Company-level pacts for employment in the global crisis 2008/09:

First Evidence from a representative German establishment level panel data

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Abstract

This paper reports on the employment effects of pacts for employment and competitiveness (PEC) concluded at the company level characterized by concessions from both bargaining partners. Works councils agree to company-specific deviations from an industry-level contract like reduced wages or prolonged working time in exchange from employment guarantees or investment programs in order to mitigate a decline of employment or to improve the company's competitiveness. Since the number of empirical studies on the employment effects of PECs is very small and no investigation with respect to the global economic crisis has been conducted until now, we use the IAB Establishment Panel Survey of the years 2006 to 2009 and adopt conditional difference estimators to assess the role of PECs within the global crisis. In our analysis we find evidence for PECs decreasing the negative employment effects of the crisis in the establishments affected by the crisis.

JEL Classification: J31, J52

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1. Introduction

Since the middle of 2008 many countries all over the world, including Germany, are faced with the deepest recession since the Great Depression in 1929 (Stiglitz 2009). The very modest increase in unemployment in Germany in face of a 5 % drop in GDP is mysterious to many observers (Bell/Blanchflower 2009, Möller 2010). The specific type of Germany's flexibility was the key to the countries success: Dismissals were avoided by the combined adoption of short-time allowances, working time accounts and company-level pacts for employment. Thereby the companies were able to reduce labour costs without a dramatic fall in monthly wages. Thus, the firms took stock of the institutional reforms adopted in the German system of industrial relations during the last 20 years (Addison et al. 2010). Industry-wide bargained wages were regarded as a source of inflexibility impending companies to adjust the level and dispersion of wages to changing conditions in labour and product markets (German Council of Economic Advisors 2002). Therefore, "opening clauses" were introduced to permit the exemption from the industry contract wage level. Normally, management and the works council have to agree upon the application of an opening clause, and in addition a consensus of the respective union and employers' association is requested. Unions and works councils generally accommodate less favourable contract norms if they expect that this is an inevitable step to avoid severe employment losses. In some cases the consent is connected to explicit pledges on the employer side like employment guarantees or investment programs, which is often called a company-level pact for employment and competitiveness (PEC). That means that concessions from both bargaining partners at the plant level are made. In contrast, many agreements characterized by concession bargaining in the USA did not involve any substantial return from employers.

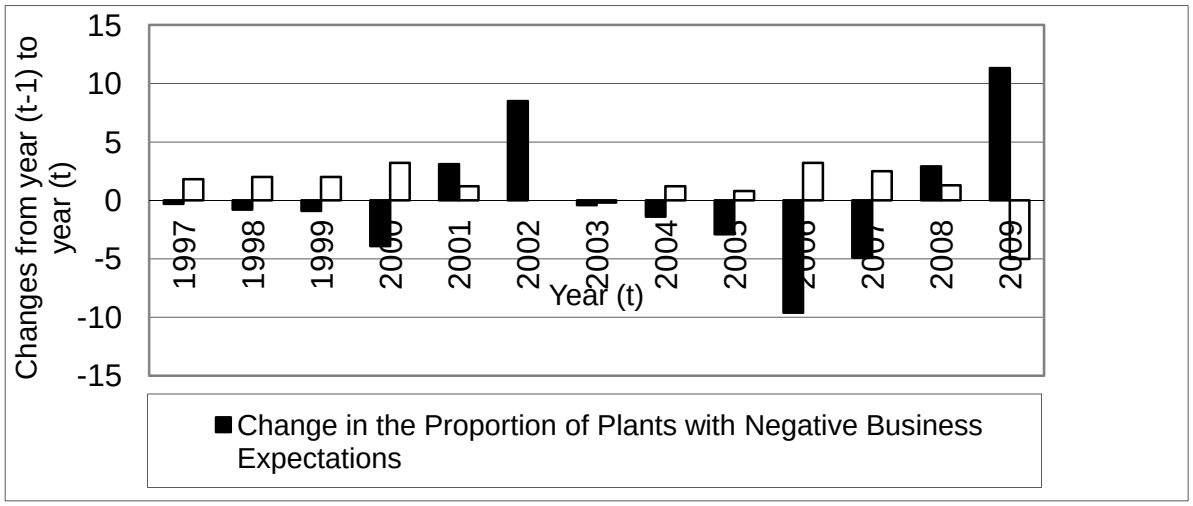
Since company-level pacts for employment were often introduced before the global crisis occurred, in order to assess the employment effect of PECs, data about the time before and

during the global crisis are necessary. The IAB Establishment Panel Survey fulfills this prerequisite. To investigate the role of PECs within the crisis we compare both, the development of the diffusion of PECs and the employment development over time between firms which are subject to the crisis and those which are not.

