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WAGE COUNTRY: EVIDENCE FROM
ITALIAN TEXTILES AND CLOTHING
MULTINATIONALS**

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THE DECISION TO INVEST IN A LOW-WAGE COUNTRY: EVIDENCE FROM ITALIAN TEXTILES AND CLOTHING MULTINATIONALS

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ABSTRACT

The Decision To Invest In A Low-Wage Country: Evidence From Italian Textiles And Clothing Multinationals*

In this Paper we investigate the firm-specific factors that account for the decision to invest in low-wage countries on the part of Italian firms in the textiles and clothing sector. This analysis is motivated by the fact that our survey data show, between 1990 and 1997, a decline of average employment in parent companies, while that in subsidiaries grew substantially. However, correlation and regression analysis show that only employment in parent companies that invested only in low-wage countries seem to be negatively related with employment abroad.

Our hypothesis is that investments in cheap labour countries are mainly cost-driven and undertaken by firms that focus on a low-quality, low-cost strategy. We test this hypothesis through a probit analysis. The evidence suggests that investments in cheap labour countries are more likely to be of a vertical type, being relatively more labour-intensive compared with the parent company. Our hypothesis seems to be confirmed empirically. Investments in low-wage countries are more likely to generate abundant intra-firm trade and to be undertaken by firms with low shares of skilled employment.

JEL Classification: F23, L13

Keywords: foreign direct investments, production relocation, product differentiation

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NON-TECHNICAL SUMMARY

During the last decade the trend of Italian outward FDI exhibits a considerable upswing. The largest percentage of recent FDI took place in traditional, labour-intensive sectors and a large share of them is directed towards low-wage countries. Total employees in foreign affiliates of Italian multinationals have grown from 244,188 in 1986 to 606,266 in 1997. When coupled with a decline in Italian manufacturing employment of roughly 500,000 units over the same period, these figures raise concerns as to whether foreign investments are in fact exporting jobs. The rationale for this argument is that, faced with rising competition from developing countries in traditional manufacturing sectors, Italian producers have been forced to reduce costs by moving stages of production to low-wage countries (LWCs).

This simplistic conclusion, mostly derived from aggregate figures and anecdotes, deserves further enquiry. Indeed, the right question is: how would demand for labour change if firms had not invested abroad? The answer depends on firm-specific and industry-specific determinants such as the characteristics of the investment (vertical or horizontal), the overall process of the restructuring of the industry, the alternative strategic options facing firms (raising product quality, increasing automation) and so on.

In this Paper we investigate the firm-specific factors which account for the decision to invest in low-wage countries on the part of Italian firms. Our analysis is carried out using data collected through a survey of Italian multinationals in the textiles and clothing sector (T&C), where most of the recent FDI in LWCs took place. Our sample collects information on the characteristics of both parent companies and foreign subsidiaries in 1990 and 1997. Over the period, average employment in parent companies has been slightly declining, while that in subsidiaries has been rising substantially. However, the correlation between changes in time of home and foreign employment is significantly negative only for the sample of firms that invested solely in LWCs. Descriptive regressions show that labour intensity in home plants is positively associated with employment in foreign subsidiaries across the whole sample. This positive relation is absent, however, for those firms whose investments are only located in LWCs. The geographical destination of FDI seems to play a major role in shaping the links between FDI activity and home employment. Our aim is therefore that of identifying which factors at the firm level account for the choice of locating FDI in LWCs.

Recent theories on multinationals predict that investments in LWCs are generally of a vertical type and driven by the need to reduce production costs and exploit cheap labour in the host country. To isolate a set of key firm-specific determinants of these investments we develop a theoretical model

that examines the choice between producing at home and investing in a cheap labour market. The model predicts that the firm-specific trade-off between high quality products and redeployment in low-wage countries is likely to be solved in favour of redeployment for those firms that suffer from a technological disadvantage in producing quality. Investments in LWCs are expected to generate abundant intra-firm trade and to be undertaken by firms employing low shares of skilled employment in their parent companies.

We carry out some econometric tests on these predictions. We find that subsidiaries in LWCs are mostly of a vertical type and that they have a large share of intra-firm trade with their parent companies. The probability of carrying out an FDI in a LWC is also higher for firms with a lower share of white collar workers in their home employment. These firms are indeed expected to have a lower comparative advantage in producing high quality and are therefore more vulnerable to import competition from LWCs.

Some lessons for policy can be sketched. Our analysis does not give much support to the worries that have been expressed by some policy-makers or scholars concerning a general negative effect of more massive FDI on home employment. Even across a sample of firms belonging to a traditional sector that heavily invested in cheap labour countries, labour intensity in parent companies seems rather to benefit from a larger involvement in FDI activity. The links between home and foreign employment are however very sensitive to the geographical destination of FDI. Home employment in those firms that concentrated their investments in LWCs probably does not benefit much from more intensive multinationalization. Our evidence suggests that these firms are probably focusing on low-price, low-quality strategies. Supporting the skills and the technological capabilities that makes pursuing strategies based on high-quality products profitable might help to contrast the recent trend towards relocation in LWCs, alleviating their possible adverse consequences on home employment.

1. Introduction

This paper attempts to analyze the firm-specific characteristics that are associated with the decision to invest in low wage countries (LWCs) on the part of Italian multinationals in the textiles and clothing industry (T&C).

