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Wage costs and industry (re)location in the enlarged European union

Jozef Konings*

Summary

■ Micro data of medium and large sized manufacturing firms in Europe are used to analyze whether wage cost differentials between high and low wage location can trigger employment relocation. Examining differences in labor costs and productivity between Western and Central Europe reveals that labor costs are about five times lower in the typical firm in Central Europe as compared to labor costs in high wage countries such as Belgium and Germany, but also that labor productivity is more than five times lower in Central Europe.

The paper analyzes labor demand as a function of labor costs in comparable sectors in different locations, but finds no evidence that employment substitution between high wage and low wage locations takes place in response to changes in wages. It also analyzes labor demand in multinational enterprises with affiliates in high and low wage locations. Employment relocation takes place, but only between high wage locations. A ten percent reduction in wage costs of affiliates located in other high wage countries reduces labor demand in parent firms in (mostly) high wage locations by one percent. Wages in low wage countries do not, on average, seem to influence labor demand in high wage countries, which suggests that low wage costs do not trigger relocation. ■

JEL classification: F23, J23.
Key words: Relocation, multinational enterprises, labor demand.

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Figure 1 shows a comparison of annual labor costs per worker in a number of "old" and "new" EU countries and clearly illustrates the recent policy concerns raised in a number of "old" EU countries[1]. Central Europe represents a large reservoir of low wage labor in the backyard of high wage countries such as Germany and Belgium. Annual labor costs are about four times lower in Central Europe compared to these West European countries. The main fear is that increased import competition from countries in Central and Eastern Europe (CEE) puts too much pressure on local producers, which forces them to close factories, or parts of these, at home and move some of their operations to CEE or other low wage regions, such as Turkey.

One of the most obvious channels through which jobs in Western Europe may be affected by this increased economic integration is through the employment (re-) allocation decisions of multinational enterprises (MNEs). It is often argued that MNEs are footloose (Caves, 1996; Görg and Strobl, 2002). They operate across different national markets and can reallocate their factors of production across these markets to minimize total production costs in response to changing local economic conditions, without having to incur major set up costs. While there exist a number of anecdotes confirming this view, the evidence, so far, has not been overwhelming. On the basis of company surveys that have been reported in a number of studies, there seems to be an emerging consensus that for most companies, the main driving force for investing in Central and Eastern Europe is not the low wage costs, but rather the advantages of being the "first

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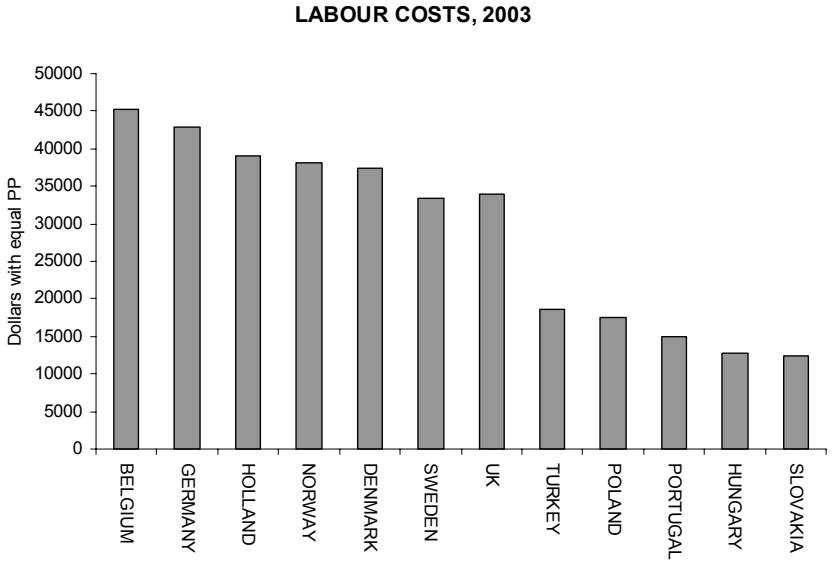
[1] "Old" EU countries refer to the EU 15 countries prior to the recent enlargement, while the "new" EU countries refer to the countries that have joined the EU since May 2004.

mover" and the opportunity to get access to a growing market. These investments did *not* usually imply a relocation of economic activity or job loss at home; rather it implied further growth and job gains in parent firms (e.g. Lankes and Venables, 1996; Abraham and Konings, 1999).

Figure 1. Labor cost 2003



Source: OECD (2003).

This pattern is also confirmed by recent studies that look at the relationship between relocation of employment and wage cost differentials between EU countries and CEE. Using data on multinational enterprises, Brainard and Riker (2001) for the US, Braconier and Ekholm (2000, 2001) for Sweden and Konings and Murphy (2006) for various European countries find no evidence of jobs being relocated from high income EU countries to low income countries. Rather, employment substitution between high wage countries seems to take place; that is, jobs seem to be relocated from one high wage country to another. In contrast, recent work by Braconier, Norbäck and Urban (2002) finds strong support for the model of vertical FDI, which is based on the idea that firms locate different stages of production depending on where production costs are the lowest. They find sup-

port for this model in the sense that more FDI is conducted in countries where unskilled labor is relatively cheap.

