

# THE DETERMINING FACTORS OF FOREIGN DIRECT INVESTMENT IN SPAIN AND THE REST OF THE OECD: LESSONS FOR THE CEECS

Carmela Martín and Francisco J Velázquez

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Centre for Economic Policy Research  
25–28 Old Burlington Street  
London W1X 1LB  
Tel: (44 171) 878 2900  
Fax: (44 171) 878 2999  
Email: cepr@cepr.org

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## ABSTRACT

### The Determining Factors of Foreign Direct Investment in Spain and the Rest of the OECD: Lessons for the CEECs\*

This paper – using an estimation of an econometric model with panel data – investigates the determining factors in bilateral direct investment flows between OECD countries (except for the more recently-incorporated former communist countries of Central and Eastern Europe, or CEECs) over the past decade. Although the research seeks to explore the general patterns in OECD countries, it also attempts to detect the possible patterns specific to the Spanish case, which could prove particularly useful in drawing inferences for the CEECs. The findings suggest that international flows of direct investment between developed countries are explained not so much by factor endowment differences as by other variables suggested in Dunning's 'ownership-location-internalisation' (OLI) model.

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Carmela Martín  
Catedrática de Economía Aplicada  
Fundación FIES  
Juan Hurtado de Mendoza 14  
28036 Madrid  
SPAIN  
Tel: (34 1) 359 0281  
Fax: (34 1) 350 3940  
Email: cmfies@lander.es

Francisco J Velázquez  
Departamento de Estudios Europeos  
Fundación FIES  
Juan Hurtado de Mendoza 14  
28036 Madrid  
SPAIN  
Tel: (34 1) 350 5988  
Fax: (34 1) 350 3940  
Email: cmfies@lander.es

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## NON-TECHNICAL SUMMARY

The objective of this paper is to explore, by estimating an econometric model, the determining factors in bilateral foreign direct investment (FDI) flows in OECD countries during the past decade, with special emphasis on Spain.

The reason for the emphasis on the Spanish case is two-fold. First, Spain has been one of the preferred targets of FDI within the OECD. Second, Spain's experience is especially useful in drawing inferences for the former communist countries of Central and Eastern Europe (CEECs), in particular Hungary, the Czech Republic and Poland, which (as in the case of Spain in the past) are now forging strategies to attract FDI as a way of achieving sustained economic growth within the framework of their membership of the OECD.

Here it is worth adding, with caution in comparing countries whose economic systems were very dissimilar until recently, that the Spanish case could prove particularly germane to the CEECs for at least two reasons. First, it exemplifies the experience of overcoming a situation of autarky which prevailed for nearly two decades (1939–59). In this respect, Spain's experience is somewhat similar to the current situation in the new market economies of Europe following the recent collapse of communism and the resulting elimination of the COMECON. Second, the Spanish economy provides a good point of reference for studying the repercussions of the process of integration in the European Union and, by extension, for helping to forecast the changes that FDI may engender in emerging market economies as they advance in the EU integration process initiated by the Europe Agreements.

The findings of the econometric analysis, aimed at explaining the bilateral investment flows between OECD countries in the past ten years, concur with the hypothesis suggested in the most recent theoretical studies that a prerequisite of any FDI project is the availability of a specific advantage – some form of intangible asset – on the part of the investor with respect to the firms located in the host country. In particular, the findings underscore the relevance of the variable that measures the technological advantage of the investor country *vis-à-vis* the host country.

Moreover, as indicated in the results of the econometric estimation, the characteristics of these bilateral flows would seem to be determined – among other factors that could not be explored for lack of data – by the size and vitality of the host country's market, the scale of its transport infrastructure and

the availability of skilled labour, all of which attract foreign capital. The results also confirm the idea that distance between the countries in question has a negative effect on direct investment flows between them, i.e. geographical proximity acts as an incentive for this type of investment.

Also, as expected, legal regulations governing direct investment (outward and inward flows, although the latter in particular) appear to have a significant impact on the geographical structure of FDI flows among OECD countries.

Finally, as in previous studies, the findings failed to detect any significant impact of the differences in the countries' relative factor endowments (capital and labour) on the geographical distribution of capital movements in the form of direct investment between them. It is worth noting, however, that the analysis aimed at detecting Spain's possible peculiarities with respect to the OECD countries as a whole shows that the latter variable is very close to significance in the case of the Spanish economy.

The most significant lessons for the CEECs to be inferred from the paper's findings on the Spanish case are as follows:

1. Membership of the EU has entailed an increase in the weight of member countries in the geographical structure of FDI received by Spain and an expansion in this type of investment. An analogous outcome is likely in the case of the CEECs as they advance towards integration with the EU.
2. The findings on the determining factors in bilateral direct investment flows between OECD countries, particularly those received by Spain, provide useful lessons for the design of FDI policies in the CEECs. Among other results are those that indicate that the supply of skilled labour, a large and dynamic market (in terms of GDP and per capita GDP), the availability of good transport infrastructure, and liberal regulations with respect to foreign investment, are essential factors in attracting capital from abroad. Moreover, geographical location is an important element in determining a country's locational attractiveness to foreign investors. Finally, judging by the specific findings for Spain, it is reasonable to believe that widely-known advantages in labour costs like those in the CEECs can help to attract foreign direct investment.

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## 1. Introduction

The objective of this paper is to explore, by estimating an econometric model, the determining factors in bilateral foreign direct investment (hereafter FDI) flows in OECD countries during the past decade, with special emphasis on the case of Spain.

The reason for placing the Spanish case in a priority position is twofold. First, Spain has been one of the preferred targets of FDI within the OECD. Second, Spain's experience is especially useful in drawing inferences for the former communist countries of Central and Eastern Europe (hereafter CEECs), in particular Hungary, the Czech Republic and Poland, which -as in the case of Spain in the past- are now forging strategies to attract FDI as a way of achieving intense and sustained economic growth within the framework of their recent or imminent incorporation in the OECD.

Here it is worth adding -with all due caution in comparing countries whose economic systems were very dissimilar until recently- that the Spanish case could prove particularly germane to CEECs for at least two reasons. First, because it exemplifies the experience of overcoming a situation of autarky that had prevailed for nearly two decades (1939-59). In this respect, Spain's experience is somewhat similar to the current situation in the new market economies of Europe following the recent collapse of communism and the resulting elimination of the COMECON. Second, because the Spanish economy also provides a good point of reference for studying the repercussions of the process of integration in the European Union

and, by extension, for helping to forecast the changes that FDI may engender in emerging market economies as they advance in the EU integration process initiated by the Europe Agreements<sup>2</sup>.

