12.4	30,2	4.0	11,1
Electrical machinery and appliances	65.6	63,9	28.4	29,6	28.2	29,2	9.0	5,1
Aircraft, spacecraft	42.9	66,0	0.0	24,6	11.6	35,4	31.3	6,0
Medical, precision, opt. instruments	36.1	46,9	6.9	18,9	22.4	19,1	6.8	8,9
Medium technology								
Organic, inorganic basic chemicals	38.5	45,1	11.1	10,5	19.0	25.1	8.4	9,5
Manufacture of rubber products	77.1	79,3	54.5	48,1	19.8	24,1	2.8	7,1
Manufacture of	73.1	67,7	55.4	26,7	17.7	36,8	0.0	4,2

[79] Developments of intra-industry trade between Spain and the EU cover different patterns with the member states. Gordo-Martín [1996] observes that Spain's trade with Germany exhibits a high proportion of vertical low quality IIT while in the bilateral trade with Portugal high quality vertical IIT dominates.

plastic products								
Non-ferrous metals, aluminium	40.7	61,4	21.9	27,3	15.9	30,9	2.9	3,2
Machinery and equipment	44.8	45,1	13.3	10,7	25.4	27,7	6.1	6,7
Railway and tramway locomotives	56.4	60,3	3.0	58,6	50.1	0,3	3.3	1,4
Motor vehicles, trailers	76.8	73,4	12.8	62,4	62.1	4,2	1.9	6,8
Manufacture of bicycles and motorcycles	30.7	87,8	16.1	53,6	14.0	21,0	0.6	13,2
Manufacture of transport equipment n.e.c.	46.8	28,0	0.0	28,0	46.8	0,0	0.0	0,0
Other manufacturing industries	44.7	50,5	11.9	15,3	16.4	26,8	16.4	8,4
Chemical products except pharmaceuticals	51.3	55,9	16.8	20,6	23.9	22,4	10.6	12,9
Low technology								
Food, beverages, tobacco	26.9	39,3	5.7	13,2	10.9	14,2	10.3	11,9
Textile, clothing leather	44.7	58,7	12.9	20,6	19.7	24,6	12.1	13,5
Wood and wood products	62.5	70,8	33.6	29,1	17.8	26,1	11.1	15,6
Paper and printing	51.9	52,2	22.2	23,9	24.7	23,7	5.0	4,6
Manufacture of refined petroleum products	55.2	58,3	22.8	34,1	3.2	0,0	29.2	24,2
Coal and petroleum products	32.1	53,9	27.4	30,9	4.0	20,6	0.7	2,4
Other non-metallic minerals	47.2	50,7	12.3	12,8	22.2	25,3	12.7	12,6
Manufacture of basic metals	52.2	50,3	39.1	39.5	8.6	13,9	4.5	3,1
Fabricated metals	64.0	68,4	27.5	23,5	30.7	30,7	5.8	14,2
Building and	31.2	21,9	4.2	11,9	26.8	7,1	0.2	2,9

repairing of pleasure and sporting boats								
Manufacturing	**55.5**	**58.8**	**17.6**	**31.3**	**31.0**	**18.0**	**6.9**	**9.5**

Source: own calculations from Eurostat Comext data

In total manufacturing and in most sectors intra-industry trade has grown. Exceptions are the plastics, basic metal sector, pharmaceuticals, production of boats, motor vehicles, transport equipment, electrical machinery and radio-TV sets, where IIT decreased. Horizontal IIT increased considerably in general which means an improvement in manufacturing export quality. Among the high-technology sectors horizontal IIT has grown radically in aircraft, spacecraft, pharmaceuticals, medical instruments, but decreased radically in office machinery and telecommunication equipment groups. Regarding medium-technology branches, a significant horizontal IIT increase can also be seen in the chemicals, manufacture of transport equipment, motor vehicles, bicycles, motorcycles, railways. In the low-quality group, horizontal IIT has grown, except for wood products, fabricated metals. In a lot of cases vertical high IIT increased which also shows an export-quality improvement.

The case of textile-clothing, food-beverage sectors are especially interesting. If we remember, these are the branches where traditional comparative advantages decreased after the adhesion but were reinforced again for 1996-98. The increase in horizontal or vertical high-quality IIT in these fields means that this reinforcement has been followed by quality upgrading.

As Martín [2000] and other authors indicate, the observed increase of IIT in several sectors was caused by the considerably increased imports. Therefore it has to be indicated here that stemming from the properties of IIT index, an increase of intra-industry trade can be observed in certain cases if the trade balance improves *but also if the trade balance worsens.* The IIT indicator can increase if import grows from a lower level than export but export remains similar. Therefore we consider it important to analyse what caused the increase of intra-industry trade. As we have seen, the developments in the trade balance of a sector are manifested in the previously used RCA indicator. So with the help of the RCA indicator combined with IIT indicator we can create four groups of industries. These four groups are different regarding their “trade adjustment” process.

