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Foreign Direct Investment in Central and Eastern Europe: Employment Effects in the EU

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Abstract:

We use firm-level data on Swedish multinationals to analyze how the recent expansion of affiliate employment in Central and Eastern Europe (CEE) has affected affiliate employment elsewhere. According to our results, employment in affiliates located in other low-wage countries in Europe decreased substantially as a consequence of the expansion in CEE. Furthermore, affiliate activities in these countries have become more sensitive to changes in labor costs as firms have set up production in CEE. We find that employment in Sweden and other high-wage European countries has also been affected, but these effects seem to be much smaller.

JEL Classification: F23

Keywords: Foreign Direct Investment, multinational enterprises, Central and Eastern Europe.

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1. Introduction

Since the reform process in the Central and Eastern European (CEE) countries started in the early 1990s, these countries have begun a transformation into open market economies. Although the transition has proceeded at different speeds, the change towards private ownership, deregulation and integration into world markets has been significant in the whole CEE region (see, e.g., EBRD, 1999).

In the long run, this transformation is likely to not only benefit the relevant countries, but also the Western European economies. However, there have been some fears that competition from low-wage countries in the CEE region may have a negative effect on employment and income distribution in Western Europe, at least in the short run. Although these fears may be valid for all types of liberalizing low-wage economies, the combination of geographic proximity, a relatively skilled workforce and preferential trade agreements with the EU makes the CEE region a stronger potential threat.

One potential source of wage competition is foreign direct investment (FDI), carried out by multinational enterprises (MNEs) originating in Western Europe. Through FDI, these firms may combine Western capital, technology and skills with low-cost labor in the host countries. The stock of inward FDI in the CEE region has grown dramatically in the last ten years, indicating that many Western firms have indeed chosen to expand in Central and Eastern Europe. It is important to investigate whether this expansion has affected their operations in Western Europe and, if so, in what way.

The relationship between an MNE's expansion in one region and its employment in other regions is not clear-cut. An expansion in one location may either lead to a contraction or an expansion of employment in other locations. The direction of the change depends on

whether the activities in the new location are complements to or substitutes for the activities in other locations. Thus, not only may an expansion in the CEE region have a positive or negative effect on employment in the MNE's other locations, the effect may also vary between locations. For instance, employment in the parent company in Sweden may increase as a result of the expansion in CEE, whereas affiliate employment in other low-wage countries in Europe, such as Portugal and Spain, may decrease.

The broader question that this paper seeks to address is how FDI in the CEE region affects labor demand in Western Europe. This question is important in the light of the current efforts to integrate the CEE countries in the European Union. In this process, low-wage member countries in Southern Europe have taken a less enthusiastic position than high-wage countries in Northern Europe. One potential explanation for this difference is that it reflects different expectations of the effect of a further integration of CEE with Western Europe on employment and real wages. Arguably, the type of activities that Western European firms may contemplate locating in the CEE region are activities that would otherwise be located in other low-wage countries and not those presently located in high-wage countries. However, whether this is in fact the case has never before been analyzed empirically. Our analysis is based on data on the foreign activities of Swedish MNEs in the manufacturing sector. Using these data, we analyze the relationship between firms' activities in the CEE region and their employment in other parts of Europe. More specifically, we examine how the increase in employment in the CEE region has affected the firms' employment in Sweden as well as in other European affiliates.

The rest of the paper is organized as follows. In section 2, we present descriptive evidence on affiliate activities by Swedish MNEs in CEE and other European regions. In this section, we address the issue of whether the countries in the CEE region seem to be more similar to the high-wage or low-wage countries in Western Europe in terms of relative factor

endowments. We also examine whether affiliates in CEE seem to have strong vertical links with their parent firms. In section 3, we carry out a preliminary analysis of how affiliate activity in CEE affects employment in other locations, by studying changes in employment in different regions. In section 4, we estimate econometrically whether affiliate employment in CEE is more sensitive to labor costs if firms have affiliate activities in other European locations. We also estimate whether affiliate employment in other European regions is more sensitive to labor costs if the firms have activities in CEE. This analysis is conducted in order to address the question whether the possibility of locating affiliates in CEE has led to increased wage-competition between European regions. Finally, in section 5, we make some concluding remarks.

2. Inward FDI in Central and Eastern European Economies

2.1 Trends in FDI in Central and Eastern Europe

Since the opening up of CEE, FDI in the region has increased dramatically. Table 1 shows the development of inward FDI stocks per capita between 1990 and 1998 in the world as well as for three European regions: Southern Europe, defined as Greece, Portugal, Spain and Turkey, Western Europe, defined as all remaining EU countries plus Norway and Switzerland, and CEE.[1] In CEE, the inward stock of FDI increased ten-fold, while it roughly doubled in the other regions. However, the average inward FDI stock per capita is still considerably lower in CEE than in the other European regions. As is shown by Table 1, the inward FDI stock per capita in Southern Europe has grown relatively slowly during the

period that inward FDI emerges in CEE. The figures for the entire CEE region, however, mask considerable variation among these countries. Hungary and the Czech Republic have reached levels of inward FDI stock per capita in parity with the ones for Western and Southern Europe. Furthermore, when related to GDP, the inward FDI stock of the CEE region is comparable to those of Southern and Western Europe.[2]

Table 1 about here

A more accurate picture of the MNEs' activities is given by activity data, i.e., data on employment, production and sales by firms. In this study, we use data on the Swedish MNEs' foreign activities collected by the Research Institute of Industrial Economics (IUI) in Stockholm.[3] These data give information about the location of producing affiliates of Swedish manufacturing firms and the types of activities carried out.

Tables 2a-c present aggregate information on the surveyed firms' activities in different regions. As can be seen from these tables, the firm-level data exhibit a similar pattern as the FDI data above. Whereas affiliate activity in CEE was virtually non-existent in 1990, in 1998, employment in CEE constituted 5 percent of the firms' total European employment.[4] At the same time, the share of both Western and Southern European employment decreased, while the share of parent employment in Sweden increased. Thus, by 1998, CEE was a small, but significant, host region of Swedish MNEs, and their operations in the region roughly corresponded to the CEE share of total European GDP (which was 5.8 percent). As revealed

[1] Central and Eastern Europe include Albania, Bosnia & Hercegovina, Bulgaria, the Czech Republic, Croatia, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Russia, Slovakia, Slovenia and Yugoslavia.
[2] In 1998, the inward FDI stock as a share of GDP was 12 percent in CEE, while it was 17 percent in both Southern and Western Europe (World Bank, 2000).
[3] This database is described in Braunerhjelm and Ekholm (1998). An account of the results from the latest survey for 1998 is found in Ekholm and Hesselman (2000).
[4] This corresponds to 13 percent of their total affiliate employment in Europe.

by Table 2b, however, the share of activities located in CEE was much smaller when measured in terms of sales. This suggests that the labor productivity of affiliates located in CEE is, on average, lower than that of affiliates located in other European regions.