After this introductory review of the study's objective and potential significance, the paper is structured in the following way. Section 2, after several brief methodological considerations, describes the pattern of capital flows to Spain in the form of FDI in recent years, taking into account the changes in the related legal framework, and then it examines the sectoral composition and geographical structure of FDI. Section 3 studies the determining factors in FDI, not only in Spain but also in the industrialised economies as a whole through an econometric estimation of a model applied to the bilateral flows of direct investment of OECD countries. Lastly, besides presenting the conclusions, several considerations of a more general nature are given regarding the possible lessons for Central and Eastern European countries that can be drawn from the Spanish case, with a view to designing an appropriate policy for foreign investment in Spain and, insofar as possible, in CEECs -as noted above, these countries were quick to undertake policies of incentives for FDI which, to some extent, can be likened to the policy applied to the Spanish economy since the Stabilisation and Liberalisation Plan of 1959.

## **2. Evolution and structure of FDI investment flows in Spain**

Since, as stated, one of the purposes of this study is to make its findings



useful to CEECs, it would seem best to analyse the pattern of FDI in Spain from a historical perspective, going back to the early 1960s. Only in this setting can a full picture be given of the opening-up of the Spanish economy, a process that put an end to a period of autarky that had lasted two decades.

Thus, it was the Stabilisation Plan of 1959 -and the accompanying complementary measures creating a more open and flexible economy- that ushered in a radical change in Spain's strategy of economic development.

In response to this policy change, in the early 1960s foreign investment flows -insignificant in the period of autarky (1939-1959)- began to increase steadily, eventually becoming a key and characteristic factor in Spain's economic development. Within the overall flow of investment, the object of our study, FDI, unquestionably played the most prominent role.

In the absence of a single source of information, data had to be drawn from a diversity of statistical sources<sup>3</sup>. Thus, despite every effort to make the data homogeneous, there are inevitably certain methodological breaks in the data series used.

Chart 1 reflects FDI flows in constant terms (millions of 1990 dollars) from 1960 to the present. As shown, the volume of FDI, insignificant in 1960, has steadily risen, a pattern that was only interrupted during the most serious stages of recession (1974-77 and 1990-93), with spectacular growth rates during the

first few years of Spain's membership of the European Union.

[CHART 1 around here]

For a proper evaluation of Spain's attractiveness as a host country for FDI, note that in the period 1986-1992 (the last year for which complete data on FDI received from all OECD countries are available) Spain absorbed 6.7% of total FDI received by OECD countries (see Table 1, column 1).

[TABLE 1 around here]

The notable and growing importance of FDI with the passage of time is confirmed if we analyse the growth in its rate of participation in GDP and FBKF (see Charts 2 and 3), and, to an even greater extent, if we compare the share of FDI in Spanish GDP with that of the rest of the OECD countries (see Table 1, column 2).

[CHARTS 2 and 3 around here]

It should be stressed that there appears to be a close correlation between these trends in FDI and the increasingly liberal regulatory framework governing this type of investment. Thus, the growth rate of FDI generally quickens in the periods following the enactment of new laws aimed at liberalising and encouraging foreign direct investment. Nevertheless, it is noteworthy that the boom in FDI flows during the period 1986-90 does not seem to be associated so much with a specific change in legislation as with the process of Spain's integration in the European Community (now the EU) and with the simultaneous launching of the Single

## Market Programme.

The data on authorised or verified FDI projects compiled by the Directorate General of Foreign Transactions give an idea of the structure, both sectoral and geographical, of total FDI.

By sector, the manufacturing industry ranks as the leader (see Chart 4). Between 1960 and 1985, this industry absorbed more than 70% of total FDI. Subsequently, i.e., after Spain's entry into the Community, service sectors - especially financial and commercial services- became the preferred target of foreign investment. However, in more recent years this shift in the sectoral focus of FDI -a widespread tendency in most countries, according to reports of the United Nations<sup>4</sup>- seems to have halted. Thus, as illustrated in Chart 4, during the 1990s the manufacturing industry is once again the preferred target of FDI.

[CHART 4 around here]

On closer examination, the sectoral breakdown of manufacturing FDI (in the years for which data are available) reflects a high degree of concentration in several sectors in particular -primarily chemical products, machinery (especially electrical goods), transport equipment (mostly automobiles), food, and non-metallic minerals (see Chart 5).

[CHART 5 around here]

As reflected here, the sectoral specialisation patterns of FDI in Spain are

quite similar to those in the great majority of countries. Thus, in Spain multinationals have also tended to concentrate on industries characterised by high levels of R&D relative to sales, a large share of skilled labour in their workforces, a high degree of product differentiation (either vertical or horizontal), and dynamic demand.

As to the geographical source of FDI flows, two features stand out in particular. First, the nearly absolute predominance of OECD countries, which in the 1960s and 1970s accounted for around 95%, on average, of the FDI received by Spain. In subsequent years, the relative weight of the OECD tended to decline, as reflected in Table 2. Nonetheless, it should be noted that this reduction is only apparent, since it is merely the result of an increase in the relative participation of the reinvestment of companies with foreign capital, most of which in fact originated in OECD countries.

[TABLE 2 around here]

A further aspect worth underscoring is the dominant position of the EU within the OECD countries as a whole. In addition, the data show that the relative weight of EU countries has grown constantly over time, especially since Spain's entry into the Union, largely at the expense of the United States. Within the EU, Germany, France and the United Kingdom have traditionally accounted for the largest shares. In this respect, it should be borne in mind that the significant presence of Holland is somewhat fictitious, in that it stems from the special fiscal benefits offered by Holland to foreign investors that use the country as an

intermediate base for projects which actually originate in other countries.

### **3. Main determining factors in FDI in Spain and other industrialised countries**

In this section, as our point of departure for exploring the possible determinants in FDI in Spain, we begin with a brief survey of the theoretical evidence (Section 3.1). We then go on to provide empirical evidence through an econometric estimate of a model applied to the bilateral flows of direct investment among OECD countries in recent years (Section 3.2).

#### **3.1. Brief synthesis of the theoretical evidence**

Although the economic literature on FDI and multinational companies is relatively abundant, it still fails to provide an adequate explanation.

The very complexity of these phenomena has produced a multitude of research efforts, theoretical and empirical, that have given rise to a broad range of explanatory hypotheses and models, all of which fall short of the mark<sup>5</sup>.

In any event, the most widely used theoretical base, at least in studies of an empirical nature, is what is known as the "eclectic theory" or the "OLI paradigm", developed in the work of Dunning -see Dunning (1974, 1980 and 1993)- in an attempt to combine the available evidence.

The OLI paradigm (ownership, location, internalisation), which in our view is more a taxonomic scheme than a formal model, postulates that FDI -and, by extension, the transnationalisation of firms- is explained by the advantages of owning property, which companies acquire by generating some type of intangible asset vis-à-vis the firms in the host country, along with the exploitation of the advantages of location and, in sum, the benefits of internalisation, when -as is usually the case- there are imperfections in international markets.

