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EUROPEAN COMMISSION

**EU RESEARCH ON
SOCIAL SCIENCES AND HUMANITIES**

**LABOUR MARKET EFFECTS
OF EUROPEAN FOREIGN INVESTMENTS**

LABFDI

Final report

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'Improving the Socio-economic Knowledge Base' of FP5**

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Preface

Within the Fifth Community RTD Framework Programme of the European Union (1998–2002), the Key Action 'Improving the Socio-economic Knowledge Base' had broad and ambitious objectives, namely: to improve our understanding of the structural changes taking place in European society, to identify ways of managing these changes and to promote the active involvement of European citizens in shaping their own futures. A further important aim was to mobilise the research communities in the social sciences and humanities at the European level and to provide scientific support to policies at various levels, with particular attention to EU policy fields.

This Key Action had a total budget of EUR 155 million and was implemented through three Calls for proposals. As a result, 185 projects involving more than 1 600 research teams from 38 countries have been selected for funding and have started their research between 1999 and 2002.

Most of these projects are now finalised and results are systematically published in the form of a Final Report.

The calls have addressed different but interrelated research themes which have contributed to the objectives outlined above. These themes can be grouped under a certain number of areas of policy relevance, each of which are addressed by a significant number of projects from a variety of perspectives.

These areas are the following:

- ***Societal trends and structural change***

16 projects, total investment of EUR 14.6 million, 164 teams

- ***Quality of life of European citizens***

5 projects, total investment of EUR 6.4 million, 36 teams

- ***European socio-economic models and challenges***

9 projects, total investment of EUR 9.3 million, 91 teams

- ***Social cohesion, migration and welfare***

30 projects, total investment of EUR 28 million, 249 teams

- ***Employment and changes in work***

18 projects, total investment of EUR 17.5 million, 149 teams

- ***Gender, participation and quality of life***

13 projects, total investment of EUR 12.3 million, 97 teams

- ***Dynamics of knowledge, generation and use***

8 projects, total investment of EUR 6.1 million, 77 teams

- ***Education, training and new forms of learning***

14 projects, total investment of EUR 12.9 million, 105 teams

- ***Economic development and dynamics***

22 projects, total investment of EUR 15.3 million, 134 teams

- ***Governance, democracy and citizenship***

28 projects; total investment of EUR 25.5 million, 233 teams

- ***Challenges from European enlargement***

13 projects, total investment of EUR 12.8 million, 116 teams

- ***Infrastructures to build the European research area***

9 projects, total investment of EUR 15.4 million, 74 teams

This publication contains the final report of the project 'Labour Market Effects of European Foreign Investments', whose work has primarily contributed to the area 'Internationalisation, technology and employment in different geographical environments'.

The report contains information about the main scientific findings of LABFDI and their policy implications. The research was carried out by six teams over a period of 30 months, starting in March 2002.

The abstract and executive summary presented in this edition offer the reader an overview of the main scientific and policy conclusions, before the main body of the research provided in the other chapters of this report.

As the results of the projects financed under the Key Action become available to the scientific and policy communities, Priority 7 'Citizens and Governance in a knowledge based society' of the Sixth Framework Programme is building on the progress already made and aims at making a further contribution to the development of a European Research Area in the social sciences and the humanities.

I hope readers find the information in this publication both interesting and useful as well as clear evidence of the importance attached by the European Union to fostering research in the field of social sciences and the humanities.

J.-M. BAER,

Director

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The Network's participants gratefully acknowledge the crucial role of all those private and public institutions which contributed during the construction of the national and cross-country databases.

Finally, the Network thanks all the seminar participants for helpful comments and discussions.

Abstract

The objective of this research project is to understand the labour market implications of foreign direct investment (FDI) and of the activities of Multinational firms (MNEs). There are good reasons to pursue this research objective. *First* it is questionable, whether MNEs and national firms are inherently different and behave differently in the labour market. *Second*, it is not clear what the effects of FDI on the level and on the characteristics of employment in home and host countries are. *Third*, it is not understood how and how far foreign investments do affect home and host economies in a broader sense. *Fourth* the role of policies in encouraging or discouraging FDI and particularly of labour market policies is still little understood. This research project provides answers to these questions. To do so it makes extensive use of newly constructed firm and sector level data bases, combining information on inward and outward investments with information on counterfactuals of domestic owned firms.

First the project examines how the allocation of FDI has affected activities and mostly employment in the home country. It generally finds a relationship of complementarity and not of substitution between foreign and domestic activities of MNEs. Also, by comparing employment dynamics and other measures of performance of investing and not investing firms, the project finds that firms investing abroad normally outperform national firms with similar characteristics.

Second, research focuses on the effects of foreign investment in host economies. Overall, foreign owned firms are more productive than their domestic counterparts. There are two competing explanation of the alleged superior performance of foreign-owned firms: multinationals can be more productive than domestic firms or they simply acquire the most productive domestic firms. Evidence on this point is not really conclusive. Besides for performance, the project also examines if foreign firms behave differently in the labour market from national firms. Foreign firms are shown to adjust faster to any shock affecting labour demands, but less than national firms, possibly because they employ a larger share of skilled personnel. As for the spillovers effects of inward FDI, research in this project generally finds that FDI play an important role in strengthening the domestic economy of the European countries analysed. Positive spillovers are generally larger in R&D intensive industries and when the technological distance between local and foreign firms is relatively small.

Third, the project examines the geographic patterns of the activities of MNEs. It finds that fragmentation of production and vertical investments are more important than predicted by earlier studies. These types of investments have important employment

implications, as they mostly take place with labour saving purposes. However, research finds little evidence that these investments have detrimental effects on home employment.

Fourth, as for the policy implications of this research project, these can be summarised under two main headings: the welfare implications of policies aimed at attracting FDI; the impact of specific policies on FDI flows. The finding that FDI are generally welfare enhancing in home and host economies provides good ground for policies aimed at attracting FDI. When looking at the effects of policies on the decision to invest in a given country, the project focuses on trade and labour market policies. Trade policy is found to have ambiguous effects. High trade barriers in any given country increase the cost of exporting to that country and raise the convenience of directly producing there. In contrast, any new foreign investment involves some trade flows. More and more international production is fragmented across different locations and it is discouraged by high trade barriers. In balance trade barriers are more likely to harm the activities of MNEs. Also labour market policies are found to have important effects. In an uncertain business climate, multinational enterprises must take into account future exit costs in deciding where to locate a branch plant. Both the theoretical analysis and the empirical evidence support the view that flexible labour markets suits MNEs better and that regulations are likely to discourage their investments.

I. EXECUTIVE SUMMARY

The objective of this research project is to understand the labour market implications of foreign direct investment (FDI) and of the activities of Multinational firms (MNEs). Indeed, this is a very controversial and up to now under-investigated issue. First, it is not clear what are the effects of FDI on the level of employment in home and host countries. As for home countries, it is often argued that the transfer of economic activities to third countries is likely to deplete activities and hence employment at home. As for host countries, it is not clear whether the activities of foreign firms are additional to and strengthen the activities of national firms, or rather they crowd them out. Thus, whether the employment created by foreign firms adds to or substitutes for domestic employment. Second, it is questionable, whether MNEs and national firms are inherently different: is it true that MNEs are more efficient, larger and pay higher wages? Is it true that MNEs behave differently in the labour market, because they have more bargaining power than national firms and because they face lower costs to relocate their activities? Third, the role of policies in this context is questionable. Many countries are providing large subsidies to attract FDI. Such policies could only be justifiable if the activities of MNEs are found to be welfare improving. Equally, many policies, namely labour market policies, but also trade, fiscal and other policies have important effects on MNEs' decisions on where to locate their plants.

This research project provides many important answers to these questions. Addressing these issues from the empirical point of view is very demanding in terms of data, as it requires fairly detailed firm level data bases. Developing such data bases has indeed been the first task fulfilled by the project.

Data. New firm level and sectoral level databases were developed under the project. These data bases are now the available state of the art on FDI in Europe. Data collection under the project led to the following results: (i) the development of new data bases in countries where they were not available on systematic grounds (Italy, Spain, Ireland); (ii) the development of counterfactuals of national firms, to be analysed in comparison to the activities of multinationals; (iii) the construction of data bases on outward FDI, encompassing the activities of the foreign affiliates and the parents at home (Italy, UK); (v) the fine tuning of existing data bases (Sweden, UK); (vi) the construction of a cross country data base of foreign owned affiliates and of a counterfactual of national firms for several European countries (vii) the construction of sectoral cross-country data bases on FDI.

Geography of European FDI. The standard theoretical framework explaining the determinants of FDI has singled out two main motives. FDI normally take place for market seeking or cost saving reasons. The first set of motives determines what are now generally defined as horizontal investments, whereby firms replicate in a foreign country most of their home activities, targeting the host country market. The second set of motives generates vertical investments, whereby firms relocate only those activities using intensely factors of production which are more abundant and cheaper in foreign countries. Consequently, this latter type of investment gives rise to fragmentation of production.

The project revised and outlined the basic features of this analytical framework and extended it in various ways. It examined explicitly the geographic fragmentation of different production stages, concluding that as for other forms of foreign investment the geography of this pattern can essentially be explained by gravity models. It also extends the classical problem of how distance interacts with market size to allow for incomplete outsourcing contracts. In fact, distance affects the returns from the outside options open to foreign investors, namely exporting from the home country.

Consistently with earlier studies, the project finds that the largest share of EU investments are of a horizontal type, between economies of similar size and factor endowments. However the project also provides new evidence of the importance of vertical FDI and of fragmentation of production. Up to now evidence on vertical investments and fragmentation has mostly been based on anecdotes. By broadening the definition of vertical FDI various studies carried out within this project find clear support for these types of investment, which turn out to be strongly sensitive to relative factor costs. The scope for the vertical decomposition of production across borders is found to be much larger than shown by previous studies. This result has important implications for labour demand, as normally vertical investments transfer labour intensive activities to cheap labour countries.

Evidence on vertical investments is also gauged by looking at a natural policy experiment: the EU enlargement to Central and Eastern Europe. The reduction in trade costs between the EU and the former socialist countries in the aftermath of the fall of the Berlin wall and the availability of cheap labour in these regions, provide a perfect setting to analyse how factor and trade costs jointly influence MNEs' choices. Swedish affiliates in Central and Eastern Europe (CEE), compared to affiliates located in other European countries, exhibit lower productivity, are less skill-intensive and seem to be more oriented towards assembly type of activities. This finding supports the presumption that

when trade costs are low and labour costs differ between home and host countries, vertical investments arise.

The impact of outward FDI in the home country. The project then examines how the allocation of FDI has affected activities and mostly employment in the home country. Up to now most of the literature has focussed on the effects of inward FDI in host economies. Also thanks to the new data bases constructed, this project devotes a good number of its studies to the analysis of the home country effects. It has often been argued that outward direct investments could influence home country factor demand and factor prices through a reallocation of production from parent companies to foreign affiliates. Therefore there is fear that the outcome of a foreign expansion is likely to be the reduction of (mostly unskilled) employment and wages in high-wage countries. However most of the previous empirical literature has not supported this claim. Rather, any substitution of foreign labour for domestic labour is usually counteracted by an increase in the firm's scale of operations. The project confirms these earlier findings. First, it often finds a relationship of complementarity and not of substitution between foreign and domestic activities of MNEs. This effect is indeed extensively studied for Sweden. Substitution is more likely to take place between employment in firms based in similar countries, than when labour costs and conditions differ drastically. Second, the project compares employment dynamics and other measures of performance of investing and not investing firms. It finds that firms investing abroad normally outperform national firms with similar characteristics and this is consistent with a positive causal effect of investment abroad on performance at home.

The project also examines the impact of outward investments on the skill mix of the labour force at home. Two papers in the project estimate the impact of outsourcing on the demand for skills for the UK, Italy and Germany. The effects on the UK and Germany are ambiguous, whereas international fragmentation of production is shown to be an important factor behind the increase in the skilled to unskilled labour ratio observed in Italy.

The impact of inward FDI in the host country. Many of the papers in the project examine the effects of foreign investment in host economies. Data on inward FDI are more widely available than those for home country effects. Under this heading we therefore provide broad evidence on sets of EU countries and also cross country comparisons. Conclusions can be derived on three sets of issues. First if foreign firms are inherently different from domestic firms; second if the activities of foreign firms also affect the broader activities of the domestic economy and specifically of national firms; third, if FDI have special effects in peripheral regions.

Comparing foreign owned and domestic firms. Overall, foreign owned firms are more productive than their domestic counterparts. For the UK the project finds that foreign firms pay higher wages and have higher productivity levels than domestic firms, even when controlling for sector, location and size of the firm. The differential is about 5% in terms of total factor productivity and wages. This result is consistent with findings of other studies on Italy and Central and Eastern European countries.

There are, however, two competing explanation of the alleged superior performance of foreign-owned firms: multinationals can be more productive than domestic firms or they simply acquire the most productive domestic firms. Evidence on this point is not really conclusive. Results on the UK and Italy show that positive effects arise just under specific circumstances related to the country of origin of the foreign investor or the sector in which the firm operates.

Besides for performance, the project also examines if foreign firms behave differently in the labour market from national firms. Specifically, it examines whether jobs are more volatile in foreign firms: for any new job created, is it likely to last longer in domestic or foreign firms? MNEs do not appear to behave in a more flexible way than national firms, but, probably also because they employ a higher share of skilled personnel, they are more likely to retain their workers than national firms. In a study on Ireland, the project finds that once plant closures are taken into account, new jobs generated in MNEs appear to be more persistent than jobs generated in indigenous firms. Also, MNEs are quicker to recover lost jobs than indigenous firms. Evidence of specific labour market behaviour is also found in a cross country study that compares dynamic labour demands of foreign and national owned firms in the EU. Foreign firms are shown to adjust faster to any shock affecting labour demands, but less than national firms. Consequently, whoever gets a job in a foreign firm is less likely to lose it than an equivalent job in a national firm. However if he she is to lose it, he or she will lose it faster than in national firms.

Agglomeration and spillovers effects. Although theory can identify a range of possible spillover channels from foreign to national firms, empirical support is hard to find in the earlier literature, possibly because many of these studies are carried out in developing countries. Indeed, FDI can affect domestic economies both ways, by generating positive spillovers or by crowding out domestic activities. This project, instead, generally finds that FDI play an important role in strengthening the domestic economy of the European countries analysed. Although FDI are generally found to make the competitive environment tighter, studies on the UK, Ireland and Spain report evidence of positive spillovers, which are generally larger in R&D intensive industries and when the technological distance between local and foreign firms is relatively small. Foreign

investment is also found to enhance positively the decision to export. The projects also look at the effects on the labour market. Finally, on a negative note, in Ireland and in the UK, foreign firms do crowd out the demand for skilled workers of national firms.

The role of inward FDI in peripheral regions. The project specifically analyses the role of FDI in peripheral regions. Ireland converged dramatically to average EU living standards over the course of the 1990s. The project examines the Irish experience extensively and relates it to those of other peripheral countries. Foreign investments are also important determinants of the structural changes observed in the other European peripheral regions.

Policy implications. The policy implications of this research project can be summarised under two main headings. First the project provides important support to policies aimed at attracting foreign direct investments. It shows that for most of the cases and issues analysed, the activities of MNEs have positive welfare effects (especially in the labour market) on both home and host economies. Second, various papers in the project discuss extensively the relationship between policies and the effects of FDI, with particular emphasis on trade and labour market policies.

As for the welfare effects of FDI, most studies in the project find that FDI have positive effects on host economies. They find that foreign affiliates of MNEs in general perform better than domestic firms, in terms of efficiency and labour market outcomes, although it is generally not possible to single out the causal link between performance and foreign ownership. It is also true that disentangling this link is probably not so important. If national champions keep thriving under foreign ownership, it is probably because being foreign owned suits them and gives them a further competitive hedge. Besides, we have no evidence that foreign ownership has negative welfare effects. Consider a crucial and very sensitive concern among policy makers: the effects of MNEs on employment levels. Some studies find that employment declines after domestic firms are acquired by foreign ones. However, little can be said unless we put the right counterfactual in place: the destiny of such national firms if they had not been acquired by foreign investors. To answer this question it is instructive to compare national and foreign owned firms. Various studies in the project have done so, and they generally find that foreign subsidiaries do behave differently from national firms in the labour market, but often in a welfare improving way: foreign owned firms are much speedier in responding to any shock affecting labour demand, but they generally adjust less than their national counterparts. Also for what concerns the effects on domestic activities, the project carries out careful and detailed studies. As reported above, virtually all of these studies find that positive externalities are generally more likely than crowding out effects.

The project also examines the welfare implications for home economies. The international delocation of activities, particularly to cheap labour countries is often perceived as a process which hampers domestic economies. This is found not to be the case. The home activities of firms investing abroad are generally found to become more effective following the investment. Also, jobs in the parent activities of foreign investors are more likely to increase, or any way less likely to decline, than jobs in firms that just keep producing in the national market. The likely reason is that by investing abroad firms become more competitive and they increase their total output, including domestic output.

The project, then, explicitly deals with the effects of policies on the decision to invest in a given country. It first discusses the role of trade policy. As trade costs are found to be an essential component of the investment decision of MNEs, they also influence the likely chances MNEs have to affect domestic labour market. The project finds that the effects of trade policies are ambiguous. High trade barriers in any given country increase the cost of exporting to that country and raise the convenience of directly producing there, so as to minimise transport costs. On the other hand, any new foreign investment involves some trade flows. More and more international production is fragmented across different locations. We document how international networking of production is increasingly an essential feature of the activities of MNEs. In this case higher trade barriers discourage foreign investments. In the project we indeed find that FDI increase in countries with lower trade barriers. This conclusion is underlined by the finding that the rebate of trade barriers within the EU (single market) and towards the EU's neighbours (Central and Eastern European countries, under the Europe Agreements and subsequently the enlargement of the Union) encouraged growing investment flows in the region.