Finally, theoretical work points in the direction of the impact of EU enlargement being rather limited. For instance, Forslid, Haaland Knarvik and Maestad (2002) develop and simulate a CGE-model, capturing inter-industry trade based on comparative advantages as well as intra-industry trade and agglomeration forces. They find the transformation and European integration to be of great importance for Eastern Europe, while the overall effects for other European regions are small. However, for some individual industries, such as textiles and transport equipment, their simulations show potentially strong effects. The intuition is simple. On the one hand, there is increased competition from CEE countries; on the other hand enhanced demand in CEE countries allows for more exports.

Despite recent academic research on these issues, the popular press and captains of industry seem to believe that the low wage competition from CEE constitutes a real threat to employment in the high wage countries of Western Europe. In this paper, I address the question of whether international wage competition may trigger employment relocation to low wage regions in Europe. To this end, I will use comparable firm level data of medium and large sized European enterprises active in the manufacturing sector. The intention is not to formally test economic geography models based on agglomeration economies dealt with in the other papers in this issue. Instead, I focus on and document correlations between wages and employment patterns and analyze enterprise level labor demand as a function of wage costs in various locations.

I start by comparing wage costs and labor productivity at the *firm level* in CEE with those in Western Europe. This will be done in the next section. By comparing wage costs and labor productivity across these countries, we may get an idea about the *attractiveness* for EU companies of relocating part of their activity to CEE and this will help us assess whether the competition from CEE should be seen as a real threat to EU employment. In the subsequent section, I study how responsive labor demand in Belgian firms is to labor cost differentials between the various regions. The focus is on Belgium as it can be seen as one extreme benchmark, representing a country with very high labor costs in relative terms and subject to a high degree of international competition. I then turn to the issue of employment substitution within multinational enterprises, as these firms are consid-

ered to be more "footloose" than other firms. In particular, I analyze whether employment substitution between affiliates in response to wage changes in different locations is important. In analyzing those elements, I am not able to make a distinction between different skill levels, due to data limitations. Arguably, low skilled workers may be affected differently than high skilled workers. However, in the econometric techniques I use, I will try to control for skill differences between firms in an indirect manner.

1. Labor costs and labor productivity

I make use of a unique panel data set of large and medium sized manufacturing firms covering six West European countries: Belgium, France, Holland, Germany, Denmark and Portugal, and five CEE countries: Poland, Hungary, the Czech Republic, Bulgaria and Estonia. The data represent the annual company accounts, which each firm must, by law, submit to the statistical office or the central bank of its country each year. This data set is commercialized under the name "AMADEUS" by Bureau Van Dijck (BvD): Its main advantage is the comparability of companies across countries, since the same inclusion criteria have been used across the different countries and BvD has tried to harmonize the reporting of the company accounts. Furthermore, the data are not restricted to the listed firms only, as is the case in, for example, the COMPUSTAT tapes of US firms. A drawback of this data set is that the coverage on a number of variables may vary from country to country, depending on the national accounting legislation[2].

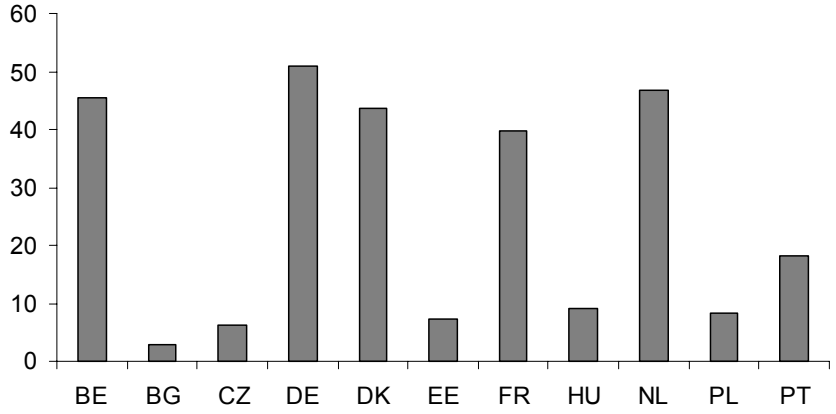
I retrieved data on sales, value added, employment, total wage bill, material costs and the sector in which the firm was operating for the years 1995-2002. This does not only allow us to compare countries but also country-sectors, which is arguably more important. The coverage on these variables varies somewhat between countries but, on average, my data set covers more than 60 percent of total manufacturing employment in the countries studied. I measure labor productivity as output per worker, where output is proxied by value added, which I obtain from the profit and loss accounts (the equivalent of the income statements in the US). Moreover, I experimented with using sales as a proxy for output, which gave qualitatively the same pattern

[2] The Amadeus data set has been increasingly used in academic applications, e.g. Helpman et al. (2004) and Budd et al. (2005).

of results. From the profit and loss accounts, I also get the total wage bill of a firm in one year. By dividing the total wage bill by the number of employees, I have a measure of labor costs per worker, on an annual basis. The drawback of this measure is that I have no information on the hours worked. However, I have a measure that does not only include the actual pay of workers, but also the social security contributions and employer contributions, which often constitute a substantial fraction of the total labor costs. This provides us with a measure that truly captures the costs firms incur by employing labor.