Total employees in foreign affiliates of Italian multinationals have grown from 244,188 in 1986 to 606,266 in 1997 (+148%).¹ The most part of recent FDI took place in traditional, labor-intensive sectors and a large share of them is directed towards low wage countries. When coupled with a decline in Italian manufacturing employment of roughly 500,000 units over the same period, these figures raise concerns on whether foreign investments are in fact exporting jobs. The rationale for this argument is that, faced with rising competition from developing countries in traditional manufacturing sectors, Italian producers have been forced to reduce costs by moving stages of production to LWCs.

This simplistic conclusion, mostly derived from aggregate figures and anecdotes, deserves further enquiry. Indeed, the right question is: how would demand for labor change firms had not invested abroad? The answer depends on firm specific and industry specific determinants such as the characteristics of the investment (vertical or horizontal), the overall process of restructuring of the industry, the alternative strategic options facing firms (raising product quality, increasing automation) and so on.

When analyzing the link between FDI and employment it is therefore necessary to narrow down the focus of analysis. Some papers (Slaughter 1995; Brainard and Riker 1997 a, b) have analyzed the degree of substitutability between home and foreign employment in multinational enterprises (MNEs) as alternative production factors. Other works (Blomstrom et al. 1997; Lipsey 1999) have tested the effect of FDI activity on labor demand per unit of output.

In this paper we take a somehow different route. We focus on the firm-specific determinants of the decision to invest in LWCs, where most FDI directed at reducing

labor costs are expected to take place. In this sense, our work is close to those investigating the determinants of investment decisions (e.g., Horst 1972; Belderbos and Sleuwaegen 1996). Our analysis is carried out using data collected through a survey of Italian multinationals in the textiles and clothing sector (T&C), where most of the recent FDI in LWCs took place. Our sample collects information on the characteristics of both parent companies and foreign subsidiaries in 1990 and 1997. Over the period, average employment in parent companies has been slightly declining, while that in subsidiaries has been rising substantially. However, the correlation between changes in time of home and foreign employment is significantly negative only for the sample of firms that only invested in LWCs. Descriptive regressions analogous to those by Blomstrom et al. (1997) and Lipsey (1999) show that labor intensity in home plants is positively associated with employment in foreign subsidiaries across the whole sample. This positive relation is absent, however, for those firms whose investments are only located in LWCs. The geographical destination of FDI seems to play a major role in shaping the links between FDI activity and home employment. Our aim is therefore that of identifying which factors at the firm level account for the choice of locating FDI in LWCs.

As for theory, our work is rooted in two different streams of literature. The first one examines the endogenous emergence of FDI in relation to country and industry characteristics. It predicts that two distinct types of FDI will emerge, classified as vertical or horizontal (Markusen et al. 1996; Zhang and Markusen 1999). Vertical FDI take place when the multinational re-deploys only part of its production process. Horizontal investments replicate in a foreign country the complete production structure of the home country. The former are principally driven by differences in factor endowments between home and host countries, they are explained by the need to exploit location specific factors of production (cheap labor, natural resources, specific skills) and they are complementary to trade. The latter are instead more often market driven, they are generally explained by the need to overcome trade barriers and transport costs, by the availability of firm specific intangible assets and they are substitute to trade (Markusen 1995; Markusen et al. 1996; Zhang and Markusen 1999; Carr et al. 1998).

¹ See Cominotti et al. (1999).

This approach neglects the firm-specific factors accounting for the choice of production relocation. As a matter of fact, even within the same industry, firms are not equally likely to re-deploy. We would otherwise observe corner equilibria (all firms in an industry either re-deploy or do not re-deploy). Firms' positioning within the competitive arena is shaped by the alternative strategies they may follow: increasing automation, increasing product quality, strengthening the brand name of their products. The choice of production re-deployment cannot be analysed in isolation from the whole set of opportunities available to firms to boost their competitiveness. We therefore also refer to a second approach, which is focused on the trade-off between redeployment and product quality faced by imperfectly competitive firms in vertically differentiated industries (Barba Navaretti 1994 ; Motta 1994; Cordella and Grilo 1998). High quality makes demand less sensitive to price changes and allow firms to preserve and improve their profit margins. High quality products, however, require skilled labor. Skilled labor is in general scarce in countries where unskilled labor is abundant and cheap. Hence, it is more expensive to produce high quality in cheap labor countries.

In line with these contributions, this paper develops a theoretical model analyzing the choice of relocation for a vertically (different product quality) and horizontally (different varieties) differentiated industry, where firms are heterogeneous in their ability to produce quality. The model predicts that vertical investments in cheap labor countries will be undertaken by those firms finding greater difficulties in adding quality to their products. This is because quality requires skills that are scarce in low-wage, less developed economies. So, if a firm chooses to re-deploy in a cheap labor country, it is because its technological constraint makes it preferable to follow a low-quality strategy .

These predictions are confirmed by the evidence emerging from our sample. We carry out a probit analysis of the decision to locate a subsidiary in a low wage country and find that the probability of locating FDI in LWCs is higher for those investments that are mainly of a vertical type, that generate abundant intra-firm trade and that are undertaken by parent companies with low shares of skilled labor.

Some policy implications can be derived. The recent surge of redeployment indicates that Italy is bad at ease in preserving its competitiveness in traditional, labor-intensive industries. Many firms do invest in LWCs in order to contain labor costs, relocating there those production stages that use more intensively unskilled labor. Locating direct investments in low wage countries is likely to affect labor demand in home plants. However, while this strategy is key for the survival of some firms, others, focusing on high market segments, do not find profitable to undertake a pervasive relocation of activities to LWCs. The adverse employment effects of de-localization could be partly offset by accelerating the path of specialization of Italian firms in high quality products.

