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Do investors avoid strong trade unions and labour regulation? Social dumping in the European automotive and chemical industries

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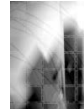
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Do investors avoid strong trade unions and labour regulation? Social dumping in the European automotive and chemical industries

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Abstract

The eastern enlargement of the European Union has prompted heated debates about social dumping related to labour standards and industrial relations. Capital mobility is seen as a crucial social dumping mechanism. The article uses time-series-cross-section data for the years 1999–2008 to analyse the determinants of capital flows (FDI) to European countries. It compares German and US FDI in the automotive and chemical industry. The article shows that FDI is influenced by labour standards (in particular protection against dismissals) and industrial relations factors and can be a social dumping mechanism. There are, however, differences according to the industries and the home countries of the investors. US companies try to avoid coordinated collective bargaining, while German companies consider government intervention in collective bargaining negative. The degree of unionization shows no effect on attractiveness for FDI.

Keywords

automotive industry, chemical industry, European Union, foreign direct investment, Germany, industrial relations, social dumping, trade unions, USA

Introduction

The social consequences of the European integration process are highly controversial. One stream of research emphasizes the dominance of the ‘negative integration’ processes, i.e. the liberalization and the deregulation linked to the European common market project (Scharpf, 2010). The dominant role of the four economic freedoms in the

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founding documents of the European Union (EU) has led to a structural asymmetry between market and social integration. Höpner and Schäfer (2012: 445) argue that the destructive force of this asymmetry has increased since the eastern enlargement of the EU: 'As heterogeneity among rule-takers rises, the probability of coordinated resistance to judicial interpretation of market freedoms should be in decline.' The competition for investment between the low-wage countries from Central Eastern Europe (CEE) and the Western European high-wage countries leads to a 'race to the bottom' regarding labour standards (Meardi et al., 2013; Vaughan-Whitehead, 2003). A second stream of research, however, emphasizes the process of reconstructing social regulation in Europe, which limits social dumping. While these authors do not deny the dominance of the 'negative integration', they argue that new social regulation is emerging at the European (Caporaso and Tarrow, 2009) and at the national level (Crouch, 2007; Rubery, 2011: 660) in response.

The suggested core mechanism of social dumping is capital mobility. The media frequently report cases of companies threatening to relocate production and demanding lower labour costs, flexible employment contracts or additional investment subsidies. The empirical evidence about this kind of social dumping is, however, far from clear. The investment decisions of companies are not simply determined by labour costs and the flexibility to dismiss employees, but also by the educational level of the workforce, the capabilities of potential suppliers, infrastructure and the knowledge base at the destination of investment. Some authors suggest that the contrasting empirical results might be related to the industries and to the home countries of the companies that were examined (Krzywdzinski, 2011; Marginson and Meardi, 2006). Systematic comparisons of the investment behaviour of companies from different countries and different industries are lacking.

This article aims to close this research gap and compares the role of labour standards and industrial relations for the foreign direct investment (FDI) flows from two different countries (Germany and the USA) and two different industries (the automotive and chemical industries). Germany and the USA represent opposite 'varieties of capitalism', in particular in regard to labour standards and industrial relations. The two industries selected differ in regard to the composition of the workforce, the main drivers of competition (cost or innovation) and the propensity to relocate production. The analysis uses time-series-cross-section data for the years from 1999 to 2008 in order to answer the following questions:

- 1) What impact do labour standards and industrial relations factors have on the FDI flows in different European countries?
- 2) How do the determinants of FDI flows differ according to the industry and the home country of the investors?

The article shows that FDI is influenced by labour standards and industrial relations and can function as a social dumping mechanism. All the labour standards indicators examined (employment protection legislation, unit labour costs, length of working time) influence FDI flows, albeit to a different degree according to the investor's industry and home country. In regard to industrial relations factors, wage-bargaining coordination and

government intervention in collective bargaining have an impact, while the degree of unionization does not have a clear-cut influence. There are considerable differences between the industries due to different structures of the workforce and different competition drivers (innovation versus efficiency). Investments in the automotive industry react more strongly to industrial relations and labour standards than investments in the chemical industry. There are also considerable differences between the home countries of the investors. US companies try to avoid coordinated collective bargaining, while German companies consider in particular government intervention in collective bargaining negative. Against expectations, investors from both countries avoid countries with strong protection against dismissals, one of the main labour standards under study.

The article is structured as follows: the next section presents the state of research and develops the central concepts and hypotheses of the analysis. The third section presents the data used. The fourth section discusses the empirical findings. In the fifth section, results are summarized and some conclusions drawn.