It can be seen below that in the case of wood products, textiles and paper printing, the increase in IIT derives from the deterioration of the trade balance. The most positive adjustment process happened in those sectors where both RCA and IIT improved (certain high and medium-technology products mainly) and adjustment were the most negative where both indicators decreased (office machinery, pharmaceuticals, rubber, petroleum, metals)

Table 15.: Positive and negative adjustments in the Spanish manufacturing trade with the EU

1990-1998	**IIT increased**	**IIT decreased**
RCA increased	aircraft-spacecraft, chemical products, precision instruments, machinery, ferr. and non ferr. metals, railway, motorcycles, food, other non-metallic minerals	electrical goods, motor vehicles, radio, TV sets
RCA decreased	wood products, textile-clothing, paper and printing, refined petroleum, minerals	pharmaceuticals, office machinery, rubber, plastic, other transport equipment, boats

Blanes-Martín [2000] built a model to explore the determinants of Spanish intra-industry trade. They included the variable of foreign capital also as explanatory variable, proxied as the proportion of foreign share holding in the sector's total share capital. They found that the determinants of vertical and horizontal IIT are not the same, the industry-specific variables (technological intensity, scale economies, product differentiation, etc) behave differently. Technological intensity for example had a significant positive effect on vertical IIT and a negative effect on horizontal IIT. According to the expectations it turned out that vertical IIT seems to be greater in industries that are more intensive in technology and in industries where this feature interacts with the existence of scale economies. as far as the effect of FDI is concerned, foreign capital penetration had a significant positive effect on both vertical and horizontal IIT. This means that the activity of foreign investment companies influences the development of intra-industry trade between Spain and its partners.

Regarding *Hungary*, the domestic literature on intra-industry trade development is

yet small. Three studies can be mentioned here. The first is the one made by Kovács [1996] who used both Hungarian and Eurostat data and calculated IIT and marginal IIT indices for 1991 and 1994 using SITC 3 digit level (269 products). The second was made by Gáspár-Kacsirek [1997] where intra-industry trade indices were calculated for the machinery industry, detailed level of classification (HS 4 digit) was applied only to selected product groups. The principle of selection was turnover and the dominant foreign partner. As third, the most recent is the study of Pula [1999], who also used Eurostat Comext data and calculated IIT indices for 1988-1996. Here NACE 3 digit classification is used (108 products) and Grubel-Lloyd and marginal IIT indices are also calculated, but further division of intra-industry trade (into vertical and horizontal type) is not applied. An analysis of quality upgrading is however done according to the price/quality-gap method (Landesmann-Burgstaller [1995]), which consists of the calculation of product prices and then comparing these to the average price for the given product in total EU import.

Our methodology is different and new in Hungary, because a far more detailed classification (the mentioned SITC 5 digit level with 3464 products) is applied and also the separation of vertical and horizontal IIT is made. The results are then grouped according to the technology-intensity level generally used in this thesis.

Observing the developments of intra-industry trade in the Hungarian-EU trade (table 16), it can be confirmed that in almost every branch, intra-industry trade increased between 1990-98. Regarding the whole manufacturing sector, mainly horizontal and vertical high quality IIT has grown. In line with the international experiences the vertical type dominates also in Hungary within intra-industry trade.

Among the high-technology groups in the case of pharmaceuticals a decrease in (mostly vertical low quality) IIT can be observed, but in office machinery, telecommunications equipment and electronic machinery a significant increase is manifested in horizontal IIT. In the case of medical, precision instruments low quality vertical IIT increased.

Table 16.:Intra-industry trade between Hungary and the EU, 1990 and 1998

sectors	**IIT**	**Horizontal**	**Vert. low**	**Vert. high**

High technology	**1990**	**1998**	**1990**	**1998**	**1990**	**1998**	**1990**	**1998**
Pharmaceuticals	43.0	28.8	0.5	1.1	27.6	12.9	14.9	14.8
Office machinery	13.1	46.5	0.9	33.9	10.1	11.4	2.1	1.2
Radio, TV sets	32.6	34.8	1.3	12.9	26.8	16.6	4.5	5.3
Electrical machinery and app.	38.4	53.3	8.0	17.4	28.0	26.3	2.4	9.6
Aircraft, spacecraft	60.0	13.0	0.0	0.2	3.5	12.5	56.5	0.3
Medical, precision, opt. instruments	25.1	44.9	0.9	2.7	18.3	35.7	5.9	6.5
Medium technology								
Organic, inorganic basic chemicals	20.6	27.8	2.5	3.6	11.2	19.0	6.9	5.2
Manufacture of rubber products	34.1	55.8	2.6	3.3	31.1	41.7	0.4	10.8
Manufacture of plastic products	51.4	52.8	0.0	11.4	50.6	39.1	0.8	2.3
Non-ferrous metals, aluminium	19.5	39.3	3.8	13.9	12.7	25.3	3.0	0.1
Machinery and equipment	32.1	37.8	0.7	6.2	30.6	25.7	0.8	6.0
Railway and tramway locomotives	36.5	57.6	1.2	15.7	35.3	41.8	0.0	0.1
Motor vehicles, trailers	17.9	30.5	2.7	0.1	13.5	12.7	1.7	17.7
Manufacture of bicycles and motorcycles	19.4	47.7	0.0	6.0	14.7	14.4	4.7	27.3
Manufacture of transport equipment n.e.c.	5.5	91.4	5.5	0.0	0	0.0	0	91.4
Other manufacturing industries	33.4	23.6	0.2	4.3	30.9	13.8	2.3	6.5
Chemical products except pharmaceuticals	11.4	12.7	0.3	2.7	9.8	6.3	1.3	3.7
Low technology								
Food, beverages, tobacco	9.1	21.8	1.3	2.9	3.9	7.3	3.9	11.6
Textile, clothing leather	33.7	38.1	11.6	10.4	13.5	8.1	8.6	19.6