The rest of the paper is structured as follows. The next section summarizes the basic stylized facts of Italian FDI. Section 3 describes our sample and presents evidence concerning the relations between investments characteristics and home employment. Section 4 analyses empirically the determinants of the choice to invest in low-wage countries. Section 5 concludes.

2. Recent Trends in Italian Outward FDI: Some Stylized Facts.

In comparison with other leading industrial countries, Italy played a relatively minor role as an international investor in the overall post war period (Onida and Viesti 1988; Graham and Krugman 1993). However, during the last decade the trend of Italian outward FDI exhibits a considerable upswing (United Nations). In 1986 there were 282 Italian international investors, with participation in 697 foreign firms. At the end of 1997, the number of Italian multinational enterprises (MNEs) has risen to 804, and that of their foreign affiliates to 2034, three fourth of which under majority ownership.² Correspondingly, total employment in foreign subsidiaries jumped from

² The most comprehensive source of information on Italian multinationals is the Reprint Database developed at the Department of Economics and Production of the Politecnico of Milano. The database is updated every two years. All the data reported in this section of the paper are found in the Reprint Database and published in Cominotti et al. (1999).

244,188 in 1986 to 606,266 units in 1997, reaching roughly 17.6% of Italian domestic industrial employment.

Compared with other European countries, Italian FDI show a bias towards traditional sectors (OECD). In 1997, about one third of Italian MNEs' affiliates are in traditional sectors (especially textiles and clothing, footwear, and food). Moreover, it is in traditional sectors that most of the recent growth in Italian FDI took place. The number of foreign firms participated by Italian companies in traditional sectors jumped from 101 in 1986 to 589 in 1997; their share over those referred to total manufacturing almost doubled during this period. As for employment in foreign affiliates, it rose from 19,188 in 1986 to 95,031 in 1997. The rise in the number of affiliates and that in foreign employment, however, has not been constant throughout this period in traditional sectors. While the increase in the number of affiliates is almost uniform, the upsurge in foreign employment is almost entirely concentrated in the years between 1986 and 1992. This is the sign that the most recent dynamics of FDI in traditional sectors is explained by a growing involvement of small and medium firms in multinational activities.

Concerning the geographical destination of Italian FDI, it strikes the growing importance of investments directed to Eastern Europe. Affiliates in this area accounted for 0.6 of the total in 1986, 7.2 in 1992, and 19.9 in 1997.³ It is only in very recent years that investment flows to Eastern Europe started being substantial. In 1997, nearly 40% of employees in Eastern European affiliates belong to traditional sectors. Moreover, compared with the sectoral distribution of other locations, in Eastern Europe Italian FDI activity is deeply specialized in traditional sectors.

FDI in textiles and clothing are particularly representative of the recent trend in Italian multinational activities. In 1997 there are 236 foreign firms participated by Italian companies in T&C, 11.6% of the total and nearly 40% of those concerning traditional sectors. The number of foreign affiliates in T&C rose speedily and steadily throughout the decade, starting from only 45 in 1986. Employment in T&C foreign subsidiaries is 46,290 in 1997, about 7,6% of total employment in Italian foreign

affiliates. The fact that the employment growth in foreign affiliates is mostly concentrated in new affiliates rather than in existing ones implies that re-deployment of production is a relatively new strategy. Up to 1992 Italian T&C firms mostly followed product strategies based on improved quality, the development of brand names, or the reduction of production costs through automation or local subcontracting (Barba Navaretti et al. 1994).⁴ Consistently, a large share of recent FDI in T&C appears to be directed towards low wage countries, especially those of Eastern Europe, and is undertaken by small and medium enterprises.⁵

Overall, the recent trends in Italian outward FDI are characterized by a strengthening bias towards traditional sectors, a growing share of FDI taking place in LWCs, and growing involvement of small firms in foreign investment activity. A large share of the most recent Italian FDI seems to be motivated by the search of better labor cost conditions in labor-intensive sectors. This picture raises some concerns. Are Italian firms increasingly exporting jobs through FDI? Is employment in parent companies harmed by the growing involvement of Italian firms in foreign direct investments? To what extent is the relocation of production activities to cheap labor countries a pervasive and long-lasting phenomenon?

Answering to these questions is beyond the scope of this paper. However, in the following analysis we take a first step towards a better understanding of the issues at stake. We have collected information on both the subsidiaries and the parent companies of Italian T&C multinationals which are not available in existing data sets. Equipped with this new data set we show that the decision of locating foreign investments to cheap labor countries matters somehow for home employment, and that it is possible to isolate a number of firm-level characteristics that are strongly associated with the decision to invest in LWCs, even within a same sector.

³ Italian affiliates in Eastern Europe are concentrated in Hungary and Poland (Cominotti et al. 1999).

⁴ The same study evidenced a clear trade off between product quality and re-deployment of production, in line with the model presented in this paper and with earlier theoretical works (e.g., Barba Navaretti 1994; Motta 1994; Cordella and Grilo 1998).

⁵ Italian FDI in Eastern Europe appears to be even more specialized in T&C than in the overall aggregate of traditional sectors. In 1997, almost 28% of employment in foreign subsidiaries belonging to parent companies with less than 500 employees is in T&C.