And so, in attempting to advance in our knowledge of the determinants of FDI in Spain and the rest of the OECD countries, we will also use the OLI paradigm as our guide. In this context, we focus our attention on location-related factors, since our prime interest here is to understand the reasons why the Spanish economy is a relatively attractive place for foreign investment.

In this respect, even though our knowledge of the strategies of multinational companies is too limited to allow us to list the criteria behind their location decisions and, even less, to know the relative significance of the criteria at play, we should begin by pointing out that the paradigm does allow us to know several of the principal ones.

Thus, on the basis of the neoclassical theory it can be argued that a country's relative factor endowments (of capital and labour) and natural resources are elements capable of influencing the location decisions in international direct investment. Together with these more traditional factors<sup>6</sup>, others are also known

to exist; although fairly marginal until recently due to the rigidity of the hypotheses in the neoclassical model of international trade, they have gained prominent positions with the development of this field of inquiry over the past two decades<sup>7</sup>.

Most notable among the factors emphasised in the more recent theories are geographical location, due to its repercussions on transport costs, and the size of the country, so important when economies of scale are recognised to exist in the activities of companies.

In particular, since the publication of Krugman's important work "Geography and Trade" (1991), interest in aspects related to the location of production has grown, not only due to the work's justified insistence on the importance of transport costs in international trade, but also, and even more importantly, because of Krugman's emphasis on the external economies associated with the spatial concentration of productive activity. In this respect, it should be noted that the recognition of the relevance of externalities of this type -which specialists in regional economy generally refer to as economies of agglomeration- has meant that greater attention is now paid to technology, labour skills and infrastructure, since they are considered determinants in these externalities or economies of agglomeration.

In fact, if externalities of this type are not acknowledged, it proves very difficult -if not impossible- to explain several of the observable patterns in the geographical structure of FDI at the world level, and, more concretely, the

predominance of relatively capital-intensive countries (and with higher per capita income), not only in the sphere of outbound FDI capital -as would be expected under the neoclassical model- but also in relation to the receiving end of this type of international investment (see Julius, 1990, and Hummels and Stern, 1994, for a closer examination of these findings).

In addition, among the other determining factors in corporate strategies of international location, the wide range of government incentives must be taken into account.

Lastly, a series of factors of an institutional, historical and cultural nature (language, among others) should not be overlooked, since there is increasingly clear evidence of their relevance in investors' location-related decisions.

Briefly stated, as indicate above, the available evidence does not allow the degree of influence of each of these factors to be weighed. To complicate matters, there are good reasons<sup>8</sup> to believe that the degree of relative influence of each factor has tended to change over time and to differ in terms of the target sector of foreign direct investment.

### 3.2. An Econometric analysis of the bilateral flows of direct investment in the OECD countries



With this description -admittedly intuitive and very abridged- of the main theoretical hypotheses used in the empirical studies of the determinants in FDI, we can now turn to apply an econometric analysis aimed at explaining the bilateral flows of direct investment between OECD countries over recent years, using as regressors all the factors in the OLI model for which data is available.

More specifically, the equation we will estimate, formulated in terms of panel data and expressed in logarithms, is the following:

$$\begin{aligned} \text{Lbdi}_{it} = & \beta_0 + \beta_1 \text{Lgdps}_{it} + \beta_2 \text{Ladv}_{it} + \beta_3 \text{Lgdph}_{it} + \beta_4 \text{Lgdppch}_{it} + \beta_5 \text{Lrlkcost}_{it} \\ & + \beta_6 \text{Lkh}_{it} + \beta_7 \text{Ldist}_{it} + \beta_8 \text{Linfri}_{it} + \beta_9 \text{bdios}_{it} + \beta_{10} \text{bdii}_{it} + \beta_{11} \text{front}_{it} + \varepsilon_{it} \end{aligned}$$

Where the meaning of the variables included in the equation are as follows:

*bdi<sub>it</sub>* = bilateral direct investment flow from the source country to the host country in the year t.

- gdps<sub>it</sub>* = GDP of the source country in the year *t*.
- tadv<sub>s</sub>* = technological advantage of the source country with respect to that of the host.
- gdph<sub>t</sub>* = GDP of the host country in the year *t*.
- gdppch<sub>t</sub>* = GDP per capita of the host country in the year *t*.
- rlkcost<sub>t</sub>* = ratio of labour/capital cost in the source country with respect to that of the host in the year *t*.
- hkh<sub>t</sub>* = human capital of the host country in the year *t*.
- dist<sub>t</sub>* = distance between the source and the host countries of the bilateral direct investment flow.
- tinfrh<sub>t</sub>* = transport infrastructure facilities in the host country in the year *t*.
- bdios<sub>t</sub>* = barriers to direct investment outflows in the source country.
- bdiih<sub>t</sub>* = barriers to direct investment inflows in the host country.
- front* = dummy variable showing the existence of common borders between the source and the host countries.

And where:

- i* = number of yearly bilateral direct investment flows in the OECD.  
In theory 552 (24 x 24 - 24).
- t* = 1983 ... 1992 (time period: 10 years).

The economic reasoning that justifies the presence of each of the

explanatory variables included in the equation and the expected subsequent sign of their parameters are explained below.

The first regressor, *gdps*, attempts to approximate the countries' capacity to generate new technological knowledge and other types of intangible asset which -under all the models of direct investment that build on Hymer's pioneering model- are essential for successful productive operations in other countries. Such an indirect method of approximating the advantages of ownership of the direct investor countries is justified by the association detected between the level of economic activity and technological capacity. In any event, these advantages of ownership are possibly better captured in *tdvts*, which is, precisely, the variable used to estimate the investor country's technological advantages with respect to the country on the receiving end of the investment flows, and which is also likely to show a positive sign.

The variables *gdph* and *gdppch* are used to test the influence -probably positive- that the countries' market size and their inhabitants' purchasing power have on the volume of direct investment that they receive. Indeed, these variables figure among those whose results have generally coincided the most with the findings of the empirical studies, carried out in Spain and abroad, of the determining factors in FDI.

The variable *rlkcost*, defined as the ratio of relative factor endowments, labour and capital, in the source and host countries of the investment flows,

evaluates the explanatory power of the more conventional -or neoclassical- hypothesis, which, of course, holds that direct investment flows, like other international capital movement, depend on relative prices.

As to the justification of the variable *dist* (distance between the source and host countries of the investment flow), it should be noted that this variable was introduced for the purpose of exploring not only the impact of the transport and transaction costs associated with the international investment project, but also the effects derived from the institutional, cultural and linguistic differences that are, to a greater or lesser degree, related to distance. Accordingly, we expect this variable's relationship with investment flows to be negative.

The variables *hkh* and *tinfrh* (human capital and infrastructure of the host country, respectively) are used to evaluate the significance of what, according to the most recent theoretical models, are the two essential factors in the location strategies of multinational firms, at least within the framework of the developed countries. In both cases, a positive sign is expected.