Wood and wood products	23.3	52.9	0.5	3.6	22.5	46.0	0.3	3.3
Paper and printing	22.2	26.1	1.6	3.0	19.6	14.6	1.0	8.5
Manufacture of refined petroleum products	1.8	40.3	0.0	26.9	1.8	13.2	0.0	0.2
Coal and petroleum products	11.5	9.1	0.0	0.0	11.5	9.1	0.0	0.0
Other non-metallic minerals	39.1	49.4	1.9	8.0	30.6	27.7	6.6	13.7
Manufacture of basic metals	17.2	31.8	0.5	2.2	16.2	27.7	0.5	1.9
Fabricated metals	47.0	54.7	2.2	3.0	44.1	47.2	0.7	4.3
Building and repairing of pleasure and sporting boats	4.3	40.8	0.2	21.9	3.8	16.8	0.3	2.1
Manufacturing	**26.8**	**38.2**	**4.0**	**8.9**	**18.9**	**19.2**	**3.9**	**10.1**

Source: own calculations from Eurostat Comext data

In the case of low technology sectors, increase in intra-industry trade (although from a low level) is general and in several cases it means an increase in horizontal or vertical high quality IIT (textile, paper, metals), which suggests quality upgrading. Regarding medium-technology sectors, the situation is the same. The increase in vertical high quality IIT is especially spectacular in the case of transport equipment (except for railway locomotives).

Quality upgrading in certain (mainly machinery) branches is confirmed by the price-quality gap analysis of Pula [1999]. He also states that this upgrading is the biggest in those branches where intra-industry trade has an important role, therefore quality catch-up is not a precondition but a consequence of increasing IIT. We conclude that in these branches the increase in IIT is mainly due to the intra-firm trade of multinational affiliates.

If we observe the adjustment of the branches according to the classification box created previously we can see that this was very successful in almost all high and medium technology sectors (those areas where FIE's are especially active) and was the least positive in pharmaceuticals and aircraft-spacecraft (see table 17). In all low technology sectors, increases in IIT came from the worsening of the trade balance. It should be mentioned here again that this analysis takes only trade with

the EU into consideration. Patterns of RCA and IIT are significantly different in the Central European or other non-EU relations.[80]

Table 17. Positive and negative adjustments in Hungarian manufacturing trade with the EU

1990-1998	**IIT increased**	**IIT decreased**
RCA increased	office machinery, radio, TV sets, electrical machinery, precision instruments, chemicals, plastic products, transport equipment, machinery	-
RCA decreased	rubber products, food, textile-clothing, wood, paper and printing, petroleum, minerals, non-metallic minerals, basic and fabricated metals, boats	pharmaceuticals, aircraft, coke, furniture, other manufacturing

Based on the product-level analysis we can state that FDI does play an important role in the increase of intra-industry trade between Hungary and the EU. (The conclusions of Aturupane-Djankov-Hoekman [1997] obtained on the basis of an econometric analysis of EU-CEEC trade after controlling for country-specific factors are similar, they found a positive and significant relationship between FDI and both vertical and horizontal intra-industry trade.) The growth of IIT made the mutual trade pattern more similar to the EU member states' intra-trade (where high levels of intra-industry trade are characteristic).[81]

[80] Pharmaceuticals for example underwent an important restructuring and regained positions in the Eastern market in the end of nineties.

[81] However, if we regard the Hungarian trade separately with some important EU-members, it turns out that the effect of FDI can be twofold on intra-industry trade. FDI either can increase this type of trade, like in case of the German-Hungarian relation where the indicator has grown radically or FDI can hold the level of intra-industry trade low, as in the case of the Spanish-Hungarian relation where the index remained almost unchanged (Éltető [1998]). In this latter case more than two third of the mutual trade is given by one product: GM Hungary delivers motors to a Spanish factory. But because there is no similar import from Spain (GM Hungary imports its inputs from other countries) there is no appearance of intra-industry trade. Therefore, the level of intra-industry trade (and the effect of FDI on it) depends not only on the aggregation level but also on the country group we define. (This phenomenon is called "geographical bias" by Fontagné-Freudenberg [1997] who argue that when different partner countries are put together, the sign of the trade balance for a given product may change from one partner to another and will show up as a "multilateral" intra-industry flow, which is a pure artefact. Though conscious of this fact, in the calculations EU is assumed to be one geographical unit.)

V. Conclusions

The decade of the nineties brought important changes in the Hungarian economic system. This period was characterised by the establishment of liberal market environment and modernisation. Increasing inflow of foreign direct investment accompanied the process of liberalisation. Based on the amount of FDI in the country, for the end of the nineties Hungary is considered to be a success story in attracting investors within the Central and Eastern European region. Without doubt, foreign capital contributed to the economic modernisation and in this respect the development path of Hungary became similar to that of other countries. Among the peripheral countries of the European Union Spain is such a country; since the end of the eighties Spanish economic development is also a success story. A major aim of this thesis was to point out similarities and differences in the FDI-helped modernisation of the two countries.