I transformed all local currencies into Euros, implying that I am comparing real labor cost and productivity assuming that purchasing power parity approximately holds, which may not be an unrealistic assumption for emerging economies (e.g. Krugman and Obstfeld, 2000).

Figure 2. Labor cost per worker 1000 Euro

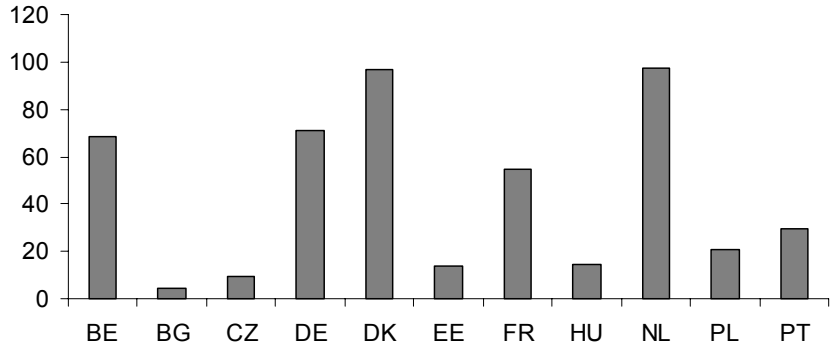


Source: Author's calculations, based on Amadeus.

Figures 2-3 summarize the data. In Figure 2, I report the median labor cost per worker per year for the various countries I study. The pattern that was reported based on macro data from the OECD in Figure 1 is confirmed when micro data are used. Annual labor costs per worker are at least five times larger in most West European countries compared to CEE. In Figure 3, however, I show that labor productivity also differs considerably between the "old" and the "new" EU countries. Labor productivity is also at least five times lower in

CEE compared to Western Europe. This difference in productivity is likely to be the main reason for the observed differences in labor costs. Thus, taking the difference in productivity into account, it is *a priori* not clear whether firms would find labor costs sufficiently low to relocate to CEE.

Figure 3. Labor productivity 1000 Euro

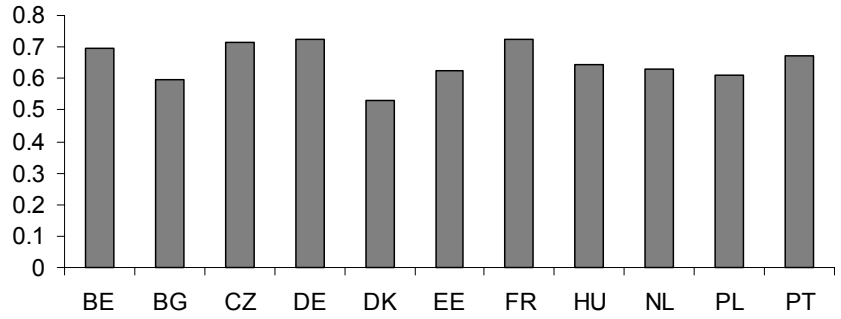


Source: Author's calculations, based on Amadeus.

In Figure 4, I show the ratio of labor costs per worker to labor productivity. This ratio can be interpreted as a competitiveness index. If this index is low, then a country is competitive in terms of its wage cost relative to the efficiency of its workers. Interestingly, we can note from Figure 4 that the competitiveness index is almost the same across countries, and sometimes even higher in some CEE countries. Thus, the low labor costs alone are clearly not a sufficient trigger to cause a massive relocation.

Naturally, these graphs just show what the median firm in an industry looks like. In general, firms are heterogeneous both in terms of their wage policy and in terms of their productivity (e.g. Helpman et al., 2004). No doubt, there will be West European firms for which the competitiveness index is worse than in Central Europe, but there will also be many firms for which the reverse is true.

Figure 4. Index labor cost relative to added value



Source: Author's calculations, based on Amadeus.

In Figure 4, all firms in the various sectors are pooled together. However, there are likely to be substantial differences between sectors in terms of their competitiveness, due to comparative advantages. In the Appendix, I show the competitiveness index for a selection of sectors. The pattern described in Figure 4 changes somewhat depending on the sector. The figures in the appendix also reveal some misconceptions that seem to persist. For instance, for the textile industry and the wearing apparel industry, the competitiveness in high wage countries such as Belgium and Germany is relatively good compared to CEE. For some other sectors, such as the printing and publishing industry, CEE scores better. This latter sector is a typical example where "outsourcing" is relatively easy; documents can be sent electronically, which are printed in the low wage countries and then shipped back to the high wage countries. There are only small logistical costs involved and the time pressure for printing a book is relatively low. The graphs in the appendix suggest that for some sectors, job loss due to competition from low wage countries could be relevant, while for other sectors, there does not seem to be a "competitiveness" problem.

Naturally, these graphs are just descriptive statistics which are suggestive. Employment sometimes adjusts to changing wage costs with a lag and labor productivity is an imprecise measure of efficiency. In order to more rigorously check the relevance of international wage

costs differentials in the various sectors for employment determination, I will perform a very simple regression analysis of labor demand. This analysis is discussed in the next section.