As to the variables for measuring the stringency of regulatory policies that affect both investment abroad (*bdios*) and foreign investment in the country (*bdiih*), a negative sign is expected.

The dummy variable showing the existence of common borders (*front*) is likely to present a positive sign, for the same reasons as discussed with respect to

the variable *dist*.

Lastly, in rounding off our observations on the variables in the equation, it is worth noting that the term random shocks incorporates two types of error: those associated with variables that change not only between individuals but also over time, and other errors related to possible factors that do not vary over time.

This said, and before going on to explain the method used in estimating the equation and commenting on its results, it would seem worthwhile to mention the difficulties posed in compiling the data for the dependent variable<sup>9</sup>.

The basic information used to construct the matrix of data on bilateral direct investment flows between the OECD countries in each of the ten years in the period studied was drawn from the OECD's publication "International Direct Investment Statistics Yearbook". In theory, therefore, this implies a total of 5,520 observations (552 bilateral investment flows -since Belgium and Luxembourg present joint data- and ten years). In practice, however, the number of data with a minimal degree of reliability is considerably smaller. Indeed, in a cursory examination and comparison of the figures for bilateral investment flows, which, also in theory, are given in the OECD publication from the standpoint of both the investor country and the host, the first two problems arise. On the one hand, missing figures for one or both sides. And, on the other, glaring disparities between the data on investment at source and at the receiving end.

In an attempt to overcome these problems, it was necessary to undertake the laborious task of cleaning the statistical data, for which two criteria were used. First, in line with the usual practice of international organisations, the data provided by the host country were considered the most reliable. And, second, in the absence of such information, the figures available for the source country were corrected on the basis of the results obtained from the regression analysis previously applied to the entire set of data, from the standpoint of both the source country and the host, using the latter as the dependent variable.

In this process of cleaning the statistics, the observations for which information was lacking were eliminated, as were the observations which reflected a disparity between the data for the investment issued and received that exceeded that of the sample as a whole, thereby reducing the number of observations to 4,797. But, once this was done and before beginning the calculation, cases involving nil or negative investment flows (in other words, disinvestment) had to be eliminated, with the result that the final sample was reduced to a total of 2,929 observations, which in turn were further reduced to 2,721 due to the one-off gaps in the data related to the variable *rikcost*.

In order to avoid the biases that can arise when applying the method of ordinary least squares (OLS) in estimates involving panel data, as in this case, we used -following Arellano and Bover (1990)- generalised least squares (GLS). Naturally, the use of the latter method, which provides more efficient estimators, is only advisable when no correlation exists between the individual effects and the

regressors. Consequently, this should be checked by applying the Hausman test (see Hausman and Taylor, 1981), which in turn requires comparing the GLS estimators and those obtained by applying the fixed-effects or within-groups estimator (WITHIN), which is always consistent<sup>10</sup>.

Thus, in preparing Table 3, which presents the results estimated under GLS, we also included -in order to illustrate more clearly the strategy used in the estimation- the results obtained by applying the other two methods.

[TABLE 3 around here]

As shown, the estimation of the equation under GLS is consistent (it passes the Hausman test) and efficient, and the values of the *t* statistics, associated with the coefficients of the explanatory variables, reflect the significance of all the variables, with only one exception: *rkkcost*, i.e., the variable that expresses the differential in the factor costs (labour and capital) of the investor country and the host.

Thus, our findings suggest that -contrary to the hypotheses of the neoclassical model- international flows of direct investment (at least those between developed countries) are explained not so much by the differences in relative factor endowments as by the variables suggested in the more recent theories and, logically, in their more or less underlying paradigm: the OLI model.

In fact, the scant relevance of factor endowment differences in explaining the recent patterns of international direct investment had already been detected in earlier studies (listed in Brainard, 1993), some referring specifically to the case of the Spanish economy (Bajo, 1991, and Bajo and Sosvilla, 1994, for example).

More concretely, according to the findings of the study, the variables that can best explain the bilateral investment flows within the OECD are, basically, the following. First, those that are most propitious to the investors' advantages of ownership: the scale of their economic activity and the level of their technological superiority vis-à-vis the host<sup>11</sup>. Second, the variables that determine the countries' capacity to attract foreign direct investment projects: distance, which, logically, is revealed as a disincentive, and endowments of transport and human capital infrastructure, which, by contrast, act as a factor of attraction for foreign capital. Among the latter, the variables that estimate the size and depth of the host country's market could be added.

Lastly, note should be had of the significance shown by the variables that reflect the legal framework governing direct investment abroad and, in particular, inward flows of foreign investment, as well as the apparently positive impact of common borders on the volume of bilateral direct investment flows between the bordering countries.

The above findings should be interpreted as general patterns among OECD countries, since a certain heterogeneity may be found at the individual level. In



seeking to ascertain the specifics of the Spanish case, we estimated a series of models in which each of the parameters specific to Spain is estimated sequentially, testing for statistical differences. Here we used an F test applied to the relative difference in the residual sums of the models<sup>12</sup>.

Two of the results are especially notable. First, those referring to the issuer's technological advantage, with a higher elasticity in Spain than in the OECD as a whole, both in receiving and in originating the investment. Second, the virtual significance of the variable that reflects the relative prices of labour and capital; from which it can therefore be inferred that this variable appears to exercise a greater impact on foreign investment in Spain than in the OECD on average.

#### 4. Conclusions and final remarks on the possible lessons for Central and Eastern European Countries drawn from Spain's experience

The paper's basic conclusions are summarised in the following points:

1) The paper provides evidence that the intense and growing inflow of FDI to the Spanish economy constitutes one of the defining features of Spain's economic development in recent decades. The strong acceleration in this flow of capital in the form of direct investment since Spain's entry into the EU has placed it among the OECD countries that are most attractive to foreign investors.

2) As to the structure of FDI and its changes over the years, most notable is the pronounced preference of investors for certain manufacturing segments: mainly chemical products, nearly all machinery products and transport equipment, food, and non-metallic mineral products. Since Spain's entry into the EU, however, investment has focused more on services, in particular financial and commercial services. Also notable is the general predominance of EU countries as the source of FDI flows received in Spain and their quickening after Spain joined the Union.

3) The findings of the econometric analysis, aimed at explaining the bilateral investment flows between OECD countries in the past ten years, concur with the hypothesis -suggested in the most recent theoretical studies- that one prerequisite of any foreign direct investment project is the availability of a specific advantage -some form of intangible asset- on the part of the investor with respect to the firms located in the host country. Concretely, the findings underscore the relevance of the variable that measures the technological advantage of the investor country vis-à-vis the host country.