Whether or not an establishment is subject to the global crisis, we are identifying by exploring the firms reported business expectations for the next year expressed in the 1st half of 2008 and 2009 respectively. All measures of firm performance, such as sales, refer to the previous calendar year. Since 2009 is the most recent wave of data, this would not allow us to identify firms hit by the crisis. Instead, therefore, we use a measure based on the change in business expectations between 2008 and 2009. The survey asks “How do you expect the business volume to develop in the current year compared to the previous?” The respondents can indicate whether they expect their business volume to remain constant, to increase, to decrease or whether they have no idea in this regard.

A strong relationship between the reported business expectations (proportion of plants which report to expect the business volume to decrease) at the firm level and the gross domestic product (GDP) can be seen in figure 1. It shows the change in the proportion of German firms which report negative business expectations for the current year compared to the year before (dark bars). The white bars represent the difference of the current real GDP and the real GDP of the previous year. Obviously, there is a clear negative relationship between the development of the GDP and the development of the proportion of establishments which report negative business expectations, except in those years shortly before a recession with a very low growth rate of the real GDP. In order to avoid confusion of structural problems with those caused by the current crisis and to pick up the very unexpectedness of the current crisis in the 1st half of 2008, finally, in our analysis a plant is regarded to be hit by the global crisis if it reports negative business expectations in 2009 but not in 2008. Bellmann and Gerner (2010) show that this definition of crisis plants yields a very sensible distribution of crisis plants over industries.

Fig. 1: Development of the Establishment Level Business Expectations and the Real GDP (1997-2009)



Source: German Statistical Office and IAB Establishment Panel Surveys, own calculations

Our empirical analysis is structured as follows: In a first step, we study the development of the proportion of plants with PECs over time. Furthermore, we investigate whether there are differences in the employment development between plants hit by the global economic crisis and those not. Finally, we attempt to find empirical evidence for PECs exert moderating effects on the employment development within the crisis.

The paper is structured as follows: Section 2 gives a theoretical overview and previous empirical evidence. Section 3 describes the IAB Establishment Panel data which we are using in our study. In Section 4 we present our descriptive findings and our econometric analysis. Section 5 concludes.

2. Theoretical overview and related studies

The impact of PECs for employment was considered by theoretical approaches that focus on the decentralization of wage setting those that concentrate on efficient bargaining and approaches with investigate one by one particular concessions of the bargaining partners without an explicit recourse to a specific model.

According to Calmfors and Driffill (1998) as well as Berthold and Fehn (1996) the level of employment is higher in decentralized wage-setting regimes compared with wage-bargaining at the industry-level. However, Fitzenberger and Franz (1999, 2000) demonstrate that whether the transition of wage-bargaining from the industry-level to the company-level increases the number of employees depends on the insider-outsider distinction. In unions have stronger preferences for insiders who are more productive that outsiders, both firms and employees are refrain from hiring outsiders even if their wages are lower. Wage cuts are accepted only if the jobs of the insiders are endangered. On the other hand uniform wage rate bargained at the industry-level raises incentives for profitable companies to increase their level of employment because the uniform wage rate is relatively low, whereas for less profitable companies the incentives are smaller. Thus, the overall employment effect is ambiguous.

According to Fitzenberger and Franz (1999, 2000) a renegotiation of wages at the firm level is feasible if a company with posterior full information about product demand faces severe employment losses due to the prior bargained wage at the industry-level. however, the existence of PECs may induce the monopoly union to set a higher wage as it is no longer binding if the product demand declines really.