Literature review and hypotheses

Two key arguments can be identified in the debate about social dumping in Europe. Several authors argue that the structural constraints created by the European integration process result in a race to the bottom regarding labour standards, industrial relations and public welfare provision (Höpner and Schäfer, 2012; Scharpf, 2010; Vaughan-Whitehead, 2003). Other authors, in contrast, emphasize the small steps towards European social standards (Caporaso and Tarrow, 2009) and the national welfare states' capacity of innovation and adaptation (Crouch, 2007; Rubery, 2011). The social dumping thesis rests on two main arguments:

- 1) The EU's founding documents define the four economic freedoms (free movement of goods, capital, services and persons) as the main principles of European integration. The primacy of the economic freedoms has a structural 'liberalizing and deregulatory impact' (Scharpf, 2010: 211) and creates competition among European countries for the lowest taxation, social security burdens, labour standards and employee rights.
- 2) The eastern enlargement has massively increased the heterogeneity of welfare state models, labour regulation and labour standards within the EU. Western European countries with high wages and sophisticated welfare states now have to compete with CEE countries, which are characterized by particularly low wages, weak trade unions and low welfare standards.

The main mechanism behind social dumping is capital mobility. Companies can relocate production and orient their FDI to the CEE. Social dumping concerns different areas: capital taxation, welfare policies, labour standards and industrial relations. In all of these areas, the evidence is not clear-cut. Bénassy-Quéré et al. (2001) argue that there is some evidence of tax competition among European countries in order to attract FDI, even though the authors note that other studies do not always confirm this finding (Görg et al., 2009). Montanari et al. (2008), like Lallement (2011), do not find any evidence of

a downward convergence of welfare states and labour market regulation in the EU, while Höpner et al. (2011) observe a general liberalization trend. There are similar controversies regarding labour standards and industrial relations, which will be briefly reviewed in the following.

Most studies about the relationship between FDI flows and labour standards focus on the role of labour costs (cf. Bellak et al., 2008). Beyond dispute is the fact that the eastern enlargement massively increased the labour cost differences within the EU. In addition, several free trade agreements have been concluded with the EU's neighbour countries (Croatia, Serbia, Bosnia, Albania, customs union with Turkey), which have even lower wages. The average manufacturing hourly labour costs in the Northern and Western European high-wage countries increased from €21 in 2000 to €28 in 2010. During the same time period, the average manufacturing hourly labour costs in the EU's new member states increased from €4 to €8. Most empirical studies find that high labour costs have a negative impact on FDI inflows (Cooke, 2003), but there is a minority of studies finding no such effect (e.g. Brandl et al., 2010). Bellak et al. (2008) find only a very small impact of total labour costs on FDI, but a stronger impact of unit labour costs, which take productivity into account.

While the role of labour costs has been analysed frequently, other labour standards have received much less attention. Kinkel and Zanker (2007) argue that working time length and flexibility is an important factor to attract FDI but this argument has not been systematically examined yet. Cooke (1997, 2003) argues that employment protection legislation (EPL) has an important impact on American FDI flows to Organization for Economic Cooperation and Development (OECD) countries and that companies prefer countries with weaker regulation (cf. Gross and Ryan, 2008), while Leibrecht and Scharler's (2007) analysis of FDI flows to CEE finds no effect of EPL. It is not clear, however, how the companies' home countries and industries affect these different results. Leibrecht and Scharler (2007) do not control for the industry. Cooke (1997) uses dummy variables to capture the industry effects. They show significant results, but Cooke neither presents the coefficients nor discusses their interpretation.

When analysing the competition regarding employment protection legislation, it is noteworthy that the lowest EPL is to be found not in the low-wage countries in CEE but rather in Switzerland, in liberal market economies like the UK and Ireland or in countries implementing the flexicurity approach, for instance Denmark (Heyes, 2011). According to the widely used EPL indicator of the OECD, there was a deregulation trend in EPL during the last decade in all European countries, but the protection against dismissals still remains stricter in the Eastern part of Europe than in the West.

There is very little empirical evidence about the impact of industrial relations factors on FDI flows and the resulting dangers for social dumping. The considerable differences in trade union membership levels in Europe are undisputed. Union density in the Western European high-wage countries decreased from 43 per cent in 2000 to 40 per cent in 2010. In the EU's new member states it declined from 31 per cent to 22 per cent. As Kohl and Platzer (2004) argue, the CEE countries represent a 'transformation model' of industrial relations which is not only characterized by weak trade unions but also by weak and decentralized collective bargaining. According to Visser (2011), fragmented collective bargaining at company level dominates in the Eastern European countries, while Western

and Northern European countries mainly have industry-level or economy-wide bargaining. The shift of production to countries with weak trade unions and decentralized bargaining might undermine centralized bargaining structures and lead to concession bargaining as illustrated in the debate about the erosion of industry-level bargaining in Germany (Hassel, 2002).