Moreover, as indicated in the results of the econometric estimation, the characteristics of these bilateral flows would seem to be determined -among other factors that could not be explored for lack of data- by the size and vitality of the host country's market, the scale of its transport infrastructure and the availability of skilled labour, all of which act as attractions for foreign capital. The results also confirm the idea that the distance between the countries in question is a dissuasive element in the direct investment flows between them, or, stated

differently, geographical proximity acts as an incentive for this type of investment.

Also, as expected, legal regulations governing direct investment - both outward and inward flows, the latter in particular- appear to have a significant impact on the geographical structure of the FDI flows among OECD countries.

Lastly, the findings, like those of previous studies, failed to detect any significant impact of the differences in the countries' relative factor endowments (capital and labour) on the geographical distribution of capital movements in the form of direct investment between them. In this respect, however, it is worth noting that the analysis aimed at detecting Spain's possible peculiarities with respect to the OECD countries as a whole shows that the latter variable is very close to significance in the case of the Spanish economy.

Before concluding, we will attempt to summarise several of the lessons for Central and Eastern European countries that can be inferred from the paper's findings on the Spanish case. In our view, the most significant ones are as follows:

- a) As expected, the Spanish experience shows how the relinquishment of autarky and the application of an increasingly liberal policy with respect to foreign direct investment produce an acceleration in the inflow of direct investment. This leads us to believe that the experience of CEECs is likely to be similar, especially once the process of creating market economies has

culminated.

- b) Membership of the EU has entailed an increase in the weight of member countries in the geographical structure of FDI received by Spain and also, it would appear, an expansion in this type of investment. From this we can infer that an analogous outcome is likely in the case of CEECs as they advance towards integration in the EU.
- c) The findings on the determining factors in the bilateral direct investment flows between OECD countries, particularly those received by Spain, provide advice of great interest in relation to the design of FDI policies in Central and Eastern European countries. Thus, among other data, the results indicate that: the supply of skilled labour, a large and dynamic market (in terms of GDP and per capita GDP), the availability of good transport infrastructure and liberal regulations with respect to foreign investment are essential factors in attracting capital from abroad. Moreover, geographical location is also found to be an important element in determining a country's locational attractiveness to foreign investors. Lastly, judging by the specific findings for Spain, it is reasonable to believe that, in the case of countries - such as CEECs- which have very well known advantages in labour costs, such advantages can also act as a factor in attracting foreign direct investment.

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**APPENDIX:****DEFINITION OF VARIABLES AND THEIR STATISTICAL SOURCES****GROSS DOMESTIC PRODUCT (gdps and gdph)**

Defined in current terms and obtained from the OECD: National Accounts. Main Aggregates. Volume 1, 1960-1992.

**TECHNOLOGICAL ADVANTAGE OF THE SOURCE COUNTRY RELATIVE TO THAT OF THE HOST (tadv)**

To obtain an indicator of the technological advantage of the source country, the ratio of the technological level of the source to that of the host country was estimated. Each country's technological intensity was estimated as the percentage of workers employed in R&D activities in relation to the total workforce. To avoid the time "volatility" of the data resulting from short-term trends, the arithmetic mean for the period was calculated, and thus the indicator does not vary over time. The data were obtained from *OECD: Main Science and Technology Indicators (various years)*. For Mexico, pre-1992 data were obtained from *UNESCO: Statistical Yearbook (various years)*.

**GROSS DOMESTIC PRODUCT PER CAPITA (gdppch)**

Defined as the quotient between gdp and the population each year. The population figures were obtained from *OECD: National Accounts. Main Aggregates. Volume 1, 1960-1992*.

**RATIO OF LABOUR/CAPITAL COST IN THE SOURCE COUNTRY RELATIVE TO THAT OF THE HOST (rlkcost)**

This ratio reflects the quotient between labour and capital costs in the source country in relation to that of the host country.

The labour cost was measured as the quotient between the compensation of payroll employees and the number of payroll employees, obtained from *OECD: National Accounts. Detailed Tables. Volume II. 1980-1992*.

The real interest rate was taken as the indicator of capital cost. For this purpose, we used the long-term exchange rate, which the IMF considers the equivalent of the central government bond rate, although the non-availability of this information for some countries meant that the following interest rates, obtained from *IMF: International Financial Statistics, Yearbook 1994*, had to be used:

Central government bond rates:

Canada (long-term), United States (long-term), Japan, Australia (long term), New Zealand, Austria, Belgium, Denmark, France, Germany, Ireland, Italy

(long-term), Luxembourg, Holland, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom (long-term).

Lending rates:

Finland, Greece and Iceland.

Treasury bill rates:

Turkey and Mexico.

These interest rates were deflated using the implicit GDP deflator.

### HUMAN CAPITAL OF THE HOST COUNTRY (hkh)

The human capital of each country was calculated on the basis of the weighted sum of the number of students enrolled at all academic levels between 1950 and the year for which the stock of human capital was estimated, divided by the total population.

To construct the weighting to be applied to each educational level, we used the average expenditure per student at each level in 1991 in the OECD as a whole, divided by the total cost of educating a university student, taking into account an average educational system for these countries. This procedure is applied in the following way:

School level	Average annual cost per student (\$) (A)	Average no. of years at each level (B)	Cost per level (C=A*B)	Weighting (A/c.4)
1. Primary	3,794	6	22,764 (c.1)	0.0376579420
2. Secondary	5,265	6	31,570 (c.2)	0.0522585832
3. Tertiary	9,279	5	46,375 (c.3)	0.0921001697
Cost of educating a university student (c.1+c.2+c.3)			100,749 (c.4)	

These weightings are invariable over time and between countries. The resulting indicator should be interpreted as the percentage of the population with a university -or equivalent- education.

The figures for the number of students enrolled were obtained from *United Nations: Statistical Yearbook (various years)* and were rounded off with data from *UNESCO: Statistical Yearbook (various years)*. Information on the average cost per student at each school level in the OECD countries was obtained from *OECD (1993): Education at a Glance, OECD Indicators*. The latter two statistical sources



provided the basic data used to define the "average" educational system of this group of countries.

#### **DISTANCE (dist)**

The distance between each pair of countries was measured as the distance separating their capital cities and was obtained from the programme *PC Globe versión 4.0*.

#### **TRANSPORT INFRASTRUCTURE FACILITIES IN THE HOST COUNTRY (tinfrh)**

The variable related to the country's transport infrastructure facilities was constructed as the simple average of the infrastructure indicators per unit of area and per inhabitant. The infrastructure indicator was estimated as the weighted sum of the number of kilometres of each category of roadway. As a weighting element, it was assumed that one kilometre of national roadway offers one-fourth the equivalent service of a motorway, and that a regional roadway offers one-eighth and that a kilometre of a local or urban roadway provides one-sixteenth of the service of a motorway. Also, each of the two indicators (per area and per inhabitant) were standardised by dividing by the simple average of that of the 24 countries in question.