Tables 2a-c about here

The aggregate picture thus suggests that substitution has taken place between the CEE region and other European regions. However, a further look at firm-level behavior is crucial to substantiate such a claim. The correlation between employment in the different regions may be due to other factors. For instance, the sample of MNEs changed substantially between 1990 and 1998. If the firms that left the sample were less active in CEE than the new entrants, the change in the geographical pattern of production may simply be due to firm or industry characteristics. Consequently, to examine whether Swedish firms have actually relocated production from one region to another, we have to analyze firm-level data, which is done in section 3. However, before entering into the firm-level analysis, we shall examine some descriptive evidence based on these firm-level data.

2.2 Affiliate Activities in Central and Eastern Europe

The literature on FDI usually distinguishes between two different types of FDI; horizontal and vertical.[5] Whether we would expect the expansion of activities in one location to substitute for or be complementary to activities in other locations crucially depends on whether FDI is of the horizontal or vertical type. According to the theory of horizontal FDI,

[5] See e.g. Markusen (1984), Horstman and Markusen (1992), and Markusen and Venables (1998, 2000) for analyses of horizontal FDI. See Helpman (1984) for an early analysis of vertical FDI.

firms invest abroad in order to avoid trade costs associated with exporting from the home plant to export markets. Consequently, the (potential) MNE weighs the trade costs associated with exporting against the additional costs associated with setting up a new plant abroad. Horizontal FDI in a former export market therefore has a negative impact on domestic employment as domestic production for exports is supplanted by local production in the host country. So-called export platform FDI, meaning investment in affiliate production exported to a third market, is closely related to horizontal FDI.[6] The employment effects for the home country are less clear in this case. With platform FDI, employment in the affiliate may substitute for affiliate production in the third market, rather than in the home country.

According to the theory of vertical FDI, firms invest abroad to reduce overall production costs, benefiting from factor-price differentials between countries. For instance, the MNE may locate skill-intensive activities in relatively skill-abundant countries and less skill-intensive activities in relatively unskilled-labor abundant countries. According to this theory, the firm's trade-off amounts to weighing the trade costs associated with fragmenting production across locations against the gains from reducing factor input costs by locating stages with different factor intensities in countries with different factor prices. In this setting, an expansion abroad is less likely to have a negative impact on domestic employment, as lower total production costs due to vertical FDI are likely to make the firm more competitive, thereby enabling an expansion of total employment within the MNE.

According to the theory of horizontal FDI, a large local market and high trade costs would lead to a high level of affiliate production. According to the theory of vertical FDI, on the other hand, low trade costs and large factor-cost differences would lead to a high level of affiliate production (Markusen, 1997, Carr et al., 2001, Markusen and Maskus, 2001). Investment costs and other set-up costs should have a negative effect on all types of affiliate

[6] An example of this is US FDI in Ireland in order to produce for the EU market.

production. Thus, we would expect stronger vertical linkages, and a complementary relationship, between two locations when trade costs are low and factor cost differences large. Locations with similar factor costs are more likely to attract the same type of activities and we would therefore expect a relationship of substitution between such locations.[7]

Based on theory, we would thus find it more likely that affiliate employment in two different host countries are complementary if their respective activities differ in terms of factor-intensity Furthermore, if the units are vertically linked through intra-firm trade, we would also find them more likely to be complementary. Thus, in order to assess how the activities located in different European regions may be affected by the expansion in CEE, it is important to investigate the extent of similarity in factor-intensity between units and the extent of vertical links. In this section, we shall use descriptive evidence to address the following two questions: (i) Is the CEE region more similar to Western or Southern Europe with respect to its relative endowments of skilled labor? (ii) Are affiliate sales in CEE mainly destined for the local or foreign markets? (iii) Are affiliate activities in CEE vertically linked to parent activities?

Table 3 about here

Table 3 summarizes the characteristics of the Swedish MNEs' activities across European regions in 1998. The first row shows the average level of wage costs paid by Swedish MNEs in different European locations. For the CEE region, the average wage costs per employee were considerably lower than in the other European regions. They were 19

[7] See Braconier & Ekholm (2000a, 2000b) for a more thorough discussion on the relationship between employment in different locations of MNEs.

percent of the wage costs in Southern Europe, and 13 and 12 percent of the wage costs in Sweden and Western Europe, respectively.[8]

Given the low wage costs in CEE, firms would be expected to have a strong incentive to locate labor-intensive activities in this area. However, to a large extent, low wages are just a reflection of low average labor productivity. For an MNE, the profitability of locating production abroad depends on the productivity-adjusted labor costs or, put differently, the MNEs' ability to combine its technology and skills with low labor costs to increase productivity. The second row of Table 3 shows the value added per employee as a measure of labor productivity. There are two important caveats that must be kept in mind when interpreting these figures. First, differences in tax treatment of capital income may induce firms to use transfer pricing to shift profits between locations, which will affect measured value-added (Clausing, 1998). Second, measured productivity will tend to be lower in Swedish parents, since the firms typically incur most of their costs for producing headquarter services (such as R&D and management) in the home country. Still, it is evident that labor productivity is much lower in CEE than in any other region. Based on the figures for value added per employee, the average labor productivity in affiliates located in Southern Europe is five times higher than in the ones in CEE. Consequently, the low wage costs mirror the low average labor productivity in the region.

One obvious reason for differences in average wage costs across regions is differences in the skill composition of the labor force. In other words, the low average wage in CEE may reflect a scarcity of skilled labor. If this were the case, we would expect MNEs to mainly locate activities requiring large amounts of unskilled labor in the region. Conceivably, we would then also mainly expect affiliate activities in Southern European countries to

[8] However, it should be noted that there are significant differences in wage costs across the CEE region. While the OECD (2000) reports wage costs in the Czech Republic, Poland and Hungary that are roughly 25 percent of

contractas a result of an expansion in the CEE region. . In many of the CEE countries, however, a fairly large share of the labor force has a post-secondary education.[9] In this respect, they appear to be fairly abundant in skilled workers. Arguably, the skills these workers acquired during the communist era may not be of much value in a market economy. Be that as it may, if the CEE countries develop comparative advantages in skill-intensive activities on account of their relatively highly educated labor force, we would expect MNEs to locate skill-intensive activities in the region. In that case, a contraction of activities in the skill-abundant countries in Western Europe would be a more likely result.