Finally, the project deals with the role of labour market policies and regulations. In an uncertain business climate, multinational enterprises must take into account future exit costs in deciding where to locate a branch plant. Countries with a more flexible labour market (that is, lower redundancy payments) are in principle better potential locations for FDI than those with more severe redundancy rules. To provide some empirical background to these theoretical results, the project also examines whether foreign owned firms have different labour market behaviour from national firms and whether this behaviour is affected by labour market conditions. In a comparison across several EU countries, it finds that regulations affect asymmetrically foreign and domestic firms. The latter's responses to shocks affecting labour demands are constrained by tighter regulations. In contrast, foreign firms appear to behave in a uniform way, independently of regulations. Foreign affiliates of MNEs tend to respond very rapidly to labour demand shocks and that they require minimum conditions to implement such flexible behaviour.

Summing up, both the theoretical analysis and the empirical evidence support the view that flexible labour markets are compatible with the standard behaviour of MNEs, and that regulations are likely to discourage their investments.

II. BACKGROUND AND OBJECTIVES OF THE PROJECT

The central goal of this project has been to *examine the labour market effects of European outward and inward Foreign Direct Investments (FDI)*, focussing on five European countries: Great Britain, Ireland, Italy, Sweden and Spain. Research has developed an analytical framework accounting for all the various links between FDI and the labour market. It then has analysed empirically the sectoral and geographical distribution of European FDIs and its labour market implications. Subsequently, the impact of inward and outward FDIs on host and home economies has been analysed using firm level panel data. A considerable effort has been made in constructing comparable harmonised firm level panel data bases for the sample countries. It has been therefore possible to control for firm specific factors, like the type of technology used by the firm, the skill structure of employment, the organisation of production and for issues concerning the geographic localisation of the investment.

The final goal of this work has been to evaluate: firstly, the scope for policies promoting FDI at a national and European level in the light of the welfare and the labour market effects of FDI; secondly, the impact of policies (and explicitly of labour market policies) on MNEs' decision to invest in a given country.

Objective 1: to develop a comprehensive conceptual framework to analyse the labour market impact of inward and outward FDI

Any empirical work aimed at a rigorous analysis of the employment effects of FDI must compare the existing pattern of employment with that that would prevail if FDI should not have taken place. In other words, the status-quo must be referred to a correctly specified counterfactual.

The development of a unitary conceptual framework has been necessary to dispose of a rigorous counterfactual that served as a basis for sound empirical analysis. In particular, theoretical work has been needed to develop models that allowed taking into account simultaneously the most relevant FDI-related employment effects. This would have allowed characterizing the net effect on labour demand entailed by the internationalization of production in terms of a restricted number of variables. Thus, the first objective of the project has been to develop a comprehensive analytical framework to examine all the different direct and indirect links relating FDIs to labour markets.

Analysing the impact of FDI activity on employment has required on one hand considering location decisions of imperfectly competitive, strategic, multi-plant firms and on the other hand, developing a general equilibrium approach to take into account the

main direct and indirect effects played by MNEs on the international distribution of the demand for labour.

During the proceeding of the project, some of the previous tasks have been deeply analysed within a related TMR project "Foreign Direct Investment and the Multinational Corporation: New Theories and Evidence". In particular, a comprehensive theoretical framework has been developed on the locational choices and the welfare effects of MNEs, and on the organisational choices characterising the international activities of multinational enterprises. This theoretical framework and the review of the theoretical and empirical literature prepared for the FDI book written within the TMR project, have constituted the background for further research in more specific and labour market related directions under the LABFDI project.

Objective 2: to construct harmonised cross-country firm level panel data sets

The second specific objective of the project has been to construct harmonised cross-country databases on outward and inward FDI based on firm level information.

Comparable cross country data are available only on FDI flows and stocks. These data are based on national sources and are published periodically by EUROSTAT, OECD and the United Nations, following slightly different sectoral and geographical breakdowns. A first step of the project has been to analyse these data so as to jointly observe the geographical and sectoral distribution of FDI flows. However, flows and stocks of FDI, that are essentially financial variables, might not be very reliable indicators of the activities of parents and affiliates and firm-level micro-data were necessary.

The aim of the project has been therefore to create or improve national firm-level data bases to provide a reliable source of information to European political and corporate decision makers and to researchers.

In Europe some national data sets already existed and the Partners of this project were among the few having this type of statistics. However, data should have been harmonised and integrated with additional information from balance sheet data bank and surveys.

The major weaknesses of the existing firm level data sources were the lack of information on wages, assets, skill composition of the work force. According to the initial objectives of the project, these data should have been collected in each country through surveys for a sample of firms.

During the proceeding of the project, the objective to collect data through surveys has been abandoned. Two main reasons motivated this decision. First, constructing and fine tuning the firm level data bases has been more time consuming than expected. Second, the width of information contained in the data bases constructed was such that teams tackled a broader sets of issues within the tasks of the project than initially planned.

In addition, the teams have developed a number of data sets which were not planned in the work proposal. These data sets have a broad coverage in terms of countries, industries and time periods, and have proved to be much more fruitful in empirical analysis than data collected through surveys based on small sample of firms.

Objective 3: to analyse the geographical distribution of European FDI flows (aggregate empirical analysis).

The third objective of the project has been that of deriving information concerning FDI-related labour demand reallocation using aggregate data on FDI flows. This task has made use of comparative data sets where the pattern of investments is classified by industry, time period, country of origin, and geographic destination.

Aggregate analysis has provided the broad picture of FDI patterns in Europe. This has served as a reference point for subsequent firm-level analysis. The analysis of aggregate data has tested empirically economic geography determinants of FDI location and the emergence of FDI-induced agglomeration effects. Econometric work on aggregate data has also allowed researchers to test hypotheses concerning the interplay between FDI flows and labour market conditions.

Objective 4: to analyse the impact of outward FDI on European countries using firm-level panel data

The data sets have combined data on the parent company of European multinationals and on the subsidiaries. It has therefore been possible to analyse whether employment in foreign affiliates is a 'substitute' or a 'complement' to home country employment of the parent firms. In some cases, firm-level data have allowed researchers to also estimate the differential effects on skilled and unskilled labour.

To understand whether FDIs have a positive or negative effect on domestic employment it has also been necessary to construct a counterfactual and to address the question of what would have occurred had firms not invested abroad. The empirical analysis has therefore compared employment dynamics for investing and non investing firms, controlling for other firm-specific differences. For this purpose, the data bases

constructed within this project have also included random samples of counterfactuals, i.e. non investing firms.

These two exercises (analysis of substitutability and complementarity and comparison between investing and non investing firms) have been carried out by controlling for the characteristics of technology at the firm level, the organisation of domestic production and the working of labour markets and labour regulations.

Objective 5: to analyse the impact of inward FDI on European countries using firm level panel data

Investment inflows have also been analysed through the construction/improvement of firm level panel data bases with information on the foreign subsidiaries based in the EU sample countries.

The project has tackled several issues with relevant labour-market consequences. These have included the following:

- to what extent are foreign and indigenous plants substitutes or complements?
- to what extent is the performance of foreign owned firms different from that of domestic ones?
- to what extent investments from more technologically advanced foreign firms generate spillovers to domestic firms and therefore affect indirectly labour demand and supply?
- do direct and indirect effects on employment differ depending on the industry where FDI inflows take place? How far do these effects depend on the characteristics of the host country?

Objective 6: to analyse policy implications

The final objective of this research has been to understand the role of policy. This has been done both through theoretical and empirical work.

Policies influence the FDI employment link at two different levels: the decision to invest in a given country and the labour market impact of a given investment. Disentangling the two levels of policy action is however difficult. Labour market regulations, for instance, directly affect the labour market impact of each investment but also contribute to shape the decision whether to invest or not in a given country. In general, the presence of

MNEs alters the effectiveness of each policy (e.g., tax policy, competition policy, trade policy...) via an induced FDI channel.

Initially, the objective of assessing *ex-ante* the effects of different policies on the FDI employment link was thought to be pursued through the use of an *ad hoc* conceptual framework and the construction of a multi-country model calibrated on the European reality. However, during the proceeding of the project, this objective has been pursued following different methodologies. In fact, interesting contributions have been provided that deeply analyse alternative policy packages in theoretical frameworks more fruitful for empirical research.

Empirical work has provided *ex-post* evaluation of policies implemented by different European countries or regions. The most obvious starting point was to review the specific policies followed by European authorities to attract investments at the national, regional and community-wide level. The project has investigated how far the different ability of sample countries in attracting inward FDI (e.g. Ireland and Spain) can be explained by specific policy measures.

III. SCIENTIFIC DESCRIPTION OF PROJECT RESULTS AND METHODOLOGY

1. Task 1: Conceptual framework (WP 1)

Under this Task, the first objective of the project has been to develop a comprehensive analytical framework to examine all the different direct and indirect links relating FDI to labour markets. This unitary conceptual framework has been used as a basis for empirical analysis.

Results in this direction of research have been reached by A. Venables (CEPR team) and G. Barba Navaretti and A. Turrini (CSLA team) under the framework of a related TMR project "Foreign Direct Investment and the Multinational Corporation: New Theories and Evidence". In particular, a comprehensive theoretical framework has been developed on the locational choices and the welfare effects of MNEs (distinguishing between vertical and horizontal MNEs), and on the organisational choices characterising the international activities of multinational enterprises. This theoretical framework and the review of the theoretical and empirical literature prepared for the FDI book written within the TMR project, have constituted the background for further research in more specific and labour market related directions under the LABFDI project.

Specific aspects of the theory of the firm, incomplete contracts and international outsourcing have been analysed by Gianmarco I. P. Ottaviano and Alessandro Turrini (CSLA and CEPR teams) in "Distance and FDI When Contracts are Incomplete" (*paper 20*). They have investigated how distance interacts with market size in determining foreign firms' choices to serve a local market through exports or FDI. They have modified a standard proximity-vs-concentration model of multinationals to allow for incomplete outsourcing contracts (the case when contracts cannot be written ex-ante due to unforeseeable contingencies) which affects somehow dramatically the costs and benefits of the alternative supply modes (exports or FDI). In fact this incompleteness generates a non-linear relation between distance and FDI which can account for the observed emergence of FDI in large markets not only when trade costs are large but also when trade costs are small. In fact, MNEs have an outside option when engaging in outsourcing arrangements: ex-post the MNE has the outside option of breaking the ex-ante agreement with the local supplier and importing self-made inputs from its country of origin. The role of the outside option in the ex-post bargaining process is at the source of the non-linearity between FDI and trade costs (even though no trade takes place under this supply mode). Therefore for low trade costs, all the rest given, MNEs may shift from intermediate exports plus local assembly to intermediate outsourcing due to improvements in the writing and enforceability of outsourcing contracts.

A different perspective and methodology to study the delocation process of the firm has been introduced by James Markusen (University of Colorado at Boulder and CEPR) and Anthony Venables (LSE and CEPR) in the paper "The International Organization of Multi-Stage Production" (*Paper 77*). The authors focus on the geographic fragmentation of production by stages reaching a conclusion that is more closely related to gravity models even if their equilibrium relationship is not-linear. In particular Markusen and Venables have investigated how the degree and pattern of fragmentation relates to country and technology characteristics and trade costs for different stages. Some of the previous discussion has been explicitly within the context of multinational firms reorganising their global production plans (owned subsidiaries or "outsourcing" to independent contractors), instead the authors choose a context of strictly competitive general equilibrium models, where fragmentation can be seen as just the question of the number of products, particularly intermediate goods, that are traded in the world economy. The model has been constructed in a way that allows to compare the results easily to traditional Heckscher-Ohlin models and to more recent models with endogenous multinational firms: a two-country, two-stage model where stages differ in factor intensities with one of the goods that is produced in two stages. Through a general equilibrium simulation they show how the equilibrium location and number of component production and assembly stages depends on relative endowments, relative country sizes, and trade costs. Their results include the following. Affiliate production (defined as local assembly of imported components) requires differences in relative factor endowments between countries, but the relationship is non-monotonic. In fact affiliate production conforms to a gravity-type relationship with respect to both country-size and relative-endowment differences: reaching a maximum when the relative endowment and the country size difference between countries is moderate. And also the change in the volume of trade in components and the final good following liberalization (defined as the ability to fragment production) is similarly largest when the countries are similar in size and differ only modestly in relative endowments, which bears on recent empirical finding that US outward investment is skilled-labour seeking. Finally for some specifications of the technologies, liberalization can move wage-rental ratios in the same direction in the two countries.

In the context of the analysis of Foreign Direct Investments and MNEs, most of the models in literature have ignored the role of product differentiation, and have focused on homogeneous goods assumption. Praveen Kujal and José Maria Lopez (Universidad Carlos III de Madrid) have established a framework where the implications of the product differentiation in a multinational environment (consumers perceive goods as different according to the nationality of the firm) can be observed (*Paper 19*). The first results

indicate that firms use product differentiation to soften competition between them, thus looking for niches in the market. Furthermore the authors investigate the effects of product differentiation on labour market and welfare. Indeed, employment increases with differentiation although the effects on welfare are not clear and the final effect depends on other additional variables. Further, increases in employment may sometimes be welfare decreasing.

Different labour market related aspects of the theory of MNEs have been investigated under the project, often as a background for empirical analysis.

The impact of inward FDI on the skill structure of labour demand in host countries is examined in a paper by Nuno Sousa (UNOTT.DE) (*Paper 33*). The author looks at the decision by multinationals to provide training in the host country. Multinationals can choose to hire skilled workers at a high wage or unskilled workers which are paid a lower wage but for which the multinational has to incur training costs. The model shows that the decision to train hinges crucially on the wage differential between skilled and unskilled workers as well as the level of training costs. The model is estimated using data for multinationals in the UK. The evidence supports the idea that domestic wage inequality (i.e. the wage differential between skilled and unskilled workers) reduces the provision of training to skilled workers in foreign multinationals based in the UK.

The issue of how the internationalisation of production may affect the bargaining power in the labour market is analysed by Leahy and Pavelin of UCD. They presents a simple model where a firm chooses the optimal number of plants to have (*Paper 39*). A firm, that initially has a plant in its home country, may choose to have a foreign plant to improve its bargaining position versus local labour unions. This permits the firm to secure lower wages than if they remained domestic. Furthermore, choosing to have a plant in more than one foreign country may lower wages further. Thus, the firm is faced with a potential link between the wage rate and its degree of geographical diversification. This mechanism acts to drive up the number of plants the firm chooses to have in equilibrium.

Another paper by these same authors, "Follow-my-leader FDI and Collusion", (*Paper 61*) presents a simple model to express the following idea: domestic rivals may be motivated to set up foreign production in the same country because the replication of each other's FDI facilitates collusive behaviour in the market in which they compete. This implies positive inter-dependence between firms FDI decisions; i.e. foreign investment by one firm offers increased incentives for others to follow suit. Thus the paper highlights a mechanism that propagates FDI clusters: a flurry of investment from one country or region to another.

Under a different perspective of research, focusing on the mobility of the workforce, Kristof Dascher (2000), in "Trade, FDI and Congestion: the Small and Very Open Economy" (*Paper 63*), has shown that capital and labour inflows reinforce each other when the economy is not only small and open in the conventional sense but is also open to labour flows across international frontiers. Under these circumstances, booms and busts, when they occur, are more dramatic than in more conventional small open economies. Booms contribute to rising welfare for land-owning households but all potential benefits for non-landholders are capitalised into higher land rents and housing costs. The paper contributes in this way to an understanding of the huge increase in house prices in Ireland over the boom years and also to the widespread feeling in Ireland that because of these unanticipated consequences many households have not benefited substantially from the boom. In a follow-up paper, "Strategic Public Housing and Foreign Direct Investment", Dascher (*Paper 64*) draws on Hong Kong and Singapore as case studies in which governments invested in public housing to overcome the opposition that might otherwise have arisen to FDI.

The direct relationship between FDI inflows and host country's welfare has been studied by Klaus Desmet from Universidad Carlos III de Madrid. In the paper "Controlling the Inflow of Foreign Direct Investment" (*Paper 48*), Desmet shows that restricting the inflow of foreign direct investment may be welfare improving. The starting assumptions include the fact that technology transfers from foreign investment are limited by the host country's level of development, and that learning spillovers are not instantaneous. From this the marginal effect on the country's technology of an additional unit of foreign capital is greater if spillovers from the existing capital stock have had the time to materialize. So to enhance technology transfer capital should enter the country more slowly so to lead to a steady state with a superior technology and a greater capital stock. In fact, there is a trade-off between faster short-run development but lower steady state welfare and slower short-run development but higher long-run development. So in the capital account management the way on how long-run gains play out against short run losses has to be considered.