Do companies direct their FDI to countries with weak trade unions and decentralized collective bargaining? Once again, the empirical evidence is mixed. Cooke's analysis (1997, 2003) shows that the degree of unionization and the level of collective-bargaining centralization have a negative effect on the amount of FDI inflows from the USA. In the study by Brandl et al. (2010), however, unionization and workplace employee representation had no significant effect on the localization of US FDI. Only the collective-bargaining centralization showed a negative influence on FDI inflows. There are other studies that do not find any evidence that industrial relations affect FDI (Bognanno et al., 2005; Dibben et al., 2011).

To sum up, the impact of labour standards and industrial relations on FDI as well as dangers of social dumping in Europe are still contested. This suggests that a re-examination of the following hypothesis is in order:

H1) FDI inflows are influenced by labour standards (wages, working times, employment protection legislation) and industrial relations (trade union density, collective bargaining centralization, government intervention). Companies prefer countries with lower labour standards, weaker trade unions and decentralized collective bargaining.

The considerable variation in results regarding the impact of labour standards and industrial relations on FDI suggests that some factors have not yet been sufficiently examined. The first main weakness of many existing studies is the use of cross-sectoral FDI as the dependent variable, which includes financial FDI, FDI in service sectors and FDI in different manufacturing sectors. The investment decisions in all these sectors are guided by very different logics and the neglect of inter-sectoral differences can lead to distorted results. Industry-specific factors influencing investment decisions exist even within the manufacturing sector. Bohle and Greskovits (2004) as well as Marginson and Meardi (2006) argue that the factor composition of an industry (high-skill and capital-intensive industries versus low-skill and labour-intensive industries) affects companies' preferences regarding industrial relations and labour standards. Differences in the main drivers of competition in the industries also have to be taken into account when analysing FDI flows. A comparison between the automotive and the chemical industry, two strongly globalized manufacturing industries, illustrates this argument (see Table 1).

The first difference between the two industries is their workforce. The automotive industry is characterized by a high share of blue-collar employees with a high-school or vocational-school education, while the chemical industry is much more a white-collar industry recruiting university graduates. The second difference is related to the main drivers of competition and the extent of production relocation in both industries. The automotive industry in Europe is characterized by strong cost competition due to relatively saturated markets, overcapacities and the market entry of new competitors (e.g. from Korea) (Jürgens and Krzywdzinski, 2010). It is also one of the sectors with the strongest trend towards

Table 1. Selected characteristics of the automotive and chemical industries.

	Automotive industry	Chemical industry
Workforce	High share of blue-collar employment (high school or vocational school)	Mainly white-collar employees (mainly university degrees)
Main drivers of competition	Cost competition due to overcapacity and market entry of new competitors	Pharmaceuticals: competition for patents and product innovation Plastics: cost competition due to overcapacity and rising energy prices
Relocation of production	Very high propensity to relocate production	Moderate propensity to relocate production
Main drivers of FDI	Efficiency-seeking FDI	Innovation-seeking and efficiency-seeking FDI

Source: Own description.

production relocation from high-wage to low-wage countries (Kinkel and Maloca, 2009). In the chemical industry, there is a differentiated situation according to the product segment. The competition in the pharmaceutical industry is mainly driven by the search for blockbuster drugs and new product patents (Kädtler, 2009). As a result, a large wave of acquisitions of companies with promising patents or products in the pipeline is going on. The situation of companies in the plastics industry, by contrast, is characterized by strong cost competition due to rising energy and oil prices. Compared with the automotive industry, the chemical industry shows a much lower level of production relocation activities (Kinkel and Maloca, 2009). To sum up, the mainly blue-collar workforce and the importance of labour costs in the automotive industry should translate into a higher importance of industrial-relations factors for FDI (assuming that companies can more easily control labour costs in plants with no or weak unions); this should not be the case for the innovation-seeking chemical industry. This leads to the second hypothesis to be examined:

H2) FDI in the automotive industry will be influenced by labour standards and industrial relations, while there will be no significant impact of these factors on FDI in the chemical industry. Due to the higher importance of efficiency-oriented FDI, companies in the automotive industry will prefer weaker labour standards, weaker trade unions and decentralized collective bargaining.

The second main weakness of the existing research is that the impact of the investors' home country has not been systematically analysed. Most studies either focus on American FDI only (e.g. Brandl et al., 2010; Cooke, 1997, 2003) or simply neglect the investors' home country. Marginson and Meardi (2006) argue that there is no systematic influence of the companies' home country on their preferences regarding industrial relations. Several studies suggest, however, that a company's home-country governance structure influences its attitudes towards labour standards and industrial relations abroad. In coordinated market economies like Germany, employee representatives (trade unions or works councils) have institutionalized co-determination rights and there are long

traditions of industry-level or economy-level collective bargaining. In large German companies, powerful works councils can enforce the transfer of 'social partnership' industrial relations to foreign sites (Bluhm, 2007; Krzywdzinski, 2011). There is also some evidence that the big flagship companies of the German economy see cooperative industrial relations as part of their company culture and try to transfer them abroad (Jürgens and Krzywdzinski, 2009; Tholen et al., 2006). Not all German companies have strong works councils, but it can be expected at least that German companies do not have a clearly negative attitude toward trade unions. The opposite case is the USA where trade unions have been weakened during the last few decades and no institutionalized rights of employee representatives comparable to the German co-determination system exist. This situation leads to the following hypothesis:

H3) US FDI will be more strongly influenced by labour standards and industrial relations than German FDI. US companies will prefer countries with lower labour standards, weaker trade unions and decentralized collective bargaining, while there will be no clear pattern for German companies.