The basic information on roadway facilities by category was obtained from *United Nations: Annual Bulletin of Transport Statistics for Europe (various years)*, which distinguishes between five types of roadway (motorways, national roadways, regional roadways, local roads and urban roads). For Japan, New Zealand and Mexico, the indicator was constructed on the basis of the relative scores for infrastructure facilities presented in *IMD and WEF (1994): The World Competitiveness Report*. Information for Australia was provided by the Australian Embassy in Spain.

#### **BARRIERS TO DIRECT INVESTMENT INFLOWS IN THE HOST COUNTRY (bdiih)**

As an indicator of the legal barriers to foreign direct investment, the ranking presented in *IMD and WEF (1994): The World Competitiveness Report* was used as a starting point. This ranking, which examines the accessibility of local capital markets in all participating countries, was then divided by the arithmetic mean of the scores of the 24 countries included in the study for the purpose of standardising the result.

#### **BARRIERS TO DIRECT INVESTMENT OUTFLOWS IN THE SOURCE COUNTRY (bdios)**

The same procedure and the same statistical source as in the previous case were used here, drawing on a ranking of the accessibility of foreign capital markets to domestic enterprises (section 4.11). This ranking was also standardised in the same way as explained above.

**NOTES**

<sup>1</sup> (\*) This paper is based on the findings of research undertaken with the support of the European Commission's Phare ACE Programme.

<sup>2</sup> See Baldwin (1994) for references and Martín (1995) for an assessment of the likely economic impact of the Europe Agreements on Spain.

<sup>3</sup> Primarily, the Bank of Spain's cash-basis accounts (only reflecting FDI entailing cross-border monetary movements), the Directorate General of Foreign Transactions (providing data solely on "authorised or verified projects", i.e., related to FDI projects, which may, of course, differ from the actual FDI made), and other very diverse sources that provide FDI data compiled from surveys of firms.

<sup>4</sup> See UN (1992, 1993).

<sup>5</sup> For an idea of the state of the issue, readers are referred to the following surveys: Caves (1982), Dunning (1993), and Markusen (1995). In all of them, the pioneer role played by Hymer (1960) is recognised.

<sup>6</sup> In fact, as stated in Brainard (1993), there is little evidence that FDI is related to differences in factor endowments across countries.

<sup>7</sup> An excellent synthesis of the main factors can be found in Grossman (1992) and Markusen (1995).

<sup>8</sup> See, for example, Katseli (1992) and the references therein.

<sup>9</sup> The statistical sources used for the other variables are given in Appendix 1.

<sup>10</sup> More concretely, the Hausman test applied here allows us to accept the hypothesis that the individual effects and the explanatory variables are independent, and therefore the use of GLS, if it accepts the equality between the parameters obtained by the within-groups estimator (i.e., the application of OLS after the variables have been transformed, by subtracting their average time) and the GLS estimator.

<sup>11</sup> Due to the absence of data, it was not possible to test the likely influence of other variables (commercial reputation linked to brands, management capacity, etc.) that may also give rise to an advantage of ownership.

<sup>12</sup> Thus, for testing linear restrictions, we used a test based on the sums of squared errors,

$$\frac{SSE^* - SSE}{q}$$

which follows an  $F_{q, T-k}$  distribution. Where  $SSE^*$  and  $SSE$  are obtained from the

restricted regression model and the full regression model, respectively.

**TABLE 1****FOREIGN DIRECT INVESTMENT FLOWS IN OECD COUNTRIES: INFLOWS (\*)**

	Geographical Distribution (%) 1986-1992	Share in GDP (%) 1986-1992
<b>TOTAL OECD</b>	100.00	0.79
<b>EU</b>	51.45	1.05
Germany (1) (2)	2.50	0.21
Austria	0.43	0.36
Belgium-Luxembourg (1)	5.16	3.46
Denmark	0.67	0.69
Spain (1)	6.74	1.96
Finland	0.31	0.35
France (1)	7.29	0.83
Greece	0.74	1.49
Netherlands	4.14	1.95
Ireland	0.07	0.22
Italy (1)	3.05	0.38
Portugal	1.40	2.77
United Kingdom	17.29	2.39
Sweden	1.67	1.00
<b>OTHER OECD COUNTRIES (3)</b>	48.55	0.62
Japan	0.69	0.03
United States	36.42	0.84
Other	11.44	1.12

(\*) These figures are cumulative investment current flows. In addition Mexico is not included in the OECD.

(1) Reinvestment earnings are not included in national statistics.

(2) The figures cover unified Germany for 1991 and 1992.

(3) Reinvestment earnings are not included in national statistics of Canada and Iceland.

Source: OECD/DAF, Based on official national statistics from the balance of payments converted in dollars at daily average exchange rate.

**TABLE 2**

**FDI IN SPAIN (1960-1994): GEOGRAPHICAL DISTRIBUTION (%)**

	1960-1979	1980-1985	1986-1990	1991-1994
<b>OECD</b>	94.6	76.2	72.9	74.2
<b>EU15</b>	38.7	41.8	60.0	63.3
France	6.8	9.6	14.8	13.5
Belgium-Luxembourg	3.7	2.7	3.0	3.3
Netherlands	4.3	7.1	18.0	25.9
Germany	12.1	10.7	7.9	7.2
Italy	1.7	2.0	4.0	3.6
United Kingdom	8.7	7.7	9.5	6.9
Ireland	0.1	0.3	0.0	0.1
Denmark	0.2	0.5	0.5	0.5
Greece	0.0	0.0	0.0	0.0
Portugal	0.1	0.0	0.2	1.0
Rest of EU15	1.0	1.3	2.0	1.3
<b>OTHER OECD COUNTRIES</b>	55.9	34.2	12.9	10.9
USA	33.4	17.9	4.0	6.3
Japan	0.5	3.6	2.3	1.4
<b>REINVESTMENT</b>	3.0	12.1	22.5	22.6
<b>NON-OECD COUNTRIES</b>	2.4	11.8	4.6	3.2
<b>TOTAL</b>	100.0	100.0	100.0	100.0

Source: Dirección General de Transacciones Exteriores, Secretaría de Estado de Comercio, Ministerio de Comercio y Turismo.