In their efficient bargaining model McDonald and Solow (1981) show that the bargaining partner can increase their utility and/or profits by negotiating wages and employment simultaneously. Whereas at the industry-level these negotiations are not incentive compatible because employer's associations cannot specify the employment level for each company and guarantee this level to the union during the contract, on the company-level bargaining over wages and employment is feasible and, thus, more efficient. Especially larger companies can attain a higher degree of flexibility and differentiation provided by PECs. Small and medium sized firms can rely more informal procedures to react to negative shocks.

There are some empirical studies for Germany for special industries like mechanical engineering (Berthold et al. 2003a, 2003b).

The number of studies investigating the employment effect of PECs is small. Hübler (2005a, 2005b) uses the 2003 Works Council Survey. His multivariate analyses reveal that establishments which signed a PEC or planned so for the near future had a significantly lower probability of stable or rising employment without a pact. Hübler also investigates the impact of different concession measures: The promotion of further training and the prolongation of working time exert positive employment effects, while reorganization measures, pay cuts and working time reductions leave the opposite effect. The Comparison the PECs concluded at different points in time shows that the employment effects are positive initially, turn negative in the medium term and become positive again later. It is worth to mention that PECs are concluded not only during an economic crisis of a company.

Bellmann et al. (2008) use the IAB Establishment Panel Survey 2004-2007 and consider both expected and realized employment change. They adopt several multivariate analysis strategies: Firstly, assuming exogeneity of PECs they find a significantly negative association between PECs and employment changes. Secondly, incrementing the PECs they basically corroborate the negative effect of the PECs on employment. Thereby, the authors distinguish between PECs to prevent a crisis and to strengthen the competitiveness of an establishment

as well as between different working time, remuneration elements of PECs and reorganization and further training measures. However, their negative impact on employment hardly changes. Last but not least matching methods are combined with difference-in-difference methods (Meyer 1995). The results obtained show significantly negative selectivity effects of the introduction of PECs. That means that establishments with worse expected and realized employment developments used PECs. The “treatment effect” of the PECs on employment turns out to be insignificant.

2. Empirical Analysis

For our analysis we use information from the IAB Establishment Panel (cf. Fischer et al. 2009). The basis for its sampling is the establishment file of the Federal Employment Agency in Germany, where all German establishments are recorded which have at least one employee covered by social security. The IAB Establishment Panel surveys approximately 16,000 establishments on an annual basis. The personal interviews are conducted with high-ranked managers of the firms by TNS Infratest Social Research Munich on behalf of the Institute for Employment Research (IAB). The annual questionnaire (2009: 94 questions) covers, for example, information about the development and the structure of the workforce, the business development etc.

2.1 Diffusion of PECs over time

To start with our investigations, we look at the diffusion of PECs over time. Table 1 therefore, shows the development of the proportion of plants between 2006 and 2009 which adopted a PEC. The numbers are weighted, i.e. they are representative for the German economy[1].

Table 1 about here

Overall, we find a slightly positive trend between 2006 and 2009 from 1.2 to 1.7 percent (see table 1, column 1). Furthermore, Table 1 column 2 – column 7 show the corresponding development for different firm size categories. As can be seen, the proportion of plants with

[1] 2007 is excluded from this descriptive analysis since information about the existence of PECs is only surveyed in 2006, 2008 and 2009 explicitly.

PECs becomes larger in the firm size. Moreover, the overall positive trend from 2006 – 2009 holds for small and medium sized plants only, whereas in larger firms this pattern is not as clear.

Table 2 shows the non-weighted proportion of plants which adopted a PEC, i.e. for the population the multivariate analysis in the remainder of this paper is based on. While the overall proportion of plants with a PEC is a bit higher than the corresponding one in table 1, the numbers for the proportions in table 2 separated by the firm size categories are very similar, which shows the oversampling of larger plants within the IAB Establishment Panel data survey. Also the overall pattern from 2006 to 2008 (table 2, column 1) changes a bit, i.e. the non-weighted numbers show a small dip between these two year. Also for the larger plants the results are slightly different. While table 2 exhibits an increased proportion of plants adopting PECs (within the firm size category more than 500 employees, table 2, column 9), table 1 shows the opposite. However, since these differences are quite low, it is not possible to say whether they are due to the sampling of the IAB Establishment Panel Data Survey or due to weighting errors.