To sum up, the article aims to examine the role of FDI in social dumping in Europe by looking at how labour standards and industrial relations influence companies' FDI decisions. It aims to close two important gaps in the discussion about the impact of capital mobility on social dumping: the lack of sectoral comparisons and the lack of studies systematically examining the role of companies' home countries.

Variables, data and conceptual issues

The analysis uses data from several sources (see Tables 2 and 3). The dependent variable is the annual change (increase or decline) of FDI stocks measured in absolute values (i.e. in million current euros in the case of German and dollars in the case of US FDI) in the automotive and the chemical industry in European countries from 1999 to 2008. The analysis covers the decade of the EU's eastern enlargement and it ends in 2008, i.e. with the outbreak of the world economic crisis. The sources for

Table 2. Descriptive statistics for the dependent variable (change in FDI stocks in European countries compared to previous year).

	Mean	Std. dev.	Min	Max	Source
Change in US FDI in automotive industry (in million dollars)	23.09	984.03	-6,389	4,506	Bureau of Economic Analysis
Change in US FDI in chemical industry (in million dollars)	53.00	1,698.42	-9,209	11,093	
Change in German FDI in automotive industry (in million euros)	101.60	331.66	-499	4,033	Bundesbank
Change in German FDI in chemical industry (in million euros)	82.45	634.83	-2,136	6,757	

Note: All variables measured at current prices.

Table 3. Descriptive statistics for the independent variables.

	Mean	Std. dev.	Min	Max	Source
Industrial relations variables					
Degree of unionization (in % of employees)	33.97	21.23	5.8	92.5	OECD, Visser (2011), European Industrial Relations Observatory (EIRO), national union statistics Visser (2011), Eurofound, EIRO
Coordination of wage bargaining (index)	2.77	1.22	1	5	
Government intervention in wage bargaining (index)	2.74	0.90	1	5	
Labour standards variables					
Unit labour costs, chemical industry (hourly labour costs/value added per hour, in euros)	0.38	0.12	0.06	0.99	Own calculation based on Eurostat, Bureau of Labor Statistics, Institut der deutschen Wirtschaft
Unit labour costs, automotive industry (hourly labour costs/value added per hour, in euros)	0.59	0.19	0.17	0.99	
Employment protection legislation (index)	2.46	0.65	0.98	3.78	OECD
Regular yearly working hours	1,769.54	89.21	1,602	2,034	Eurofound, national sources
Control variables					
English language	0.09	0.29	0	1	
German language	0.12	0.33	0	1	
EU member	0.66	0.47	0	1	
Exchange rate to US\$ (% change from previous year)	0.97	0.08	0.83	1.15	European Central Bank, IMF
Exchange rate to Euro (% change from previous year)	1.01	0.09	0.87	1.92	European Central Bank, IMF

(Continued)

Table 3. (Continued)

	Mean	Std. dev.	Min	Max	Source
FDI stock, US automotive industry (in million dollars)	966.38	1,845.52	-632	11,798	Bureau of Economic Analysis
FDI stock, US chemical industry (in million dollars)	2,471.26	3,586.99	-9	16,661	
FDI stock, German automotive industry (in million euros)	726.97	988.23	0	4,905	Bundesbank
FDI stock, German chemical industry (in million euros)	878.01	1,404.59	0	7,925	
Distance to Germany in 1000 km (distance between capitals)	1.07	0.60	0.28	2.50	http://www.luftlinie.org
Unemployment rate (%)	7.71	3.88	1.9	20.0	Eurostat, ILO
Subsidies (% of GDP)	1.41	0.82	0.0	4.2	Eurostat, IMF
Population with tertiary education (%)	19.39	6.92	7.5	35.3	Eurostat, national statistics
Population with secondary education (%)	46.58	13.82	13.6	72.2	
GDP (in million euros)	380,931	575,432	5,358	2,473,800	Eurostat, national statistics
Corporate tax rates (in %)	27.20	7.53	10.0	52.0	OECD, European Commission, national sources

Note: All monetary variables measured at current prices.

FDI data are statistics from the German Bundesbank and the US Bureau of Economic Analysis.