If we want to characterise in general the development pattern of Spain and Hungary and the role of FDI, a major difference can be pointed out, three factors be taken into account: economic liberalisation, institutional integration into the EU and structural changes (of converging type to the EU) induced partly by FDI. In the case of Spain, liberalisation and integration took place first and at the same time. Structural changes in production and trade were realised later on. In the case of Hungary, liberalisation happened first, then during the nineties important structural convergence to developed countries has taken place in which the role of FDI has been very important and larger than in Spain. Institutional integration will only follow in the future.

Foreign direct investments have a huge international theoretical literature. There are several schools and theories on this topic, which were divided into two main parts in the first chapter of the thesis. To the first part belong the theories concerning the determinants of FDI and to the second those of dealing with the effects of FDI on the host economies.

Regarding the determinants, theories and empirical evidence have been organised into a framework based on three factors: ownership-, location-specific, and

internalisation advantages for the investors. The thesis applied this framework to that extent that it focused on the location-specific advantages of the two countries. Regarding the effects of FDI, the emphasis has been put on the fields of technology, productivity, production structure and especially foreign trade, therefore the literature concerning these fields were described in the beginning chapter.

Following the theoretical survey, the general characteristics of FDI in the two countries were described in the second chapter. The amount of FDI absorbed by both economies has been significant in terms of both GDP and investments. However, as it turned out, the share of FDI appears to be much bigger in Hungary than in Spain: the estimated stock of FDI as of the end of 1999 in Hungary was 40% of GDP while in Spain the corresponding figure was 23%. It is a difference between the two countries that while in Hungary a major way of FDI involvement has been the privatization process, in Spain privatization began relatively late and was carried out without significant involvement of foreigners. The two types of privatization are rather different in their characteristics, scale and nature.

The distribution of foreign capital in the two countries is to a large extent similar. It was interesting to remark that in both countries foreign investors preferred the same „globalised" manufacturing industries: chemical sector, electrical machinery, motor vehicles and food industry register the highest shares of foreign investment. Regarding the distribution of FDI, one of our previous hypotheses was, that the bigger the country-size (market-size) the more FDI is oriented to domestic market. However, the results of the surveys and econometric studies suggest that in both countries FDI is devoted to supply both the domestic and export markets, which finding is to a certain extent contradictory to the mentioned hypothesis. In the case of Hungary, several surveys pointed out that (as in the Spanish case) the local market is very important for investors. There are two possible explanations for this. One is that the local market - however small it is - was still a new market. The other is to think that apart from being a local market, Hungary is also a regional one: somehow is a door to the Central-European market. As for the Spanish case, it is clear that the quite big size of the domestic market is one of its attracting factors, but it is also clear that a significant amount of FDI aims at supplying exports.

We attempted to determine the weight of foreign investment enterprises in the manufacturing sectors (foreign penetration). Foreign penetration (defined as the pure foreign share in the total nominal capital of the sector) in the Hungarian manufacturing industry increased rapidly in the nineties. In manufacturing as a whole, the share of foreign capital was 56.6% in 1997. If we take the total capital of foreign investment enterprises into consideration, their share in the sectoral nominal capital is even higher: in 1997 it was 71%. Foreign participation companies also have a determining role in the net sales revenue, total export and value added of the branches. In the Spanish case, any information on sectoral foreign penetration is only available for the end of the eighties and the beginning of the nineties. These data were obtained by the estimations made by studies. The latest estimation elaborated by Martín-Velázquez [1996] for the year 1993 obtained that 44.5% of manufacturing social capital was in foreign hands.

Having described and compared the major patterns of FDI in Spain and Hungary, our attention has been directed to the assessment of location-specific advantages of each country. In this respect, on the basis of the analysis carried out in Chapter III., some tentative conclusions emerge. First it seems that both the liberalisation process and EU membership have been important attraction factors of Spain for FDI. These two factors in great part coincided in time, liberalisation was a relatively gradual process still going on after the accession. The opening process of Hungary has been more rapid and radical in the context of its transformation to a market economy, which seems to have been also a key factor to attract FDI inflows. The expectation of the future joining to the EU can be considered as an additional positive factor to capture direct investment projects.

In both countries there are several types of general and regional investment incentives. In Hungary tax concessions benefited only foreign investors in the beginning in Hungary but since 1995, they benefit all investors. In the case of greenfield investments, investors were able to take advantage of tax allowances and special regulations such as customs-free zones. In any event, as it happen to be the case in Spain, major investors and large-scale projects (especially in the automotive industry) were able to negotiate special incentive packages.

Being a further location-specific advantage, theoretical studies have shown how

important the technological level and human capital endowment of a country are in the attraction of FDI. It seems that both Spanish and Hungarian policy-makers realised the tendencies concerning the rapidly increased role of knowledge and human capital and promoted R&D activity and innovation such as education. As an interesting difference, while Spanish incentives target mainly the small and medium-sized companies, the Hungarian policy measures have attracted the R&D activity of large multinationals in the country.

Relatively low labour costs belong to location-specific advantages too. Our calculations have shown that the labour costs of Hungary are still considerably behind those of Spain and far behind those of Germany while differences in productivity and unit labour costs are somewhat smaller. In spite of that, several studies proved that low labour costs alone (disregarding qualification) in neither countries played a major role in attracting FDI. Even for efficiency seeker investors the role of human capital, and the qualification of the workforce had higher importance in both countries.

Certainly, with the changes of macroeconomic situation and business environment location-specific advantages, as well as the motivations of investors change with time. It is a general experience, which is true for Hungary and Spain also. In this thesis we made an evaluation for both countries focusing to the nineties.