**TABLE 3**

**RESULTS OF OLS, WITHIN (FIXED EFFECTS) AND GLS ESTIMATORS**

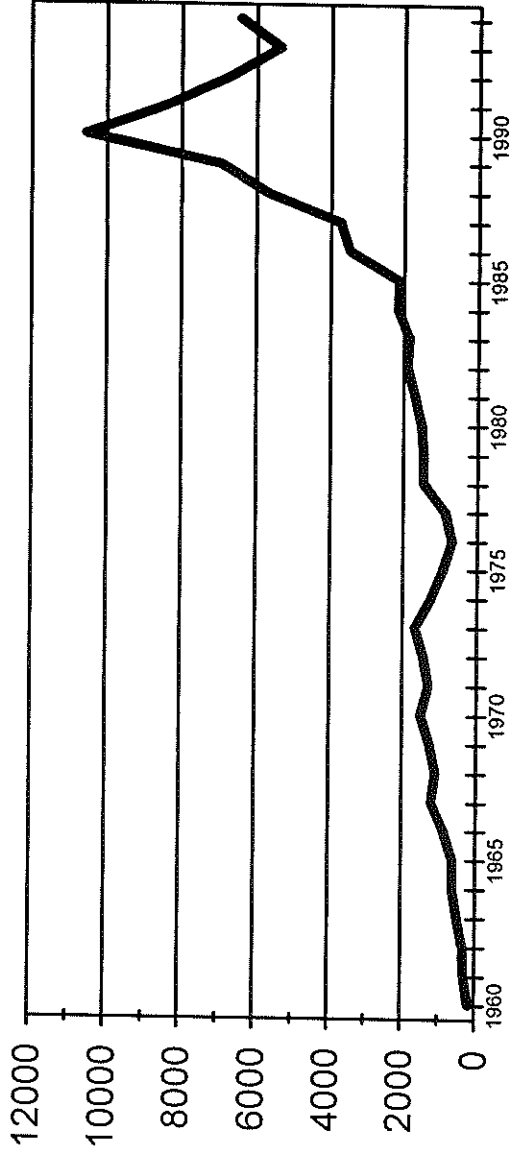
<b>variable</b>	<b>OLS</b>	<b>WITHIN</b>	<b>GLS</b>
<b>constant</b>	<b>-19.439</b> <b>(-25.017)</b>	<b>-</b>	<b>-20.311</b> <b>(-23.600)</b>
<b>Lgdps</b>	<b>0.657</b> <b>(25.569)</b>	<b>0.862</b> <b>(4.539)</b>	<b>0.680</b> <b>(14.491)</b>
<b>Ltadv</b>	<b>0.979</b> <b>(16.927)</b>	<b>-</b>	<b>0.986</b> <b>(12.086)</b>
<b>Lgdph</b>	<b>1.005</b> <b>(37.569)</b>	<b>-0.418</b> <b>(-0.338)</b>	<b>0.962</b> <b>(20.261)</b>
<b>Lgdppch</b>	<b>0.304</b> <b>(3.974)</b>	<b>1.278</b> <b>(1.067)</b>	<b>0.243</b> <b>(2.202)</b>
<b>Lrikcost</b>	<b>-0.002</b> <b>(-0.049)</b>	<b>-0.035</b> <b>(-1.007)</b>	<b>-0.022</b> <b>(-0.667)</b>
<b>Lhkh</b>	<b>0.684</b> <b>(3.014)</b>	<b>2.228</b> <b>(2.805)</b>	<b>1.232</b> <b>(3.235)</b>
<b>Ldist</b>	<b>-0.425</b> <b>(-12.660)</b>	<b>-</b>	<b>-0.457</b> <b>(-7.116)</b>
<b>Ltinfrh</b>	<b>0.416</b> <b>(7.714)</b>	<b>1.022</b> <b>(1.868)</b>	<b>0.428</b> <b>(4.526)</b>
<b>Lbdios</b>	<b>-3.376</b> <b>(-8.895)</b>	<b>-</b>	<b>-4.014</b> <b>(-5.512)</b>
<b>Lbdiih</b>	<b>-5.057</b> <b>(-13.479)</b>	<b>-</b>	<b>-4.988</b> <b>(-7.124)</b>
<b>front</b>	<b>0.877</b> <b>(9.501)</b>	<b>-</b>	<b>0.934</b> <b>(4.834)</b>

<b>n observations:</b>	<b>2721</b>		
<b>adjusted R<sup>2</sup>:</b>	<b>0.5484</b>	<b>0.7861</b>	<b>0.7448</b>
<b>Hausman Test</b>	<b>7.3475 [ <math>\chi^2(95)=14.4</math> ]</b>		