In another paper (*Paper 8*), Desmet has worked on a model that extends the Brezis, Krugman and Tsiddon (1993) dynamic Ricardian leapfrogging framework where localized learning externalities lead the economy to diverge into a rich manufacturing region and a poor agricultural region. When a new technology is introduced, it locates in the low-wage region, then as the new technology's productivity increases over time, the lagging region overtakes the leading region. The author introduces geographically mobile capital and allows for a wider variety of development patterns, departing from the above Ricardian model by focusing on a Heckscher-Ohlin framework with mobile capital to see if capital

could act to equalize factor price (as the HO model would suggest). However, in the presence of labour mobility and localized learning-by-doing externalities, instead of income convergence the result is specialization and income divergence. Depending on the strength of spillovers, the introduction of a new technology can benefit either the lagging or the leading region. However the development pattern may also get reinforced if spillovers between the old and the new technology make the leading region a more attractive location. Furthermore the model permits to analyse explicitly capital flows and it is then shown that while some transfers as investment subsidies may improve the lagging region, certain types of inter-regional transfers have a negative effect on the growth perspectives of backward regions (see the case of unemployment benefits and public employment in the south of Italy in the 1970s) reducing the chance of take-off. Although transfers are welfare improving for the lagging region in a static sense, in some cases they may contribute to the long-run persistence of uneven development raising wages without improving productivity.

A number of papers have studied the links between FDI and trade liberalisation agreements (i.e. the European single market) and the impact on the labour market. Peter Neary from UCD and CEPR, in the paper "Foreign investment and the single market" (*Paper 40*) extends the theory of multinational corporations to explore the effects of internal trade liberalisation by a group of countries on the level of inward direct investment. The analysis identifies three distinct influences on how a multinational corporation chooses to serve the union markets. First is the tariff-jumping motive. Less familiarly from earlier literature, reductions in internal tariffs reduce the tariff-jumping incentive to establish more than one union plant, and so encourage plant consolidation. Second is the export platform motive. As internal tariffs fall, this favours FDI with only a single union plant relative to exporting. Finally, reduced internal tariffs lead to increased competition from domestic firms, which dilutes both the tariff-jumping and export platform motives. This works against both FDI and exports and may lead to the "Fortress Europe" outcome of multinationals leaving union markets even though external tariffs are unchanged.

FDI has been of particular importance in the Irish case, where foreign-owned firms employ almost 50 percent of the manufacturing workforce. The strong growth in inward FDI over the course of the 1990s was one of the major factors behind the emergence of the so-called "Celtic Tiger". Several papers by the UCD team explored both theoretically and empirically the implications of strong FDI inflows.

In particular, Frank Barry (from University College Dublin) has focused on the issue of peripheral regions in the paper "FDI, Infrastructure and the Welfare Effects of Labour

Migration" (*Paper 37*). He develops a new approach to the treatment of labour mobility and a new perspective on the modelling of economically-peripheral regional economies. The fixed-cost element of public infrastructure is emphasised, which allows both the tax-base effect and congestion to be taken into account. International capital mobility is assumed, with the emphasis on increasing-returns sectors; for peripheral economies, entry to these sectors is primarily through inward FDI. Taking Ireland as an example of an economy with an open labour market and strong FDI inflows, the model is used to revisit a number of issues of practical and analytical interest.

In another paper, Frank Barry has studied the issue of how individual region will fare as a consequence of the national decision on whether or not to adopt the single European currency in the presence of inward FDI (*Paper 2*). The paper identifies certain crucial differences that determine how a region fares relative to others in the same national economy if the country remains outside EMU, and asks what bearing these differences will have on relative performance within EMU. There are two types of labour (low and high skill) in the model, and two goods (one competitive and the other monopolistically competitive). The high-skill export good is priced in euros. Regions differ in terms of degree of labour-market flexibility and the importance of the high-skill FDI sector in regional income. Strong regions, i.e. those with greater labour-market flexibility and more FDI, fare better than weaker regions both inside and outside EMU. Weaker regions fare relatively better in EMU however.

Jan Haaland (Norwegian School of Economics and Business Administration and CEPR) and Ian Wooton (University of Glasgow and CEPR) have addressed from a theoretical point of view the effects of different policies, in particular labour market policies, on the location decision of firms. In "Multinational Investment, Industry Risk and Policy Competition" (*Paper 78*), they have shown that in an uncertain business climate, multinational enterprises must take account of future exit costs in deciding where to locate a branch plant. On the other side, even though some countries are generally more successful than others in attracting MNEs' investments, perhaps reflecting relatively more advantageous underlying conditions, not all foreign investment is drawn to these locations. To explain this feature of FDI the authors focus their attention to the fact that locations offer *industry-specific* advantages, allowing these countries to win the competition for particular firms, while they lose the battle for other industrial investment. In particular among the possible elements that influence firms decision they concentrate on the differences in national labour-market conditions between countries. Considering *labour-market flexibility* as the case with which a firm can close down operations of a branch plant in a particular location, they show that a country with a more flexible labour market (that is, lower redundancy payments) finds it easier to attract FDI than one with more

severe redundancy rules. Furthermore, the lower the opportunity wage (the wage in the best alternative job), the more eager is the potential host to make its location attractive to the MNE. As a result the model has basically two dimensions: labour-market flexibility and the employment level, which are modelled using redundancy payments and the opportunity cost of employment respectively. In such a setting, for the MNE, the mix of labour-market flexibility and investment incentives determines its preferred location while for the potential host country, there is a trade-off between the value of extra employment and the cost of the necessary investment incentives. It should come as no surprise that a country with flexible labour market and low opportunity wages will tend to win any policy competition for inward FDI. But extending the analysis and considering a game between two countries with different characteristics, the authors also conclude that a nation with an inflexible labour market and high unemployment will succeed in attracting low-risk firms that are more interested on entry incentives than on potential exit costs, while that with more flexible labour markets and low unemployment will be more successful with respect to higher-risk firms.

In a follow up paper "Domestic Labour Markets and Foreign Direct Investment" (*paper 52*), the same authors then endogenize the determination of wages and redundancy rates in order to study the labour-market organisation in more detail. In particular they introduce the possibility for unions to bargain with the government in setting a national wage that will apply to the MNE should it choose to invest in that country to extend the exogenously given wage rates and the government-mandated redundancy rates that were considered in the previous paper. The first result reached starting from these considerations is that redundancy rates will be fully reflected in the wages. Hence, for the average only the opportunity cost of labour in the country will matters for the overall expected wage costs. Nevertheless, they show that as long as wages are not firm-specific, redundancy rates may play a key role in determining the expected wage costs and the employment levels for an MNE. So only if the risk level (or time horizon) of the MNE matched that of the average domestic firm, government-mandated redundancy rate will have no effect. The interesting contribution of this paper arises from the comparison of countries where opportunity costs can be high or low and redundancy rates can be high or low: for high-risk FDI low redundancy rates dominate, while for lower-risk FDI (but still more risky than domestic firms) low opportunity costs (and hence low wages and high subsidies) are more important So that the choice of location for an FDI may depend on the way the labour market is organised in various potential host countries, but also on the risk profile of the FDI relative to the average risk of layoffs in the countries.

2. Task 2: Construction of harmonised cross-country data sets (WP 2)

The second specific objective of the project has been to construct harmonised cross-country databases on outward and inward FDI based on firm level information. A major aim of the project has been to improve the availability of FDI and MNEs data at the European level and to provide a reliable source of information to European political and corporate decision makers and to researchers.

All teams have been involved in work in this area. At the end of the project, data collection and harmonisation has reached important and novel results. Additional work remains to be done to wide the coverage of the datasets and to improve the quality and the comparability of the data. At this moment, property rights' problems and differences in collecting data have made impossible to reach a very good degree of harmonization and comparability of the data from different countries. However, the partners have planned to continue the collaboration and the work in this area of research also after the end of the project. In particular, when possible, the databases will be updated and additional effort will be devoted to data harmonisation.

The collection and/or improvement of data on inward and outward FDI at the firm level have involved each team during the first year of the project. In the second year, this activity has been mostly concluded and the teams have had the possibility to conduct empirical research using the new databases. Existing data sets have been harmonised and integrated with additional information from balance sheet data bank (i.e. CSLA for Italy) or new databases have been acquired (i.e. UCDUB.DE for Ireland, UNOTT.DE for the UK, UCAR.DE for Spain).

CSLA has constructed an integrated database on outward and inward FDI. The number of parents, of foreign affiliates, of foreign owned subsidiaries and of employees and sales of foreign affiliates and of foreign owned subsidiaries has been retrieved from the Reprint database. Reprint is the most comprehensive source of information on inward and outward FDI in the Italian manufacturing sector, in the period 1986-2000. Reprint has been developed at Politecnico di Milano in co-operation with the National Council for Economics and Labour (CNEL). As for outward FDI, CSLA team has integrated this data set on subsidiaries with data on the parent company, available in national balance sheet data sets. As for inward FDI, data on local subsidiaries based in Italy have been combined with balance sheet data. A data set on locally owned firms not investing abroad has been developed, and has been used as a benchmark. At the end of the project, the integrated CSLA dataset covers the period 1992-1998.

RIIE has a data set containing information on Swedish outward FDI within the manufacturing sector. The data set combine information on the parent companies and on the foreign subsidiaries. The data have been collected through a survey based on a questionnaire every fourth year since the early 1970's. The database has been updated recently and new data on the skill composition of the labour force have been collected.

During the proceeding of the project, the team of the University of Nottingham (UK) has had access to a new panel database (the ARD) which has been constructed by the Office for National Statistics (ONS) from the individual returns to the Annual Census of Production. The team has cleaned the database and also managed to obtain input and output price indices for the U.K manufacturing sector. Since an interesting feature of the ARD is the information it contains on the nationality of the ultimate parent of the constituent firms, the database has been used to study the effects of the presence of multinational companies on the productivity of domestic firms.

The team of University College Dublin has obtained access to a plant-level database on manufacturing firms for the economy of the Republic of Ireland constructed by Forfas, the government agency responsible for Irish economic development, by bringing together information from three different surveys of Irish manufacturing firms. The database provides information at plant level and distinguishes between domestic and foreign owned firms.

The Spanish team has constructed a database on inward FDI using information from two firm-level longitudinal data sets for Spanish firms: the ESEE, conducted by the Ministry of Industry and Energy, and the CBBE (Central de Balances del Banco de Espana). The two databases provide a number of information at firm level, including firm's innovation activity, the features of the markets in which each firm operates, etc.

An additional database at the firm level has been constructed by the RIIE and UNOTT.DE teams. This database is the result of a merger between the existing UK and Swedish databases. In these two databases, UK affiliates of Swedish firms have been matched. The Swedish database covers information on Swedish parents and their foreign affiliates. The UK database covers information on UK affiliates of Swedish firms and other domestic and foreign-owned firms in the UK. The purpose of matching the observations on UK affiliates of Swedish firms in the two databases has been to construct a dataset that enables linking information on affiliate performance both to information on the whole corporation (such as overall R&D spending) and to information about the environment in which the affiliates operate (such as productivity of other firms operating in the same industry and region).

The aim of the project to create cross-country datasets at the firm level has been pursued by CSLA team collecting firm level balance sheet data from the "Amadeus" commercial database (a database created by Bureau Van Dijk that reports balance sheet and other information for about 5 million firms in 31 countries between 1993 and 2000). CSLA data set is an unbalanced panel covering more than ten thousand manufacturing companies located in eleven European countries (Belgium, Denmark, Finland, France, Germany, Italy, The Netherlands, Spain, Sweden and the United Kingdom) observed in the period 1993-2000. The panel comprises MNEs' affiliates and national firms (NEs). According to Amadeus dataset, a foreign firm is such when its 'ultimate owner' is non-resident in the country analysed that owns at least 50% of the company. Firms with less than 50 employees and/or with less than three observations for the employment variable have been excluded from the CSLA database. The coverage of the final data set of national manufacturing activities varies by country, from 40.33% in Sweden to 5.68% in Italy. Also, MNEs are over-represented compared to their share in national manufacturing employment, mainly because of the exclusion of firms smaller than 50 employees. However, average output per employee and average cost of employment per employee for NEs and MNEs in the sample (Table A1) are in line with those at the population level, according to OECD data.

A second objective under task 2 has been to improve the availability of cross-country data at industry level.

The Swedish team has engaged in work related to the construction of a database with comparable sectorally distributed FDI data for the European countries. Contacts with the units within the OECD that publish data on FDI flows and stocks have been established with the purpose of getting as disaggregated data as possible from them. Balance-of-payments data on foreign direct investment are comparable between countries to a large extent and there is a benchmark definition that most countries comply with. However, getting data that are finely disaggregated (i.e. disaggregated by industry and country) involves the additional problem that the requirement of confidentiality leads to a large share of suppressed data. Therefore, the Network has decided not to proceed with the request of much disaggregated data, usually resulting in unbalanced data set, unreliable for empirical research.

Advancements in the availability of cross-country data to be used for the study of the labour market implications of the firms' internationalisation process have been reached by other teams.

CESPRI (CSLA subcontractor) has constructed a database to study international fragmentation of production and outward processing trade (OPT). Based on data on outward processing trade collected by Eurostat and published in the Comext database, the CESPRI team has re-classified these data (which in the official publications are released following the Combined Nomenclature, the official trade classification of the EU) working at a high level of disaggregation in order to match their merchandise classification with the classification of FDI that was made available by the other research teams. The reason to have a common classification for FDI and outward processing trade has been to be able to look for correlations across sectors in different international activities of firms. Furthermore, the team has collected and classified data on skill employment in different industries, in order to examine how the skill/unskilled labour ratio changed over time, focusing in particular on those sectors where fragmentation took place.

The SNS team (RIIE subcontractor) has constructed a database to study the determinants of firm location. The database comprises altogether 108 variables, whereof a substantial part is distributed on industries in the respective country. Considerable resources have been invested in making the data comparable across countries and over time. Whenever the researchers have been forced to calculate data due to missing information, or when they expect data to be incorrect, they specify the way in which they have replaced these missing values with actual numbers. The SNS's team has also used a number of different sources, and also here a lot of work has been undertaken to assure that data from these sources are comparable. The database consists of three separate parts: one database is distributed on countries and years, one part is distributed on eight broad industry groups covering the manufacturing sector within a subset of these countries, while the final part is distributed on corporate level (not yet available). The data for the first two parts has primarily been collected from various OECD and United Nations sources and for the part that is distributed on corporate level the data comes from RIIE/IUI's databases. The aim of the database is to facilitate and trigger research in the area of empirical economic geography. The database could easily be pooled with firm level data from other countries, or the firm level data available in the database could be used directly. For instance, locational determinants related to home and host country issues could easily be analyzed by implementing the data in the current database. The three databases, Country.xxx, Industry.xxx and Firm.xxx, are available in both Excel (.xls) and STATA (.dta) format and may be downloaded from www.sns/xxx/.se. However, access to the databases is presently restricted to researcher involved in the project and further distribution of the databases is prohibited. Currently the database embraces the time period 1970 to 1998.

Finally, CSLA has prepared a dataset on the activity of US multinationals in the European Union. For each country of the EU15, from 1982 to 1998, a number of industry-level variables are available (among others: imports and exports of goods between affiliates and US parents, intra-firm trade, total sales, local sales by affiliates, sales to US and other countries, employment of affiliates and US parents). In addition, variables as transport costs, distance, relative GDP are included.

A detailed and updated description of each database is presented on the project's web page: www.dagliano.uni-bocconi.it

3. Task 3: Geography of European FDI and implications for labour demand: empirical analysis (WP 3)

A number of papers studied the geography of European FDI. Under this task the project addresses the question of where multinational firms do locate their activities. This task has indirect implications for labour demand, particularly when foreign activities are additional to domestic ones. Also, as we will see, labour market conditions and factor costs are important determinants of FDI.

A review of the empirical literature analyzing in a comprehensive way all the range of possible determinants of the location of multinational activities has been prepared by K. Ekholm (RIIE team) and K-H Midelfart-Knarvik (CEPR team). This review takes into account firm, sector and country specific determinants and it will be published in a book reviewing the contemporary literature and evidence on MNEs and FDI.

A standard hypothesis on the location of MNEs, called the convergence hypothesis, stipulates that multinational companies will tend to displace national firms and trade as total market size increases and as countries converge in relative size, factor endowments, and production costs. This hypothesis is tested empirically at the aggregate level in a study undertaken by Barrios (University of Manchester), Görg (UNOTT.DE) and Strobl (UCDUB.DE) (*Paper 1*). Using a recent model developed by Markusen and Venables (1998) as a theoretical framework, the authors explicitly develop empirical measures to proxy displacement of national by multinational firms between two countries. These empirical measures are then used to test the convergence hypothesis for a panel of data of country pairs over the years 1985-96. The results provide some empirical support to the convergence hypothesis.

Two papers by Braconier, Norbak and Urban (*Papers 51 and 73*) explore how relative skilled-wage premia affect FDI. Contrary to previous studies based on factor endowment differences, this study finds strong support for vertical FDI, in the sense that a large

share of FDI are conducted in countries where unskilled labour is relatively cheap. In addition, the study finds that relative skill-premia also affect FDI activities that have previously been associated with horizontal FDI, i.e. local affiliate sales. Consequently, the potential effects of changes in the relative wage costs on international production reallocation within MNEs are large.

The SNS team (RIIE subcontractor) carried out an empirical analysis of the determinants of location of production by multinational corporations (MNEs) (*Paper 22*). The effects of the implementation of the internal market program in Europe are emphasised. The econometric exercise has taken advantage of the detailed data set on foreign activities by Swedish MNEs, stretching over the period 1974 to 1998. This data set has been pooled with country level data comprising altogether 38 host countries where Swedish MNEs have undertaken FDI. It is shown that agglomeration on the industry level influences FDI positively in all countries and regions. However, high relative wage costs have a negative impact on location in Europe. This effect diminishes considerably as all countries are included in the analysis, suggesting either higher labour mobility outside Europe, or that higher relative wages costs mirror higher productivity. Hence, the positive effect of agglomeration on location of production is partly mitigated by high relative wage costs in Europe, increasing the prospects for a geographically dispersed production. Among the policy variables it is shown how expansionary fiscal policies, taxes and protection tend to discourage location. Access to human capital is important as firms decide where to locate production.