2. Employment determination and international wage competition

I focus on firm level labor demand in Belgium. Belgium is characterized by very high labor costs and, as it is a small open economy, it is subject to strong international competitive pressure. A standard dynamic labor demand equation of the following form is assumed:

$$l_{it}^{j} = \gamma_i + \alpha_1 l_{it-1}^{j} + \alpha_2 w_{it}^{j} + \alpha_3 w_{it-1}^{j} + \alpha_4 y_{it}^{j} + \alpha_5 k_{it}^{j} + \sum_c \beta^c w_{jt}^{c} + \varepsilon_{it}, \quad (1)$$

where l_{it}^{j} stands for the log of employment at firm i operating in sector j at time t, w is the log of labor cost per worker, y is the log of output, k is the firm's capital stock, and w^{c}_{jt} stands for the log average wage cost in sector j in country c.

The dynamics in equation (1) captures the presence of adjustment costs, such as hiring and firing costs, which are likely to be substantial in most European countries, given the strong employment protection legislation. The lagged dependent variable captures a partial adjustment mechanism, often used in modeling dynamic labor demand (e.g. Hamermesh, 1993). I also lag wages to capture the idea that wages often adjust slowly, perhaps due to wage contracts negotiated by trade unions. It is the sector wage in the other countries that can give an idea about the role of international wage competition. A simple bargaining framework where the outside option of the firm is modeled as moving its production to another country could yield a specification as in (1), where the average sector wages in the other countries enter into the specification. A positive β^c can be interpreted as a result that is consistent with employment substitution between Belgium and country c in response to wage cost differentials.

In (1), homogeneous labor is assumed, but it would be more realistic to have a distinction between high skilled and low skilled workers. However, such information is not available in the data used. But it is not unreasonable to assume that certain types of firms typically use production techniques that are more skill intensive, while other firms are typically less skill intensive. So, at the *firm* level, one way of con-

trolling for the skill intensity of the firm is to assume that it is captured by a firm-level fixed effect, γ_i. In general, this unobservable fixed effect captures firm heterogeneity.

I estimate (1) in first differences in order to control for the unobservable firm-level fixed effect, γ_i:

$$\Delta l^j_{it} = \alpha_1 \Delta l^j_{it-1} + \alpha_2 \Delta w^j_{it} + \alpha_3 \Delta w^j_{it-1} + \alpha_4 \Delta y^j_{it} + \\ + \alpha_5 \Delta k^j_{it} + \sum_c \beta^c_j \Delta w^c_{jt} + \Delta \varepsilon_{it}. \qquad (2)$$

Furthermore, in (2) the lagged dependent variable becomes endogenous due to the first differencing. I also assume that the wages are endogenous. This makes sense if the labor market is imperfectly competitive, e.g. when wages are negotiated between unions and employers, a realistic scenario in the EU. I use the General Method of Moment IV technique introduced by Arellano and Bond (1991) to estimate (2). This implies that I use all available moment restrictions for employment and the own wage from *t*-2 and before as instruments.

Table 1 shows the results. I show two specifications. The first specification only considers a lagged dependent variable, while the second, in addition, includes the dependent variable at *t*-2. This second specification checks whether there is some further dynamics in employment not captured by just including employment at *t*-1. The Sargan test of instrument validity and a test of Second Order Serial correlation (SOC), which is standard normally distributed, are also reported. In both specifications, the Sargan test and the SOC test indicate that the model is correctly specified and that the instruments are valid.

It is clear from both specifications that a dynamic specification with lags up to one period is appropriate. The own wage elasticity is high and statistically significant. An increase in labor costs by ten percent reduces labor demand by at least ten percent in the long run. This is consistent with other estimates of labor demand elasticities using micro data.

Table 1. Regression results of labor demand in Belgium

	(1)	(2)
l_{t-1}	0.26**	0.27***
	(0.04)	(0.05)
l_{t-2}	-	0.003
		(0.015)
w_t	-0.81**	-0.83**
	(0.08)	(0.07)
w_{t-1}	-0.02	-0.03
	(0.04)	(0.05)
y_t	0.38**	0.39**
	(0.03)	(0.038)
k_t	0.076**	0.075**
	(0.010)	(0.01)
$Sectorwage_{Portugal}$	0.023*	0.034**
	(0.015)	(0.015)
$Sectorwage_{Germany}$	0.06*	0.06*
	(0.038)	(0.039)
$Sectorwage_{Denmark}$	0.0001	0.006
	(0.135)	(0.13)
$Sectorwage_{Holland}$	0.05	0.07
	(0.07)	(0.07)
$Sectorwage_{France}$	0.49**	0.52**
	(0.24)	(0.24)
$Sectorwage_{Poland}$	-0.009	-0.008
	(0.046)	(0.044)
$Sectorwage_{Hungary}$	0.016**	0.016**
	(0.006)	(0.006)
$Sectorwage_{Czech}$	0.0001	0.001
	(0.05)	(0.05)
$Sectorwage_{Estonia}$	-0.014	-0.018
	(0.015)	(0.015)
$Sectorwage_{Bulgaria}$	0.02	0.025
	(0.025)	(0.026)
Sargan Test (p-value)	0.09	0.05
SOC Test	0.29	0.32

Notes: Dependent Variable: Log Firm Level Employment. All equations include year dummies; lagged employment and own wage costs are instrumented using all available moment restrictions from t-2 and before. Standard errors are in parentheses, the results refer to the two-step robust estimates.