3. Parent Employment, Affiliates' Employment, and FDI Location: Evidence from a Sample of T&C Firms.

We have conducted a survey on a sample of multinationals in the textiles and clothing industry. The survey collects information on the main characteristics of parent companies and each of their subsidiaries, and on the nature of the links between them, in particular on intra-firm trade. The years of reference are 1990 and 1997. The survey comprises 44 MNEs that have at least one subsidiary between 1990 and 1997. Of them, 22 had subsidiaries in 1990 and 43 in 1997. The total number of foreign affiliates is 76 in 1990 and 106 in 1997.⁶ The sample of reference accounts for more than 40% of the whole population of foreign affiliates in T&C captured by available statistics. From a geographical point of view, more than 65% of foreign affiliates in the sample are located in low wage countries in both years (Table 1).⁷ Within LWCs, Eastern European countries are the most important host area for T&C investors. Between 1990 and 1997, the number of foreign subsidiaries has increased especially in Western Europe, Eastern Europe, and Asia. Firms in our sample do not seem to spread evenly their investments across the different regions of the world. More than 61% of them only invested in LWCs over the period.

Table 1- *The geographical distribution of subsidiaries*

Regions	1990		1997	
	N. of subs.	%	N. of subs.	%
Western Europe	18	25.35	29	27.36
Central and Eastern Europe	27	38.03	32	30.19
North America	2	2.83	5	4.72
Latin America	4	5.63	5	4.72
Asia	9	12.68	14	13.21
Africa	10	14.08	15	14.15
Other	1	1.41	6	5.66
TOTAL	71	100	106	100

Source: Sample data.

⁶ The rate of response is high for sales and employment data, less for intra-firm data. Data on home and foreign employment in both years are available for 30 firms.

⁷ We define as LWCs the following: African countries, Latin American countries and Mexico, Former USSR countries, Eastern European countries, China, India, Pakistan, Korea, Hong Kong, Singapore, Thailand, Jordan, Turkey, grouped under the name "Asia" in Table 1.

Looking at the size of the parent companies, our sample is dominated by small and medium firms, a feature which is consistent with the overall size structure of T&C in Italy. Average home employment in parent companies is 483 units in 1990 and 456 in 1997 (Table 2). Referring to medians, values fall to 210 and 220 for 1990 and 1997, respectively. The sample also captures the recent involvement of small firms in FDI activities. The average size (as measured by employment) of firms that had not yet invested in 1990 is sizably smaller than that referred to the whole sample. Average home employment is also lower for firms that only targeted LWCs for their FDI.

A glance at Table 2 is sufficient to capture the basic evidence inspiring our analysis. Across the whole sample, average employment in parent firms is slightly declining over the period, while that in the sum of their subsidiaries grows substantially. It is to note that mean employment in subsidiaries of those firms that had not yet invested abroad in 1990 is notably lower compared with that referred to the whole sample. New investments are thus of a smaller average size. The growth of average per-firm foreign employees is mainly due to the opening of new subsidiaries by firms that had not yet invested in 1990. This account for almost 70% of the observed change in average foreign employment across the whole sample, with the rest explained by new subsidiaries opened by firms that had already invested, or by an increased average size of their existing subsidiaries.

Table 2 - *Employment in parent companies and subsidiaries: Mean values*

Employment: Mean values	1990	1997	N.obs.
Employment in parent companies (whole sample)	482.9	456.5	30
Employment in subsidiaries (whole sample)	320.1	508.9	30
Employment in parent companies (firms with FDI only in LWCs)	204.1	227.2	19
Employment in subsidiaries (firms with FDI only in LWCs)	223.8	295.8	19
Employment in parent companies (firms without FDI up to 1990)	311	365.3	16
Employment in subsidiaries (firms without FDI up to 1990)	0	246.2	16

Source: Sample data.

Whole sample: firms that had at least one subsidiary between 1990 and 1997 which reported data on parent employment and employment in all their subsidiaries in both 1990 and 1997. Firms that had not yet invested in 1990 reported zero employment in subsidiaries in 1990. Employment in subsidiaries indicates 'average per-parent foreign employees'.

The observed rise in mean affiliates' employees coupled with declining home employment raises a natural question. How does foreign employment relate with employment in parent companies? Is there any sign that the higher employment abroad, the lower that in home plants?⁸ A rough check on this can be derived from correlation coefficients between home employment and that in subsidiaries. The two appear to be strongly positively correlated in both 1990 and 1997 (Table 3). This can be easily explained by a positive relation between firms' size at home and abroad. A different issue is that of the relation between time changes in employment at home and abroad. The correlation coefficient between employment changes in the parent company and in the subsidiaries in the 1990-1997 period appears to be negative, but very small. Thus, there is not strong evidence that the reduction in home employment is larger for those firms that increased more substantially employment in their subsidiaries. However, limiting the sample to those firms that only invested in LWCs new relevant insights come up. The correlation between employment at home and abroad is much weaker for this sample; the correlation between employment changes in parent companies and subsidiaries is strongly negative.

Table 3 - Employment in parent companies and subsidiaries: Correlation analysis

Variables	Correlation coefficients	Whole sample	Firms with investments only in LWCs
PAREMP90, PARSUBS90	0.367	(30)	-0.021 (19)
PAREMP97, PARSUBS97	0.455	(36)	0.194 (19)
Δ PAREMP, Δ PARSUBS	-0.0818	(30)	-0.37 (19)

Source: Sample data.