The role of FDI in the development of the EU peripheral regions has been investigated with particular emphasis to the case of Ireland. Agglomeration effects in inward FDI in this region have been investigated by Barry (UCDUB.DE), Görg (UNOTT.DE) and Strobl (UCDUB.DE) (*Paper 3*). Towards the late 1980s Ireland's share of US investment in the EU increased dramatically, and this played an important role in the reversal of the country's economic fortunes. Several observers suggested that demonstration effects may have a role to play in explaining this increased share. The paper by Barry, Görg and Strobl explores whether the significance of such demonstration effects (or other types of agglomerations which apply particularly to the foreign-owned sector) can be identified empirically in an econometric analysis of the location of foreign firms in Ireland. In the empirical model they propose that the number of new foreign owned firms locating in sector j depends on the existing agglomeration of firms in sector j . The model also includes a number of other control variables. In the empirical analysis, using firm level data for the Irish manufacturing sector for the period 1973 to 1996, they focus on the foreign-owned firms from the US and the UK. They find that agglomerations of US and

other foreign firms in Ireland are important determinants of the location of new US firms, while the evidence for the new UK firms is not as clear-cut.

A paper by Frank Barry (UCDUB.DE) and Aoife Hannan (UCDUB.DE) on "Demand Elasticities and the Growth of FDI" (*Paper 45*) identifies one set of factors contributing to the growth of manufacturing-sector FDI both in Europe and across the world since the Second World War. Arguing that R&D-intensity and advertising-intensity reflect the kind of firm-specific assets that are associated with FDI, they show that the share of total output accounted for by sectors intensive in these activities has increased in recent decades, suggesting that income elasticities of demand for these products are relatively high.

The CEPR team has undertaken a number of studies in the field of the "new economic geography", analysing the location of activities, in particular of multinationals. A model of the location of industries across countries has been developed and econometrically estimated (*Paper 26*). The model combines factor endowments and geographical considerations, and shows how industry and country characteristics interact to determine the location of production. The model is estimated on sectoral data for EU countries over the period 1980-97, and the empirical results show that endowments of skilled and scientific labour are important determinants of industrial structure, as also are forward and backward linkages to industry. In a different study, A. Venables (LSE and CEPR) evaluates the claim that new technologies mean the 'death of distance', allowing suitably skilled economies to converge with high income countries (*Paper 27*). In this study it is argued that geography matters for international income inequalities, and that new technologies will change, but not abolish this dependence. Some activities may become more entrenched in high income countries than they are at present. Others – where information can be readily codified and digitized – will relocate, but typically only to a subset of lower income countries. The study concludes that these countries will benefit, but other countries will continue to experience the costs of remoteness.

Looking at how the process of trade integration affects FDI location, Girma (UNOTT.DE) analyses whether the process of the European Internal Market Programme has changed the motives of entry by non-EU multinationals in the UK manufacturing industry (*Paper 34*). He finds that FDI appear to have become more responsive to the size of the European market and unit labour costs relative to the rest of the EU, and less sensitive to the local market size. FDI is also increasingly found to be concentrated in sectors with higher intra-EU exports propensity.

Another paper dealing with the relationship between trade costs and the location of FDI is by Frank Barry and Aoife Hannan who explore all possible dangers to Ireland if FDI inflows are diverted towards Central and Eastern Europe, upon the latter's accession to the EU. (*Paper 36*). Based on Ireland's experience pre- and post- EU accession, they expect the nature of FDI flows to the CEE countries to change substantially in terms of country of origin, sectoral destination and type (i.e. market seeking versus export-oriented) after enlargement. Some CEE countries in particular will be very competitive in terms of corporation tax, rates of pay and educational level of the population. As against this however, the pool of available FDI is also likely to increase substantially upon enlargement, so that the process will not represent a zero-sum game between FDI-reliant incumbents and new EU entrants.

Frank Barry and Aoife Hannan study also how trade integration leads to the adjustment of inter- and intra-industry variety (*Paper 38*). Factor endowments in the relatively poor economies of the EU periphery would be expected to differ substantially from those at the core. Consequently, the trade-integration effects of the EU's Single Market programme could be expected to lead to inter-industry adjustment in these economies, in the form of an increase in specialisation on their part in labour-intensive industries. They show that indicators of revealed comparative advantage from the mid-1980s predicted exactly this for Greece and Portugal, but predicted the opposite for Ireland and Spain.

Further aspects of the Single Market are explored in Stephen Pavelin's paper on "The Geographical Diversification of Leading Firms in the EU" (*Paper 62*). This looks at changes in the degree to which firms' operations became more dispersed across countries over the Single Market era. Using firm-level production data for 1987 and 1993, disaggregated by industry and country, he finds the introduction of the Single Market to have been associated with an expansion in the average number of plants that the leading multinational firms in the EU maintained. Among such firms with plants in Ireland for example, the average number of other EU countries in which plants were maintained rose from 3 in 1987 to 5 in 1993. This suggests that the development of the Single Market was associated with a further fragmentation of the production chain. This has implications for whether incumbent EU member states which rely heavily on FDI need fear the possibly disruptive labour-market implications of a diversion of FDI flows to Central and Eastern European countries upon EU accession.

The links between FDI and trade are also analysed by Mary Amiti (Melbourne) and Katharine Wakelin (UNOTT.DE). They focus on the question whether these two flows are complements or substitutes (*Paper 29*). They use aggregate country level data for the

bilateral trade and investment relationship between the US and 35 countries (including most EU countries). Their empirical analysis shows that the relationship between trade and FDI depends on country characteristics as predicted by recent models in the new trade literature. When countries differ in relative factor endowments and trade costs are low, investment liberalisation (which increases FDI) stimulates exports, whereas when countries are similar in terms of relative factor endowments and size, and trade costs are moderate to high, investment liberalisation reduces exports.

Focusing on the link between FDI and trade from a different perspective, Frank Barry (UCDUB.DE) and Aoife Hannan (UCDUB.DE), in "FDI and the Predictive Powers of Revealed Comparative Advantage Indicators" (*Paper 46*), show that the revealed comparative advantage methodology which is frequently used to predict the sectoral effects of trade liberalisation would have failed completely as a predictor of post-EU-accession changes in Ireland's sectoral structure and in sectoral export performance. The flaw in the methodology arises because Irish developments were instead driven by the country's success in attracting FDI, and the sectoral destinations of these *greenfield* FDI inflows were unrelated to measures of the country's pre-accession RCA. The methodology proves reasonably accurate however as a predictor of developments in indigenous (i.e. domestically-owned) industry in Ireland. The analysis is used to critique recent work on expected structural change in CEE countries in the wake of EU accession.

Finally, the CSLA team has studied the effect of globalisation on labour demand elasticity (*Paper 7*). Among the various paths through which a trade shock is channelled to the labour market, this is the effect on labour demand elasticity. Globalisation might induce an increase in this elasticity via a scale effect due to the increased competition on the output market and/or via a substitution effect generated by expanding the firm production possibility set to include foreign inputs. At the empirical level, very little attention has been devoted to study the relevance of the latter channel of transmission (an exception is Slaughter (1998) for the United States). Accordingly, the focus of the study has been centred on the substitution effect of increasing international integration on labour demand elasticity. A theoretically consistent labour demand is estimated using a industry-year panel from a number of industrialised countries, including major European countries, Japan and the US over the period 1970-96.

4. Task 4: Empirical analysis of the impact of outward FDI on labour market in the home country (WP 4)

How does investing abroad affect the labour demand at home? Two major channels of transmission need to be emphasized. First, investing abroad has effects on the size of investing firms' domestic activities. Domestic employment may expand or contract depending on whether foreign activities complement or substitute domestic ones. Second, it has effects on the way things are done at home. The skill or the capital intensity of domestic activities may again increase or decline depending on the relative factor intensity of the different activities carried out by the firm and on the factor endowments of the home and foreign countries. Also, domestic productivity may rise or decline, depending on whether foreign activities strengthen or deplete domestic ones.

All these issues have been addressed under this task of the project.

As for the effects of outward FDI on home employment, earlier works generally find little or mixed evidence that outward investments deplete home activities. Henrik Braconier and Karolina Ekholm (both from RIIIE) in their paper entitled "Competition for Multinational Activity in Europe: The Role Played by Wages and Market Size" (*Paper 4*) argue that one possible reason for this conflicting evidence is that studies of whether employees in different locations of the firm are substitutes or complements only examines the effect of wage changes on employment in existing units. There may be strong substitutionary effects of the firm's discrete decision to set up a new production plant and to close down an existing one that are ignored by the methodology used in previous studies. Therefore, Braconier and Ekholm have developed a method for examining the impact on labour demand in one location from both the firm's discrete decision of whether to set up a foreign affiliate in a particular location or not as well as the marginal decision of whether to expand or contract employment within existing units. This has involved developing a theoretical framework for analysing the firm's decision to set up an affiliate in a particular foreign location where not only the home country serves as an alternative production site, but also a third country. The paper has used firm-level data for Swedish MNEs to estimate the impact of the discrete and marginal employment decision on labour demand. In order to be able to treat the sample of affiliates as one in which the locations are potential alternatives for one another, the focus has been on affiliate activities in Europe. As expected, much more of substitution between employment in different locations is found when focusing on the discrete decision. The likelihood that the firm will establish affiliates in a particular location is strongly affected by the level of labour costs in potential alternative locations within the same region. That

is, a high level of labour costs in locations in which the firm has not already set up foreign affiliates has a strong positive effect on the likelihood that the firm will set up an affiliate in a particular location. However, the marginal decision of whether to expand or contract employment within existing units is not significantly affected by changes in labour costs at all.

Following the same direction of research, the RIIE team has studied the effect of a closer integration of the Eastern and Central European countries on the location decisions of Swedish multinational firms (*Paper 5*). The starting point has been the notion that an increased integration between Western and Eastern Europe may lead to a relocation of production activities from West to East, where MNEs exploit low production costs in the Eastern and Central European countries. The study has focused on how the MNEs' expansion in Eastern and Central Europe has affected employment in affiliates located in Western Europe. The results suggest that there has been a relocation of activities, and thereby employment, from the Northern as well as Southern part of Western Europe. However, this effect seems to be the strongest for the countries located in Southern Europe (i.e. Greece, Spain and Portugal). This fits in well with the observation that the affiliates located in Eastern and Central Europe are more similar to the ones in Southern than Northern Europe in terms of skill intensities. It is expected that countries in which firms produce with similar factor intensities compete for the same type of activities. Moreover, there is evidence that the employment by firms with affiliates in Eastern and Central Europe has become more sensitive to changes in labour costs. This suggests that the possibility of shifting production to low-wage countries in Eastern and Central Europe may lead firms to reduce employment more in response to labour cost increases.

Another study that deals with the location decision of Swedish multinationals is the paper by the RIIE team on Germany (*Paper 6*). Data on foreign activities by Swedish MNEs are used to examine the performance of German affiliates compared with affiliates in other locations and to the other firms in German manufacturing. It is found that German affiliates, on average, have higher labour productivity, R&D expenditure per employee and skill-intensity than affiliates located in other Western European countries. German affiliates also seem more oriented towards selling in the local market than affiliates in other European countries. Thus, it appears as if market access is an important motive for why Swedish MNEs establish affiliates in Germany. However, in spite of this, it is found that labour costs do have a significant effect on the firms' decision to locate in Germany. The location decision is sensitive to the level of wage costs in Germany and in other potential locations in high-income Europe. However, there is no evidence that the location decision is sensitive to the level of wage costs in Sweden or low-income countries in Europe. The cross-wage elasticity showing the effect of increases in labour

costs in other high-income locations in Europe on employment in German affiliates of Swedish MNEs is positive, indicating substitutability between German workers and workers employed in other high-income countries in Europe.

Evidence on the domestic employment effects of outward FDI has been provided by CSLA team for the Italian case. Using the new data set CSLA-Reprint, combining data on the parent company and on the subsidiaries of Italian multinationals, the issue of whether employment in foreign affiliates is a 'substitute' or a 'complement' to home country employment of the parent firms has been studied (*Paper 24*). The data base used in the analysis also contains a counterfactual, based on a sample of non-investing firms. In fact, to properly assess the role of de-location on domestic employment, it is necessary to address the question of what would have occurred had firms not invested abroad. The empirical work has therefore compared employment dynamics for investing and non investing firms, controlling for other firm-specific differences.

In a related paper (*Paper 76*), Barba Navaretti and Castellani (both CSLA team) have applied on the same database propensity score matching to construct an appropriate counterfactual of national enterprises (NEs) and have used a difference-in-difference estimator (DID) to compare the performance of Italian MNEs and of NEs. The performance measures analysed have been growth in output, employment and productivity. The paper has first focused on firms that change status from national to multinational by investing abroad for the first time, so as to single out the effects of the investment, by comparing firms' performance before and after the investment. Second, it has compared the performance of these firms investing abroad (MNEs), to the performance of a counterfactual of national firms (NEs) that do not invest abroad. Barba Navaretti and Castellani have found that the home performance of Italian firms that invest abroad for the first time during the period analysed improves after the investment; they have also found that the post-investment rate of growth of output, employment and productivity is higher than the one observed over the same period for the counterfactual of non-investing firms. Thus, the evidence seems to support the view that foreign investments do strengthen and do not deplete economic activities at home.

The second major issue studied under this task has been the effect of the internationalisation of production on the composition of labour demand at home.

As a background study, the impact of globalisation on the skill composition of labour demand has been analysed in the paper "Wage Premia and Skill Upgrading in Italy: Why Didn't the Hound Bark?" (*Paper 50*). The paper presents firm level evidence on the dynamics of non-manual wage premia and employment shares in Italian manufacturing

during the nineties. The authors find that the relative stability of aggregate wage premia and employment shares hides offsetting disaggregate forces. First, while technical progress raises the relative demand for skilled labour within firms, demand changes associated with exports reduce the relative demand for skills. Second, within the class of non-manual workers, wage premia and employment shares of executives rise substantially, whereas those of clerks fall in a similar proportion. They also find that the export status of firms plays a key role in explaining labour market dynamics, as exporters account for most of both demand-related and technology-related shifts. Overall, the results for Italy question the general validity of the conventional view that emphasizes the role of labour market institutions, as opposed to trade and technology, in determining wage and employment dynamics in continental Europe.

More directly related to the issues focussed under the project is the empirical paper by the CESPRI team (CSLA subcontractor) studying the implications for the labour market of international fragmentation of production in Europe (*Paper 21*). The existing (but limited) empirical work in this field suggests that labour cost differentials trigger the decision by EU firms of transferring abroad more or less extensive segments of previously integrated production processes, but geographic and cultural proximity plays a key role in the choice of localisation. Delocalisation of production appears in fact first of all to be a response to the increasing competitive pressure exerted by low-cost producers on European firms. Models of trade due to fragmentation of production show that when international fragmentation takes place in order to save on labour costs by delocalising labour intensive phases of production, skilled/unskilled labour ratios in domestic production are expected to increase. The specific contribution of this paper has been to investigate the impact of outsourcing and import of intermediate goods on the labour market in the cases of Italy and Germany. These two countries' characteristics make them interesting to analyze in this context, because both countries are highly involved in the recent wave of trade with Central and Eastern Europe, and the Italian and German light industries (especially responsive to fragmentation of production) play an important role in their economies. The other specificity of this paper has been the use of a strictly-defined measure of international fragmentation of production – trade flows for reason of processing – that allows to pinpoint the international linkages between production phases much better than general indices of import penetration used in other analyses. The paper provides the theoretical background on international fragmentation of production and the analysis of the data set (carefully built in order to match industry classifications for data on international fragmentation and on skill intensity in production), allowing to identify the sectors most affected by the phenomena and the countries toward which fragmentation is directed. The central part of the paper is given by econometric analysis

of the relationship between IFP and change in skill intensity. The econometric analysis derives the estimated equation from a quasi-fixed translog cost function, as it is done in most of the comparable literature. Estimates of the equation measuring the shifts of the labor demand function show that the index of international fragmentation of production is consistently positive and significant for Italy, indicating that part of the increase in the skilled-to-unskilled labor ratio in Italy is linked to this form of organization of production. Results for Germany are less straight forward, and not directly comparable. Estimates show that the labour demand equations in these two countries have different characteristics. International fragmentation of production in Germany started much earlier than Italy and affects production to a larger extent. Changes occurred in the past might have affected the present organisation of production in Germany, which is currently on average more skill-intensive than Italian production.

The Nottingham team also studied the effect of outsourcing on relative employment of skilled and unskilled workers in the UK (*paper 42*). The paper applies and expands the methodology of Feenstra and Hanson (1996) to calculate imports of intermediate goods (fragmented products) at a fairly disaggregated level for UK manufacturing industries. The econometric results suggest that technical change and import penetration matter for wage inequality (although the effect of the latter depends crucially on whether or not estimations are weighted) while the role of outsourcing cannot be clearly determined.

As initially said, among the effects of outward FDI on the way things are done at home, the impact on domestic productivity must be considered. As employment, also domestic productivity may rise or decline, depending on whether foreign activities strengthen or deplete domestic ones. In addition, changes in productivity might indirectly influence labour demand.