Furthermore, wage costs in France, Germany, Hungary and Portugal have some effect on labor demand in Belgian manufacturing firms. This indicates that there are ongoing substitution effects when

relative wage costs change; however, it seems that such substitution mainly happens with respect to other West European countries. For the CEE countries, only the estimated cross-wage elasticity for Hungary is statistically significant. Its point estimate, however, is very small, only 0.016. In other words, if wage costs in comparable sectors in Hungary were lowered by ten percent, then employment demand by Belgian firms would only be reduced by 0.16 percent. This effect is negligible. In contrast, the estimated cross-wage elasticity in France is 0.52. This implies that a reduction in French wage costs by ten percent would be associated with a reduction in Belgian labor demand by five percent. Thus, wage competition seems to be more important between high wage countries than between high wage and low wage countries. This finding is in line with the descriptive graphs of the previous section. The competitiveness index between Belgium and CEE is not that different.

The above analysis, however, does not take into account that the technology that Western firms use may be superior to the technology used in CEE. Firms that decide to produce in CEE may import better equipment so that the labor productivity for those firms is much higher compared to that of local firms. There is evidence that foreign firms in Central Europe are more efficient compared to local firms (e.g. Djankov and Hoekman, 2000; Konings, 1999). The graphs in Figures 2-4 did not make any such distinction, nor did the labor demand analysis. I therefore take the analysis of labor demand a step further and focus on the labor demand of MNEs and the possibility of employment relocation within MNEs. Arguably, similar production techniques are used within the same MNE and technological knowledge is spread throughout the company group so that, implicitly, I can control for these effects. We turn to this analysis in the next section.

3. Footloose multinationals?[3]

One of the most obvious channels through which jobs in the EU may be affected by increased economic integration is through the employment decisions of MNEs. These firms can easily respond to changing local economic conditions, without having to incur major set up costs. Once more, I use the Amadeus data set and retrieve *firm* level data covering 1,067 medium and large sized parent MNEs matched with their 2,078 affiliates located in various EU regions, in-

[3] Part of this section is related to Konings and Murphy (2006).

cluding CEE. Therefore, I can analyze how labor demand in parent and affiliate enterprises is associated with changes in affiliate wages[4] relative to parent wages. I define a parent as a firm located in country *i*, holding a direct ownership share of at least 50 percent in one or more firms located in another country $j \neq i$ and refer to these latter firms as affiliates. Thus, I only consider a direct ownership relationship and do not consider indirect holding structures. The fact that I have a panel of matched parent firms with their affiliates allows us to control for firm-specific technology that may affect labor allocation across different regions. This enables us to focus on the employment substitution effects between parent firms (or home parent employment) and their affiliates. We define these substitution effects as a reallocation of employment in response to changing wage differentials between countries, keeping the global output of the MNE constant.

Tables 2 and 3 show the distribution of parent firms and their affiliates across the various European countries. Germany, France and Belgium host almost 60 percent of the parent firms in my sample. France, Italy, Spain and the UK contain many of the affiliates in my sample, with only 5.34 percent located in Central and Eastern Europe.[5]

Figures 5 and 6 show the evolution of parent and affiliate employment as a fraction of total employment of the MNEs. The employment share of the parent companies has diminished in favor of a higher employment share of the affiliates. The increased employment share of the affiliates is mainly due to relative employment gains in West European affiliates, and not in CEE ones as can be seen from Figure 6.

[4] A related literature is concerned with international outsourcing by multinational firms in reducing demand for unskilled labor in the home country (e.g. Slaughter, 2000; Feenstra and Hanson, 1996). However, there is no information on the skill composition of the workers in my firm level data, so I am not able to focus on these types of demand shifts.

[5] Due to variation in national reporting requirements, all companies in some countries—in particular Greece and Finland—lack basic information (e.g., wage bills) that is essential for my analysis. Otherwise, I include companies in the data set simply on basis of data availability and the ability to link parents with foreign affiliates.

Table 2. Distribution of parent firms across the EU

Parent country	Frequency of firms (%)
Austria	2.08
Belgium	13.54
Denmark	3.65
Ireland	0.22
France	27.16
Germany	20.83
Italy	14.14
Luxemburg	0.30
Netherlands	2.23
Portugal	0.15
Spain	5.36
UK	10.34

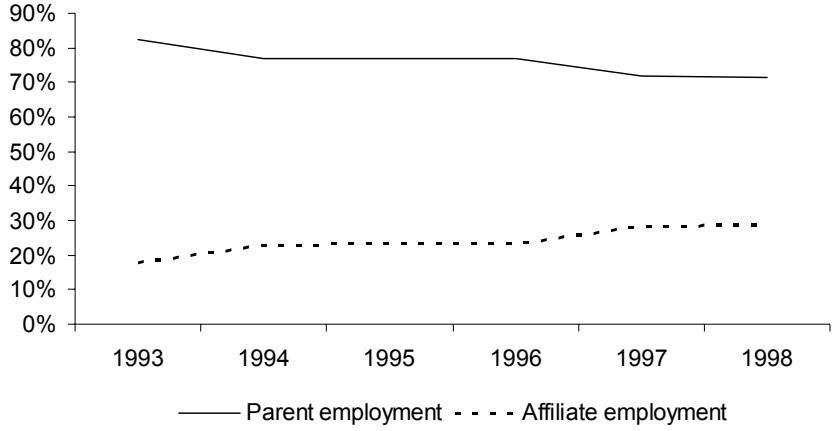
Source: Firm-level database extracted from Amadeus.