The descriptive evidence presented in Table 3 helps us address the issue of whether skill endowments and skill-intensities found in CEE are more similar to the ones found in Western or Southern Europe. The third row shows the ratio of wage costs per employee for white-collar and blue-collar workers employed by Swedish MNEs. The ratios are substantially lower in Sweden and Western Europe compared to Southern Europe and CEE. This suggests that skilled labor is relatively scarcer in the latter two regions (at least insofar as the distinction between white-collar and blue-collar workers captures differences in levels of skills).[10]

The next row in Table 3 gives information about the skill-intensity of activities located in different regions by Swedish MNEs. More specifically, it shows the ratio between white-collar and blue-collar workers. Whereas this ratio is as high as two-thirds for Swedish parents, it is 0.48 in Western Europe, 0.21 in Southern Europe and 0.29 in CEE. Thus, the firms do seem to respond to differences in relative wages by locating white-collar worker

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the wage costs within the EU, WIIW (1999) reports that wage rates in a country such as Romania are only about 25 percent of the ones found in the richer CEE countries.

[9] See e.g. the Barro-Lee dataset.

[10] Similar conclusions can be drawn from a survey of wages for engineers relative to production workers made by Union Bank of Switzerland (2001). The relative wage between these two groups was 1.34 for Sweden, 1.87 for CEE, 1.58 for Western Europe and 2.10 for Southern Europe. For the CEE region, data were only available

intensive activities to Sweden and other Western European countries and blue-collar worker intensive activities to Southern Europe and CEE.[11]

Another potential indicator of the skill-intensity of activities located in different regions is the R&D intensity. The fifth row in Table 3 shows R&D expenditures as a share of total sales. It is evident that R&D spending constitutes a much higher share of total sales for Swedish parents than for affiliates. However, among the affiliates, CEE and Southern Europe have a fairly similar R&D intensity, while it is somewhat higher for Western Europe.

Another important question is to what extent MNE production in CEE is oriented towards production for the local market or for export markets. Empirically, the size of the host country market has been shown to be one of the most important determinants of FDI (e.g. Brainard, 1997, Carr *et al.*, 2001). Even though the population of CEE constitutes a fairly large share of the total European population (35 percent in 1998), low incomes and productivity imply that its share of total European GDP is much lower (around 6 percent at current exchange rates).[12] The individual national markets in CEE are very small, the only potential exceptions being the Russian Federation and Poland. However, their GDPs are still only comparable to a small Western European country such as Sweden (whose share in total European GDP was about 2 percent in 1998). It is likely that the fairly small markets in CEE make market-oriented (horizontal) FDI less important than for the Western and Southern European regions. Accordingly, good access to export markets is likely to be more important for MNEs investing in CEE than for those investing in large Western European countries. Through membership in the WTO and EFTA, most CEE countries have obtained access to

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for the Czech Republic, Hungary, Poland and Russia. Data for Russia were not included in the analysis, as engineering wages were substantially lower than wages for manual workers there.

[11] A likely explanation for the higher wage ratio between white-collar and blue-collar workers (and the larger share of white collar workers in employment) in Sweden than in Western Europe is the concentration of skill-intensive headquarter services such as management and R&D in the home country.

[12] World Bank (2001) and OECD Economic Outlook 68 (2001).

large export markets. As shown in the fifth row of Table 3, exports to sales ratios are indeed higher for CEE than for Western and Southern Europe in 1998.

The combination of relatively good access to foreign markets and large factor cost differences vis-à-vis other European regions means that we also expect affiliates located in CEE to be more vertically integrated with other parts of the MNE. Therefore, we would expect to observe substantial intra-firm trade for affiliates located in CEE. The data give a less clear picture of this, however. Although the figures on total exports might indicate a high degree of vertical integration, where affiliates located in CEE export to other affiliates, this cannot be separated out from the data. With respect to sales back to Swedish parents (row seven in Table 3), CEE exports are in line with those from affiliates located in Southern Europe, but lower than exports from affiliates in Western Europe. Consequently, the evidence of Swedish MNEs using CEE as a location for upstream production is weak.

Regarding imports, we find much stronger evidence of vertical integration of the affiliates located in CEE (rows eight and nine in Table 3). Again, our data do not allow us to separate out imports from other affiliates. However, the data on imports from Swedish parents show that total imports from Swedish parents amount to 16 percent of total affiliates sales for CEE, while the corresponding figures are 15 and 3 percent for Western and Southern Europe, respectively. Moreover, virtually all imports to affiliates located in CEE consist of intermediate inputs, whereas intermediates only account for approximately 65 to 75 percent of total imports for the other regions. Another interesting fact emerging from the data is that while the share of imports of intermediate inputs in total affiliate sales has increased substantially for CEE (from 0 to 16 percent between 1990 and 1998), there has been a successive decline in this share for Southern Europe (from 9 to 2 percent between 1990 and 1998). This may be an indication that the MNEs have moved downstream activities from Southern Europe to CEE. All in all, the descriptive evidence suggests that affiliates located in

CEE are vertically integrated with their parents as downstream, rather than upstream, producers.[13]

Another important factor determining the pattern of FDI, which is closely related to trade costs, is the geographical proximity to potential markets and/or home countries of MNEs (e.g. Shatz and Venables, 2000). The CEE countries closest to the core of the European Union, i.e. Poland, Czech Republic, Hungary, and the Baltic states, have attracted more inward FDI than more peripheral countries. The concentration of FDI in these countries does not in itself confirm the importance of geographical proximity, as these countries have also been the most successful in transforming their economies (e.g. in carrying out institutional reform and trade liberalization). However, simple eyeballing suggests that MNEs from a particular EU country tend to establish affiliates in nearby CEE countries. For example, out of the total affiliate employment located in CEE by Swedish MNEs in 1998, 35 percent were located in the nearby Baltic countries, whereas only 4 percent were located in the Czech Republic. In comparison, the total inward FDI stock in the Czech Republic is four times as large as the stock in the Baltic countries (WDI, 1999).

To summarize, Swedish MNEs primarily seem to have located fairly low-skill intensive activities in CEE up until 1998. These activities appear to be more export oriented than affiliate activities in Western and Southern Europe. Furthermore, affiliates in CEE seem to have a relatively high propensity to import intermediate inputs from their Swedish parents. Altogether, this suggests that the affiliate activities located in CEE might be characterized as export platform FDI, where downstream production is carried out with relatively unskilled-labor intensive techniques. The evidence of specialization in relatively unskilled-labor intensive production suggests that the least skill-abundant of the other European regions (i.e.

[13] One potential explanation is that upstream production seems to be more skill-intensive than downstream production (cf. Venables, 1999).

Southern Europe) is the region most likely to be hurt by the expansion of MNE activity in CEE.

3. Employment Effects of Affiliate Activity in CEE

We now turn to analyzing the effect of affiliate activities in CEE on employment in other parts of the MNEs. More specifically, we address the following questions: (i) Has the expansion of affiliate activity led to a decrease in employment in other European locations? (ii) If so, has the effect been strongest in Sweden, Western Europe or Southern Europe?