Whole sample: firms that had at least one subsidiary between 1990 and 1997 which reported data on parent employment and employment in all their subsidiaries in both 1990 and 1997.

Number of observations (responding firms) in parenthesis.

Legend

PAREMP_{yy}=Employment in parent companies, year yy

PARSUBS_{yy}=Employment in parent companies, year yy

Δ x=x₉₇-x₉₀, x=PAREMP, SUBSEMP

⁸ Whether employment in foreign affiliates is a "substitute" or a "complement" to home country employment in parent firms has also been studied by Slaughter (1995) and Brainard and Riker (1997a) through price elasticities estimates for home and foreign labor adopting multinationals' cost functions which treat all factors of production, both domestic and foreign, as jointly chosen. Results indicate that domestic industry employment and overseas affiliate employment are weak price substitutes. Moreover, in Brainard and Riker (1997b) it is found a strong substitution between workers at affiliates in alternative low wage locations, where the activities most sensitive to labor costs take place.

Foreign employment may vary in relation to changes in the scale of activities in the parent companies or in relation to changes in production technologies in the parent company. To capture these two effects it is useful to disentangle the impact of output in parent companies for given employment/output ratios, and that of employment per unit-of-output, for given output in parent companies. Blomstrom et al. (1997) and Lipsey (1999) estimate descriptive equations illustrating the firm-level relationship between foreign production (proxied by affiliate net sales) and employment in parent firms, given the level of parent production (proxied by net parent sales).⁹

Here, we perform an exercise slightly different from that by Blomstrom et al. (1997) and Lipsey (1999). We study how employment in home plants relates with that in subsidiaries across our T&C multinationals sample, controlling for home plants production, proxied by net sales.¹⁰ Results are reported in Table 4. The fact that firms belong to the textiles or the apparel sector does not appear to affect results, since the dummy variable DSUBSECT is non significant. The size effect on employment is controlled by the strong positive association with net sales in the parent company (NETFAT). Less trivially, home employment is also positively and significantly related with (aggregate) employment in subsidiaries (SUBSEMP). Those firms that employ more workers in their foreign subsidiaries tend to use more labor-intensive production methods in their home plants. The most likely interpretation is that the firms that invest heavily abroad need larger employment (especially skilled workers) in home plants to monitor and coordinate their activities. Results, however, depend very much on the geographical distribution of affiliates' employment. When we add to the regression the variable SUBSEMP interacted with a dummy which has value 1 in case all subsidiaries are located in LWCs and 0 otherwise (INVLWC), its sign is significantly negative. Looking at the values of regression coefficients, it emerges that the positive relation between home labor intensity and foreign employment nearly

⁹ Blomstrom et al. (1997) compare evidence from a sample of Swedish and one of US multinationals, showing that US multinationals tend to exhibit lower labor intensity of home production in the presence of higher foreign production, while the opposite occurs for Swedish multinationals. Using data on US multinationals, Lipsey (1999) shows that higher levels of affiliate production in developing countries are associated with lower parent employment for any given level of parent production at home.

¹⁰ We also used net sales of subsidiaries to measure FDI activity. The coefficient of net sales in subsidiaries is still positive in our regressions, but barely significant.

disappears for those firms whose investments are located only in LWCs (the coefficient of SUBSEMP is almost the same as that of SUBSEMP*INVLWC with opposite sign).¹¹

Table 4 - Affiliates' employment and home labor-intensity: Regression analysis

Dependent variable: PAREMP			
N. obsv.	53	53	55
Adj. Rsq.	0.477	0.661	0.664
F	17.85	21.35	27.78
YEAR	-95.387 (-0.707)	-121.511 (-1.119)	-121.984 (-1.172)
DSUBSECT	-284.107 (-1.182)	-117.165 (-0.908)	
NETFAT	0.954** (4.926)	0.671** (4.073)	0.658** (4.096)
EMPSUBS	0.38** (3.692)	0.776** (6.911)	0.79** (7.264)
EMPSUBS*INVLWC		-0.779** (-5.218)	-0.811** (-5.732)

Source: Sample data.

OLS Estimation. Constant term coefficients not reported.

t values in parentheses. Significance levels at 95 and 99 per cent are denoted, respectively, by * and **.

Legend

YEAR= year dummy; 1=1997, 0=1990.

DSUBSECT= subsector dummy. It equals 1 if subsector is Garment; and 0 if subsector is Textile

EMPSUBS = employment in affiliates;

NETFAT = parent total sales- parent purchase from subsidiaries

INVLWC= 1 if all subsidiaries are located in low wage countries, 0 if not.

Although a higher involvement in foreign production does not seem to affect much home employment and is positively associated with labor-intensity across our sample, the geographical destination of investments seems to play a major role in affecting results. The correlation between employment changes home and abroad is sizably negative for firms that only invested in LWCs, and the positive relation of affiliates' employees with home labor intensity almost disappears for these firms.

¹¹ Recall that the correlation coefficient of EMPSUBS for the firms that only invested in LWCs is given by the coefficient of EMPSUBS summed to that of EMPSUBS*INVLWC.