Table 2 about here

Table 2 furthermore reports the proportion of plants separated by crisis and non-crisis plants, i.e. plants which were subject to the most current economic crisis 2008/09 and those plants which were not. As can be seen, the proportion is larger in crisis plants, whereas the time trends are very similar. In sum we can conclude that table 1 and table 2 indicate at least between 2006 and 2009 an overall increase in the proportion of plants adopting a PEC. Moreover it is higher in larger establishments. Finally, crisis plant show a higher proportion than non-crisis plants whereby the time trends are very similar.

In the next step we show these basic patterns within a multivariate framework, i.e. within a logit model (Maddala, 1983). Table 3 shows 3 different specifications: First of all (table 3, column 1), a specification with time dummies for 2006, 2007, 2008 and 2009[2], 5 firm size dummies according to tables 1 and 2 (plant with less than 6 employees is the base category) and a set of control variables (see table A1 appendix for descriptive statistics and table A2 appendix for a detailed definition of the control variables). The second specification (table 3, column 2) furthermore includes a crisis dummy which indicates whether or not a firm was affected by the economic crisis 2008/09. The third specification (table 3, column 3), finally, contains interactions for the time dummies and the crisis dummy in order to identify different time trends in the proportion of plants adopting a PEC between crisis and non-crisis plants.

Table 3 about here

First of all, the estimations show that the probability for having a PEC is higher in firms with a works council, a collective bargaining agreement and a bad profit situation (column 1 – column 3). Secondly, the multivariate estimates reported in table 3 (column 1 – column 3), indicate a positive time trend in the proportion of plants adopting a PEC between 2006 and 2009. Moreover, larger plants (column 1 – column 3) and crisis plants are more likely to have a PEC. Table 4 finally reports the "marginal effects" for the time trends separated by crisis and non-crisis plants and the corresponding difference. The "marginal effects" are calculated at the mean linear prediction, the difference in the time trends between crisis and non-crisis plants is estimated according to Ai and Norton (2003).

[2] To get information about the existence of PECs in 2007 we combine information from 2008 and 2006, i.e. we use the information about the year the firm concluded the PEC which is surveyed in 2006 and 2008 as well. Furthermore, we know, also from 2006 and 2008, whether a firm never concluded a PEC.

Table 4 about here

As can be seen, we find overall at least between 2006 and 2009 a positive time trend for the incidence of PECs in both, crisis and non-crisis plants (table 4, column 1 – column 2, based on our 3rd specification from table 3, column 3). The difference in the time trends between crisis and non-crisis plants finally, is not significant. In the next section we investigate the differences between establishments with and without PECs with respect to their employment development over time.

2.2 Change of employment over time

Within this section we look at the employment changes over time and attempt to identify different patterns for crisis vs. non-crisis plants and for plants with PECs vs. plants without PECs. Our estimations are again based on the IAB Establishment Panel Data Survey 2006 to 2009. The outcome variable of interest is the standardized change in the number of employment from one year to the other

$$(1)\ \Delta N = \frac{(N_t - N_{t-1})}{[(N_t + N_{t-1}) \times 0.5]}.$$

N is the number of Employees and t is a time index.

In a first step we therefore are comparing the employment development 2007 vs. 2006, 2008 vs. 2007 and 2009 vs. 2008 between crisis and non-crisis plants. This is done by estimating the following simple linear regression model

(2) $\Delta N_{it} = \delta_{07} t_{07} + \delta_{08} t_{08} + \delta_{09} t_{09} + \delta_{07,C} t_{07} C_i + \delta_{08,C} t_{08} C_i + \delta_{09,C} t_{09} C_i + x'_{it}\beta + \varepsilon_{it}$,