The researchers of CSLA team have worked on this issue, particularly on the so called "learning-by-investing" hypothesis, testing the dynamic impact of outward investments on internationalising firms' productivity (*Paper 23*). Following studies which address a similar question with reference to exports, it has been assumed that firm's learning translates into productivity gains. With this assumption, learning effects from outward investments have been measured by looking at the stochastic process governing productivity growth. The learning-by-investing hypothesis has been tested specifying a partial adjustment process for productivity, where foreign investments enter as a predetermined regressor. Using firm-level panel data on productivity, employment and foreign subsidiaries for a sample of about 2000 Italian manufacturing firms from 1992 to 1997, a dynamic panel equation has been estimated, controlling for fixed effects and

endogeneity. Results have shown a drop in productivity growth in the year of investment, followed by a rise in later years, which has outweighed the short term fall.

Moreover, the impact of outward foreign direct investments on investing firms' productivity has been studied by the CLSA team also in a comparative framework (*Paper 41*). The case of Italy is compared to the case of France and Spain. The empirical analysis, conducted using two firm-level datasets created under the project, shows that firms investing abroad between 1993 and 1997 have improved their competitiveness and efficiency. On the one hand, delocalisation of production in developing countries has brought significant benefits to Italian firms and has certainly not impoverished the domestic production system. On the other hand, a comparison of the Italian experience with other countries highlights that foreign investments have a particularly significant effect in high tech sectors, since they allow to gather technological competencies localised in host countries and to exploit economies of scale. The high concentration of foreign investments in other industries, such as textile or industrial machinery, typical of the Italian pattern of specialisation, is a source of weakness when compared with other European countries, such as France, which has volumes of outward investments significantly higher than Italy, particularly in high tech sectors.

Finally, a different and interesting direction of research has been followed by Irish and Nottingham teams, studying the relationship, and the potential link of causality, between inward and outward FDI. Although Ireland is primarily thought of as a case study in inward FDI, outward FDI from Ireland has been growing rapidly in recent times, which is consistent with Dunning's Investment Development Path (IDP) hypothesis (*Paper 35*). In "Outward FDI and the Investment Development Path of a Late-Industrialising Economy: Evidence from Ireland", Frank Barry (University College Dublin), Holger Görg (University of Nottingham) and Andrew McDowell (of the Irish government agency Forfás) find empirical support for the hypothesis in the Irish case. The sectoral analysis shows up important differences between Ireland's outward FDI and the bulk of FDI occurring in the world economy however. Ireland's outward FDI flows are as yet almost exclusively horizontal and go largely into non-internationally-tradable manufacturing and services sectors. Also, the firm-specific assets of Irish multinationals lie neither in R&D nor in the type of product differentiation associated with high advertising expenditures.

As for the previous tasks, a review of the empirical literature analyzing the home country effects of outward FDI has been prepared as part of the book written in the framework of the related TMR project "Foreign Direct Investment and the Multinational Corporation: New Theories and Evidence". This review, including a large section on labour market

effects of outward FDI, has been carried out by G. Barba Navaretti and A. Falzoni (CSLA team).

5. Task 5: Empirical analysis of the impact of inward FDI on labour market in the host country (WP 5)

Under this task, several issues with relevant labour market consequences have been empirically analysed.

Data on inward FDI are more widely available than those for outward FDI, therefore broad evidence on sets of EU countries and also cross-country comparisons have been provided. The main directions of research have been the following:

- i) To what extent foreign investments generate spillovers to domestic firms and therefore affect indirectly labour demand and supply;
- ii) To what extent foreign presence affects the labour demand in host countries, i.e. in terms of dynamics and in terms of skill composition;
- iii) To what extent the performance of foreign owned firms is different from that of domestic ones;
- iv) What is the role of inward FDI in peripheral regions?

As for the *spillover effect of inward FDI*, Greenaway, Girma and Wakelin (all UNOTT.DE), have investigated if there is any productivity or wage gap between foreign and domestic firms in the UK and if the presence of foreign firms in a sector raises the productivity of domestic firms in that sector (*Paper 9*). Their results indicate that foreign firms do have higher productivity than domestic firms and they pay higher wages even after controlling for the sectors in which they are located and the size of affiliates. This differential is around 5% in terms of total factor productivity and wages once productivity differences are accounted for. However, they find no aggregate evidence of intra-industry spillovers, although sector and firm characteristics influence how they affect individual firms. Firms with low productivity relative to the sector average gain less from foreign firms, as do firms in sectors with low skills and low levels of foreign competition.

Again on UK, but focusing on the spatial dimension, Girma and Wakelin (both UNOTT.DE) have examined whether spillovers from foreign to domestic firms occur at the level of the region (*Paper 10*). The total factor productivity of domestic firms in the UK is estimated, including indicators for the level of FDI in the region and the sector; in the sector but outside the region; and in the region but outside the sector. In addition, they have also

checked to see if the characteristics of the firm and sector influence the level of spillovers from foreign firms. Girma and Wakelin conclude that domestic firms gain from the presence of multinational firms in the same sector and region, but lose out if the firms are located in a different region but belong to the same sector. The characteristics of the region and the sector also influence the level of spillovers. Less-developed regions gain less from spillovers than other regions, sectors with high levels of competition gain more, and sectors with a low technology gap between foreign and domestic firms experience higher spillovers. The same authors have also applied this analysis to plant-level data for the electronics industry in the UK, using a number of new semi-parametric techniques to improve the estimation of the production functions (*Paper 32*). The results indicate that positive spillovers exist but are mostly confined to the region in which the MNE locates. A number of characteristics influence their level, they are higher from non-US firms (in particular Japanese firms) and in more-developed regions. Girma and Görg (both UNOTT.DE) have produced a further analysis of the role of the technology gap in determining whether or not firms benefit from regional spillovers (*Paper 72*). Their findings clearly suggest that both absorptive capacity and distance matter for productivity spillover benefits. They find evidence for a u-shaped relationship between absorptive capacity and productivity spillovers from FDI in the region, while there is an inverted u-shaped relationship for spillovers from FDI outside the region.

On productivity spillovers from multinational firms is also a study by the CSLA team. Using data from a sample of Italian and German manufacturing companies, 1993-1998, CSLA members have studied the effect of the presence of foreign owned firms on productivity and GDP growth of the host country (*Paper 18*). If MNEs are very productive compared to domestic firms, they may promote learning and catch-up of local firms. Such a channel of spillovers from MNEs to local firms is known as the Veblen-Geschekron effect. Rather than the overall density of MNEs in a region or sector, it is their initial productivity advantage on the local firm to determine the positive effect on domestic productivity growth. The authors test this hypothesis using firm level data for German and Italian companies during the 90ies and they find evidence of a significant and robust Veblen-Geschekron effect.

Overall, the studies in the literature on productivity spillovers examine them usually within the framework of an econometric analysis in which labour productivity in domestic firms is regressed on a number of covariates assumed to have an effect on productivity, one of which is the presence of foreign firms. A positive and statistically significant coefficient on the foreign presence variable is then taken as evidence that spillovers exist. In the paper "Multinational Companies and Productivity Spillovers: A Meta-Analysis", Görg (UNOTT.DE) and Strobl (UCDUB.DE) critically discuss these findings and

present the results of a meta-analysis of the literature on multinational companies and productivity spillovers (*Paper 12*). For a sample of published and unpublished studies, they collect the different coefficients on the foreign presence variable reported in different studies, and their associated values of the *t*-statistics. They then regress the value of the *t*-statistics on a number of study characteristics, such as sample size, variable definitions used, etc.. The authors show that some of these characteristics, namely, variable definitions, and whether it is a cross-section or panel analysis, have an effect on the size of the coefficient found in the productivity studies.

The *effect of foreign multinational companies on the development of indigenous firms* in the host country has been studied in a number of papers. The starting point for the analysis of Görg (UNOTT.DE) and Strobl (UCDUB.DE) has been the paper by Markusen and Venables (1999) that shows formally that multinationals, through the creation of linkages with indigenous suppliers, can exert positive effects on the development of indigenous firms. Based on the literature on entry in industrial organisation, the authors estimate empirically a model describing the entry of indigenous firms using data for the Irish manufacturing sector. Results indicate that there is a positive effect of multinational companies on the entry of indigenous firms for a variety of alternative specifications (*Paper 13*).

Foreign presence might affect not just Irish firm entry but also indigenous start-up size. An increased market for indigenous suppliers might be expected to have a positive effect on the size of entrants, but an increased entry rate of indigenous suppliers can reduce entry size. Görg and Strobl have estimated the effect of foreign presence on the start-up size of both indigenous and foreign firms (*Paper 16*). The results indicate that foreign presence has a negative effect on the start-up size of indigenous entrants, and no effect on the start-up size of foreign entrants.

Of course, the incidence and size of entry says little about the performance of the indigenous sector over time. Görg and Strobl have examined the effect of foreign presence on indigenous firm survival (*Paper 17*). Again this effect a priori can go in either direction. The paper shows that when firm and sector-specific effects are controlled for, foreign presence has a survival-enhancing effect on indigenous firms in the same sector.

Barry, Görg and Strobl (*Paper 28*) have focused on the impact of foreign presence on productivity and wages in larger indigenous companies. Because these are unlikely either to sub-supply or to compete on product markets with the foreign companies (who are almost wholly export-oriented) the main effect we might expect to see operates through labour-market crowding out. They find indeed that foreign presence reduces average

wages and productivity (averaged over skilled and unskilled workers) in indigenous exporting firms, and has no effect on non-exporting firms. This is consistent with the model, in which foreign firms compete against indigenous exporting firms in the market for skilled labour, while indigenous non-exporters, which primarily employ unskilled labour, remain unrationed. Productivity spillovers do not appear in the data on large indigenous firms studied by Barry, Görg and Strobl, but they do appear for the smaller sub-supplying firms that drive the results of Görg and Strobl (*Paper 17*).

The area of research of export spillovers from MNEs to domestic firms is explored in a paper by Sousa, Greenaway and Wakelin (all UNOTT.DE) (*Paper 14*). They have addressed the issue of whether it is possible for a domestic firm to become more export oriented in response to the activities of MNEs' subsidiaries in the host country. Three channels through which this may occur are identified, namely export information externalities, increased competition in the domestic market and demonstration effects. The team from University of Nottingham has investigated this empirically for the United Kingdom, using a large firm-level dataset of 3662 firms from 1992 to 1996. The results confirm positive spillover effects from MNEs on the decision to export of UK-owned firms as well as on their export propensity. It is also clear from the results that the main channel for this phenomenon is increased competition.

This latter channel of transmission is specifically studied by Sembenelli (University of Turin and CSLA) and Siotis (UCAR.DE) in the paper "Foreign Direct Investment, Competitive Pressure and Spillovers. An Empirical Analysis on Spanish Firm Level Data" (*Paper 75*). According to the theoretical and empirical evidence, Foreign Direct Investment (FDI) has the potential to increase the intensity of competition as well as to act as a channel for technology transfers. One would expect, all else equal, an increase in average productivity following a wave of FDI, as multinational corporations (MNEs) enjoy higher levels of efficiency. At the same time, the entry of foreign firms has also been associated with an increase in competitive pressure on the domestic market. Using a large firm level data set covering all sectors of Spanish manufacturing during the period 1983-1996, Sembenelli and Siotis have attempted to disentangle these two effects by estimating a dynamic model of firm level profitability. They find that FDI has a positive long-run effect on the profitability of target firms, but this is limited to firms belonging to R&D intensive sectors. In addition, the results indicate that foreign presence dampens margins. However, this effect appears to be more than compensated by positive spillovers in the case of knowledge intensive industries.

Other empirical studies on FDI spillovers in Spain have found different results. Barrios and Strobl, in the paper "FDI Spillovers in Spain" (*Paper 58*), have analysed the impact

of Foreign Direct Investment (FDI) on firm productivity using an establishment-level panel of Spanish manufacturing industry that spans the period 1990-1994. The key question concerned the elements that enable domestic firms to capture the positive spillovers associated with the presence of foreign firms. They use Research and Development (R&D) expenditure and trade data to represent the capacity of local firms to reap the benefits from FDI. Their results fail to identify positive spillovers for local firms while a negative correlation is detected in low R&D activities. Further evidence shows that positive externalities have been mainly captured by foreign affiliates. Overall, the general effects of FDI remain very limited in absolute terms.

In the paper "Foreign Direct Investment and Efficiency Spillovers in the EU Periphery: A Comparative Study of Greece, Ireland and Spain" (*Paper 67*) by Barrios, Strobl, Demilis and Lourie the analysis is extended still further. The results show evidence of spillovers in Ireland and Spain only, although these positive spillovers seem to depend on whether firms have the absorptive capacity to capture technological spillovers and the criteria used to classify them as foreign affiliates.

Again using Spanish firm level panel data (for the period 1990 to 1998), Barrios, Görg and Strobl, have examined the importance of a firm's own R&D activity and intra-sectoral spillovers on the decision to export and the export intensity (*Paper 68*). Their results are in line with preceding findings on the role played by firm-specific variables such as age, firm size, productivity and workers' skills. In addition, they show that export and R&D spillovers, either from MNEs or domestic firms in the sector, have a different impact on Spanish and foreign firms, the latter generally benefiting from positive spillovers. Further evidence shows a larger marginal impact of R&D spillovers on export intensity of Spanish firms exporting to other OECD countries than those exporting to non-OECD nations. Using the same panel data, Barrios and Strobl have also tested the impact of learning by doing (LBD) on firm productivity. While their results indicate evidence in support of the role of LBD, they show that this hinges on controlling for unobservable time invariant firm specific effects. Their results also suggest that spillovers from the accumulated experience within an industry can enhance firms' productivity, especially for established firms. Moreover, the level of embodied technology can improve the learning experience of some firms but only through firms' experience (*Paper 66*).

As shown by the number of papers produced within the project, the issue of the spillover effect of inward FDI is particularly important. However, it is hard to find a general conclusion on this subject. Görg and Greenaway (both UNOTT.DE) have contributed to clarify the debate presenting a review of the theoretical and empirical literature on spillover benefits from FDI for domestic firms (*paper 43*). They show that, although

theory can identify a range of possible spillover channels, empirical support is hard to find. In the light of this, the paper concludes with a review of policy aspects.

In addition to the previous paper, a review of the empirical literature analyzing the host country effects of inward FDI has been produced as part of the book prepared in the framework of the related TMR project "Foreign Direct Investment and the Multinational Corporation: New Theories and Evidence". This review, including a large section on spillovers, has been carried out by G. Barba Navaretti (CSLA team) and M. Bloomstrom.

Under Task 5, a second direction of research followed has been to analyse *to what extent foreign presence affects the labour demand in host countries*, i.e in terms of dynamics and in terms of skill composition.

Görg (UNOTT.DE) and Strobl (UCDUB.DE) have compared employment dynamics in domestic and foreign firms in Ireland (*Paper 30*). Using plant level data it is found that multinationals are more likely to exit the market than indigenous firms when controlling for other firm and industry specific characteristics. In terms of employment persistence it is found, however, that new jobs generated in MNEs appear to be more persistent than jobs generated in indigenous firms. Also, MNEs are quicker to recover lost jobs than are indigenous firms.

The UCAR.DE team has studied the impact of incoming FDI on employment dynamics in Spain, distinguishing its permanent and temporary components (*Paper 25*). Since Spain joined the EU in 1986, there has been an important acceleration in the volume of FDI. During the same period, Spanish firms experienced record rates of job creation and job destruction, mainly linked to the massive introduction of fixed-term contracts. Given these pieces of evidence, the Spanish team has analysed the impact of FDI on job creation and job destruction at the firm level. The use of a very rich database containing data at the firm level has allowed distinguishing employment variation by type of contract and by occupations.

The UNOTT.DE team has examined a different effect of inward FDI on the employees, the training of local labour force (*Paper 33*). MNEs are usually assumed to be vehicles for the introduction of technology into host countries. The training of local labour is arguably one of the most prevalent means to transfer technological assets abroad. However, there is little evidence available to confirm the suitability of such an assumption, especially in developed economies. The UNOTT.DE team has used UK data for 1760 workplaces of which 340 are foreign-owned for 1998 to examine training behaviour. They find that workplaces belonging to foreign affiliates tend to invest more in the training of labour than domestic workplaces controlling for other factors that affect training provisions. This

result holds for both the incidence and the intensity of the training provided. Additionally they find that the level of wage inequality in the host country is negatively correlated with the incidence and intensity of training provided by foreign MNEs. On the other hand, low technology gaps between the UK and the home countries of MNEs seem to promote the provision of training.

Again on UK, but focussing on wage spillovers, it is the paper by Driffield (Birmingham) and Girma (UNOTT.DE). They have examined the extent to which foreign investment in the UK contributes to wage spillovers in the domestic sector of the economy (*paper 44*). They focus on the electronics sector, possibly the most "globalised" sector of UK manufacturing. They find evidence that the higher wages paid by foreign firms, causes wages in the domestic sector to be bid up. This phenomenon is however largely confined to skilled rather than unskilled workers. Reasons for this with reference to the wage determination, and labour market segmentation literature, are discussed, as are the prospects for those groups most likely to benefit from FDI. Additional evidence on the existence of wage spillovers from foreign owned firms has been presented in the paper "Foreign Direct Investment and wages in Central and Eastern Europe" by Giulia Faggio (*paper 80*). The paper explores the link between foreign direct investment and wages in three countries of Central and Eastern Europe: Poland, Bulgaria and Romania. The objective of the study is twofold. It tries to detect (1) whether higher levels of foreign investment in a local market are associated with higher wages for the market as a whole and (2) whether a higher foreign presence is also associated with higher domestic firms' wages. Results indicate that higher levels of foreign activity are associated with higher local wages in all countries. Moreover, evidence supports the existence of positive FDI spillovers from foreign to domestic producers in Poland, but not in Bulgaria and Romania. Evidence also suggests that there is a link between the FDI impact on wages and the sector of activity in which foreign and domestic firms operate. FDI effects seem to vary substantially across sectors of the economy.