First, we look at how the probability of firms expanding (and setting up) production in CEE relates to the MNEs production structure. Out of 252 observations of active MNEs in 1990 and 1994, 29 expanded their affiliate activity in CEE in the following periods, 1990-1994 and 1994-1998. Consequently, for 11.5 percent of the observations, firms expanded their production in CEE. If starting from the 207 MNE observations with affiliate activities in Western Europe in 1990 and 1994, we find that 25 of these (12.1 percent) expanded in CEE. Finally, we have 42 observations on MNEs with affiliate activities in Southern Europe in 1990 and 1994. Ten of these (23.8 percent) expanded their activities in CEE in the next time period. Thus, MNEs with activities in Southern Europe were more likely to establish production in CEE than other MNEs.

A related issue is whether an expansion in CEE has an impact on employment patterns in other locations where the MNE operates. In Table 4, we report the average changes in employment in different locations according to whether the firms have expanded in the CEE region. As shown by this table, average employment in all non-CEE locations decreased over the period studied. The first column reports changes in employment in Sweden for MNEs

with any affiliate employment in Europe 1990-1998, distinguishing between firms that expanded in the CEE region and those that did not. On average, firms expanding in CEE reduced their employment in Sweden by about five times more (-1103/-216) than the others . Similar effects are found for affiliate employment in Western and Southern Europe (which decreased another four and five times, respectively, for MNEs expanding in the CEE region). Consequently, the expansion in CEE is negatively correlated with changes in employment in other parts of Europe. As shown in Table 4, the difference in employment reduction for firms that expanded in CEE and those that did not is significant for Sweden and Southern Europe, but not for Western Europe.

Table 4 about here

What is important from Table 4 is not only the difference between firms that expanded in CEE and those that did not, but also the relative impact on the three European regions. The total reduction in employment in Sweden, Western Europe and Southern Europe 1990-1998 by firms expanding in CEE was around 50 000. By comparing each region's share of this employment reduction with its share of MNE employment in 1990, we get a measure of the exposure to relocation due to an expansion in CEE. As shown in the lower part of Table 4, an employee in Southern Europe was three times as likely to be replaced by workers in CEE as a Swedish employee and six times as likely as a Western European employee. Clearly, Southern Europe has thus been most strongly affected by the expansion of employment in CEE.[14]

[14] This ranking is also confirmed when we correlate employment changes in CEE and Southern Europe, Western Europe and Sweden. The simple correlations are –0.67, -0.47 and –0.26, respectively.

It may be noted that the size of the employment expansion by Swedish MNEs in CEE 1990-1998 is much smaller than their employment contraction in the rest of Europe. Thus, the employment reduction cannot solely be attributed to a relocation of activities within Europe. Naturally, there may be many other reasons why there is an overall decrease in these firms' employment in Western and Southern Europe, such as a changing firm sample and a bias towards firms operating in declining industries. Here, we have not controlled for any such factors.

One way of finding the importance of changes in the firm sample and the industry composition of firms is to make a decomposition of the total change in the CEE region's share of MNE employment. We define the CEE share of affiliate employment in low-wage countries in Europe (taken to consist of Southern Europe and CEE) as:

$$ES_t = \sum_i q_{it} es_{it} , \qquad (1)$$

where q_i is firm i's share of employment in low-wage countries in Europe and es_i the share of firm i's employment in the CEE region. In order to analyze changes in employment shares in the CEE-region, we follow Bailey *et al.* (1992) and make the decomposition:

$$\Delta ES_t = \sum_{i \in S} q_{it-k} \Delta es_i + \sum_{i \in S} \Delta q_{it} es_{is} + \sum_{i \in N} q_{it} es_{it} - \sum_{i \in X} q_{it-k} es_{it-k} , \qquad (2)$$

where S is the set of firms included in the sample for two consecutive years, N is the set of entrants between t and t-1 and X is the set of exiting firms between t and t-1. The first term on the right hand side shows the "within" effect, which is the contribution by changes in the individual firm's CEE share of employment, holding its share of total employment in low-

wage European countries constant. The second term shows the "between" effect, which is the contribution of changes in firms' employment shares, holding the CEE share of their employment constant. The last two terms show the contribution of entry and exit into the sample, where a positive effect would indicate that entrants are more involved in the CEE region than exiting firms.[15] The results from this decomposition are showed in Table 5, which also shows the results from a similar decomposition of changes in the CEE share of total European affiliate employment.

Table 5 about here

The CEE share of total affiliate employment in low-wage European countries increased from less than 5 percent to 75 percent between 1990 and 1998. For the period 1990-1994, the "within" effect explained 62 percent of the change in the CEE share, while the "between" effect explained 50 percent and net entry –11 percent. Consequently, the main part of the expansion in the CEE share is due to firms that have increased the share of employment located in CEE. This is fairly clear evidence of substitution between CEE and Southern Europe. Furthermore, the large "between" effect implies that firms expanding in terms of their shares of affiliate employment in low-wage countries in Europe were also the ones with a relatively large share of their employment in the CEE region. Finally, a negative effect from net entry implies that entrants tended to be less involved in the CEE region than exiting firms.

For the period 1994-1998, the "between" effect dominates completely, whereas the "within" effect is small and net entry has a large negative effect. Consequently, the within-firm shift towards the CEE region seems to be much smaller, while the firms already having a

[15] Changes in the sample may occur for two different reasons. Firms may enter or exit the IUI database of Swedish MNEs or they may enter or exit the sub-sample of firms with activities in low-wage countries in Europe.

relatively large share of their employment in the CEE region seem to have expanded their employment shares in low-wage countries in Europe substantially. Altogether, we thus see a large within-firm shift towards the CEE region in the period 1990-1994 and a large relative expansion of firms with a relatively large share of their operations in CEE in 1994-1998. As can be seen from the lower part of Table 6, the same overall pattern emerges for the decomposition of the change in the CEE region's share of total European affiliate employment.

4. Cross-wage Elasticities and Wage Competition

According to the evidence presented so far, the expansion of affiliate activities in CEE has been associated with a contraction of employment in the rest of Europe. This contraction has been most pronounced for low-wage countries in Southern Europe. The question is then whether this apparent relocation of production is due to wage competition between locations. The substitution of employment in one region for employment in another is not necessarily the result of the firms' efforts to minimize wage-costs. One might, for example, argue that Swedish MNEs have relocated affiliate activities in CEE to take advantage of unique assets or better locations. Moreover, even if the substitution of employment between regions is caused by the firms' desire to reduce labor costs, this does not necessarily lead to increased wage-competition between the regions. For instance, it could very well be that wages are so much lower in CEE than in the other European regions that no realistic reduction of wages would make affiliate production in those regions more profitable than in CEE. If that were the case, labor cost differentials would explain the relocation of production, but no wage competition would actually take place. Hence, from a policy perspective, it is important to

examine to what extent firms respond to changes in labor cost differentials between regions by changing the regional structure of employment. This is the task undertaken in this section.