The sample of target countries for FDI includes the EU member states (as of 2008) and their direct neighbours with free trade agreements (Iceland, Norway, Switzerland and Turkey). The reason for including non-EU countries is that being in the direct neighbourhood and having access to the EU market allows these countries to compete directly with the EU for FDI. Thus, the geographical space covered by the analysis is the European 'macro market' (Brandl et al., 2010; Meardi et al., 2011). A dummy variable is included in the model in order to capture the effect of EU membership compared to a pure free trade agreement. The country samples for German and for US FDI differ slightly as the US Bureau of Economic Analysis does not provide FDI data for all countries due to the lack of the resources necessary to prepare estimates for some smaller countries.

The independent variables are comprised of indicators for labour standards and for industrial relations and of control variables. The variables used to describe industrial relations are degree of unionization (percentage of employees organized in trade unions), wage-bargaining coordination and the extent of government intervention in wage bargaining. The source for the unionization degree data is the OECD, Visser (2011) and national union statistics. The indicators for wage-bargaining coordination and government intervention are taken from Visser's (2011) database on 'Institutional Characteristics of Trade Unions, Wage Setting, State Intervention and Social Pacts'. Wage-bargaining coordination is based on a five-point scale: economy-wide bargaining (5), mixed industry and economy-wide bargaining (4), industry bargaining (3), mixed industry- and firm-level bargaining (2), fragmented bargaining at company level (1). For government intervention in wage bargaining, Visser (2011) also uses a five-point scale: (5) government imposes wage settlements, (4) government participates directly in wage bargaining, (3) government influences wage bargaining indirectly (price ceilings, indexation, minimum wages etc.), (2) government provides an institutional framework of consultation and/or conflict resolution mechanisms, (1) none of the above.

The variables describing labour standards include the OECD's employment protection legislation (EPL) index, unit labour costs and regular yearly working hours. The EPL index measures the procedures and costs linked to individual and collective dismissals as well as regulation related to fixed-term or agency work contracts. It has a scale of 0 (no employment protection) to 6 (maximum employment protection). It is compiled from 21 items covering three dimensions of regulation: individual dismissals of workers with regular contracts (weight in the total index: 42%), regulation of fixed-term contracts and agency work (42%) and additional regulation for collective dismissals (16%). The sub-index related to individual dismissals covers notification and consultation requirements, notice periods, severance pay and the definition of fair (allowed) dismissal. The sub-index for temporary contracts covers the types of work for which these contracts are allowed, their duration and equal treatment rules. The sub-index for collective dismissals includes additional delays, notification procedures and the costs linked to the dismissal of a large number of employees.

There are several ways to measure labour costs. When choosing investment locations, companies might compare total labour costs (gross wages plus the employer's welfare contributions and taxes) or focus on unit labour costs i.e. labour costs corrected for

productivity differences. For the purposes of this article, all models were calculated in two versions with total labour costs and with unit labour costs. In the model with total labour costs, productivity (value added per hour) was included as a control variable. The choice between these two labour cost indicators had no effect on the signs (and in most cases also on the significance) of the coefficients of the other industrial relations and labour standards variables. The coefficient for the impact of total labour costs on FDI always had a positive sign, while the coefficient for unit labour costs mostly had a negative sign. Unit labour costs were used as an indicator in the model discussed in this article.

Kinkel and Zanker (2007) suggested that besides labour costs, companies take into account working times when deciding about the investment location. The regular yearly working times were calculated as follows: average statutory or collectively agreed weekly working time * 52 minus statutory minimum annual leave minus public holidays.

The control variables used in the analysis include the language (English or German respectively), EU membership, exchange rate (euro or dollar respectively), FDI stock in previous year, distance to Germany,¹ unemployment rate, GDP, population with secondary and with tertiary education, subsidies and corporate taxes.

Analysis

Pooled time-series-cross-section data (TSCS) as used in the analysis can be assumed to include two different effects. On one hand, there are the 'between effects' i.e. the effects of differences between countries. On the other hand, there are the 'within effects' i.e. the effects of changes in some country-level parameters (e.g. labour costs) over time. The advantage of a TSCS data set is that it increases the number of observations, which is otherwise an eliminating factor for quantitative analysis. The disadvantage is that the observations are not completely independent from each other. A simple ordinary-least-squares (OLS) regression of TSCS data treats all countries and years as homogeneous and assumes that the 'between effects' and the 'within effects' are equal. This assumption is, however, highly unrealistic and might induce omitted variable bias. Different solutions were developed to address this problem. A very simple and pragmatic approach is to use the OLS regression and make corrections for the standard errors – 'panel-corrected standard errors' according to Beck and Katz (1995) or 'robust standard errors' according to Rogers (1993). This approach is popular in the social and political sciences (Wilson and Butler, 2007) although it does not solve the fundamental problems of TSCS analysis.