Having discovered the attractive factors for investors in the two countries, we tried to analyse the effects of FDI on the host economies. One can learn that FDI has had substantial effect on the economy structure. Apart from its direct impact on savings and investment it induced technological spillovers which has favoured productivity and growth. Those technological spillovers are however very difficult to measure. Spanish data show that companies with foreign (mainly majority) ownership spend more on R&D than domestic firms. The analysis of the structure of R&D expenditures showed that these mean first of all expenditure on technology import or licensing. The technology import of foreign investment enterprises increased a kind of technological dependency. Similarly to Spain, Hungarian experience shows that R&D intensity of FIE's is much higher than that of the domestic companies. In both countries we can find examples of establishment of R&D centres by multinational companies.

The structure of production and value added in the Hungarian manufacturing

industry has changed considerably in the nineties, to which the activity of foreign companies strongly contributed. Changes have been less pronounced in Spain in the same period. In both countries the presence of foreign capital is associated with a higher efficiency of labour. The effect of foreign capital as a determining factor was also detectable in the increase of productivity.

A major focus of our analysis has been the development of foreign trade in the two countries. Trade and FDI have been considered to be substitutes in the early theories, but later on their complementary relationship and the trade enhancing role of FDI was put into the foreground. Chapter IV further on concentrated on the analysis of the changes in foreign trade specialisation and the likely influence which FDI may have had on it. In the development of the foreign trade of Spain and Hungary, the liberalisation process has had similar consequences. In both countries we can observe a considerable increase in exports and imports. The increase has been more pronounced in the case of imports, therefore the balance of foreign trade deteriorated rapidly and drastically. (As it has been seen in the third chapter, in the case of Hungary this deterioration even caused balance of payment problems in the beginning of 1995. In Spain the trade deficit could be balanced by EU transfers and tourism revenues). It is most probable that the foreign investment enterprises contributed to the deterioration of the trade balance as for it was observed that in both countries these firms have more propensity to export and import than domestic companies and what is more, their propensity to import has been higher than to export. However, towards the end of the examined period, the activity of export-oriented foreign investment enterprises functioning in industrial customs-free zones in Hungary has strongly contributed to the improvement of the trade balance.

An important characteristic of Spanish and Hungarian exports to the EU is concentration. Although Spanish exports have been more concentrated during the whole period than those of Hungary, concentration increased rapidly in the case of Hungary also.

As mentioned, FDI had important effects on the production structure in both countries. Therefore, we presumed that these changes have also been manifested in the structure of exports. In Chapter IV, structural changes in the Spanish and Hungarian exports to the European Union have been examined through the

development of technology-intensity of the products between 1990 and 1998. In the product-classification we applied the method of the OECD, differentiating among high-tech, medium-tech and low-tech product groups. Based on the results, we can say that our assumption has been justified. Regarding Hungary, the share of high technology product groups in the exports increased extremely rapidly during the nineties. In 1998 this - in international comparison high - share (34.5%) was much higher than the corresponding Spanish figure (13.5%). The product-level analysis showed that this tendency has been due to a few technology intensive products produced by a small number of multinational affiliates in the country. The strong increase in share of high-tech products took place at the expense of the low-technology group.

In Spain no such radical changes were observed, high-, and medium-technology product groups increased and low-technology group decreased somewhat their share. Thus, the extent of the changes in the export structure coincides with the extent of the changes in the production structure; in both cases developments in Hungary have been more radical than in Spain.

The results of the simple structural analysis of the foreign trade give basis to suppose that the inter-, and intra-industry trade specialisation of the two countries have also changed. Inter-industry trade specialisation can be measured by one type of the so called revealed comparative advantage (RCA) indicator, which was applied in the thesis. One important result of the calculation valid for both countries is that traditional specialisation patterns prior to the liberalisation have not been reinforced afterwards. In Spain the deterioration of revealed comparative advantages - which took place in all manufacturing fields after the accession - has been the most striking in those labour intensive sectors where the country had traditionally comparative advantages. In several cases this kind of specialisation vanished. However, for the end of the examined period, the RCA indicator of certain labour intensive branches (textile-clothing and the food sector) showed positive values again, hinting to a certain re-specialisation to the traditional manufacturing sectors. Revealed comparative advantages of the transport equipment branch have been maintained during the period.

Developments in Hungary are to some extent similar, but also different in another sense. Similarly to Spain, revealed comparative advantages of low-technology

labour intensive traditional sectors (textile, food, etc.) decreased. This decrease has not meant the complete vanishing of advantages, specialisation remained existing. However, at the same time high-technology sectors appeared as new fields of revealed comparative advantages. As it was the case in the export-structure changes, this process is due to the same FDI-dominated product groups. In Hungary thus, the weakening of the specialisation on labour intensive, traditional products could be compensated by other goods. However, in Spain during the nineties no new areas of revealed comparative advantage emerged.