4. The Decision to Locate Investments in a Low-Wage Country: A Firm-Level Analysis

So far our evidence indicates that home employment in firms that mostly targeted LWCs as host countries for their investments might suffer, or at least not benefit much from more intensive multinationalization. Of course, we cannot say whether firms that mostly invested in LWCs would have kept more employment at home shouldn't they have invested at all. Absent the opportunity of foreign investments, plants could have been closed and home employment might have suffered more. No conclusions on that can be inferred, since we do not have counterfactual evidence. However, the previous analysis suggests that where FDI are directed seems to matter substantially for the relation between home employment and the degree of firms' involvement in FDI activity. But, what induces firms, belonging to a same sector, to invest mainly in countries where labor is cheap? Why do we observe some firms re-locating only to low wage countries, meanwhile others spread more evenly their investments across host countries? Understanding the firm-specific characteristics that are associated with the location of outward FDI is key to isolate different mechanics working under the relation between FDI activity and home employment, and therefore for identifying a framework for policy intervention.

In this section we want to address empirically what are the characteristics observable at the level of parent companies and subsidiaries that are associated with the choice of locating affiliates in LWCs rather than in high wage, Industrialized Countries (ICs). We base our analysis on a model of FDI location which is presented in the Appendix. When a firm considers the alternative of relocating part of its activities to a high or a low wage country is faced with a common trade-off. On the one hand, locating production stages in LWCs reduces the cost of unskilled labor employed in those stages, thus improving price competitiveness. On the other hand, locating manufacturing in LWCs may be detrimental for product quality. Labor in LWCs often lacks even basic skills. The consequence is a poor performance in the production stages that are relocated. Firms that relocate in LWCs might then require greater efforts in quality development if they want to keep up with that of competitors. If this is the case, which firms will chose to relocate to LWCs and which not? Firms will go to low wage countries provided that the gain in terms of cheaper labor more

than compensates their loss in quality. Also within the same sector, firms are likely to differ substantially with respect to their capabilities of manufacturing goods of high quality. Consistently, some firms focus on low market segments, following low-price, low-quality strategies, while others find it profitable to serve high market segments. The quality loss associated with redeployment is most probably much higher for this second type of firms.

As suggested by our model in the Appendix, we should expect investments in LWCs to be undertaken by firms that specialize in low market segments, thus developing less quality and employing a lower share of skilled workers. We also should expect investments in LWCs to be associated with more abundant intra-firm trade, since they are undertaken by firms focusing on low-price, high-sales strategies, that rely on more massive redeployment. Since this hypothesis is valid for investments that are of a vertical type, in implementing the model empirically we must also control for the extent to which the investments of the firms in our sample can be thought to be vertical. We do that by adding an explanatory variable (LABINT) that measures the extent to which each investment is labor saving rather than market oriented.

Foreign affiliates are our unit of observation; we estimate the probability that a foreign affiliate is located in a LWC rather than in an IC, against a set of variables that can be parent or affiliate-specific. Formally, we run a Probit regression of the following type:

$$P_{i,j} = \text{Prob} (\beta_1 + \beta_2 C_{i,j} + \beta_3 C_i + \varepsilon_i > k)$$

where, $P_{i,j}$ is the probability that subsidiary i belonging to parent company j is located in a LWC, $C_{i,j}$ is a vector of parent-specific variables and C_i is a vector of subsidiary-specific factors. So, the dependent variable is a binary variable which is equal to 1 if the investment is located in a LWC and equal to 0 if it is located in an industrialized country (IC). We present evidence concerning year 1997 only.¹² Results are reported in Table 5.

¹² As for 1990, a value of LABINT higher than a given threshold perfectly predicts the probability of investments being located in LWCs.

We present regressions results referred to the T&C aggregate. Distinguishing between investments belonging to the textiles or the apparel sectors does not seem to matter for our results.¹³ We therefore omit such specifications. LABINT measures the ratio between the share of affiliates employment on parent employment over the share of affiliates sales on parent sales. A higher value of LABINT is associated with those investments that are more “labor-saving oriented” rather than “market oriented”, as compared with the parent company’s production structure. This variable has a significant and positive sign in all regressions. So, it emerges that, on average, subsidiaries in LWCs are used to relocate employment rather than sales. In principle, the positive and significant value of LABINT might also be due to the fact that, since labor is cheaper in LWCs, the whole production process is more labor intensive there. This second interpretation does not seem very plausible, however. The average value of LABINT in LWCs is too much higher compared to that in ICs to be consistent with a simple replication of the production process of the parent company.¹⁴

Table 5 - Firm-specific characteristics associated with investments in LWCs: Probit Analysis

Number of Observations	39	42	39
Pseudo-R ²	0.765	0.738	0.709
Log-Likelihood	-16.836	-6.806	-7.29
LABINT	2.225* (2.327)	2.131** (2.74)	2.336** (2.665)
PARPURCH	0.028 (1.250)		0.0476* (2.361)
PARSALES	0.028 (1.317)	0.05* (2.575)	
WHITE	-8.325* (-2.064)	-6.279* (-2.509)	-11.02** (2.685)

Source: sample data. Z statistics in parentheses. Significance levels at 95 and 99 per cent are denoted, respectively, by * and **.

Legend

¹³ A dummy which has value 1 when the sector is apparel and 0 when it is textiles always appear to be insignificant.

¹⁴ The average ratio (affiliate employment/affiliate sales)/(home employment/home sales) is equal to 5.75 for investments in ICs and 25 for investments in LWCs.