Table 3. Distribution of affiliates across countries

Affiliate country	Frequency of firms (%)
Central and Eastern Europe	5.34
Austria	1.89
Belgium	8.45
Denmark	0.68
France	22.62
Germany	2.27
Netherlands	2.12
Ireland	0.89
Italy	11.37
Luxemburg	0.83
Portugal	3.18
Spain	20.58
Sweden	3.83
UK	15.95

Source: Firm-level database extracted from Amadeus.

Figure 5. Evolution of parent and affiliate employment as a share of total employment of all MNEs



Source: Author's calculations, based on Amadeus.

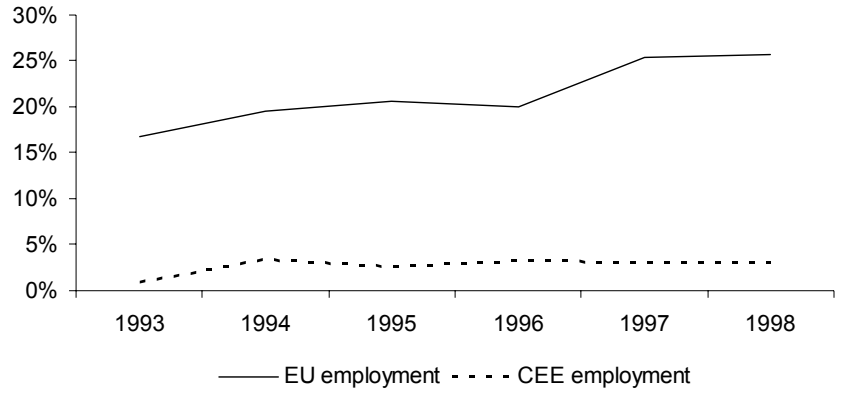
As before, I want to check how important relative wage costs have been in determining parents' labor demand. To this end, I will estimate the following simple labor demand equation, similar to that specified in (1),

$$l_{it}^{P} = \alpha_i + \alpha_1 l_{it-1}^{P} + \alpha_2 w_{it}^{P} + \alpha_3 y_{it}^{P+A}{}_t + \beta_1 w_{it}^{acee} + \\ + \beta_2 w_{it}^{aneu}{}_t + \beta_3 w_{it}^{aseu} + \varepsilon_{it}. \quad (3)$$

In equation (3), superscript *P* refers to parent and superscript *A* refers to affiliate. The β coefficients capture the cross-wage elasticities and superscripts *acee*, *aneu* and *aseu* refer to affiliates in CEE, Northern EU and Southern EU, respectively. I took the average wage of the affiliates of a particular parent firm in each of these regions. So, if, for example, a German parent company has three affiliates in Northern EU, e.g. one in the Netherlands, one in Belgium and one in Sweden, then I take the average wage of those three affiliates to proxy the average wage of its typical Northern EU affiliate. I estimate (2), once more using the GMM IV approach of Arellano and Bond, instrumenting the lagged dependent variable, the wage paid at the parent firm, but also the output of the MNE and wages at the affiliates.

Treating wages at the affiliates as potentially endogenous is sensible, as parent firms may be able to set wages in their affiliates in a negotiation process. The instruments used are lagged values of the endogenous variables along with location dummies of the parent. The latter may capture institutional differences between countries.

Figure 6. Evolution of EU and CEE affiliate employment as a share of total employment of all MNEs



Source: Author's calculations, based on Amadeus.

Two specifications are shown in Table 4. The first does not make any distinction between affiliates located in the South and North of Europe, while the second does. In both specifications, the same result is revealed. The own wage elasticity, which shows the percentage response in parent employment to a one percent increase in the parent wage, is negative and significant, as expected. More importantly, however, the cross-wage elasticity is only statistically significant and positive for affiliates located in the "old" EU, not for affiliates located in CEE. Based on the first specification, a reduction in labor costs in other EU countries by ten percent would imply a reduction in labor demand of 0.7 percent in the short run and about one percent in the long run. This effect is not very large, but it is statistically significant and given that the average MNE in my sample employs 1800 workers, a one percent reduction in employment would be equivalent to a reduction of eighteen workers for the average parent firm.