Having examined the inter-industry specialisation patterns, in chapter IV also an in-depth calculation and analysis of intra-industry trade indices were carried out. The results showed that the general level of IIT in the Spanish manufacturing sectors is higher than in the Hungarian one. The level of intra-industry trade increased both in Spain and Hungary during the examined period. Intra-industry trade was separated into horizontal (trade of same quality products) and vertical (trade of different quality products) types by applying the unit value calculation method, in order to judge whether a product quality upgrading has also taken place or not. It turned out that although in both countries vertical IIT dominates, the level of horizontal IIT in Spain is in every field higher than in Hungary. Regarding vertical IIT in Hungary, within this group the share of the low-quality type vertical IIT is generally higher, but the high-quality type has been increased. This increase, which hints to a product quality upgrading took place mainly in those product groups where the trade is dominated by multinational companies, presumably by intra-firm trade.

We also analysed the statistical components of the increase of intra-industry trade. Stemming from the properties of IIT index, such an increase can be observed in certain cases if the trade balance improves but also if the trade balance worsens. With the combination of the RCA and IIT indicator four different groups could be created regarding their “trade adjustment” process. Trade adjustment in Hungary has been very successful in almost all high and medium technology sectors, which means that the increase of IIT happened together with the increase of foreign trade balance. Both indices worsened in the case of pharmaceuticals and aircraft-

spacecraft, furniture and coke. In all low technology sectors, increases in IIT came from the worsening of the trade balance. In the Spanish case there are more sectors where trade adjustment can be said to have been negative. In the case of certain medium-tech and low-tech products, the value of both indices increased.

In overall, we can conclude that the effect of FDI on foreign trade is much more apparent in the case of Hungary than in Spain. As we have seen, a small number of foreign investment enterprises are responsible for the structural, inter-, and intra-industrial changes in Hungary, while in Spain no such strong role could be detected. This can be caused partly by the different size of the two countries (in the small Hungarian market, even the presence of domestic market-oriented FDI is manifested in exports to neighbouring regions) and to the possible lower extent of FDI penetration in Spain. Regarding the near future, based on the new investments and promises in sight, we can state that the concentration of the production and exports on high-tech goods in electronics and on car-industry products is likely to continue.[82]

Finally, based on the results of this thesis some implications for the economic policy can be made. The present technological structure of the Hungarian exports to the EU characterised by the high share of high-tech products is very promising in international comparison. If the maintenance or improvement of this „modern" structure of exports is desirable, than one way of this is to promote the investments of foreign companies specialised to high-tech products. Regarding promotion, the application of individual incentives can be effective only on the short run. On the long run, however, the improvement of the domestic technological capacity and of the links between domestic and foreign companies is

[82] Major latest investments announced: In November 1999 Audi decided to build a new new motor factory in Gyõr for DM 650 million. On the short run the plant will employ 500 employees, later on more. General Electric will set up a new plant with an investment of USD 100m to produce various energetic equipment for power plants in Veresegyhaza where GE is currently constructing an aircraft engine repair facility. Production is to start at the beginning of 2000. Korea's largest manufacturer of electronic equipments and parts, Samsung Electro-Mechanics Co (SEMCO) is planning to set up a new greenfield electronics assembly plant in Hungary through investment of USD 21m. Sony builds for USD 10 million an LCD monitor plant near to Budapest, Sanyo establishes a mobile phone battery factory in Dorog for USD 100 million and Nakashima a roller bearing factory in Debrecen for USD 10 million.

more important. Technological capacity means not only R+D expenditures but also the development of human capital. The development of these factors increase the attractiveness of the country in the future and able to maintain and improve competitive positions internationally and also within the European Union.

Annex

Table A1a: Stock of inward FDI as a percentage of the GDP

	1990	**1994**	**1995**	**1997**	**1998**	**1999**
Hungary	1.7	15.6	26.7	34.7	38.5	39.9
Spain	13.4	25	20	19	21.5	23.1

Table A1b: Inflow of FDI as a percentage of gross fixed capital formation

	1991	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**
Hungary	21.2	20.2	32.1	13.7	52.8	20.6	20.5	17.4	12.8
Spain	10	10.6	10.1	9.8	5.9	5.7	5.9	9.5	7.3

Source: UNCTAD World Investment Report 1999

Table A2: Geographical origin of foreign investments in % of total, Spain

Hiba! A könyvjelző nem létezik.	**1960-79**	**1980-85**	**1986-90**	**1991-96**
EU 15	38,7	41,8	60,0	62.0
France	6,8	9,6	14,8	14.4
Netherlands	4,3	7,1	18,8	13.2
Germany	12,1	10,7	7,9	10.5
UK	8,7	7,7	9,5	8.6
USA	33,4	17,9	4,0	6,3*
Reinvestment	3,0	12,1	22,5	22,6*

* data for 1991-1994

Source: based on DGTE data Martín-Velázquez [1996a] p. 166. and Martín [1997] p.219.

Table A3: FDI inflows into Hungary (millions of current US dollars)

	1991	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**
Cash	1459	1471	2339	1147	4453	2275	2173	2037	1944
In kind	155	170	142	173	117	57	22	11	7
Total	1614	1641	2481	1320	4570	2332	2195	2048	1951

Source: Hungarian National Bank and Ministry of the Economy

Table A 4.: Development of foreign penetration (Foreign capital/nominal capital, %)