where ΔN_{it} is the standardized employment development in firm *i* between year *t-1* and *t*. Furthermore, t_{07}, t_{08} and t_{09} are time dummies. Therefore, δ_{07} identifies the change of employment in non-crisis plants between 2006 and 2007 (δ_{08} and δ_{09} have the corresponding interpretation for 2007 to 2008 and 2008 to 2009 respectively). C_i is a crisis dummy which is equal to one, if the plant *i* is affected by the crisis 2008/09. Thus, $\delta_{07} + \delta_{07,C}$ identifies the employment development in crisis plants from 2006 to 2007 ($\delta_{08} + \delta_{08,C}$ and $\delta_{09} + \delta_{09,C}$ have the corresponding interpretation for the employment change in crisis plants from 2007 to 2008 and from 2008 to 2009 respectively). The difference in the employment developments between crisis and non-crisis plants is given by $\delta_{07,C}$, $\delta_{08,C}$ and $\delta_{09,C}$ respectively. x_{it} is a vector of control variables and ε_{it} an error term. We are estimating (2) by ordinary least squares. The standard errors are adjusted using a modified sandwich estimator which takes into account correlated observations within firms (White 1980, Rogers 1993).The employment change for non-crisis and crisis plants, as well as the corresponding differences are reported in table 5 (the detailed regression results are reported in table… appendix).

Table 5 about here

As can be seen, for non-crisis plants we do not identify significant differences in the employment level from one year to the other. For crisis plants however, the situation is different. While the employment growth rates are positive, although not significant, the number of employees decreases from 2008 to 2009 by 6.5 percent. This result corroborates

to those one found in Bellmann and Gerner (2010). Furthermore, we find significant differences in the time trends between crisis and non-crisis plants at least for 2008 vs. 2007 and 2009 vs. 2008. The positive difference in the employment development between crisis and non-crisis plants in 2008 vs. 2007 corresponds to the hypothesis that especially the stars of the German economy were hit by the economic crisis 2009/08. Moreover, this result makes perfect sense when we look at the definition of the crisis indicator (Bellmann and Gerner 2010).

Basically, we are estimating (relative) differences from one year to the other and are comparing these differences between two groups, crisis and non-crisis plants. Therefore, the results in table 5 column 3 can be interpreted as difference-in-differences estimates. We therefore are controlling for time constant unobserved heterogeneity between crisis and non-crisis plants (Caliendo 2006). However, since there are already differences in the change of employment between crisis and non-crisis plants before the crisis, we refrain from a causal interpretation in the sense that the difference in the employment development in 2009 vs. 2008 between crisis and non-crisis plants of -5.2 percentage points is due to the crisis. What we are doing here instead is (and this holds for the remainder of this paper) to describe what we are observing within a multivariate framework based on the IAB Establishment Panel Survey.

To identify differences in the change of employment between crisis plants and non-crisis plants with and without PECs, we run model (2) separately for plants with and plants without PECs. The employment development as well as the corresponding differences between crisis and non-crisis plants which are not adopting PECs, are reported in table 6.

Table 6 about here

The pattern of the employment development in plants which are not adopting PECs is very similar to those one reported in Table 5. Again, we find a very strong and significant negative employment effect in plants affected by the crisis. Those plants which are not subject to the crisis again show no significant change in the employment between 2008 and 2009. The difference in the employment effect between crisis and non-crisis plants 2009 vs. 2008 is -5.7 percentage points and highly significant. Again, also for 2008 vs. 2007 there were significant differences in the employment development between crisis and non-crisis plants (+2.0 percentage points). Table 7 presents the results for plants with a PEC.

Table 7 about here

For plants with PECs we do not find significant results at all[3]. However, despite the lower statistical significance levels in table 7 there are enormous differences to the corresponding results in table 6. Especially, if we look at the last row of table 7 and compare it to the corresponding row in table 6, plants with PECs hit by the crisis obviously perform better within the crisis. When we look at table 7, column 1, last row, we see that non-crisis plants with a PEC do not exhibit any employment change between 2008 and 2009 (the employment change in non-crisis plants with no PEC is -1.4 percent though insignificant, table 6, column 1, last row). The corresponding employment change for crisis plants with a PEC (table 7, column 2, last row) is statistically insignificant and -1.5 percent, whereas in crisis plants with no PEC it is -7.0 percent and highly significant. Table 8 finally summarizes the differences between plants with and plants without PECs.

[3] One reason therefore may be the lower number of observations (the results in table 6 are based on 21,245 cases whereas the results in table 7 on 1,390 cases only).