A first alternative is to calculate the 'between effects' and the 'within effects' separately (Beck, 2008). The 'within effects' can be calculated by fixed effects models (FE), which have been developed for longitudinal analysis and are equivalent to an OLS regression with dummy variables for each country. They focus on the time-series information as the country dummies absorb the between-country variation. The 'between-effects' models (BE), in contrast, analyse the effects of differences between countries and are equivalent to OLS regressions with dummy variables for each year. For the purposes of this article, the 'between effects' of country differences regarding industrial relations and labour standards are of particular interest.

'Random-effects' models, which use both the information about the within-country (time) and the between-country variation (Beck, 2008), represent a second alternative. They have, however, very restrictive assumptions about the data structure, which were not met here.

The following analysis uses the 'robust standard errors' OLS regression (complete pooling model) to analyse the combined effects of between-country and within-country variation and BE and FE models (with robust standard errors) in order to decompose the variation and to cross-validate the complete model. The models were calculated first with all control variables and second with the statistically significant control variables only (at least .10 level). For the second model, the non-significant control variables were dropped step by step. The independent variables have the same signs respectively in both models but their significance increases in some cases after the exclusion of insignificant control variables. Tables 4 and 5 show the regression results for the models including all control variables. The variables that become significant after the insignificant control variables have been dropped are marked by asterisks in parentheses.

For both industries, the variables included are much better at explaining the differences between countries (between effects) than the variation in time within the countries (within effects). In the following, the analysis concentrates mainly on the results of the between-effects models.

Regarding industrial relations factors influencing German FDI, government intervention showed a statistically significant negative impact in the chemical industry; the coefficients in the complete pooling and the BE model were also negative for the automotive industry, but not significant. Trade union density and wage-bargaining coordination, in contrast, did not negatively influence the location of German FDI. Quite the opposite; there was even a positive impact of trade union density on FDI inflows in the automotive industry.

Regarding labour standards, employment protection legislation showed a significant negative impact on FDI in the chemical industry. The signs of the coefficients are negative (although not always significant) across all three models (complete pooling, between effects, within effects). In the case of the automotive industry, unit labour costs had a negative influence on FDI in the complete pooling model, but this finding was not confirmed by the BE and FE regressions. There was no clear impact of yearly working hours.

For space reasons, control variables are not indicated in Table 3. FDI stocks had a significant positive impact on German FDI inflows in both industries. This means that German companies preferred countries with large industry clusters, established infrastructure and supply chains. EU membership, a higher share of population with secondary education and a small distance to Germany had a positive impact in the case of the automotive industry. In the case of the chemical industry, subsidies had a significant positive influence on FDI. There was no statistically significant impact of unemployment, GDP, tertiary education and corporate taxes. The weak explanatory power of tertiary education can be explained by the high correlation between labour costs and tertiary education. If the labour costs variable is excluded from the model, a higher share of the population with tertiary education had a significant positive impact on FDI.

Table 4. Estimation results (dependent variable: change in German FDI in million euros compared to previous year).

Variable	Automotive industry		Chemical industry			
	OLS (robust standard errors)	Between-effects regression	Within-effects regression (fixed effects)	OLS (robust standard errors)	Between-effects regression	Within-effects regression (fixed effects)
Industrial relations variables						
Union density	0.943 (0.743)	1.552^(***) (1.858)	-58.576^(*) (35.484)	-0.779 (2.065)	-0.457 (2.183)	28.943 (28.996)
Coordination of wage bargaining	-16.868 (17.497)	-0.314 (34.879)	-66.556 (64.357)	-8.571 (52.824)	12.413 (40.777)	86.222 (172.301)
Government intervention in wage bargaining	-31.993 (38.916)	-77.097 (50.104)	4.007 (37.501)	124.343 (73.228)	-59.313^(**) (99.965)	160.392 (185.358)
Labour standards variables						
Employment protection legislation index	-6.603 (30.872)	13.392 (59.517)	-156.734 (248.936)	-39.366^(**) (59.022)	-109.008^(*) (90.688)	-66.587 (148.529)
Unit labour costs	-71.133^(**) (132.218)	141.141 (378.706)	594.974 (370.839)	11.563 (382.443)	694.370^(**) (815.135)	-380.249 (675.849)
Regular yearly working hours	-0.224 (0.420)	-0.171 (0.580)	Omitted	1.322 (0.935)	-0.241 (1.287)	Omitted
All control variables included						
R ²	0.092	0.803	0.200	0.065	0.749	0.078
N	211	211	211	238	238	238

Notes: Standard errors in parentheses. **Statistically significant coefficients are marked in bold.** Significance levels: * .10, ** .05, *** .01. (*), (**), (***) indicate coefficients that become significant after excluding non-significant control variables.

Table 5. Estimation results (dependent variable: change in US FDI in million dollars compared to previous year).