ISIC	Industries	**1993**	**1996**	**1998**	**increase 98/93**

15	Food products, beverages	41.45	50.59	61.02	1.47
16	Tobacco	95.47	67.39	86.84	0.91
17	Textiles	23.69	47.63	53.37	2.25
18	Wearing apparel, dressing	28.49	38.50	49.21	1.73
19	Tanning and dressing of leather	14.40	34.37	50.47	3.50
20	Wood	18.46	51.20	50.95	2.76
21	Paper and paper products	34.45	43.65	69.19	2.01
22	Publishing, printing	27.07	31.33	28.69	1.06
23	Coke and petroleum	0.13	31.51	54.61	420.08
24	Chemicals	19.64	58.71	58.87	3.00
25	Rubber and plastic	40.02	56.86	49.85	1.25
26	Other non-metallic minerals	48.23	68.85	68.78	1.43
27	Basic metals	11.30	36.15	51.06	4.52
28	Fabricated metals	32.41	33.31	60.57	1.87
29	Machinery and equipment n.e.c.	24.53	44.85	49.01	2.00
30	Office machinery	31.23	60.80	77.78	2.49
31	Electrical machinery and app.	73.26	85.06	81.32	1.11
32	Radio, TV sets	17.72	46.29	64.39	3.63
33	Medical, precision, opt. instruments	15.18	29.12	30.91	2.04
34	Motor vehicles, trailers	38.17	64.45	79.52	2.08
35	Other transport equipment	55.11	37.06	39.62	0.72
36	Furniture, manufacturing n.e.c.	22.92	29.41	39.55	1.73
37	Recycling	39.36	15.28	26.67	0.68
D	**Manufacturing**	**31.31**	**50.20**	**59.75**	1.91

Source: calculations based on Central Statistical Office data

Table A 5.: Share of foreign investment enterprises (1998, in percentages)

ISIC		number of organisa-	no.of emplo- yees	net sales revenue	export sales

		tions			
15	Food and beverages	12.93	40.26	55.71	66.98
16	Tobacco	62.50	87.87	95.71	100.0
17	Textiles	15.44	38.32	55.93	72.06
18	Wearing apparel, dressing	11.51	32.88	47.20	60.23
19	Tanning and dressing of leather	20.39	47.77	57.28	77.12
20	Wood	9.74	23.04	45.50	69.38
21	Paper and paper products	13.67	55.81	77.58	85.84
22	Publishing, printing	6.90	21.14	40.53	31.11
23	Coke and petroleum	25.00	99.91	99.97	100.0
24	Chemicals	21.94	72.32	83.62	92.38
25	Rubber and plastic	15.16	40.96	51.68	64.92
26	Other non-metallic minerals	15.28	50.49	70.18	81.26
27	Basic metals	15.87	36.64	47.66	59.40
28	Fabricated metals	10.55	30.84	39.06	62.52
29	Machinery and equipment n.e.c.	12.58	42.23	52.57	76.09
30	Office machinery	12.64	77.33	95.80	99.86
31	Electrical machinery and app.	13.01	66.81	79.91	92.74
32	Radio, TV sets	12.20	46.42	82.80	87.03
33	Medical, precision, opt. instruments	11.10	35.06	40.60	57.14
34	Motor vehicles, trailers	28.90	79.13	96.85	99.12
35	Other transport equipment	13.36	35.99	48.62	79.06
36	Furniture, manufacturing n.e.c.	9.01	25.72	32.99	56.47
37	Recycling	12.18	29.72	31.63	85.53
D	**Manufacturing**	**11.76**	**44.88**	**70.01**	**85.86**

Source: calculations based on Central Statistical Office data

Table A6: Changes in industrial structure (net sales revenues of manufacturing = 100, 1998 prices)

	1990	**1998**

Food, drink, tobacco	26.4	18.8
Textile, clothing	7.7	4.5
Wood, paper, printing	5.1	5.3
Chemicals	25.2	17.5
Non metallic mineral	4.0	3.1
Coke and petroleum	12.1	9.3
Machinery	17.4	39.9
Other manufacturing	1.9	1.2
Manufacturing total	**100**	**100**

Source: Central Statistical Office

Table A7: Productivity (value added/number of employees, USD thousand) in Hungarian manufacturing

		All firms		Firms with 50-90% foreign share		Firms with 100% foreign share	
ISIC Code	Industries	**1993**	**1996**	**1993**	**1996**	**1993**	**1996**
15	Food products, beverages	8	10	15	15	17	16
16	Tobacco	18	28	n.a.	n.a.	n.a.	n.a.
17	Textiles	5	5	9	9	5	9
18	Wearing apparel, dressing	4	4	6	6	4	5
19	Tanning and dressing of leather	4	4	4	6	5	7
20	Wood	4	5	10	11	7	17
21	Paper and paper products	9	15	12	24	12	29
22	Publishing, printing	9	9	16	16	18	18
23	Coke and petroleum	47	43	n.a.	n.a.	n.a.	n.a.
24	Chemicals	15	20	27	23	22	26
25	Rubber and plastic	7	10	9	14	21	18
26	Other non-metallic minerals	9	10	13	19	16	19
27	Basic metals	6	9	8	8	10	11
28	Fabricated metals	5	7	8	11	9	12

29	Machinery and equipment n.e.c.	7	5	9	10	8	13
30	Office machinery	8	24	6	5	1	82
31	Electrical machinery and app.	6	12	7	14	7	15
32	Radio, TV sets	6	9	12	11	11	14
33	Medical, precision, opt. instruments	7	9	12	13	10	13
34	Motor vehicles, trailers	10	19	27	25	10	58
35	Other transport equipment	5	11	6	9	-3	7
36	Furniture, manufacturing n.e.c.	5	4	6	8	8	7
D	**Manufacturing**	**8**	**9**	**12**	**15**	**11**	**17**