It is not only the type of FDI that may affect the relationship between employment in different locations. As Braconier and Ekholm (2000b) show, two locations may be alternatives for a specific investment project, but once the choice of location has been made, marginal changes in employment in one location may very well be complementary to employment in the other. The reason for this is that setting up production is associated with fixed costs. Once the MNE has decided on the location pattern of its activities, relocation of production units between countries becomes costly.

Braconier and Ekholm (2000b) find that, empirically, the distinction between the decision whether to locate affiliate production in a particular host country and the decision to change the level of employment in existing affiliates is an important one. More specifically, they find that relative labor costs do not affect the level of employment in existing affiliates to any great extent, although they have a significant impact on the probability that a MNE will operate in a particular host country.

In our analysis, we attempt to capture these two aspects of potential wage competition. First, labor cost differentials may affect the distribution of employment across a given set of affiliates. Estimating labor demand functions within firms, which would give us estimates of cross-wage elasticities showing the effect on employment in one location of changes in labor costs in another, would capture these effects (e.g., Slaughter 1995, Brainard and Riker 1997a, 1997b, Braconier and Ekholm, 2000a). Furthermore, changes in labor cost differentials may affect the distribution of locations where the firm decides to operate. Put differently, labor cost differentials may affect the firm's choice of location for setting up a new plant (in addition to the decision to hire or fire workers in existing plants). Previous studies suggest that wage-competition between locations is much stronger at this stage of the firm's decision

making than when deciding on the level of employment in existing affiliates (e.g., Braconier and Ekholm, 2000b).

In order to capture the effect of wage-competition in the firms' choice of location for their affiliates, we estimate a selection model where the probability of observing affiliate activities in a particular host country is assumed to depend on labor costs and local market size. We estimate the following equation:

$$P\left(A_{ijt}=1\right)= f\left(w^{O}_{ijt}, w^{S}_{ijt}, d\times w^{O}_{ijt}, D^{O}_{jt}, y^{0}_{jt}\right), \qquad (3)$$

where A_{ijt} is a dichotomous variable denoting whether firm i has affiliate activities in country j at time t. The w's are labor cost variables; w^{O} denoting local labor costs in country j and w^{S} denoting labor costs in Sweden. $d\times w^{o}$ is an interaction variable, interacting local labor costs with a dummy variable (d) taking the value one if firm i currently has affiliate activities in a certain region and the value zero if it has not. This variable is our main variable of interest and its interpretation will be explained shortly. D^{O} denotes local market size and is included to control for the effect of market size on the attractiveness of a certain location as a host country of affiliate activities. The variable y^{O} denotes average labor productivity in country j and is included to control for the effect of productivity differences on labor cost differences.

From a theoretical point of view and on basis of results from previous studies, we would expect that labor costs in other locations than the host and home countries may have an impact on the firm's decision to give affiliate activities a particular location. That is, labor costs in other potential locations for affiliate activities – locations where the firm already operates or entirely new locations – may be of importance (see, e.g., Brainard and Riker,

1997a, 1997b, Braconier and Ekholm, 2000a, 2000b). However, our sample is too small to include any additional labor costs variables in the model.[16]

Labor costs in Sweden are measured by industry-distributed average labor costs in Swedish manufacturing.[17] Ideally, we would also like to have exogenous labor cost data for the host countries, but finding such data is difficult. The local labor cost w^0 is therefore calculated from information on labor costs in the database on Swedish MNEs. More specifically, w^0 is the average labor cost in all affiliates of all firms in the sample, except firm *i*, that are located in country *j*. The market size variable D^O is measured as GDP and y^O as GDP per capita.[18]

We expect that local labor costs will have a negative effect on the probability of a firm producing in a particular location, while we expect market size and average labor productivity to have positive effects. We have no strong prior on the effect of labor costs in Sweden, since increased labor costs in the home country may lead to an expansion or a contraction of affiliate activities, depending on the nature of the affiliate activities. We would expect the former effect if firms tend to relocate activities to country *j* when labor costs rise in the home country, and the latter effect if the reduced profitability tended to lead to a contraction of the overall activities of the firm.

Our variable of main interest will serve the purpose of capturing any additional sensitivity to local labor costs stemming from the geographical structure of the firm. For instance, we may estimate the model in (3) for CEE countries only and let the dummy variable *d* take the value one for all firms which also have affiliate activities in Southern Europe. In this case, the interaction variable captures any difference in sensitivity to local

[16] In the studies that have been conducted on Swedish data, labor costs in locations where the firm already operates (measured as employment-weighted indices) do not have significant effects (Braconier and Ekholm, 2000a).

[17] Wage data have been collected from Industristatistiken (Statistics Sweden) and data on payroll taxes have been supplied by the Swedish Employer's Confederation.

wage costs between firms with and without affiliate activities in Southern Europe. We may also estimate the model for Western or Southern European countries only and let the dummy variable indicate whether the firm has affiliate activities in CEE. Once more, the interaction variable will capture any difference in the response to local labor costs between firms with and without affiliate activity in CEE. If an expansion in CEE leads to stronger wage-competition between locations, we would, in this case, expect $d \times w^o$ to have a negative impact on the probability of observing affiliate activity in country j. This would imply that if a firm sets up activities in CEE, the survival of affiliates in other locations becomes more sensitive to local labor costs.

The effect of wage-competition on the level of employment in existing plants is captured by estimating the following labor demand equation:

$$\ln L_{ijt} = \alpha + \beta_0 \ln w^O_{ijt} + \beta_1 \ln w^S_{ijt} + \beta_2 \ln D^O_{ijt} + \beta_3 \ln y^O_{jt}. \qquad (4)$$

where L_{ijt} is firm i's employment in country j at time t. One difference compared to equation (3) is that all coefficients may now be interpreted as elasticities.[19] Equations (3) and (4) are estimated with the Heckman method to account for potential selection bias problems.[20] Time dummies have been included in both (3) and (4). An important role of the time dummies is to capture changes in the overall price level. All labor cost variables included in the analysis have been constructed from data reporting costs in current Swedish Kronor (SEK). Moreover, we have converted GDP figures to SEK using current exchange rates. The time dummies will

[18] Data have been collected from World Development Indicator (World Bank, 2000).
[19] We also tried to introduce the interaction effect in the labor demand function, but in none of the cases discussed below did this effect come through as significant.
[20] In the Heckman estimations, we have used the cluster-option in the STATA package to re-estimate standard errors with potential dependence within MNEs. In principle, the selection model could be estimated with a fixed-effect logit estimation, but this is not a viable option, due to low degrees of freedom in most estimations.

thus control for changes in the variables due to a general rise in the price level. In the case of the base specifications, however, we must exclude the time dummies in the wage equations to be able to estimate the model, since otherwise, we would have the same variables in the selection equation and the labor demand equation.