Table 8 about here

While there are no significant differences in the employment development between non-crisis plants with and without PECs, the corresponding difference for crisis plants within the crisis is 5.5 percentage points and therefore enormous 5.5. Based on a Hausman-White-Test (White 1994, Weesie 1999), it can be shown, that this difference within the crisis is also statistically significant. Finally, the difference of 4.2 percentage points, i.e. the difference between the "crisis effect" (i.e. the difference of the employment change from 2008 to 2009, between plants subject to the crisis and plants not subject to the crisis) for plants with and the crisis effect for plants without a PEC is statistically significant as well. Since the first two columns of table 8 can be regarded as difference-in-differences estimates, we are comparing the change in employment from one year to the other (first difference) between plants with and those without PECs (second difference), technically spoken the third column of table 8 gives a sort of difference-in-difference-in-differences estimates, which means that we are implicitly controlling for time constant unobserved heterogeneity between crisis and non-crisis plants and between plants with and without PECs. Therefore to sum up finally, we find first evidence for PECs played a moderating role within the economic crisis 2008/09 in the sense that they acted as an employment stabilizer.

3. Conclusions

Three results of our empirical analysis should be underlined. Firstly as expected, in firms adopting PECs we usually observe a works council, furthermore, these firms often are subject to a collective bargaining agreement and finally ceteris paribus in a worse economic situation. Secondly, our investigations reveal a positive trend for the incidence of PECs during the years 2006 to 2009. Therefore, we can conclude that PECs became more important over time but not only for plants being subject to the global economic crisis. Thirdly, based on conditional difference-in-differences and difference-in-difference-in-differences estimates we find evidence for PECs helped establishments to stabilize their employment during the crisis. That means that we do not find significant differences in the development of employment between establishments with and without PECs before the beginning of the crisis. During the global crisis however, large and significant differences in the employment development can be traced back to the adoption of PECs.

The third conclusion is in contrast to Bellmann et al (2008) who found rather negative effects of PECs on employment. Hübler (2005a, 2005b) obtained mixed results, positive employment effects in the short run, negative one in the medium and again positive one in the longer run. The specific reason for the success of establishments adopting PECs especially during the crisis will be an important topic for future research. To shed light into this black box the combination of quantitative and qualitative methods seems to be most promising.

Tables

Table 1: Proportion of plants with PEC, weighted

	all plants	N<6	5<N<51	50<N<101	100<N<251	250<N<501	N>500
2006	0.012	0.003	0.015	0.059	0.135	0.244	0.336
2008	0.015	0.006	0.016	0.074	0.132	0.230	0.302
2009	0.017	0.008	0.020	0.072	0.151	0.256	0.305

Own calculations based on the IAB Establishment Panel Data Survey 2006-2007. N refers to the establishment size measured by the number of employees.

Table 2: Proportion of plants with PEC, non-weighted

	all plants	Crisis plants	Non-crisis plants	N<6	5<N, N<51	50<N, N<101	100<N, N<251	250<N, N<501	N>500
2006	0.061	0.101	0.047	0.003	0.023	0.065	0.155	0.253	0.379
2008	0.059	0.096	0.046	0.006	0.027	0.079	0.140	0.232	0.337
2009	0.069	0.109	0.053	0.011	0.033	0.087	0.175	0.261	0.395

Own calculations based on the IAB Establishment Panel Data Survey 2006-2007. N refers to the establishment size measured number of employees.