# CHART I

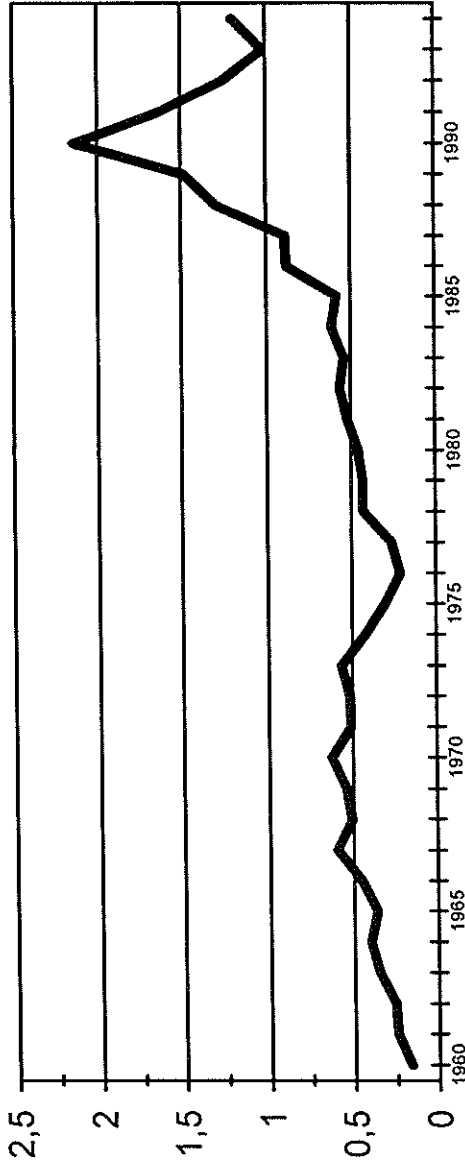
## FOREIGN DIRECT INVESTMENT IN SPAIN

millions of 1990 US dollars



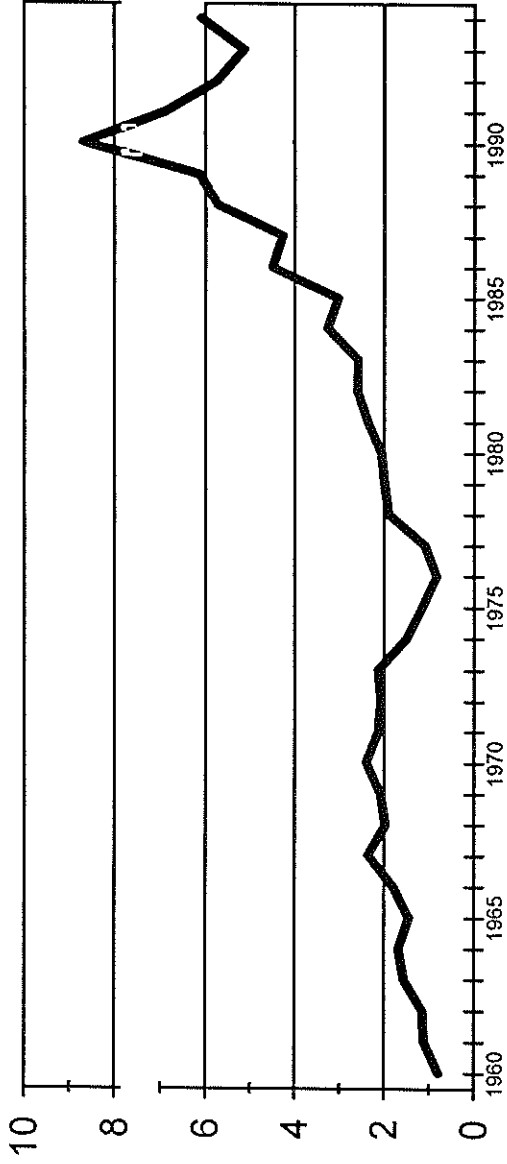
Source: Transactions Records of Banco de España, National Accounts of INE and own elaboration

CHART 2  
SHARE OF FDI IN SPANISH GDP  
%



Source: Transactions Records of Banco de España, National Accounts of INE and own elaboration.

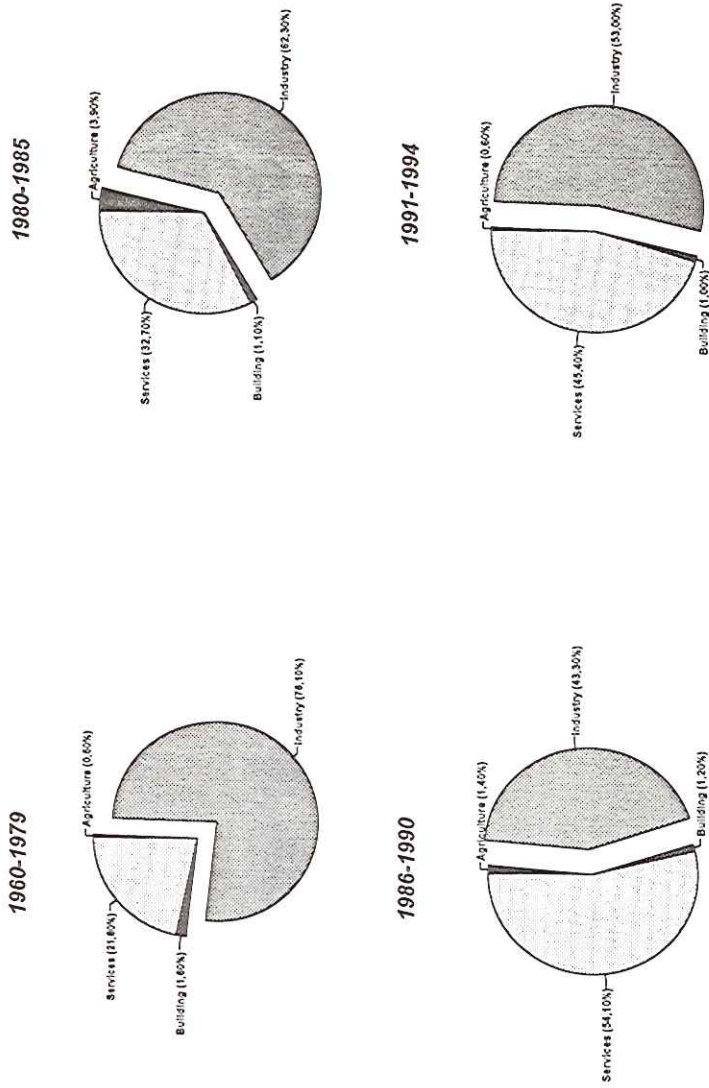
**CHART 3**  
**SHARE OF FDI IN GFCF IN SPAIN**  
%



Source: Transactions Records of Banco de España, National Accounts of INE and own elaboration

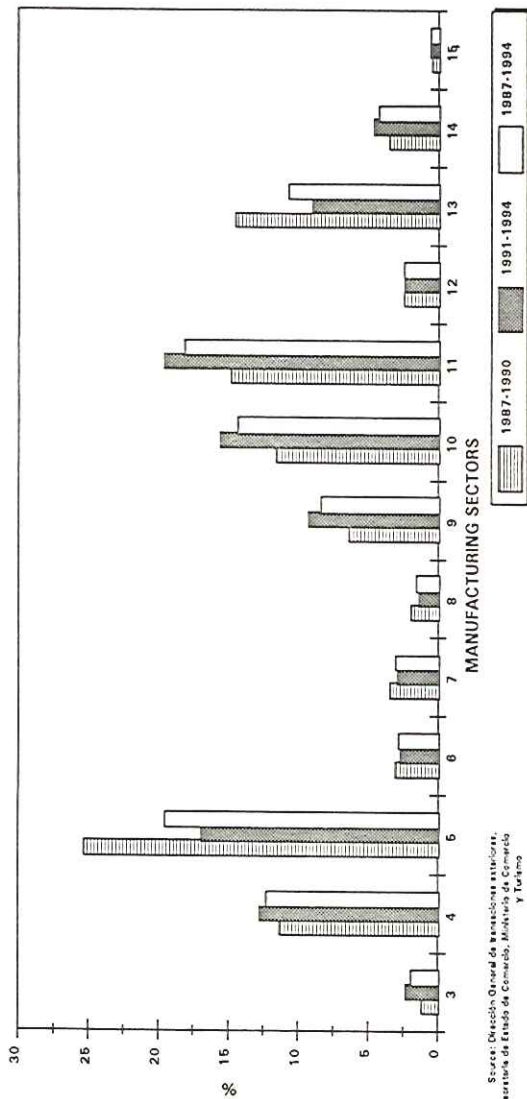


CHART 4  
FOREIGN DIRECT INVESTMENT IN SPAIN (1960-1994): SECTORAL BREAKDOWN



Source: Dirección General de Transacciones Exteriores, Secretaría de Estado de Comercio, Ministerio de Comercio y Turismo and own elaboration

CHART 5  
MANUFACTURING FDI IN SPAIN (1987-1994): SECTORAL DISTRIBUTION



NACE-CIIO R25 Classification

- 3. Ferrous and non-ferrous ores and metals
- 4. Non-metallic minerals and mineral products
- 5. Chemical products
- 6. Metal products, except machinery and transport equipment

- 7. Agricultural and industrial machinery
- 8. Office and data processing machines, precision and optical instruments
- 9. Electrical goods
- 10. Transport equipment

- 11. Food, beverages, tobacco
- 12. Textiles and clothing, leather and footwear
- 13. Paper and printing products
- 14. Rubber and plastic products
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