$LABINT_{i,j} = \log(\text{aff}_{i,j} \text{ empl.} / \text{aff}_{i,j} \text{ sales}) / (\text{par}_j \text{ empl.} / \text{par}_j \text{ sales})$
 $PARPURCH_{i,j} = \text{aff}_{i,j} \text{ purch. from par}_j / \text{total aff}_{i,j} \text{ purchases}$
 $PARSALES_{i,j} = \text{aff}_{i,j} \text{ sales from par}_j / \text{total aff}_{i,j} \text{ sales}$
 $WHITE_j = \text{par}_j \text{ white collar empl.} / \text{total par}_j \text{ empl.}$

Intra-firm trade is measured by two variables. These are the share of purchases of the affiliate from the parent company on total purchases of the subsidiary (PARPURCH) and the share of sales from the subsidiary to the parent company on total sales of the subsidiary (PARSALES). The expected sign for both these variables is positive. Investments in LWCs tend to be associated with firms strategies based on low costs, high volumes, and abundant intra-firm trade. Abundant purchases of the affiliate from the parent company may be associated with unskilled labor-intensive “assembly” stages. Large shares of sales of the subsidiary from the parent company may be explained by the manufacturing of “raw output” in the subsidiary that is subsequently finished in the parent company. We run different regressions, including both variables of intra-firm trade or only one of them. Both PARSALES and PARPURCH always have a positive coefficient as expected. However, their coefficient is significant only when they do not appear together in the specification of the regression equation, probably due to a multicollinearity problem.

As for the role of skilled workers at home, we expect the ratio of white collar employment in the parent company (WHITE) to be negatively related with the probability of locating investments in LWCs. Firms with a low share of white collars are expected to specialize in low quality segments, and then to find relatively more convenient to relocate production LWCs. As expected, in our regressions WHITE always appears with the expected sign and significant.

In conclusion, our evidence seems to support the presumption that those investments that are predominantly of a vertical type are more likely to be located in LWCs. The evidence confirms also our further hypothesis that also those investments that generate more abundant intra-firm trade and that are undertaken by firms with low shares of skilled employment are more likely to be located in LWCs.

5. Conclusions

This paper presents an analysis of the determinants and characteristics of the Italian FDI in T&C directed towards low-wage countries (LWCs). The analysis is based on a new data base joining data on the parent and the affiliates. Data from our sample show that the share of workers based in foreign subsidiaries increased very considerably between 1990 and 1997, mostly in LWCs. Recent theories on multinationals predict that investments in LWCs are generally of a vertical type and driven by the need to reduce production costs and exploit cheap labor in the host country. To isolate a set of key firm-specific determinants of these investments we develop a theoretical model which examines the choice between producing at home and investing in a cheap labor market. The model predicts that the firm-specific trade-off between high quality products and redeployment in low-wage countries is likely to be solved in favor of redeployment for those firms that suffer from a technological disadvantage in producing quality. Investments in LWCs are expected to generate abundant intra-firm trade and to be undertaken by firms employing low shares of skilled employment in their parent companies.

We carry out some econometric tests on these predictions. We find that subsidiaries in LWCs are mostly of a vertical type and that they have a large share of intra-firm trade with their parent companies. The probability of carrying out an FDI in a LWC is also higher for firms with a lower share of white collars in their home employment. These firms are indeed expected to have a lower comparative advantage in producing high quality and are therefore more vulnerable to import competition from LWCs.

Some lessons for policy can be sketched. Our analysis does not give much support to the worries that have been expressed by some policy makers or scholars concerning a general negative effect of more massive FDI on home employment. Even across a sample of firms belonging to a traditional sector that heavily invested in

cheap labor countries, labor intensity in parent companies seems rather to benefit from a larger involvement in FDI activity. The links between home and foreign employment are however very sensitive to the geographical destination of FDI. Home employment in those firms that concentrated their investments in LWCs probably does not benefit much from more intensive multinationalization. Our evidence suggests that these firms are probably focusing on low-price, low-quality strategies. Supporting the skills and the technological capabilities that makes profitable pursuing strategies based on high-quality products might help to contrast the recent trend towards relocation in LWCs, alleviating their possible adverse consequences on home employment.

Appendix

Firm-specific technology, labor skills, and product quality: A model of redeployment

Consider an industry where N heterogenous, imperfectly competitive firms have to decide upon the location of their plants, the quality level of their good, and the price to charge to consumers. For simplicity, neglect strategic interaction (in contrast with existing close models, e.g., Barba Navaretti 1994; Motta 1994; Cordella and Grilo 1998), relying on the “large group” Chamberlinian hypothesis. Each firm is the exclusive owner of a blueprint i , giving raise to a particular product variant, indexed by i as well. Each variant can be produced at different quality levels. Production requires two factors only: skilled and unskilled labor.

The world consists of two locations, denoted by $c=h,f$. Locations are big: each of them may include more than one country.¹⁵ We assume locations h and f to be characterized, respectively, by high and low wages for unskilled labor, while differences in skilled labor costs are considered to be negligible. We only consider firms that have their parent company in location h . Assume further that transport costs

¹⁵ So, location h can be thought of as consisting of EU countries, and location f being a set of non-EU neighbour developing countries (e.g. East Europe, Turkey and the Maghreb).

are null, and that all output is sold to a representative consumer who spends a constant fraction of income in the good under analysis¹⁶.

Firms' production process consists of two stages. In one stage "raw" products are produced, and only unskilled labor is used. This stage is footlose. In another stage, raw products are turned into perfectly finished goods within the parent company: "quality" is added.