Variable	Automotive industry			Chemical industry		
	OLS (robust standard errors)	Between-effects regression	Within-effects regression (fixed effects)	OLS (robust standard errors)	Between-effects regression	Within-effects regression (fixed effects)
Industrial relations variables						
Union density	4.873 (4.047)	3.901 (4.514)	-77.552 (77.563)	-17.267^(*) (11.829)	-1.962 (7.804)	78.966 (54.245)
Coordination of wage bargaining	-81.520* (40.747)	-85.757^(***) (44.085)	-146.692 (204.685)	-33.490 (81.096)	93.834^(*) (123.532)	467.018 (332.246)
Government intervention in wage bargaining	74.807 (78.320)	4.343 (72.085)	105.234 (96.757)	225.716 (174.779)	134.615 (171.166)	19.394 (134.234)
Labour standards variables						
Employment protection legislation index	-144.953 (182.608)	-125.420^(*) (142.496)	-315.200 (465.806)	-792.062^(**) (493.669)	13.782 (475.687)	266.570 (512.335)
Unit labour costs	-1145.833* (607.955)	-850.554 (695.935)	-517.942 (1005.491)	-1134.881 (1286.373)	-2280.152^(*) (1814.522)	12.463 (2358.827)
Regular yearly working hours	3.120 (2.391)	-0.859 (0.935)	Omitted	3.804^{**} (1.713)	2.166 (2.081)	Omitted
All control variables included						
R ²	0.315	0.870	0.405	0.190	0.843	0.277
N	165	165	165	191	191	191

Notes: Standard errors in parentheses. **Statistically significant coefficients are marked in bold.** Significance levels: * .10, ** .05, ***.01. ^(*), ^(**), ^(***) indicate coefficients that become significant after excluding non-significant control variables.

US FDI in the automotive and chemical industries was partially driven by different factors than German FDI (Table 5). Regarding the industrial relations variables, there was a significant negative impact of wage-bargaining coordination on US FDI in the automotive industry. This can be explained by the US companies being used to decentralized bargaining. In contrast to German FDI, government intervention in collective bargaining had no negative influence on FDI inflows from the USA. The coefficients in all models are positive though not significant. Union density had no clear impact. In the case of the automotive industry, the coefficients are not significant and their signs differ in the complete pooling, BE and FE models. In the case of the chemical industry, the coefficient in the complete-pooling model is negative and significant.

Regarding labour standards, there was a negative impact of employment protection in the automotive industry. The complete pooling model also shows a significant negative impact of EPL on FDI in the chemical industry, which is, however, not confirmed by the BE and FE models. There was a negative impact of unit labour costs in both industries and a positive impact of longer working hours in the chemical industry.

In regard to control variables (not indicated in Table 5), there were some differences and some similarities between American and German FDI. In strong contrast to Germany, existing investment stock in both industries had a negative impact on FDI inflows from the USA – in the BE model as well as in the within-effects model. Unlike German companies, US companies in both industries under study had dissolved their former investment stocks and redirected their investment towards new locations outside of existing clusters. One further difference in comparison to German FDI was that EU membership did not have a significant positive impact on the inflow of US FDI compared to neighbour countries with free trade agreements with the EU. In both the automotive and the chemical industries there was a positive impact of subsidies on FDI inflows. American companies in both industries preferred English-speaking countries.

As mentioned above, the explanatory power of the regression is considerably higher for the between-effects than for the within-effects models. In addition, the explanatory power of the regression models is higher for American compared to German FDI and for the automotive industry compared to the chemical industry. The lower explanatory power of the model for the chemical industry might be due to different specific drivers of FDI in this industry (patents, innovative products), which could not be included in the regression (Montalban, 2008).

Discussion and conclusions

The first hypothesis about the influence of industrial relations and labour standards on FDI inflows was confirmed. Regarding labour standards, high protection for employees against dismissals reduced the FDI inflow. This is a considerable danger of social dumping. The potentially negative impact of competition within the EU is particularly clear when looking at employment protection legislation, which shows a trend towards deregulation in nearly all European countries. It is important to note, however, that the social dumping trend does not concern all labour standards. While high unit labour costs (labour costs/productivity) partially showed a negative impact on FDI inflows, this was not the case for total labour costs. Countries with high productivity can afford high total labour

costs and the necessity to finance the infrastructure and education required for high productivity might limit social dumping.

Regarding industrial relations variables, the evidence was less clear. Union density had no systematic negative impact on FDI inflows. This might be related to the fact that automotive and chemical companies from both the USA and Germany are used to union representation. It might also be the case that companies simply do not consider industrial relations when choosing investment locations, as was argued by Kinkel and Zanker (2007). Haufler and Mittermaier (2011) suggest that countries with high union membership levels tend to offer more generous investment incentives in order to compensate for their 'bad image' as union strongholds.