The issue of employment risk that may come along with the arrival of multinational firms has been analysed in a theoretical framework by the CSLA team (*Paper 15*). A model has been proposed that compares in a simple general equilibrium setting a regime with national firms to a regime with multinational firms in the presence of consumption risk insurance by implicit contracts. The model shows that terms of trade behaviour is different with insurance. An optimal policy rule is derived that imitates the optimal insurance equilibrium if there is a lack of private contract enforcement. Employment, real wage, and profit fluctuations are compared in the two regimes in response to technology shocks. The preliminary empirical evidence seems to be in favour of the model. In particular, multinational employment changes seem to be more sensitive to wages.

However, multinational firms expand employment more than indigenous firms in most countries.

The third major issue studied under this task has been *whether foreign owned firms are different from domestic ones*. Overall, the literature on foreign owned firms' performance has found that these firms are more productive than their domestic counterparts. There are, however, two competing explanation of the alleged superior performance of foreign-owned firms: multinationals can be more productive than domestic firms or they simply acquire the most productive domestic firms. Benfratello (CERIS-CNR) and Sembenelli (University of Turin, CERIS-CNR and CSLA) in the paper "Foreign Ownership and Productivity: Is the Direction of Causality so Obvious?" (*Paper 49*) have shed light on this topic by analysing a large panel of Italian firms observed in the 90s. They first assess whether foreign-owned firms are more productive than domestic owned ones; then, they check whether multinational tend to acquire the most productive domestic firms by using calculated productivity measures to predict firms' probability to be acquired. Overall results suggest that only for US affiliated firms it is possible to identify a structural relation between ownership and productivity. Mutinelli, Piscitello and Rabbiosi (Politecnico of Milan) have studied a strictly related issue: the impact of M&As on target firm labour productivity and employment level (*Paper 74*). The analysis covers the whole set of M&As occurred in Italy in the 90s. Paired T tests have been employed to investigate corporate performance differences in firms that experienced ownership change vs. firms which maintained their ownership. Results show that M&As induce productivity improvements not necessarily related to labour downsizing. This result is even more significant when considering cross border acquisitions and smaller target companies. In the same direction of research is the paper by Girma and Görg (both UNOTT.DE). They have investigated whether a take-over of a domestic establishment by a foreign firm has any effect on that establishment's survival and employment growth prospects (*Paper 31*). The analysis uses plant level data for the UK electronics industry. Estimating hazard models the authors find that the survival prospects of the take-over target are not improved after the takeover. Using differences-in-differences analysis to estimate the effect of the take-over on employment growth it is found that take-over targets have significantly lower employment growth rates than comparable domestic firms that were not taken over. It is found that this is driven by reductions in employment growth of unskilled rather than skilled workers. The same authors have developed their analysis in the paper "Foreign ownership, returns to scale and productivity: Evidence from UK manufacturing establishments" (*Paper 79*). They have calculated returns to scale and productivity growth (allowing for non-constant returns to scale) in UK manufacturing establishments in the electronics and food industries. The results show that foreign establishments tend

to have lower returns to scale than their domestic counterparts. Girma and Görg have also examined the effect of the acquisition of a domestic establishment by a foreign owner on returns to scale and productivity growth. They use a matching and difference-in-differences methodology which allows them to construct a reasonable counterfactual and to determine the post-acquisition changes in RTS and productivity that can be attributed to the incidence of acquisition, rather than to changes in the other external conditions. In both sectors, acquisition has a negative effect on RTS, although the effect appears stronger in the food sector. The effect of foreign acquisition on productivity differs between sectors; establishments in the electronics sector experience a reduction in productivity post acquisition, while plants in the food sector increase productivity.

A cross-country perspective to the study of the different behaviour of domestic and foreign owned firms been provided by Barba Navaretti (University of Milan and CSLA), Daniele Checchi (wTw, University of Milan) and Alessandro Turrini (UNCTAD, University of Bergamo, CEPR and CSLA) (*paper 53*). They have estimated labour demand equations by means of dynamic panel data techniques, using a sample of firms from eleven European countries. The data sets permit to identify the ownership status of firms, therefore the authors could distinguish between the behaviour of foreign firms (MNEs' affiliates) and the one of nationals (NEs). Their initial finding is that the first group has the tendency to adjust employment faster than the latter and this phenomenon appear consistently across countries. Furthermore, regarding the long run wage elasticities of labour demand, these appear more rigid in MNEs affiliates given the supposedly higher skill intensity of their work force. This feature emerges with little variations across countries. However the authors also observe an interesting relationship between the above measures of labour dynamics and the national labour market regulation. In fact, cross-country correlations show that the relative value of wage elasticities in MNEs on that in NEs is positively related to country-level indexes of labour market regulation. More specifically from this second step of the analysis they conclude that "relative long-run wage elasticities in MNEs tend to rise with measures of skill availability, employment protection, product market regulation and union presence". Hence country-specific labour market regulations that tend to limit the capacity of firms to adjust employment have a relatively smaller impact on MNEs given that the latter are in a "better position to bypass regulations affecting employment adjustment than purely national firms". Thereupon MNEs appear to be able to reach their optimal labour demand at faster speed independently of the labour market regime but they are also able to adjust more smoothly to shocks affecting their labour demands than national firms.

Another issue addressed under the project has been *the role of inward FDI in peripheral regions*. The case of Ireland has been deeply investigated, also in comparison to other EU

peripheral regions. In "The Celtic Tiger Era: Delayed Convergence or Regional Boom" (*Paper 69*) Frank Barry has evaluated the role of FDI in the theoretical perspectives which have been proposed to explain the Irish boom of the 1990s. The first perspective which has by now become the conventional wisdom holds that the boom is to be thought of as an example of delayed convergence. Growth would have come much sooner if consistently mistaken policies had not been followed over the previous 40 years. This suggests that convergence once achieved cannot unwind as long as the same best-practice policies as are followed elsewhere are adopted. The alternative perspective holds that the recent phase of Irish growth is instead to be seen as an example of a regional boom. The country took off because the low-corporation-tax strategy it had followed for the previous 30 years suddenly proved critical as the development of the European Single Market overlapped with hugely increased overseas activities on the part of US high-tech companies. The paper argues that potential threats to the Irish economy loom larger in this alternative perspective.

In "FDI and Structural Convergence in the EU Periphery" (*Paper 56*), Salvador Barrios, Frank Barry and Eric Strobl have analysed the impact of FDI on the similarities and differences in the industrial makeup of the EU core and periphery economies. The paper shows that convergence along this dimension is associated with convergence in terms of income per head, and that in the case of each of the cohesion countries foreign industry contributes to this element of structural convergence.

The development of the Irish economy is again presented in the context of developments in the other cohesion countries in Barry's paper "Economic Policy, Income Convergence and Structural Change in the EU Periphery", (*Paper 57*) for which his 2000 papers on "Foreign Direct Investment, Cost Competitiveness and the Transformation of the Irish Economy" (*Paper 59*) and "FDI and Industrial Structure in Ireland, Spain, Portugal and the UK: Some Preliminary Results" (*Paper 60*), served as forerunners. The role of foreign industry in driving a number of structural changes associated with a move away from economic peripherality is identified. While structural change is less evident in Portugal - the other EU periphery success story of recent years - its strong convergence performance is argued to have relied heavily on a very high degree of labour-market flexibility.

In ongoing work, Frank Barry and a team from the Economic and Social Research Institute (ESRI) in Dublin have developed datasets that includes measures of human capital across sectors and measures of the backward and forward linkages of the foreign-owned sector that the researchers propose to use in simulations of the ESRI macro-

econometric model of the Irish economy in order to evaluate the full implications of inward FDI for the Irish labour market (*Paper 71*).

Focusing on the effects of inward FDI on the industrial structure of host countries, Frank Barry and Colm Kearney in "Portfolio Characteristics of Ireland's Industrial Structure" (*Paper 55*) start the analysis noting that the products produced by foreign firms in Ireland have high income elasticities, which makes these sectors vulnerable in a downturn. They model the resultant trade-off between output and employment growth over the longer term and volatility in the short to medium term as an issue in portfolio theory. This entails identifying an efficiency frontier that shows the combination of industries that yields the highest return for any particular degree of risk. Foreign firms are found to exhibit both higher risk and higher return than their indigenous counterparts. The results show however that the growing foreign presence in Ireland's "industrial portfolio" has shifted the economy closer to the efficiency frontier.

Bejan, Desmet, Kujal and Lopez (all UCAR.DE) in "Inward FDI and labour markets: A sectoral analysis for Spain" (*Paper 81*), have studied the determinants of FDI inflow in Spanish regions. At the aggregate level, human capital, wages, taxation and market size all enter with the expected sign and are significant. However, once they control for the existing stock of FDI, all those variables, except market size, become insignificant. At the sectoral level, human capital only matters in industry whereas wages affect services and construction. Surprisingly, market size does not matter for services, but it does for industry.

Finally, FDI-related implications of EU accession by the countries of Central and Eastern Europe have been addressed by Frank Barry (UCDUB.DE) in two papers. In "EU Accession and FDI flows to CEE countries: Lessons from the Irish experience" (*Paper 47*) he argues that uncertainty about CEE public policy, CEE public administration and the timing of CEE accession explains why high-tech export-oriented multinationals have not yet begun to invest heavily in the region. Several CEE countries are well on the path to resolving these uncertainties and are likely to prove highly attractive to such firms upon accession to the EU, holding out the possibility of rapid real convergence on EU living standards. In a second paper (*Paper 54*), studying the experience of Ireland, Barry shows that convergence is not automatic. For over 70 years Irish income per head remained at around 60 percent of the level prevailing in the country's dominant trading partner, the UK. Ireland began to converge rapidly over the last 15 years however, and parity has now been achieved with the UK and the overall EU. In the paper, he analyses the changes in public policy that facilitated the turnaround in economic fortunes and discusses the lessons for Central and Eastern Europe.

6. Task 6: Policy implications (WP 6)

Under this task, two specific issues have been addressed. The first one is the scope for policies promoting FDI. Many countries provide large incentives to attract inward FDI or to promote outward FDI. Does the evidence on the welfare effects of FDI (and explicitly on labour market effects) justify this policy objective? The second one is the impact of policies (and explicitly of labour market policies) on the decision to invest in a given country.

Scope for policies. On the first issues, most of the papers in the project find positive or neutral effects of FDI on home and host economies. These effects have been extensively discussed under the previous tasks, but it is worthwhile to summarise them here. The project has first considered effects in host economies. The starting point is understanding if MNEs are different or behave differently than national firms and therefore they may be expected to have different effects from domestic firms. In general foreign subsidiaries of MNEs are found to be more productive than domestic firms in most European countries. The difficulty is to disentangle the causal link between productivity and foreign ownership. Are foreign firms more productive because they are inherently better, or because they buy the best domestic firms? The nature of this link is rigorously tested for Italy, without finding that foreign ownership causes better performance. Foreign investors, as expected, pick the winners, but also preserve their faster pace.

One crucial issue addressed by the project, which raises much concern among policy makers and the public opinion, is the effects on the labour market. The project tackles this issue from different angles, and the prospects are not discouraging. A cross-European analysis finds that foreign firms adjust faster than domestic firms to price and output shocks affecting labour demand. However, the extent of the adjustment is found to be smaller. This finding is confirmed by evidence on Ireland, where on average employment persistence is higher for MNEs than for national firms, although in the UK the project finds a likely decline in employment after foreign firms purchase domestic ones.

One other important issue is whether MNEs generate spillover on domestic activities. This is not necessarily the case as more efficient foreign firms could equally crowd out domestic ones. Surveys on the available literature, also carried out within this project, find contradictory results: often foreign firms crowd out domestic ones. However, the results derived from the original work undertaken within the project report more encouraging findings, also because most earlier studies on spillovers are on developing countries. In the UK there is evidence of positive spillovers which is stronger if the

technological gap between foreign and domestic firms is not large and if there is sectoral and geographical proximity. For Italy also, the project finds that foreign presence and proximity affect domestic productivity

Foreign firms also affect positively domestic wages although the project finds some evidence of crowding out in the demand for skilled workers in Ireland: average wages decline with foreign presence in indigenous exporting firms.

The project also studies the effects of foreign presence on market entry and survival. Foreign firms enhance the likelihood of entry and survival of domestic firms, and the size of entering firms (Ireland). Finally, MNEs are found to make exporting more likely for domestic firms

The project also deals with home country effects. Home country effects arise because production and employment decision in different location are interconnected. Most studies in the project find that outward investment activities enhance domestic productivity and employment. These findings emerge essentially from studies of Italy and Sweden, the only two countries for which data sets combining both information on parent companies and foreign affiliates are available. Analysis carried out on Italy and Germany, find that fragmentation of production increases the average skill intensity of employment at home.

Policies: do they attract or discourage FDI? Under task 6 the project also analysed the effects of policies on MNEs' decision to invest in a foreign country. Although various sets of policies have been taken into account the project has mostly focussed on trade and labour market policies.

A report by Barba Navaretti (CSLA), Haaland (CEPR) and Venables (CEPR) examines the relationship between trade policy and FDI flows, with special reference to FDI flows between the EU and the US. As for the home country perspective, in principle trade policy could be used to attract inwards FDI. Focussing on US MNEs in Europe, the report finds that when tariffs and non tariff barriers are higher subsidiaries' sales are larger in real terms, with respect to domestic activities and even with respect to imports from the US. However, the report does not regard this finding as a basis for restrictive, rent transferring policy. The positive link between US inward FDI and both tariffs and non-tariff barriers in the EU, although statistically significant, is quantitatively quite small, and is dwarfed by other factors like the steadily increase of FDI in real terms in the last twenty years, a period of substantial external and internal trade liberalisation for the EU member countries. Real sales nearly doubled between 1982 and 1997 with steep rises in the second half of the 1980s and after 1992. The report also notes that US subsidiaries in

the EU have a substantial dependence on imports from the US and that they undertake 22% of total EU imports from the US. The econometric analysis finds that this intra-firm trade declines with trade barriers. Consequently, US subsidiaries are damaged by restrictive trade policy that affect these imports, particularly given that firms increasingly fragment their production processes across different countries. Similar results are found for the investments of EU MNEs in the US.

Similarly, in "Foreign Investment and the Single Market", Peter Neary (Paper 40.) explores the effects of internal trade liberalisation by a group of countries on the level of inward direct investment. The analysis identifies three distinct influences on how a multinational corporation chooses to serve the union markets. Reductions in internal tariffs reduce the tariff-jumping incentive to establish more than one union plant, and so encourage plant consolidation. Second is the export platform motive for FDI. A fall in internal tariffs shifts the balance of advantage away from exporting and towards FDI with only a single union plant. Finally, reduced internal tariffs lead to increased competition from domestic firms, which dilutes both the tariff-jumping and export platform motives. This works against both FDI and exports and may lead to the "Fortress Europe" outcome of multinationals leaving union markets even though external tariffs are unchanged.

Neary's work, however, does not take into account the impact of the fragmentation of activities along the production chain. Stephen Pavelin's empirical study of "The Geographical Diversification of Leading Firms in the EU" (*Paper 62*) over the Single Market describes the degree to which a firm's operations in a particular industry are dispersed over a number of countries rather than being concentrated in only a few. Using firm-level production data for 1987 and 1993, disaggregated by industry and country, he finds the introduction of the Single Market to have been associated with an expansion in the average number of plants that the leading multinational firms in the EU maintained. Among such firms with plants in Ireland for example, the average number of other EU countries in which plants were maintained rose from 3 in 1987 to 5 in 1993. According to Pavelin, the development of the Single Market was associated with a further fragmentation of the production chain.

The effects of antidumping measures, particularly their impact on inward investment, is analysed by Girma, Greenaway and Wakelin (all UNOTT.DE), in the paper "Anti-dumping Policies and Japanese FDI in Europe" (*Paper 11*). As trade policy is set at the EU level, it can influence the investment decisions of extra-EU firms within the whole of the EU. Using information on the population of Japanese manufacturing affiliates in the EU, they investigate the effects of antidumping and other trade measures on Japanese investment. In particular they can examine how both entry decisions and expansion are

influenced by trade policy over the period, i.e. Japanese firms may set up affiliates or existing affiliates may have their production lines expanded as a result of trade policy. As well as including anti-dumping cases against Japan, they also include those taken out against other countries. The latter can have a negative effect on Japanese FDI as it diverts trade away from competitors' exports towards exports from countries not involved in the anti-dumping case. They also include a measure for average effective tariffs in the product group. They find that European antidumping policies are indeed an important factor attracting Japanese investments

The Irish case, also provides an important standpoint to predict the effects on EU investments of the accession of the new member countries from central and eastern Europe (CEE). Indeed, this issue is tackled in a set of papers prepared by the Irish team. In a paper entitled "Will Enlargement threaten Ireland's FDI inflows?" Barry and Hannan (2001) (*Paper 36*) draw on Ireland's pre- and post- EU accession experience to suggest that the nature of FDI flows to CEE countries may change substantially upon accession: in terms of the country of origin of the inflows, their sectoral destination and degree of export orientation. They show that some CEE countries in particular will be able to compete strongly with Ireland in terms of corporation tax, rates of pay and skill levels of the workforce. This raises the possibility that Ireland could lose some of the FDI that has played a crucial role in the country's recent growth performance. As against this however, the pool of available FDI is also likely to increase substantially upon enlargement, so that the process will not represent a zero-sum game between FDI-reliant incumbents and new EU entrants. The earlier discussion of trade liberalisation, FDI and fragmentation is directly related to this issue.