Table 4. Regression results of employment substitution within multinational enterprises

	(1)	(2)
Lagged Parent Employment	0.20**	0.24**
	(0.023)	(0.03)
Parent Wage	-0.60**	-0.55**
	(0.10)	(0.09)
Total Output	0.42**	0.33**
	(0.05)	(0.05)
Affiliate Wage EU	0.07**	-
	(0.02)	
Affiliate Wage North EU	-	0.05**
		(0.018)
Affiliate Wage South EU	-	0.02
		(0.016)
Affiliate Wage CEE	-0.01	-0.02
	(0.03)	(0.03)
Sargan Test (p-value)	0.67	0.93
SOC Test	-0.86	-0.35

Notes: Dependent variable: log parent employment. Standard errors are in parentheses.

In addition, from the second specification, we may note that for employment substitution between the parents—mainly located in high income countries—and their affiliates, it is mostly affiliates located in other high wage locations that matter. Neither the effect of wage costs in the affiliates located in the South of Europe nor that of wage costs in the affiliates located in CEE is statistically significant. In fact, the point estimate of the wages of the affiliates in CEE is even negative, which would suggest that workers in Western European parents and workers in affiliates in CEE are complements rather than substitutes.

This result suggests that competition from low wage locations (on average) does not constitute a threat to parent employment. Braconier and Ekholm (2000, 2001) report similar results for Swedish MNEs. A potential explanation for this finding is the proximity hypothesis put forward by Brainard (1997). Brainard shows that substitution between parent and affiliate employment is more likely to take place in response to wage cost differentials, when proximity to the final market is the main driving force behind the firm's decision to locate production abroad. The firm is then likely to carry out similar activities

abroad as it does at home. If trade and transport costs are not too high, this tends to make workers substitute for one another. Such substitution effects are more likely when the initial factor endowments are similar across locations, which is the case for Northern European affiliates and (mostly North EU based) parent firms in my sample. The evidence presented here is consistent with such a "horizontal" view of the MNEs' activities in Europe.

4. Conclusion

Does competition from low wage regions trigger relocation of employment? I have attempted to answer this question by using micro data of medium and large sized manufacturing enterprises in Europe. Labor costs in Central and Eastern Europe are typically five times lower than labor costs in West European countries, such as Germany, France and Belgium. However, labor productivity is at least five times lower as well, which suggests that the low wage countries of Central and Eastern Europe are not necessarily more competitive compared to the high wage countries in the West.

In the first part of the analysis, I estimated a labor demand equation for Belgian firms as a function of labor costs in comparable sectors in other countries. Belgium is an interesting case, as it has very high labor costs relative to other European countries and it is a small open economy; hence subject to substantial international competition. The results indicate that wages from low wage countries do not have any impact on labor demand in Belgium; instead wages of other high wage European countries seem to be of larger importance.

This result persists if labor demand is analyzed within large European multinational enterprises. Employment substitution within European multinationals only takes place between affiliates located in high wage locations and their parents in (mainly) high wage locations. The results presented here suggest that, on average, competition from low wage countries does not trigger employment relocation from high wage to low wage regions. There are several possible reasons for this. For instance, if the affiliates produce intermediate inputs or carry out assembly activities, wage changes may not induce any changes in how labor is allocated across locations for a given level of output (although such changes may affect output levels through the firm's competitiveness vis-à-vis other firms). Moreover, if firms go to low wage regions to get better access to their markets and trade costs are rela-

tively high, there is no reason for firms to reallocate labor across locations in response to wage changes. Declining trade costs between Western Europe and CEE might, of course, change this and create more substitution between workers in the two regions in the future.

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Appendix 1. Competitiveness index for various sectors (labor cost per worker / labor productivity)