Source: Borsi et al. [1998] from Central Statistical Office data

Table A8: Geographical composition of Spanish foreign trade

	1990		**1998**		**1999**	
	Export	**Import**	**Export**	**Import**	**Export**	**Import**
EU	69.3	59.5	71.5	66.9	72.5	67.4
Germany	13.5	16.4	13.6	15.4	13.2	15.7
France	20.7	14.6	19.5	18.2	19.6	18.1
Italy	11.5	10.1	9.3	9.7	9.2	9.1
UK	8.0	7.2	8.4	7.4	8.4	7.5
USA	5.8	8.2	4.2	5.8	4.3	5.4
Japan	1.1	4.4	0.9	3.0	1.0	3.2
Total	100	100	100	100	100	100

Source: calculations based on Banco de Espana data (Boletín estadístico, July 1999 and March 2000.)

Table A9 :The first ten product groups in the EU-import from Spain

SITC	**1990**	**SITC**	**1993**	**SITC**	**1996**	**SITC**	**1997**
78120	16.10	78120	20.47	78120	18.56	78120	17,14
78439	3.99	78439	4.44	78439	3.87	78439	3,88
78219	2.79	99999	2.76	78219	2.75	78219	3,69
85148	1.96	78219	1.75	71322	1.62	99999	3,50

05712	1.62	05712	1.61	99999	1.57	71322	1,45
42141	1.46	85148	1.35	05712	1.27	76110	1,34
05711	1.30	05459	1.21	85148	1.16	85148	1,09
71322	1.23	05711	1.14	76110	1.06	11217	1,08
05459	1.06	11217	1.10	05711	1.01	05440	1,00
11217	0.99	76110	1.10	05459	1.01	05712	0,98
SUM	**32.53**	**SUM**	**36.96**	**SUM**	**33.93**	**SUM**	**35,15**

Source: Own calculations based on SITC 5-digit nomenclature, Eurostat Comext.

Name of SITC numbers: 05440: tomatoes fresh or chilled, 05459: vegetable fresh or chilled, 05711: oranges fresh or dry, 05712: mandarines fresh or dry, 11217: wine, grape must, 42141: virgin olive oil, 71322:piston engines of a cyl. capacity exc.1000cc, 76110: television receivers, color or sound and video recorders, 78120: motor vehicles for the transport of persons, 78219: motor veh.for the transport of goods, 78439: parts and accessories for motor vehicles, 85148: footwear of leather

Table A10: Geographical composition of Hungarian foreign trade

	1990		**1998**		**1999**	
	Export	**Import**	**Export**	**Import**	**Export**	**Import**
EU	35.4	36.8	73.0	64.1	76.2	64.4
Germany	20.1	23.3	36.6	28.2	38.4	29.2
Austria	7.5	9.9	10.6	9.6	9.6	8.9
Italy	5.8	4.0	5.7	7.5	5.9	7.7
CEEC's	14.0	11.3	15.9	15.1	12.4	14.3
Russia	20.1	19.0	2.8	6.5	1.4	5.8
Total	100	100	100	100	100	100

Source: calculations from CSO and Ministry of Economy data

Table A11: The first ten product groups in the EU-import from Hungary

SITC	**1990**	**SITC**	**1993**	**SITC**	**1996**	**SITC**	**1998**
85148	1.78	77313	3.20	71322	8.16	71322	12,89
00121	1.72	85148	2.35	77313	3.06	75270	4,37
01291	1.49	71322	1.84	78120	2.54	76381	3,48
85190	1.33	85190	1.74	33430	1.50	78120	2,96
01235	1.32	84230	1.33	76499	1.44	75997	2,53
01233	1.18	22240	1.31	76110	1.41	77313	2,49
77821	1.12	01235	1.27	78439	1.35	76110	2,24
84230	1.08	84140	1.21	85148	1.31	78439	1,80

01232	1.07	84130	1.20	75997	1.29	75260	1,45
77521	1.04	84270	1.10	85190	1.13	71323	1,42
SUM	**13.17**	**SUM**	**16,60**	**SUM**	**23.24**	**SUM**	**35,63**

Source: own calculations based on Eurostat Comext

Name of SITC numbers: 00121:sheep, live, 01232: poultry, not cut in pieces, frozen, 01233: fatty livers of geese, 01235: poultry cuts, frozen, 01291: meat of rabbits, hares, fresh or frozen, 22240: sunflower seeds, 33430: gas oils, 71322: reciprocating piston engines of a cylinder capacity exceeding 1000 CC, 71323: compression-ignition engines (diesel or semi diesel) for road vehicles 75260: input/output units in data processing 75270: storage units for data processing 75997: parts of automatic data processing machines, magnetic or optical readers 76110: television receivers, color or sound and video recorders, 76381:video recording or reproducing apparatus 76499: parts of sound recorders and TV image and sound recorders or reproducers, 77313: ignition and other wiring sets used in vehicles, 77821:filament lamps, 78120: motor vehicles for the transport of persons, 78439: parts and accessories for motor vehicles 84130: men's jacket, wowen, 84140: men's trousers, woven, 84230:women's jacket of wowen textile, 84270: blouses, shirts of woven textile, 85148:footwear of leather, 85190: parts of footwear

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