Barry takes the discussion further in a paper on "EU Accession and FDI flows to CEE countries" (*Paper 47*). Responding to the point that EU accession will have few implications for FDI flows to CEE countries because there is already almost completely free trade in manufactures, he argues that foreign investors are unlikely to see free trade as equivalent to EU membership for a number of reasons. First is the fact that efforts to remove any remaining non-tariff barriers are likely to be pursued more vigorously in the case of intra-EU trade. Secondly, accession will increase the confidence of foreign investors by allowing for the possibility of appeal beyond the courts of the associated countries to those of the European Union in the event of legal disputes arising. Thirdly, EU membership serves as some guarantee of transparency in the legal and business environment because of the *acquis communautaire* and the culture of checking the probity of Structural Funds expenditures, and fourthly, entry to the Single Market will fully remove customs frontiers and trade barriers associated with differing technical standards, and will allow full access to government procurement contracts throughout

the EU. For all of these reasons, he argues, accession is likely to represent as dramatic a change in the CEE climate for foreign investors as it did for Ireland in 1973.

As for the effects of labour market policies, this issue was addressed from a theoretical point of view by two papers written by Jan Haaland (Norwegian School of Economics and Business Administration and CEPR) and Ian Wooton (University of Glasgow and CEPR). In "Labour Regulation and Multinationals" (*Paper 52*) the authors argue that in an uncertain business climate, multinational enterprises (MNEs) must take into account of future labour-market conditions and potential exit costs in deciding where to locate a branch plant. The authors show that, other things equal, the most attractive location has a flexible labour market (low closure costs) together with a low opportunity cost of employment (high unemployment). In a subsequent paper (*Paper 78*) they study the labour-market organisation in more detail, endogenizing the determination of wages and redundancy rates. In such a setting, the choice of location for an FDI may depend on the way in which the labour market is organised in various potential host countries, and the risk profile of the MNE relative to the average risk of layoffs in the countries.

The paper by Barba Navaretti, Daniele Checchi and Alessandro Turrini (all from CSLA) (*paper 53*) discussed above, which investigates the effect of inward FDI on labour demand with a firm-level analysis for a set of European countries, has also important policy implications. The authors directly relate measures of labour dynamics (labour demand elasticity and speed of adjustment) to national labour market regulation. In fact, cross-country correlations show that the relative value of wage elasticities in MNEs on that in NEs is positively related to country-level indexes of labour market regulation. More specifically relative long-run wage elasticities in MNEs tend to rise with measures of skill availability, employment protection, product market regulation and union presence. Hence country-specific labour market regulations that tend to limit the capacity of firms to adjust employment have a relatively smaller impact on MNEs given that the latter are in a better position to bypass regulations affecting employment adjustment than purely national firms. Thereupon MNEs appear to be able to reach their optimal labour demand at faster speed independently of the labour market regime but they are also able to adjust more smoothly to shocks affecting their labour demands than national firms. Thus, although as predicted by Haaland and Wooton's theory a heavily regulated environment may hinder the decision to invest in a given country, labour market regulations appear to be quite harmless on already established MNEs.

Finally, in "FDI, Infrastructure and the Welfare Effects of Labour Migration" Frank Barry (2002) (*Paper 37*) develops an alternative model of FDI-induced labour mobility, again to examine at the theoretical level a number of issues that arose over the course of the

recent Irish boom. One policy which stimulated some debate in Ireland concerned the government's attempt to maintain a high GDP growth rate (as distinct from growth in income per head) by making work visas widely available to non-EU residents. Barry shows that this is consistent with rising levels of income per head for the indigenous population if the productive sector experiencing FDI inflows exhibits increasing returns to scale. The paper shows that if the work visa programme moves the economy closer to a socially efficient equilibrium it will actually trigger further inflows of workers (such as returning emigrants and other EU citizens) who do not require work visas. The paper also shows how the type of tax cuts introduced in Ireland in the late 1980s and early 1990s would have expanded labour supply and yielded social benefits when the economy was uncongested. Continuing to do this in the late 1990s when infrastructure was congested would have led to a deterioration in welfare. The paper therefore lends support to the criticisms of Irish budgetary policy levelled by ECOFIN and the European Commission in the late 1990s.

Finally, under this Task, a policy makers' guide addressing the main policy issues raised by the activities of MNEs, has been prepared by Jan Haaland (CEPR team). This review, including a specific section on labour market policies, will be published in the book prepared under the TMR project "Foreign Direct Investment and the Multinational Corporation: New Theories and Evidence".

IV. CONCLUSIONS AND POLICY IMPLICATIONS

1. The data

New firm level and sectoral level databases were developed under the project, as discussed extensively earlier. These data bases are the available state of the art on FDI in Europe. Following their construction many new research questions could be addressed by the project. The nature of these data bases is always national, as each country collects firm-level data using different methodologies and often addressing different sets of information. For this reason most of the studies focus on one, maximum two countries. However, the project also developed a cross-country data base of inward FDI for some Europe. This data base has of course less information per country, than national data base, but it is now the only available source to carry out cross-country comparisons.

Data collection under the project led to the following results: (i) the development of new data bases in country where they were not available on systematic grounds (Italy, Spain, Ireland); (ii) the development of counterfactuals of national firms, to be used as counterfactuals to the activities of multinationals; (iii) the construction of data bases on outward FDI, encompassing the activities of the foreign affiliates and the parents at home (Italy, UK); (v) the fine tuning of existing data bases (Sweden, UK); the construction of a cross country data base of foreign owned affiliates and of a counterfactual of national firms for several European countries.

2. The impact of outward FDI on labour market in the home country

2.1. Effects on the level of domestic employment

It has often been argued that outward direct investments could influence home country factor demand and factor prices through a reallocation of production from parent companies to foreign affiliates. Therefore the outcome of a foreign expansion is likely to be the reduction of employment and wages in high-wage countries. However most of the previous empirical literature has not supported this claim. Rather, any substitution of foreign labour for domestic labour is usually counteracted by an increase in the firm's scale of operations

With regards to these issues, an extensive analysis of the Swedish case found only weak evidence of a relationship of substitution between employment in Sweden and in high-wage host countries. Actually with reference to the relationship between employment in different affiliates, most of the evidence finds a relationship of complementarity between locations. This suggests that Swedish MNEs do not reallocate affiliate employment in response to changes in relative wage costs, but instead treat affiliate employees in

different host countries as complements to one another, even if the affiliates are located in countries with similar characteristics.

As for the relationship between employment in the affiliates and in the parent at home, the project finds no evidence that wage costs in low-wage host countries affects employment in the Swedish parts of the MNEs and the only sources of potential wage-competition between the home country and other countries seem to stem from other high-wage countries. This is consistent with the view that the activities carried out in different types of host countries are different and therefore wage-competition is the strongest with countries with *similar* characteristics with respect to relative *factor endowments*, income levels etc.

In fact, the effects of wage costs become relevant when MNEs location decision is taken into account. In particular one of the studies shows that two different potential locations compete in terms of wage costs to acquire foreign investments. Consequently, potential hosts may compete for MNE employment but once the MNE is active in two locations, employment in these two units may be complementary. The empirical analysis clearly supports this view. Potentially, this may resolve a puzzle of the earlier literature: studies based on aggregate data find relatively strong negative effects on employment from increases in relative wage costs, whereas studies based on firm-level data, as the one mentioned above, do not find such effects.

Relatively little research has been done on whether higher wage costs in the home country leads to the set-up of new affiliates abroad. On the one hand, home country activities may be more complementary to affiliate activities than affiliates are to each others as headquarter activities, such as R&D, are complementary to sales and production. On the other hand, however, downstream production activities conducted at home may be more likely to move to low cost locations than e.g. sales activities carried out in affiliates. In the Swedish case the studies find that wage costs have a weak (but positive) effect on the likelihood of observing affiliate activity abroad, indicating that, on average, wage costs in the home country increases the propensity of MNEs to set up foreign affiliates.

2.2. Effects on the skill composition of domestic employment

Previous studies have investigated whether transfer of activities from parent companies to foreign affiliates would result in skill upgrading (increase in the share of non-production workers wage bill) in the home country, but no significant effect was ever found.

One of the papers in this project has focused on this factor bias generated by the international fragmentation of production, by estimating the relative demand for labour in the UK and relating it to different measures of outsourcing. The results show that there appears to be a positive relationship between capital intensity and skill intensity confirming the idea that capital and skilled labour are complements. Also both expenditure on computers as well expenditure on research and development seem to be appropriate indicators of skill-biased technological change. Therefore an increase in skill-biased technological change is associated with an increase in wage inequality. The role of outsourcing is ambiguous as no significant effect of trade is found.

A further contribution to this issue can be found in one other paper that analyses the implications for the labour market of international fragmentation of production in Europe, in particular looking at how it affects labour demand in the cases of Italy and Germany.

The effects of fragmentation, as postulated by the theory are that when labour intensive phases of production are delocalised, skilled/unskilled labour ratios in domestic production are expected to increase. Indeed, the project shows that the international fragmentation of production is an important factor behind the increase in the skilled to unskilled labour ratio observed in Italy.

2.3. Comparing investing and non investing firms

When analysing the home country effects of FDI, it is necessary to relate the analysis to the right counterfactual. Possibly, it would be necessary to know what would have happened to firms that invested abroad if they had not done so. As this cannot be observed, one way to look at this issue is to compare investing firms with those that did not invest abroad.

When trying to analyse if MNEs are exporting domestic jobs, particularly to low-wage countries two issues have to be considered. The first one (*labour intensity effect*) is that for given domestic output, foreign investments affect the labour intensity of production, the number of employees per unit of output. The second one (*output effect*) that for given labour intensity, foreign investments affect domestic output and thus domestic employment. In this project, through the comparison of investing and non investing firms and the decomposition of these two effects of investments on domestic employment, it is shown that the rates of growth of employment are identical for investing and non investing firms up to the time of the investment. Afterwards, these rate diverge and they are much higher for investing firms.

Findings that investing firms perform better than non investing ones are tested further by deriving a demand function for domestic labour where foreign employment is included as one of the arguments. In fact the growth of foreign employment seems to have a positive effect on the growth of domestic employment supporting a relationship of complementarity between foreign and domestic jobs.

A different way to compare investing firms to firms which have not invested abroad is to create a counterfactual using propensity score matching. This approach has been adopted in the project, to measure performances at home (output, employment and TFP growth) of a sample of Italian firms which invested abroad for the first time in the period analysed. The results show that the investors outperform national firms with similar characteristics and this is consistent with a positive causal effect of investment abroad on performance at home.

Regarding the characterisation of investing firms with respect to non investing one other papers of the project focus on the issue of learning-by-investing, and on the productivity of investing firms. First, by testing the dynamic impact of Italian outward investments on the productivity of investors the project finds evidence of a drop in productivity growth in the year of the investment, followed by a rise in later years, which outweighs the short term fall. This confirms the assumption that firm's learning translates into productivity gains

Finally, by comparing the case of Italy to the case of France and Spain, the project shows that firms investing abroad between 1993 and 1997 have improved their competitiveness and efficiency in the three countries. Foreign investments appear to have a particularly strong effect on home productivity in high tech sectors, since they are a mean to gather technological knowledge localised in host countries. The high concentration of foreign investments in other industries, such as textile or industrial machinery, typical of the Italian pattern of specialisation, is less of a source of strength than investment in high tech sectors like those made by French firms.

3. The impact of inward FDI in the host country

Many of the papers in the project examine the effects of foreign investment in host economies. Data on inward FDI are more widely available than those for home country effects. Under this heading we therefore provide broad evidence on sets of EU countries and also cross country comparisons. Conclusions can be derived on three sets of issues. First if foreign firms are inherently different from domestic firms; second if the activities of foreign firms also affect the broader activities of the domestic economy and specifically of national firms; third, if FDI have special effects in peripheral regions. These issues are

analysed from two perspectives: the point of view of the product market, trying to single out the competitiveness and the efficiency of foreign firms; the point of view of the factor markets and specifically of labour markets.

3.1. Comparing the performance of foreign owned and domestic firms

Overall, the literature on foreign owned firms' performance has found that these firms are more productive than their domestic counterparts. For the UK the project finds that foreign firms pay higher wages and have higher productivity levels than domestic firms, even when controlling for sector of location and size of the firm. The differential is about 5% in terms of total factor productivity and wages (once productivity differences are controlled for). This result is consistent with findings of other studies on Italy and Central and Eastern European countries. The analysis on a sample of Italian firms which are M&A targets, shows an increase in productivity in the aftermath of the acquisition.

There are, however, two competing explanations of the alleged superior performance of foreign-owned firms: multinationals can be more productive than domestic firms or they simply acquire the most productive domestic firms. Evidence on this point is not really conclusive, rather it points out that once we control for causality properly, foreign ownership does not always have a positive effect on performance. Results on the UK and Italy show that positive effects arise just under specific circumstances, like the country of origin of the foreign investor or the sector in which the firm operates.

Besides for performance, the project also examines if foreign firms behave differently in the labour market from national firms. One important issue is whether employment increases or declines following takeover. A study on the UK electronic industry shows that that take-over targets have significantly lower employment growth rates than comparable domestic firms that were not taken over, particularly for what concerns unskilled employment.

Another important aspect is whether jobs are more volatile in foreign firms: for any new job created, is it likely to last longer in domestic or foreign firms? Foreign firms are often expected to be footloose, given that their costs from transferring production to another country are lower than for domestic firms. One indirect way of looking at this issue is to consider output volatility. A study on Ireland finds that the growing presence of foreign firms, pushed the economy towards activities with higher returns and faster increasing output, though more volatile. Foreign firms are also more likely to exit the market than indigenous firms when controlling for other firm and industry specific characteristics. In terms of employment persistence it is found, however, that once plant closures are taken into account, new jobs generated in MNEs appear to be more persistent than jobs

generated in indigenous firms. Also, MNEs are quicker to recover lost jobs than are indigenous firms.

This apparently inconsistent evidence can partly be rapped up by the findings of a cross country study that compares dynamic labour demands of foreign and national owned firms in the EU. Foreign firms are shown to adjust faster to any shock affecting labour demands, but less than national firms. Consequently, whoever gets a job in a foreign firm is less likely to lose it than an equivalent job in a national firm. However if he she is to lose it, he or she will lose it faster than in national firms.

Summing up MNEs do not appear to have detrimental effects on employment. They behave in a more flexible way than national firms, but, probably also because they employ a higher share of skilled personnel, they are more likely to retain their workers than national firms. Indeed, in a comparison of training activities of foreign multinationals and domestic firms in the UK it is found that the former tend to invest more in the training of labour than the latter. This result holds for both the incidence and the intensity of training provided.

3.2. Agglomeration and spillovers effects

Many of the studies in the project examine the impact of foreign investments on the economic activities of the host country and, specifically, of national firms.

A few contributions to the project review the literature on multinational companies and productivity spillovers. Although theory can identify a range of possible spillover channels, empirical support is hard to find, possibly because many of the earlier studies on spillovers are carried out in developing countries. The original papers in this project, mostly based on firm level databases of a sample of EU countries, generally find that FDI play an important role in strengthening the domestic economy. The issue is not straightforward, as FDI can affect domestic economies both ways, by generating positive spillovers or by crowding out domestic activities.

Few of the studies consider the effects on the productivity of domestic firms. Positive spillovers are found in studies on the UK and Spain. These studies normally find that spillovers are mostly intra-sectoral and intra-regional. Also, spillovers are larger in R&D intensive industries, when the technological distance between local and foreign firms is relatively small. Various studies on Ireland also find similar results: controlling for other firm and sector-specific effects, foreign presence has a life enhancing effect on indigenous firms in high tech industries, while no effects on indigenous low tech firms.

Also, MNEs have a positive effect on the entry of indigenous firms for a variety of alternative specifications.

Besides for these positive interactions, several studies also find that FDI make the competitive environment tighter. Again in Ireland, the presence of foreign multinationals in a sector impacts negatively on the start-up size of indigenous entrants, a likely effect of increased competition. Also in the case of Spain, it is found that competition from foreign firms reduces margins at the industry level.

Foreign investments are also found to enhance positively the decision to export. The project identifies three channels through which this may occur, namely export information externalities, increased competition in the domestic market and demonstration effects. In the case of the UK, MNEs are found to enhance the export propensity of national firms.

Many of the papers dealing with the issue focus on the labour market. Here too the effects of FDI are expected to be both ways. They may either favour the development of a skilled work force, or crowd out the demand for skilled workers of national firms. Some studies find indeed evidence that higher wages paid by foreign firms bid up wages in the domestic sector (UK), particularly for what concerns skilled workers. Also in the case of Ireland, the project finds that foreign firms crowd out the local demand for skills. Crowding out occurs only towards export oriented firms, which directly compete with foreign ones. There is no evidence of crowding out in those low skill activities, mostly geared towards the domestic market.