Table 3: Logit estimations (coefficients), dependent variable: plant has a PEC

	Specification 1	Specification 2	Specification 3
Crisis		0.264***	0.0257**
Year 2007	-0.086	-0.109	-0.132
Year 2008	0.123**	0.104	0.105
Year 2009	0.322***	0.246***	0.265***
Crisis*Year 2007			0.054
Crisis*Year 2008			-0.003
Crisis*Year 2009			-0.045
Profitability (1: very good… 5: bad)	0.162***	0.173***	0.173***
Eastern Germany	-0.025	0.023	0.023
% of qualified	0.149	0.085	0.085
% of part-timers	-0.586***	-0.516**	-0.516**
% of women	-0.351**	-0.411**	-0.411**
Firm size dummies:			
5<N<51	0.797***	0.686***	0.686***
50<N<101	0.917***	0.852***	0.852***
100<N<251	1.125***	1.010***	1.010***
250<N<501	1.560***	1.403***	1.403***
N>500	1.914***	1.808***	1.808***
Industrial relations:			
Sectoral level bargaining	0.631***	0.686***	0.686***
Firm level bargaining	1.006***	1.013***	1.013***
Works council	1.873***	1.921***	1.921***
Technical state of the facilities (1: very good… 5: bad)	0.038	0.063	0.063
Investment dummies:			
- in buildings	0.073	0.101	0.102
- in IT	0.243***	0.279***	0.279***
- in production facilities	0.041	0.036	0.036
- in transport facilities	-0.017	-0.076	-0.077
Sector dummies	***	**	**
Constant	-6.110***	-6.087***	-6.090***
Number of Observations	43,480	31,910	31,910
Pseudo R^2	0.285	0.287	0.287

Own calculations based on the IAB Establishment Panel Data Survey 2006-2007. N refers to the establishment size measured by the number of employees.

*/**/*** indicates significant at the 10/5/1% level.

Table 4: Development of the Proportion of Plants with PEC, "marginal effects"

	Non-crisis plants (1)	Crisis plants (2)	Difference (2)-(1)
2007	-0.003	-0.002	0.001
2008	0.002	0.003	0.001
2009	0.007***	0.007***	0.000

Own calculations based on the IAB Establishment Panel Data Survey 2006-2007. The calculations are based on the regression reported in table 3, column 3. The "marginal effects" are calculated at the mean linear prediction, the numbers in column 3 are calculated according to Ai and Norton (2004). The base category is year 2006.

*/**/*** indicates significant at the 10/5/1% level.

Table 5: Employment change

	Non-crisis plants (1)	Crisis plants (2)	Difference (2)-(1)
06/07	0.006	0.013	0.008
07/08	-0.002	0.017	0.019***
08/09	-0.013	-0.065***	-0.052***

Own calculations based on the IAB Establishment Panel Data Survey 2006-2007. For the detailed regression results see table A3 appendix.

*/**/*** indicates significant at the 10/5/1% level.

Table 6: Employment change in plants without PEC

	Non-crisis plants (1)	Crisis plants (2)	Difference (2)-(1)
06/07	0.006	0.014	0.008
07/08	-0.004	0.016	0.020***
08/09	-0.014	-0.070***	-0.057***

Own calculations based on the IAB Establishment Panel Data Survey 2006-2007. Also included are the same control variables as for the estimation presented in table 5.

*/**/*** indicates significant at the 10/5/1% level.

Table 7: Employment change in plants with PEC

	Non-crisis plants (1)	Crisis plants (2)	Difference (2)-(1)
06/07	0.025	0.026	0.001
07/08	0.037	0.043	0.006
08/09	0.000	-0.015	-0.015

Own calculations based on the IAB Establishment Panel Data Survey 2006-2007. Also included are the same control variables as for the estimation presented in table 5.

*/**/*** indicates significant at the 10/5/1% level.

Table 8: Differences in the employment change between plants with and without PECs

	Non-crisis plants (1) (1,table7)-(1,table6)	Crisis plants (2) (2,table7)-(2,table6)	Difference (2)-(1) or Difference (table7) - Difference (table6)
06/07	0.019	0.012	-0.007
07/08	0.041	0.027	-0.014
08/09	0.014	0.055*	0.042***

Own calculations based on the IAB Establishment Panel Data Survey 2006-2007. Also included are the same control variables as for the estimation presented in table 5.

*/**/*** indicates significant at the 10/5/1% level.

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Appendix:

Table A1: descriptive statistics for the key variables

Pacts for employment and competitiveness (PEC)	0.061
Crisis	0.282
Profitability (1: very good… 5: bad)	2.827
Eastern Germany	0.416
% of qualified	0.590
% of part-timers	0.194
% of women	0.387
Firm size dummies:	
5<N<51	0.469
50<N<101	0.096
100<N<251	0.098
250<N<501	0.045
N>500	0.040
Industrial relations:	
Sectoral level bargaining	0.358
Firm level bargaining	0.064
Works council	0.223
Technical state of the facilities (1: very good… 5: bad)	2.164
Investment dummies:	
- in buildings	0.126
- in IT	0.427
- in production facilities	0.458
- in transport facilities	0.237

Own calculations based on the IAB Establishment Panel Data Survey 2006-2007. N refers to the establishment size measured by number of employees. The descriptive statistics refer to the estimation in table 3, column 2. Also included 7 sector dummies, primary sector, manufacturing, construction, trade, transportation and communication, finance and business services, other services.