First, we investigate whether the effect of local labor costs (the own-wage effect) for affiliates located in CEE is related to whether the MNE has affiliates in Western and Southern Europe. If the elasticity is significantly greater for affiliates in a certain region (i.e. if $d \times w^o$ is positive and significant), CEE affiliates are exposed to stronger than average wage-competition with this region. The results are presented in Table 6. Column 1 is our base regression, where the coefficients reported for the selection model show that the likelihood of observing affiliate activity in country j is decreasing in the local labor cost and increasing in local market size and labor costs in Sweden. Except for our proxy for labor productivity, all estimated coefficients have the expected sign, although none of them are significant at standard levels of significance. The positive estimate for Swedish labor costs indicates a relationship of substitution between employment in Swedish parents and affiliates in CEE, since it implies that higher labor costs in Sweden increase the probability of observing affiliate activities in CEE.

The reported elasticities in Table 6 are the elasticities of the probability of observing affiliate activity in host country j, with respect to the independent variables, computed at the mean of observations on the independent variable. According to our estimates, a one percent increase in local labor costs decreases the probability of observing affiliate activity by 1.25 percent.

In the estimated labor demand equation, all coefficients have the expected signs but, once more, none of them are significant at standard levels of significance. The result for the so-called Heckman's lambda shows no evidence of a selection bias problem.

Our base regression does neither explain the probability of observing affiliate activities in a specific CEE country very well, nor the level of employment in these affiliates. This probably relates both to the fact that we only have a small sample of actual affiliate activity and the fact that we have controlled for no institutional aspects, e.g. differences in the extent of investment liberalization, that may be of considerable importance.[21]

In the second column of Table 6, we include the interaction variable and let the dummy variable indicate whether firms have affiliate activity in Western Europe. The estimated coefficient thus indicates whether the probability of observing affiliate activities in CEE is more sensitive to local labor costs in CEE for firms with affiliates in Western Europe. The estimated coefficient is negative and highly significant. All other effects are similar to the base specification.

In the last column, we present results from a similar specification, only here the dummy variable indicates whether firms have affiliates in Southern Europe. In this specification, the estimated overall effect of local labor costs is virtually zero, but for firms with affiliates in Southern Europe, the effect is highly significant. Thus, local labor costs in CEE are important if the MNE has affiliates in Southern Europe. As in the case of Western Europe, this suggests wage competition between the regions. Now, the estimated coefficient for Swedish labor costs is highly significant. All other estimates are similar to the other specifications, with the exception of Heckman's lambda, which is now significant. The overall fit is also much better than in the previous two estimations, as shown by the log likelihood.

All in all, the results in Table 6 suggest that Swedish MNEs' decisions to locate production in CEE are influenced by local wage costs if the firm already has activities in Western or Southern Europe. The increased sensitivity to local labor costs is strongest for

[21] There are no data on such factors that cover the whole time period, which is why they are not included in the regressions.

firms with activities in Southern Europe. For these firms, the own-wage elasticity is increased by 0.38, while the corresponding increase is 0.17 for firms with affiliates in Western Europe. Labor costs in Sweden also seem to affect the decision to locate in CEE. The estimated elasticity of 2.12 in the last specification is large and significant. We interpret this as evidence of locations in CEE being engaged in wage-competition with other European locations for MNE activity. Furthermore, the insignificance of the estimated coefficients of local market size emphasizes our earlier conclusion that affiliate activity in CEE seems to be strongly export oriented.

Table 7 shows the results from similar estimations, using a sample only including host countries in Southern Europe. The estimated coefficients presented in the first column have the expected signs and the local market size is significant in the selection equation, while the results for the labor demand equation are generally poor. In the second column, we add the interaction variable, letting the dummy variable indicate whether firms have affiliate activities in CEE. In this case, the overall own-wage effect is still insignificant and small, while the additional effect for firms with affiliate activity in CEE is negative and significant at the five-percent level. Consequently, Southern European affiliates seem to be more vulnerable to labor cost increases, if the MNE has activities in CEE. The interaction effect also improves the overall fit of the estimation and produces a much more reasonable labor demand equation.[22] In the third and fourth columns, we investigate whether the additional sensitivity to local labor costs found for firms with affiliates in CEE is systematically different for labor-intensive (LI) and R&D-intensive high-tech (HT) industries.[23] We would

[22] One alternative interpretation of the results in the second column is that they reflect a general increase in the wage-sensitivity of FDI over time as FDI has been increasingly liberalized. For instance, Hatzius (2000) has shown that increased FDI has tended to make labor demand in the UK and Germany more elastic. Since affiliate activity in CEE has also increased over time, the results might be explained by general FDI liberalization. However, we find no evidence of increasing wage-sensitivity over time in our data when allowing for time-specific own-wage elasticities (the results from these estimations are available from the authors upon request).

[23] We follow Dollar & Wolff (1993) when defining industries as labor intensive or high-tech.

expect firms operating in labor-intensive industries to be particularly sensitive to labor cost differentials, while the opposite would be expected for firms operating in high-tech industries. The results reported in table 7 confirm that firms operating in labor-intensive industries seem to be more sensitive to local labor costs, while firms operating in high-tech industries seem to be less sensitive to local labor costs.

In Table 8, we show the results of similar estimations for Western European affiliates. Here, the results for the selection equation are much better than the ones presented in Tables 6 and 7. The coefficients have the expected signs and are generally significant at the five-percent level. As in the previous tables, however, the results for the labor demand equation are somewhat mixed.

The main result from the selection model is that now, we find no significant effect of the interaction between local labor costs and the dummy indicating whether the firm has affiliate activity in CEE. Thus, affiliate activities in CEE do not seem to make these firms more sensitive to local labor costs. Furthermore, we now find fairly strong evidence of substitution between employment in Western European affiliates and Swedish parents. The estimated coefficients are positive and significant at the five-percent level in all specifications. Furthermore, the computed elasticities suggest that a one percent increase in labor costs in Sweden increases the probability of observing affiliate activity in a Western European host country by 1.6-1.7 percent. In this sub-sample, we find no evidence that firms operating in labor-intensive or high-tech industries differ from other firms in terms of their sensitivity to local labor costs.

To conclude the results from the econometric analysis, we find evidence of firms with affiliate activities in CEE and Southern Europe being particularly sensitive to local labor costs in both regions. In this sense, affiliates in CEE and Southern Europe seem to be exposed to wage-competition *vis-à-vis* each other. The evidence on wage-competition between CEE

and Western Europe is much weaker. We also find some evidence suggesting that the cross-wage effect with respect to the home country, Sweden, is positive, which indicates that employees in affiliates in CEE and employees in Swedish parents, on average, tend to be substitutes. All in all, the results support the notion that the expansion of Western European firms in the CEE region may contribute to stronger wage-competition within Europe. They also support the idea that in particular the low-wage countries in Southern Europe are affected.