Assuming a CES representation for preferences, and denoting by q_i the quality level of each variant, and by C_i its consumption, we have that the (sub)utility associated with the consumption of our good is

$$(1) \quad U = \sum_{j=1}^{N_i} [C_i^\theta q_i^{(1-\theta)}]^{1/\theta}$$

where $\theta \in (0,1)$. Given total expenditure in the good equal to C , consumption of each variant is

$$(2) \quad C_i = CP^{(\eta-1)} p_i^{-\eta} q_i$$

where $\eta = \frac{1}{1-\theta}$ is the elasticity of substitution among varieties and

$$P = \left[\sum_{i=1}^N p_i^{1-\eta} q_i \right]^{1/(1-\eta)}$$

is the CES price index.

Production costs for a firm supplying variant i , and located in country c , $c=h,f$, are as follows¹⁷

$$(3) \quad c_i = (w_u^c + w_u^h)X_i + w_s \gamma_i^c q_i^{\lambda_i}$$

¹⁶ As long as inter-firm differences in transport costs are negligible, non-null transport costs do not affect the conclusions of the model.

¹⁷ Setting equal to one the unit labor requirements in stage 1 of production is without loss of generality.

where X_i is output, w_u^c denotes the wage for unskilled labor in location $c=h,f$, and w_s is the wage for skilled labor (recall that $w_u^h > w_u^f$). The remaining symbols in (3) characterize technology and it is assumed $\lambda_i > 1$, for all i . Note that variable costs are paid in terms of unskilled labor, while fixed costs consists of expenses for a staff of skilled workers. While quality does not affect marginal costs, the higher the supplied quality level, the higher the amount of skilled labor required, according to the firm-specific elasticity of skilled labor requirements with respect to quality λ_i . Note further that marginal costs include a “footloose component”, summarized by w_u^c , (i.e., unit labor costs in location c , $c=h,f$) and a “domestic component”, summarized by w_u^h . Finally, we assume that the location of stage 1 affects the technology for quality development. Carrying out stage 1 of production in location f yields “raw” products of a lower quality, thus requiring a more abundant amount of skilled labor to obtain the same quality level in stage 2. Consistently, in the following we assume that, for any i ,

$$(4) \quad \gamma_i^f = \kappa \gamma_i^h, \quad \kappa > 1.$$

Firms decide, in sequence, where to locate their production stages, which quality level to supply, and which price to charge to consumers.¹⁸ As usual, we derive the equilibrium for the last stage of our game first. Since firms are many (large group à-la Chamberlin) firms charge the same mark-up over marginal costs

$$(5) \quad p_i = \frac{\eta(w_u^c + w_u^h)}{\eta - 1}$$

As for the choice of quality levels, it is given by

$$(6) \quad q_i = \left[\left(\frac{\eta(w_u^c + w_u^h)}{\eta - 1} \right)^{1-\eta} \frac{C}{\eta \lambda_i w_s \gamma_i^c P^{1-\eta}} \right]^{1/(\lambda_i - 1)}$$

¹⁸ Since strategic interaction is absent, a different sequence of actions does not change results.

One observes that quality is dependent upon firms' technology and the location of stage 1, and so are profits earned at equilibrium. From simple comparison of equilibrium profits we get that locating in f will be preferred by firm i whenever

$$(7) \quad \pi_i^f \geq \pi_i^h \Leftrightarrow \frac{2w_u^h}{w_u^f + w_u^h} \geq \kappa^{\frac{1}{\lambda_i(\eta-1)}}$$

The term $\frac{2w_u^h}{w_u^f + w_u^h} \equiv \omega$ in eq. (11) measures the disadvantage suffered by firms not locating in LWCs in terms of higher marginal costs, while $\kappa^{\frac{1}{\lambda_i(\eta-1)}} \equiv \kappa_i$ measures their advantage due to lower fixed costs for developing quality. The term κ_i falls with λ_i (recall that $\lambda_i > 1$ and $\kappa > 1$). It follows that firm i is more likely to locate its footlose production stage in a LWC the higher is λ_i . Parameter λ_i cannot be directly observed. Other observable variables can be used as proxies exploiting equilibrium relations. Define by r_i the ratio between the number of unskilled employed in stage 2 in the parent company over that of skilled workers, (i.e., $r_{i,j} = \frac{X_i}{\gamma_i^c s_i^{\lambda_i}}$). From equations (3),

(5), and (6), at equilibrium it must be that

$$(8) \quad \lambda_i = \frac{r_i(w_u^c + w_u^h)}{(\eta-1)w_s}$$

Denote further by g_i the extent of intra-firm trade, obtained dividing the value of “raw” output by total sales ($g_i = \frac{w_u^c C_i}{p_i C_i}$). Using (5) we can rewrite (8) as follows

$$(9) \quad \lambda_i = \frac{w_u^h}{w_s} \frac{r_i}{\eta(1-g_i)-1}$$

At equilibrium, λ_i is positively related with both r_i and g_i . Other things being equal, parameter λ_i is higher for those firms that are using a higher share of unskilled

labor in their home plants. This is understood recalling that high values of λ_i entail low quality at equilibrium, and then a little use of skilled labor. Moreover, λ_i is higher the higher the ratio of the value of “raw” output over total sales. This is because, at equilibrium, a high value of λ_i is associated with low quality and therefore with a low value added from stage 2 of the production process. Overall, then a generic firm i is more likely to locate its footlose stage in LWCs the higher are both r_i and g_i .

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