Regarding collective-bargaining systems, the evidence showed that US automotive companies tried to avoid countries with strong wage-bargaining coordination, but there was no similar effect for German companies. This difference can be explained by the respective home-country models of collective bargaining. Government intervention in collective bargaining seems to be interpreted differently by German companies (which tried to avoid it) and US companies (which did not try to avoid it). This contradiction might be due to the ambiguity of the indicator itself. Government intervention in collective bargaining can impose duties on capital (e.g. minimum wages) or on labour (e.g. wage moderation).

The second hypothesis about sectoral differences regarding FDI determinants was only partially confirmed. There were differences between the industries but they did not show a clear pattern. In contrast to expectations, FDI in both industries was sensitive to labour standards, in particular to employment protection legislation. Against expectations, there was no clear difference in the impact of industrial relations on FDI in the two industries.

There were, however, sectoral differences regarding the control variables. Proximity to Germany and EU membership proved important in order to attract German FDI in the automotive industry, which was not the case for the chemical industry. While the chemical industry valued tertiary education, secondary education was more important for the automotive industry. As determinants for FDI differed considerably between industries, cross-industry data – often used in analysis – might not be the best source to develop reliable explanatory models for FDI behaviour. This suggests a need to explore the role of industry governance in the relationship between labour standards, industrial relations and investment decisions.

Hypothesis H3 was related to the impact of the investors' home countries on FDI decisions. The expectations regarding differences between German and US FDI were also only partially confirmed. US automotive companies (in particular in the automotive industry) tried to avoid countries with strong wage-bargaining coordination, a preference that corresponds to their home-country model. Against expectations, neither German nor US FDI seemed to be negatively influenced by union density. Another finding that went against expectations was that US and German companies did not differ regarding their animosity towards high protection against dismissals.

A clear difference between German and US investment concerned the role of existing FDI stocks (one of the control variables). In the German case, high FDI stocks attracted more new FDI, while in the US case, the relationship between existing FDI

stocks and new FDI was negative. US automotive firms considerably restructured their FDI in Europe during the last decade, while German companies mainly invested in existing automotive clusters in close proximity to German plants. In the case of the US firms, the restructuring of FDI was driven by the crisis among US carmakers. Large US supplier companies responded to the crisis with an expansion on the European market in order to gain access to new customers. Jürgens and Krzywdzinski (2010) showed in the case of the Lear Corporation how that company expanded its employment in high-wage countries through takeovers of smaller companies in Western Europe, while simultaneously establishing production facilities in the CEE low-wage countries. A few years after this double expansion, Lear initiated a phase of rationalization: either the production facilities in the high-wage countries were closed down or the number of employees was reduced. German companies did not experience a crisis comparable to their US competitors and German FDI remained much more strongly bound to existing clusters.

There are some limitations to the analysis in this article. The low explained variance in the case of the chemical industry suggests that there are sector-specific FDI determinants that are not captured by the models used here (e.g. patents, energy prices). The second limitation is that countries might be overly large entities for the analysis of FDI determinants. As Kinkel and Zanker (2007) show, companies often do not compare countries but regions when deciding about investments. Finally, this article focuses on the choice of locations for foreign investment. It does not deal with the forms of industrial relations that the companies try to establish in their foreign locations. Even if companies do not consider industrial relations when selecting countries for investment, they might try to avoid union organization once the foreign plants are established (Meardi et al., 2013).

Has the eastern enlargement of the EU increased the danger of social dumping? The evidence suggests that there is considerable pressure for 'flexible' forms of employment regulation, in particular for weaker employment protection legislation. In this regard, capital mobility promotes social dumping. It does not, however, seem correct to blame the eastern enlargement of the EU. The countries with the weakest employment protection legislation are to be found in Western and Northern Europe (the UK, Ireland, Switzerland and Denmark). The competition between liberal and coordinated market economies was built into the European project before the eastern enlargement of the EU and the new member states did not increase the EU's institutional heterogeneity in this regard. It could be argued that the EU's eastern enlargement increased the pressure on coordinated collective bargaining regimes with strong trade unions, because all the new member states have weak trade unions and highly decentralized collective bargaining. The evidence is, however, far from supportive. The degree of unionization shows no effect on FDI inflows. Only in the case of American FDI in the automotive industry, centralization of collective bargaining reduced FDI. The investors' preferences regarding industrial relations differed considerably according to the industry and the home country of the company. Rather than general social dumping, the result of competition for FDI might be 'converging divergences' (Katz and Darbishire, 2000), i.e. increasing convergence within industries (or between clusters) and increasing heterogeneity within the nation states.

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1. Four different measurements of the distance to Germany were used: from the capital of each country to Berlin (capital, direct proximity to VW automotive cluster in Wolfsburg), to Frankfurt (Opel cluster), to Stuttgart (Daimler and Porsche cluster) and to Munich (BMW cluster). The definition of the distance indicator had no impact on the signs and significance of the coefficients for the industrial relations and labour standards indicators.

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