5. Concluding Remarks

In this paper, we have examined the recent expansion of FDI into Central and Eastern Europe (CEE) and its consequences for employment in other European regions. By using firm level data on Swedish MNEs, we have compared affiliates located in CEE with other European affiliates. We have found that, on average, affiliates in CEE exhibit lower labor productivity, lower labor costs and smaller shares of skilled labor than their counterparts in the rest of Europe. Furthermore, they tend to have larger export shares and lower R&D intensity than other European affiliates. Finally, their pattern of intra-firm trade suggests that they are more likely to be engaged in downstream activities (e.g. assembly) than other European affiliates.

The fact that affiliates in CEE seem to be fairly low-skill intensive suggests that the activities conducted in CEE are more similar to those conducted in the low-wage countries in Southern Europe than in the high-wage countries in Western Europe. Consequently, we would expect Southern Europe to be especially vulnerable to the emergence of affiliate activities in CEE. This is confirmed by our results, which show that the reduction in employment related to the firms' expansion in CEE has been considerably larger in Southern

European affiliates than in Western European affiliates or Swedish parents. This shift from Southern Europe to CEE seems to a large extent have taken place within MNEs, at least in the period 1990-1994. That is, firms seem to have increased affiliate employment in CEE while they have decreased affiliate employment in Southern Europe.

In the last section of the paper, we have estimated a model explaining demand for labor in a particular host country by local labor costs and market size. We use this model as a starting point for addressing the issue of whether the apparent substitution of production in CEE for production in other parts of Europe have led to increased wage-competition within Europe. We examine whether the sensitivity to labor costs in CEE is stronger for firms with affiliate activities in other European countries and whether the sensitivity to labor costs in other European countries is stronger for firms with affiliate activities in CEE. The results suggest that affiliate employment in Southern Europe is more sensitive to local labor costs if the firm also has affiliate activities in CEE and *vice versa*. We interpret this as evidence of Southern European employees facing increased wage-competition as a result of the expansion in CEE. The evidence of increased wage-competition for Western European employees is much weaker. However, our results indicate that there is an element of wage competition between affiliate employment in CEE and employment in Swedish parents.

It is tempting to use the results of this study to draw conclusions about how the integration of CEE into the rest of Europe is likely to have affected European labor markets and to discuss the likely effects of an Eastern enlargement of the EU. On basis of our results, we would expect the adjustment costs associated with a relocation of economic activity from current EU members towards CEE to fall disproportionately on the low-wage countries in Southern EU. However, it should be kept in mind that the conclusions drawn in this study are based on a sample of Swedish manufacturing firms with production activities abroad. To be able to generalize the results based on this firm sample, we would have to know to what

extent the sample is representative for other European MNEs. However, we have no information that enables us to address this issue. Therefore, the results presented in this study should be taken as suggestive of disproportionately high adjustment costs in the Southern European countries rather than as definitive evidence of this being the case. However, until we get evidence based on firm level data from other European countries, this is the only evidence available.

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Table 1 - FDI Inward Stock per capita (current US Dollars)

	1990	1993	1994	1995	1996	1997	1998
World	336	376	415	492	533	590	693
Western Europe	994	1034	1121	1410	1335	1556	1876
Southern Europe	784	1096	1179	1241	1129	1079	1331
CEE	29	53	76	138	181	269	326
Czech Republic	102	259	343	573	685	923	1307
Hungary	0	514	663	1165	1441	1588	1807
Poland	8	78	114	203	297	425	561
Russian Federation		9	16	27	44	98	91

Source: World Investment Report (1999)

Table 2a. The Number of Swedish MNEs with Activities in Different European Regions 1990-1998

	Sweden	CEE	Western Europe	Southern Europe
1990	120	-	109	21
1994	132	23	98	21
1998	117	32	73	11

Source: IUI database
Note: - data supressed.

Table 2b. Sales by Swedish MNEs in Different European Regions 1990-1998

	Sweden		CEE		Western Europe		Southern Europe	
	bn. SEK	percent	bn. SEK	percent	bn. SEK	percent	bn. SEK	percent
1990	355	55	0	0	271	42	17	3
1994	380	59	4	1	251	39	11	2
1998	524	68	8	1	233	30	8	1

Source: IUI database

Table 2c. Employment by Swedish MNEs in Different European Regions 1990-1998

	Sweden		CEE		Western Europe		Southern Europe	
	1000's	percent	1000's	percent	1000's	percent	1000's	percent
1990	339	54	1	0	292	42	20	3
1994	245	60	10	3	140	35	11	3
1998	226	64	16	5	105	30	6	2

Source: IUI database

Table 3. Characteristics of MNE activities across regions in 1998

	Sweden	CEE	Western Europe	Southern Europe
Total wage costs per employee (1000' SEK)	311	40	334	214
Value added per employee (1000' SEK)	476	78	538	400
Wage ratio white collar/blue collar workers	1.69	2.12	1.62	1.99
Employment ratio white collar/blue collar workers	0.65	0.29	0.48	0.21
R&D expenditures (share of total sales)	0.072	0.006	0.010	0.007
Affiliate exports (share of total sales)	-	0.48	0.38	0.40
Affiliate exports to Sweden (share of total sales)	-	0.04	0.12	0.04
Affiliate imports from Swedish parent (share of total sales)	-	0.16	0.13	0.03
Affiliate imports of intermediates from Swedish parent (share of total sales)	-	0.16	0.10	0.02

Source: IUI database

Table 4. Mean Changes in MNE Employment and Exposure to Relocation in Different Regions

	Sweden	No. of obs.	Western Europe	No. of obs.	Southern Europe	No. of obs.
Expansion in CEE	-1103	29	-498	25	-541	10
	(783)		(513)		(264)	
Non-expansion in CEE	-216	84	-124	77	-109	11
	(117)		(136)		(48)	
Difference	886*		374		432*	
	(498)		(376)		(257)	
Share of relocation	0.65		0.24		0.11	
Share of employment 1990	0.54		0.42		0.03	
Exposure to relocation	1.20		0.57		3.67	

Source: IUI database

Note: Figures in parentheses are standard errors. Asterisk indicates that differences in means are significant at the 10 percent level.

Table 5. Decomposition of Changes in the CEE region's Share of Affiliate Employment

Sample	Period	Δ*ES*	Within	Between	Net Entry
Low-wage Europe	1990-1994	0.53	0.33 (0.62)	0.26 (0.50)	-0.06 (-0.11)
	1994-1998	0.22	0.05 (0.25)	0.34 (1.55)	-0.17 (-0.80)
Europe	1990-1994	0.10	0.04 (0.39)	0.07 (0.66)	-0.01 (-0.05)
	1994-1998	0.07	0.03 (0.35)	0.08 (1.09)	-0.03 (-0.44)

Source: IUI database

Note: Figures in parentheses show the shares of the total change in *ES* that can be attributed to the different components.