Table A2: definition of the key variables

Pacts for employment and competitiveness (PEC)	Does the plant have a PEC= Dummy variable D=1, if yes, D=0 otherwise
Profitability (1: very good… 5: bad)	How is the plant's profit situation last year? Dummy variable with 5 categories. 1: very good, 2: good, 3: satisfying, 4: sufficient, 5 bad.
Eastern Germany	Is the plant located in Eastern Germany? Dummy variable D=1, if yes, D=0 otherwise.
% of qualified	Proportion of qualified workers calculated as the number of qualified workers divided by the total number of employees. Qualified workers are defined as vocational training and/or university graduates.
% of part-timers	Proportion of part-time workers calculated as the number of part-time workers divided by the total number of employees.
% of women	Proportion of women calculated as the number of women divided by the total number of employees.
Firm size dummies:	
5<N<51	Does the plant have more than 5 and less than 51 employees? Dummy variable D=1, if yes, D=0 otherwise.
50<N<101	Does the plant have more than 50 and less than 101 employees? Dummy variable D=1, if yes, D=0 otherwise.
100<N<251	Does the plant have more than 100 and less than 251 employees? Dummy variable D=1, if yes, D=0 otherwise.
250<N<501	Does the plant have more than 250 and less than 501 employees? Dummy variable D=1, if yes, D=0 otherwise.
N>500	Does the plant have more than 500 employees? Dummy variable D=1, if yes, D=0 otherwise.
Industrial relations: Sectoral level bargaining	Is the plant subject to a sectoral collective bargaining agreement? Dummy variable D=1, if yes, D=0 otherwise.
Firm level bargaining	Is the plant subject to a firm-level collective bargaining contract? Dummy variable D=1, if yes, D=0 otherwise.
Works council	Does the plant have a works council? Dummy variable D=1, if yes, D=0 otherwise.

Table A2: continued	
Technical state of the facilities (1: very good… 5: bad)	In which technical state are the plant's facilities? Dummy variable with 5 categories. 1: very good, 2: good, 3: satisfying, 4: sufficient, 5 bad.
Investment dummies:	
- in buildings	Did the plant invest in buildings last year? Dummy variable D=1, if yes, D=0 otherwise.
- in IT	Did the plant invest in investment technology last year? Dummy variable D=1, if yes, D=0 otherwise.
- in production facilities	Did the plant invest in production facilities last year? Dummy variable D=1, if yes, D=0 otherwise.
- in transport facilities	Did the plant invest in transportation facilities last year? Dummy variable D=1, if yes, D=0 otherwise.

Own calculations based on the IAB Establishment Panel Data Survey 2006-2007. N refers to the establishment size measured by the number of employees. The descriptive statistics refer to the estimation in table 3, column 2.

Table A3: Linear regression (coefficients), dependent variable: Employment change

	Specification 1
Year 2007	0.006
Year 2008	0.002
Year 2009	-0.013
Crisis*Year 2007	0.008
Crisis*Year 2008	0.019***
Crisis*Year 2009	-0.052***
Eastern Germany	-0.001
% of qualified	0.033***
% of part-timers	0.076***
% of women	-0.015**
Industrial relations:	
Sectoral level bargaining	-0.015***
Firm level bargaining	0.001
Works council	-0.013***
Technical state of the facilities (1: very good… 5: bad)	-0.014***
Investment dummies:	
- in buildings	0.021***
- in IT	0.020***
- in production facilities	0.021***
- in transport facilities	0.018***
Sector dummies	**
Number of Observations	23,049
R^2	0.038

Own calculations based on the IAB Establishment Panel Data Survey 2006-2007. This regression refers to the estimations in table 5.

*/**/*** indicates significant at the 10/5/1% level.