3.3. The role of inward FDI in peripheral regions

The cohesion countries have traditionally been the least well-off of the EU member states. Ireland converged dramatically to average EU living standards over the course of the 1990s, and several papers in the project relate the Irish experience to the one of other peripheral countries. The role of foreign industry in driving a number of structural changes associated with a move away from economic peripherality is identified. While structural change is less evident in Portugal - the other EU periphery success story of recent years - its strong convergence performance is argued to have relied heavily on a very high degree of labour-market flexibility.

The project also examines the impact of FDI on another dimension of economic structure: i.e. the similarity between the industrial makeup of core and periphery economies. It is shown that convergence along this dimension is associated with

convergence in terms of income per head, and that in the case of each of the cohesion countries foreign industry contributes to this element of structural convergence.

Finally, the project studies the effects of MNEs on the productivity of domestic firms in peripheral regions, comparing Italian Mezzogiorno to the Eastern Landers in Germany. For both regions the project finds that, controlling for sectoral factors, and conditional upon MNEs investing in such regions, the largest the initial productivity gap between MNEs and domestic firms, the largest the spillovers to domestic firms.

4. Geography of European FDI and implications for labour demand

The project also examines the determinants of FDI. This issue is of course strictly intertwined to the implications of FDI for labour demand. What determines a given firm's decision to invest abroad, will also affect its labour demand both in home and host markets. The standard theoretical framework explaining the determinants of FDI has singled out two main motives. FDI normally take place for market seeking or cost saving reasons. The first set of motives determines what are now generally defined as horizontal investments, whereby firms replicate in a foreign country most of their home activities, targeting the host country market. The second set of motives generates vertical investments, whereby firms relocate only those activities using intensely factors of production which are more abundant and cheaper in foreign countries. Consequently, this latter type of investment gives rise to fragmentation of production.

The characteristics of the investing firm and the type of investment it is seeking for, also explain the host country chosen for the investment. It is generally expected that horizontal FDI tend to converge towards high income countries with large markets, when trade costs are high and vertical FDI towards countries with cheap factors, generally labour, when trade costs are low.

The project revised and outlined the basic features of this analytical framework and extended it in various ways. It examined explicitly the geographic fragmentation of different production stages, concluding that as for other forms of foreign investment the geography of this pattern can essentially be explained by gravity models. It also extends the classical problem of how distance interacts with market size to allow for incomplete outsourcing contracts. In fact, distance affects the returns from the outside options open to foreign investors, namely exporting from the home country. It finally takes into account the impact on location choices of various policy related factors like labour market regulations, the completion of the EU internal market and the EU enlargement to Central and Eastern European countries.

The project also provides important empirical contributions on the geography of FDI. It explicitly tests and finds support to the "convergence hypothesis", according to which, multinational companies will tend to displace national firms and trade as total market size increases and as countries converge in relative size, factor endowments, and production costs.

Some of the papers try to single out the determinants of vertical investments. Indeed, although there are lots of anecdotes on product fragmentation, up to now little formal evidence on the relation between FDI and relative factor endowments was available. Within this project the vertical motive for FDI has been re-examined, noting that the rejection of this model is usually made in two steps. First, a very narrow definition of vertical FDI is normally used: exports from affiliates to the home country. Second relative labour endowments - measured as the ratio of skilled to unskilled workers - are found not to have a significant, or consistent, impact on the sales of MNEs' foreign affiliates.

To broaden the definition of FDI the new studies carried out within this project introduce a number of empirical innovations: they replace factor endowment data with previously unused relative wage costs, since firms' incentives to conduct vertical FDI are directly related to relative factor costs, but only indirectly to factor endowments; it investigates different components of affiliate activities (not just trade with parents); it pools US and Swedish outward FDI data. These studies now find clear support for vertical FDI: FDI is strongly sensitive to relative factor costs rather than relative factor endowments, and the scope for vertical decomposition of production across borders is much larger than shown by previous studies, as it encompasses both local sales of affiliates as well as exports to third countries and imports of affiliates from the home country. This conclusion is also confirmed by another work, based on a model that combines factor endowments and geographical considerations. This work shows how industry and country characteristics interact to determine the location of production. The empirical results, on EU countries over the period 1980-97, confirm that endowments of skilled and scientific labour are important determinants of industrial structure, as also are forward and backward linkages to industry.

Evidence on vertical investments can also be gauged by looking at a natural policy experiment: the EU enlargement to Central and Eastern Europe. The reduction in trade costs between the EU and the former socialist countries in the aftermath of the fall of the Berlin wall and the availability of cheap labour in these regions, provide a perfect setting to analyse how factor and trade costs jointly influence MNEs' choices. Swedish affiliates in Central and Eastern Europe, compared to affiliates located in other European

countries, exhibit lower productivity, are less skill-intensive and seem to be more oriented towards assembly type of activities. This finding supports the presumption that when trade costs are low and labour cost differ between home and host countries, vertical investments arise. This finding has also implications for employment in Europe. An expansion of Swedish MNEs' activities in CEE has led to a reduction in their employment in the Southern EU countries, Spain, Portugal, and Greece as well as in Turkey, locations with features similar to those of Central and Eastern European countries. Thus, these findings can be interpreted as evidence that the integration of CEE with the rest of Europe may have contributed to increased wage competition between the countries in CEE and the countries in Southern Europe.

Conclusions in line with these findings also emerge from other studies looking at the issue of agglomeration. These studies examine whether there is a trade-off between agglomeration economies and production costs, and to what extent the effect differs between Europe and the "World". Agglomeration generates externalities (infrastructure, trained personnel etc.) and can become an important factor attracting FDI. Yet agglomeration also pushes factor prices up significantly. If these effects are at work, there is an important distinction between areas characterised by high labour mobility (as the U.S.), and regions featuring low labour mobility (like Europe). In the former case, firms redirect investment to other regions when labour costs become excessive, which could induce a more even regional distribution of production. These studies find that agglomeration, measured at the level of industry, is a factor of attraction of FDI in both Europe and the "rest of the world".

One other useful policy experiment to assess the role of trade costs is to look how the implementation of the European Internal Market has changed the motives of entry by non-EU multinationals in UK manufacturing. Particularly for M&As, the project finds that there is a reorientation in investment motives, as the main target market shifts from the UK to the EU as a whole. Also unit labour costs relative to the rest of the EU become an increasingly important factor explaining MNEs' location choices, again in line with findings reported above.

Another factor affecting FDI activities is GDP growth. In one of the papers of the project a new perspective is presented on why post-War GDP growth has generally been associated with even more rapid FDI growth. It is shown that the kinds of goods and services that are typically produced by multinational firms also tend to have relatively high income elasticities of demand. GDP growth in this case will automatically lead to a rising share of FDI-intensive sectors in the economy. Moreover, with GDP growth also the share of activities which are more likely to be carried out by MNEs increases. These

activities are normally R&D-intensive and advertising-intensive, firm-specific assets generating firm level scale economies that can be exploited by multiplant firms.

The project also considers the role of new technologies, and their effects on firms' locations. It questions whether new technologies cause the 'death of distance', by allowing suitably skilled economies to converge with high income countries. The project argues that new technologies will change, but not abolish distance. Some activities may become more entrenched in high income countries than they are at present. Others – where information can be readily codified and digitised – will relocate, but typically only to a subset of lower income countries. The study concludes that these countries will benefit, but other countries will continue to experience the costs of remoteness.

5. Policy implications

As discussed in earlier parts of this report, the policy implications of this research project can be summarised under two main headings. *First* the project provides important support to policies aimed at attracting foreign direct investments. It shows that for most of the cases and issues analysed, the activities of MNEs have positive welfare effects (especially in the labour market) on both home and host economies. *Second*, various papers in the project discuss extensively the relationship between policies and the effects of FDI, with particular emphasis on trade and labour market policies.

As for the *welfare effects of FDI*, most studies in the project find that FDI have positive effects on host economies. They find that foreign affiliates of MNEs in general perform better than domestic firms, in terms of efficiency and labour market outcomes: foreign affiliates are more productive, generate net employment in the host economy, pay higher wages and hire more skilled personnel. It is difficult to say whether these findings arise because foreign firms are inherently better or simply because foreigners buy national champions. The very few papers that have managed to provide some ground on the nature of this relationship are not really conclusive and in general they do not find robust evidence that firms perform better after becoming foreign owned. It is also true that disentangling this link is probably not so important. If national champions keep thriving under foreign ownership, it is probably because being foreign owned suits them and gives them a further competitive hedge. Besides, we have no evidence that foreign ownership has negative welfare effects. Consider a crucial and very sensitive concern among policy makers: the effects of MNEs on employment levels. Some studies find that employment declines after domestic firms are acquired by foreign ones. However, little can be said unless we put the right counterfactual in place: the destiny of such national firms if they had not been acquired by foreign investors. To answer this question it is instructive to

compare national and foreign owned firms. Various studies in the project have done so, and they generally find that foreign subsidiaries do behave differently from national firms in the labour market, but such different behaviour is not really bad news. Foreign owned firms are much speedier in responding to any shock affecting labour demand, but they generally adjust less than their national counterparts. For example, if there is a decline in demand foreign subsidiaries are faster in laying off jobs, but they would lay off less people than national firms, possibly because of the higher skill intensity of their labour force.

If it is good to have foreign firms because they are generally the best firms around, their effects on national activities should also be taken into account. These effects could either be positive, because of externalities or negative because of competition and crowding out. This is another difficult area for empirical analysis, as the specific effects of foreign firms are difficult to single out. Within this project many careful studies have been carried out. As reported above, virtually all of these studies find that positive externalities are generally more likely than crowding out effects. This is in conflict with earlier studies, which found that crowding out was the dominant effect. Probably this inconsistency is due to the fact that earlier studies were based on evidence on developing countries. As positive externalities are found to be more likely when the gap between foreign and national firms is relatively small, they prevail in the advanced European countries we analyse in this project.

The project also examines the welfare implications for home economies. The international delocation of activities, particularly to cheap labour countries is often perceived as a process which hampers domestic economies. This is found not to be the case. The home activities of firms investing abroad are generally found to become more effective following the investment. Also, jobs in the parent activities of foreign investors are more likely to increase, or any way less likely to decline, than jobs in firms that just keep producing in the national market. The likely reason is that by investing abroad firms become more competitive and they increase their total output, including domestic output.

The project, then, explicitly deals with the effects of policies on the decision to invest in a given country. It first discusses the role of trade policy. This policy dimension has apparently little to do with the labour market. Quite the contrary. As trade costs are found to be an essential component of the investment decision of MNEs, they also influence the likely chances MNEs have to affect domestic labour market. The project finds that the effects of trade policies are ambiguous. High trade barriers in any given country increase the cost of exporting to that country and raise the convenience of directly producing there, so as to minimise transport costs. On the other hand, any new

foreign investment involves some trade flows. More and more international production is fragmented across different locations. We document how international networking of production is increasingly an essential feature of the activities of MNEs. In this case higher trade barriers discourage foreign investments. In the project we indeed find that FDI increase in countries with lower trade barriers.

Finally, several papers explicitly deal with the role of labour market policies and regulations. In an uncertain business climate, multinational enterprises must take into account future exit costs in deciding where to locate a branch plant. Countries with a more flexible labour market (that is, lower redundancy payments) are in principle better potential locations for FDI than those with more severe redundancy rules. To define optimal policies it is useful to consider both point of views, of MNEs and of host governments. For MNEs, the mix of labour-market flexibility and investment enter as important factors in the choice of its preferred location. The potential host country, considers the trade-off between the value of extra employment and the cost of the necessary investment incentives. Consequently, countries with high levels of unemployment are expected to be more prone to provide investment incentives. If such countries also have flexible labour markets, they are expected to be particularly attractive for FDI. The distribution of gains between the host country and the MNEs will, however, depend on the bargaining power of the parties involved, which in turn is affected by the number of potential hosts with similar conditions competing for the investment, the characteristics of the industries in which FDI operate and other factors. For example, to attract the newer and more uncertain industries, flexibility in the labour market may be more important than direct subsidies or other kinds of initial support to the MNE.

To provide some empirical background to these theoretical results, the project also examines whether foreign owned firms have different labour market behaviour from national firms and whether this behaviour is affected by labour market conditions. In a comparison across several EU countries, it finds that regulations affect asymmetrically foreign and domestic firms. The latter's responses to shocks affecting labour demands are constrained by tighter regulations. In contrast, foreign firms appear to behave in a uniform way, independently of regulations. This result apparently contradicts the theoretical prediction that rigid labour market regulations may discourage FDI. The problem is that we can only observe firms that do actually invest; these could likely be those which are more able to circumvent regulations (because of their bargaining power, or of the characteristics of their activity). What is clear is that foreign affiliates of MNEs tend to respond very rapidly to labour demand shocks and that they require minimum conditions to implement such flexible behaviour

Summing up, both the theoretical analysis and the empirical evidence support the view that flexible labour markets are compatible with the standard behaviour of MNEs, and that regulations are likely to discourage their investments.

V. DISSEMINATION AND EXPLOITATION OF RESULTS

One of the principal aims of this project has been to generate results useful to a broad range of groups: from the consortium as a whole to academics, public and private research institutes, policy makers, firms and businessmen. Econometric studies on the impact of FDI on home and host countries are particularly useful to the business community and policy makers. The development of the FDI databases stimulates the interest of international research institutes and provides new evidence to study the impact of the globalisation of economic activities on the labour market. Dissemination has been therefore a key part of the whole project and it will continue to be very important in the future.

The dissemination of the research of the Network takes place in the first instance through Discussion Paper Series, including that of CEPR. This makes it possible for papers to receive the widest possible professional scrutiny in the research and the policy communities. As for CEPR Discussion Papers, on average 500 copies of each DP are circulated throughout Europe and the rest of the world. CEPR Discussion Papers are also abstracted widely, and summaries of the papers are distributed on a monthly basis by electronic mail to over 3,000 individuals. Each Discussion Paper is also listed in the CEPR *Bulletin* which is circulated to over 6,000 members of the academic community in Europe and elsewhere, and appears on CEPR's webpage, where it is also available in PDF form. Weekly email notifications advise a wide variety of academics and those in the public and private sectors of new CEPR research, which includes the work of the LABFDI Network. Highlights of the Centre's research are featured in its newsletter *European Economic Perspectives*, which is distributed to over 10,000 members of the policy community and the private sector worldwide. About 15 Discussion Papers have already been published; others will be published in the next months reporting the last studies prepared under the project.

GEP Research Paper Series of the University of Nottingham is an additional important way of dissemination of the research of the Network together with the Centro Studi d'Aqliano - Queen Elizabeth House Development Studies Working Papers which are distributed to over five hundred universities, research centres and scholars throughout the world.

Furthermore a number of papers are also being published in international journals. It is highly likely that the number will increase in the future given the interest of the research carried out and the quality of the theoretical and empirical work done by the network's participants.

In addition, a large part of the studies produced within the project is surveyed in the book "Multinational Enterprises and Foreign Direct Investments: Theory and Evidence" (edited by G. Barba Navaretti and A. Venables). The volume, which is prepared under the framework of the TMR project "'Foreign Direct Investment and the Multinational Corporation: New Theories and Evidence", will be published by Oxford University Press or Princeton University Press in 2003 and it is likely to become the reference book on the subject in Europe and potentially in US.

The complete list of the papers produced within the LABFDI project is given in VI. References and Bibliography and also in Annex 7.5.

Dissemination of the Network's research output occurs also through the project website, hosted as part of the CSLA site (<http://www.dagliano.uni-bocconi.it/>). The website contains information on the people involved in the Network, the main research results, databases and papers produced, conferences, useful links. It also contains links to the teams' own sites. The papers produced within the project can be downloaded from the site. In addition a detailed description of the databases is available. As a result of the research interactions established during the course of the project and in the perspective of further collaboration, the network's participants aim to maintain the LABFDI website constantly updated after the end of the project.

The international conferences and the workshops held within the project have given to the research network a great opportunity of sharing and most of all disseminating the results. The main workshops took place in London, Madrid, Dublin and Turin. (See Annex 7.2 and 7.3 for detailed description of each event).

An extremely important contributor to the dissemination of the work of the network has been the presentation of papers produced under its auspices at non-Network events, such as those outlined in Annex 7.4. This has exposed the Network's research to far wider professional scrutiny than would otherwise be the case, and succeeded in publicising the objectives and activities of the project to a wide audience across Europe and beyond. The contribution of the CEPR node, because of the large number of workshops and conferences it organizes each year, has been particularly important in this regard. However, all team leaders are regular participants in the most important trade meetings across the world, both academic and policy-oriented. Both factors have been crucial to the visibility currently enjoyed by the project.

An important means of disseminating the research of the Network has been the invited session of the Annual conference of the European Economic Association (EEA), August

2002. One paper prepared under the project will be published in the forthcoming "Journal of the European Economic Association".

The Network has benefited from close co-operation with both the policy community and the private sector, through the involvement of industrial institutes, industrial employer' associations and institutes of foreign trade of each partner's country. These institutions are and will be in the future among the principal end-users of the project results. Close relationships already exist between a number of these institutions and the teams' members (See Annex 7.4).

The Network benefited enormously from the European dimension of the programme. During the 30 months of activity many, largely formalised, interactions between the teams took place: joint papers, bilateral visits, seminars, fellows spending their time in more than one partner institution, joint conferences. In addition, it is highly likely, given the research being carried out at the time of writing, that research collaborations established during the course of the Network will continue on both a formal (institutional and network-based) and an informal basis.

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