Table 6. Results for Central and Eastern Europe. Heckman estimations

Dep var: *P(A)*	Selection model		Selection model WE		Selection model SE	
	Coefficient	**Elasticity**	**Coefficient**	**Elasticity**	**Coefficient**	**Elasticity**
lnw^0	-0.92	-1.25	-0.64	-0.88	-0.13	-0.18
	(-0.94)		(-0.61)		(-0.13)	
$d \times lnw^0$	-	-	-0.13***	-0.17	-0.27***	-0.38
			(-2.91)		(-4.47)	
lnw^S	0.27	0.37	0.69	0.95	1.53***	2.12
	(0.53)		(1.30)		(2.77)	
lnD^0	0.30	0.41	0.27	0.37	0.17	0.23
	(1.32)		(1.08)		(0.71)	
lny^0	-0.64	-0.87	-0.66	-0.90	-0.32	-0.44
	(-1.21)		(-1.24)		(-0.69)	
Dep var: lnL	**Labor demand equation**		**Labor demand equation**		**Labor demand equation**	
lnw^0	-0.81		-1.83		-2.68	
	(-0.53)		(-0.51)		(-0.72)	
lnw^S	-1.14		-0.57		-1.38	
	(-0.65)		(-0.27)		(-0.55)	
lnD^0	0.32		0.67		0.95	
	(0.68)		(0.68)		(0.96)	
lny^0	1.63		1.15		0.10	
	(1.30)		(0.69)		(0.06)	
lambda	0.42		1.93		2.45*	
Log likelihood	-222		-220		-205	
Observations:						
Total	241		241		241	
Censored	188		188		188	

Note: Figures within parentheses are t-statistics and asterisks denote level of significance: * (10%), ** (5%) and *** (1%). Standard errors have been adjusted for clustering around the firm's identity. Elasticities have been computed at the means of the independent variables.

Table 7. Results for Southern Europe. Heckman estimations

Dep var: *P(A)*	Selection model		Selection model		Selection model		Selection model	
	Coefficient	Elasticity	Coefficient	Elasticity	Coefficient	Elasticity	Coefficient	Elasticity
lnw^0	-0.17	-0.27	-0.15	-0.24	-0.13	-0.20	-0.17	-0.27
	(-0.85)		(-0.67)		(-0.55)		(-0.78)	
$d \times lnw^0$	-	-	-0.08**	-0.12	-0.05*	-0.09	-0.05*	-0.08
			(-1.97)		(-1.68)		(-1.68)	
$d \times lnw^{0, LI}$	-	-	-	-	-0.09	-0.14	-	-
					(-1.47)			
$d \times lnw^{0, HT}$	-	-	-	-	-	-	0.13***	0.20
							(3.53)	
lnw^S	0.81	1.26	0.85	1.34	0.75	1.19	0.59	0.92
	(1.39)		(1.40)		(1.24)		(1.02)	
lnD^0	0.21**	0.34	0.21*	0.32	0.21*	0.33	0.21**	0.33
	(1.96)		(1.81)		(1.92)		(1.97)	
lny^0	0.34	0.52	0.34*	0.53	0.30	0.47	0.36*	0.57
	(1.50)		(1.40)		(1.24)		(1.66)	
Dep var: lnL	**Labor demand equation**		**Labor demand equation**		**Labor demand equation**		**Labor demand equation**	
lnw^0	0.23		-0.37		-0.53		0.54	
	(0.52)		(-0.69)		(1.02)		(0.76)	
lnw^S	-0.50		1.50		1.54		-1.27	
	(-0.37)		(0.87)		(1.03)		(-0.49)	
lnD^0	0.15		0.55**		0.57**		-0.04	
	(0.53)		(2.28)		(2.34)		(-0.11)	
lny^0	-0.48		0.59		0.90*		-0.59	
	(-0.91)		(1.12)		(1.77)		(-0.58)	
lambda	-1.70**		1.39		1.76***		-2.44*	
Log likelihood	-251		-249		-248		-245	
Observations:								
total	374		374		374		374	
censored	315		315		315		315	

Note: Figures within parentheses are t-statistics and asterisks denote level of significance: * (10%), ** (5%) and *** (1%). Standard errors have been adjusted for clustering around the firm's identity. Elasticities have been computed at the means of the independent variables.

Table 8. Results for Western Europe. Heckman estimations

Dep var: *P(A)*	Selection model		Selection model		Selection model		Selection model	
	Coefficient	**Elasticity**	**Coefficient**	**Elasticity**	**Coefficient**	**Elasticity**	**Coefficient**	**Elasticity**
lnw^0	-1.01***	-1.17	-1.05***	-1.21	-1.04***	-1.21	-1.07***	-1.24
	(-3.63)		(-3.66)		(-3.62)		(-3.97)	
$d \times lnw^0$	-	-	-0.02	-0.03	-0.01	-0.01	-0.00	-0.00
			(-0.64)		(-0.35)		(-0.07)	
$d \times lnw^{0, LI}$	-	-	-	-	-0.05	-0.06	-	-
					(-0.76)			
$d \times lnw^{0, HT}$	-	-	-	-	-	-	0.08	0.10
							(1.05)	
lnw^S	1.45**	1.67	1.49**	1.72	1.38**	1.60	1.36**	1.57
	(2.20)		(2.39)		(2.32)		(2.04)	
lnD^0	0.18***	0.20	0.18***	0.20	0.18***	0.20	0.18***	0.21
	(3.12)		(3.04)		(3.08)		(3.20)	
lny^0	0.37*	0.42	0.38**	0.44	0.38**	0.44	0.38**	0.44
	(1.93)		(1.96)		(1.96)		(1.98)	
Dep var: lnL	**Labor demand equation**		**Labor demand equation**		**Labor demand equation**		**Labor demand equation**	
lnw^0	0.82		-0.87		-1.04*		1.32*	
	(1.15)		(-1.23)		(-1.73)		(1.91)	
lnw^S	-0.45		2.19		2.37		-0.80	
	(-0.51)		(1.08)		(1.37)		(-0.67)	
lnD^0	0.15		0.44***		0.46***		0.11	
	(1.09)		(5.05)		(4.90)		(0.80)	
lny^0	-0.83*		-0.22		-0.17		-0.98*	
	(-1.71)		(-0.46)		(-0.36)		(-1.77)	
lambda	-1.44***		0.97		1.18		-1.83***	
Log likelihood	-1495		-1495		-1493		-1487	
Observations:								
total	1287		1287		1287		1287	
uncensored	887		887		887		887	

Note: Figures within parentheses are t-statistics and asterisks denote level of significance: * (10%), ** (5%) and *** (1%). Standard errors have been adjusted for clustering around the firm's identity. Elasticities have been computed at the means of the independent variables.