Figure A.1. Food and beverages

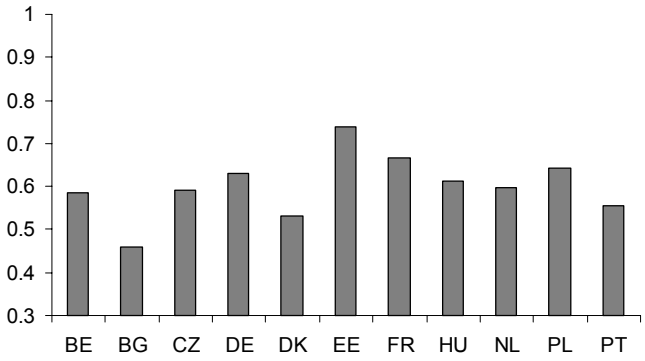

Figure A.2. Textiles

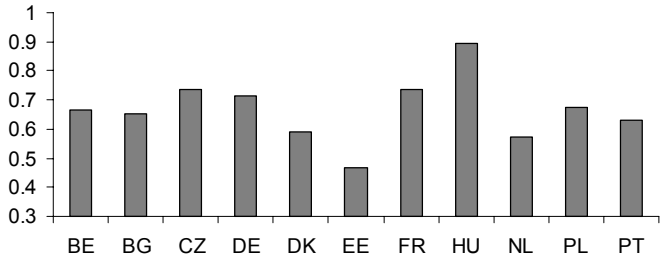

Figure A.3. Wearing apparel

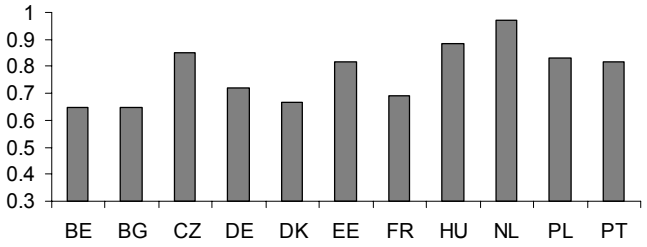

Figure A.4. Leather, luggage and handbags

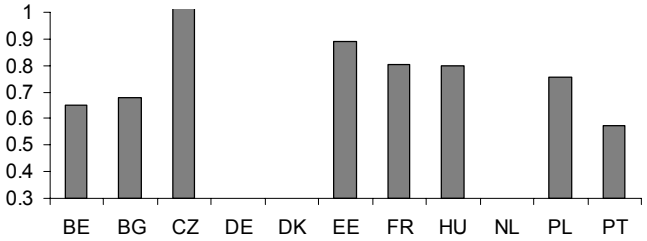

Figure A.5. Wood and wood products (excl. furniture)

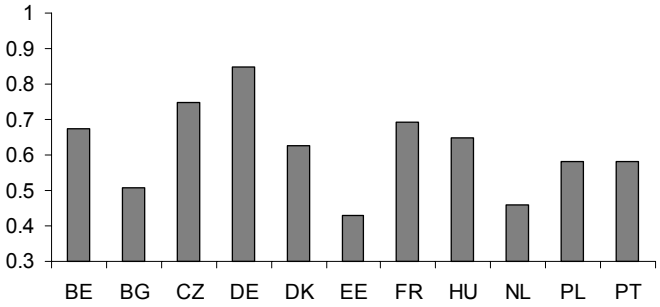

Figure A.6. Pulp and paper

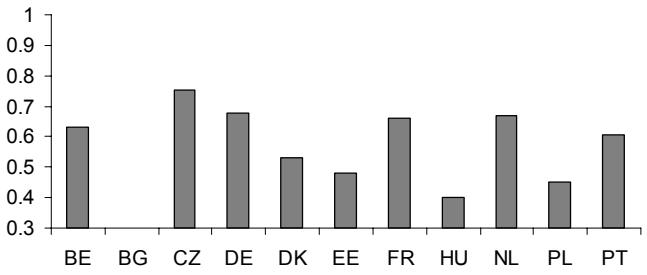

Figure A.7. Printing and publishing

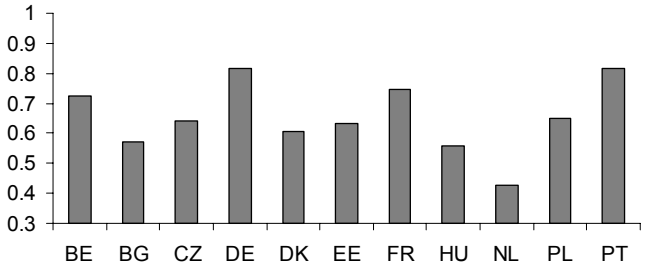

Figure A.8. Chemical products

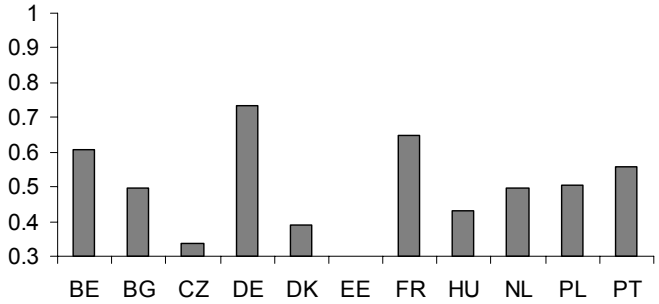

Figure A.9. Plastic and rubber

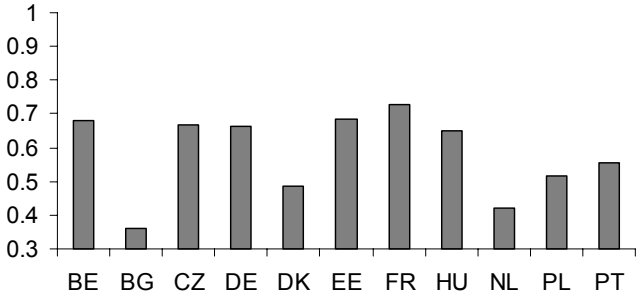

Figure A.10. Basic metals

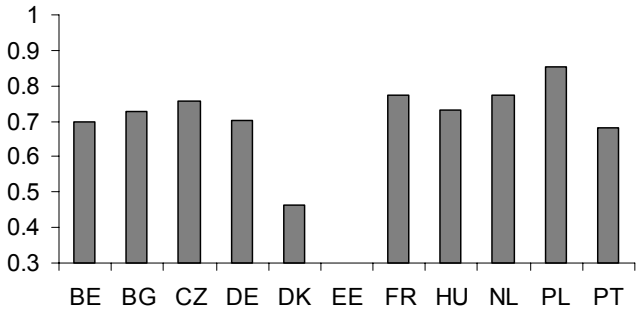

Figure A.11. Motor vehicles