Should Trade Unions Welcome

Foreign Investors?

Evidence from Danish Matched

Employer-Employee Data

Sebastian Braun

2008-07

Should Trade Unions Welcome Foreign Investors?
Evidence from Danish Matched Employer-Employee Data

Sebastian Braun[*]

Humboldt University of Berlin

January 24, 2008

Abstract. The paper presents first empirical evidence on the effect of foreign ownership on the union wage premium. Using matched employer-employee data for Denmark, the positive effect of plant-level unionisation on wages is found to vanish in foreign-owned firm. While the estimation establishes a positive wage effect of foreign ownership of between two and four per cent for workers employed in non-unionised firms, the foreign ownership premium is close to zero for workers in highly unionised enterprises. This result might help to understand why trade unions frequently resist foreign take-overs even though the existence of a positive foreign ownership wage premium is widely acknowledged in the literature.

Contact: Humboldt University of Berlin, School of Business and Economics, Spandauer Straße 1, 10099 Berlin, Germany. Email: sbraun@wiwi.hu-berlin.de. Tel.: +49-30-2093 1675. Fax: +49-30-2093 5696.

1. Introduction

Over the last two decades or so foreign direct investment (FDI) has increased sharply, both in absolute terms but also relative to the levels of GDP and trade.[1] While FDI is often perceived to be beneficial to the host country, for instance through inflows of new technologies, trade unions frequently fight foreign take-overs. They fear employment losses but also downward pressure on wages. A commonly expressed concern in that respect is that globalization in general and FDI in particular will erode the bargaining power of workers forcing them to accept lower wages. In fact, while there is now a sizeable theoretical literature that generally confirms these concerns, empirical evidence on the issue is virtually nonexistent. The present paper aims at filling this gap.

Prior to presenting the empirical framework and the results of the study, related research is briefly described. A number of theoretical contributions discuss the wage effects of multinational enterprises in unionised labour markets. In an early contribution, Mezzetti and Dinopoulos (1991) set up a partial equilibrium duopoly model and show that a credible threat to shift production abroad improves the bargaining position of a firm and, hence, the negotiated wage falls. The result can be understood as follows: in the case of a disagreement between the two bargaining parties production of a national firm will plummet to zero as workers go on strike. On contrary, a multinational firm can still serve the market via it foreign production facility. Going multinational therefore increases the firm's outside option in the wage bargain.

Zhao (1995) construct a partial equilibrium model of cross-hauling FDI under wage bargaining and also finds a negative effect of FDI on the negotiated wage. In an extension, Zhao (1998) considers a general equilibrium model with full employment in which the outside option of workers is endogenously determined by the wage rate in a perfectly competitive sector.[2] FDI then depresses the negotiated wage through the threat point effect but also through an additional collusion effect.[3] Skaksen and Sørensen (2001) use a similar (partial equilibrium) setup and show that the welfare consequences of FDI for unionised workers depend on the degree of substitutability between the activities of the multinational firm in the home and the host country. The union gains in terms of bargaining power when the activities are perfect complements and the firm engages in vertical FDI.[4] In the case of perfect substitutes, which corresponds to the case of horizontal multinationals, FDI will depress wages.

---

[1] For an overview of stylised facts on FDI see, for instance, chapter 1 of Navaretti and Venables (2004).

[2] In a recent contribution, which also makes use of a general equilibrium framework, Eckel and Egger (2006) analyse the role of trade unions for the decision of firms to either serve a foreign market through exports or through production of a local subsidiary. The second production facility again increases the outside option and firms face a trade-off between lower wages and higher fixed costs in their decision to become multinational. A higher ratio of multinationals firms compared to exporters lead to lower wage payments in general equilibrium.

[3] Firms in the two countries are found to partially cooperate against the union. The degree of competition then goes down and so does output.

[4] Note, however, that this result should be less relevant in the context of developed countries since for these countries inward FDI is largely dominated by horizontal FDI. Therefore, the negotiated wage rises as a consequence of (vertical) FDI.

However, almost none empirical study has substantiated the results derived in the theoretical literature. To the best of my knowledge Choi (2001) is the only study that comes up with evidence on the threat effect of FDI. Using an industry level panel data set he shows that the union wage premium in the US manufacturing sector is negatively associated with the stock of outward FDI. On contrary, a large literature documents a positive wage premium in foreign-owned firms,[5] even though recent evidence based on matched employee-employer data suggests that the wage premium is lower than previously thought (see Girma and Görg, 2007, and Heyman et al., 2007). At first sight, the empirical finding seems to contradict the theoretical prediction. However, foreign ownership may benefit the average workers but nevertheless hurt the wage setting capacity of trade unions.

Against this background, the present study provides an empirical assessment of the effects of foreign ownership on the union wage premium in Denmark. For doing so, I use a detailed matched employer-employee dataset that covers the total Danish population for the years 2000 to 2002. The dataset identifies foreign-owned firms, provides information on trade union membership and allows me to construct measures of union density at the firm level.

In accordance with previous studies, the analysis generally confirms the existence of a small positive wage premium of between two and four per cent associated with foreign ownership, even after controlling for firm and individual characteristics and accounting for individual specific heterogeneity. The estimation also identifies a positive wage effect of union density. High degrees of unionisation can be expected to improve the bargaining situation of unions through e.g. its impact on the ability of workers to inflict a loss on the firm during a labour dispute (Barth et al., 2000).

The positive union density effect vanishes in foreign-owned firms. Hence, trade unions are not able to secure higher wages in highly unionised enterprises that are owned by foreigners. The analysis also establishes a very small union membership premium that is not affected by foreign ownership. Taking together the positive general wage effect of foreign ownership and the negative effect on the union density wage premium, the overall effect of foreign ownership on wages of workers in highly unionised enterprises is close to zero. These findings might help to understand why trade unions resist foreign take-overs even though the empirical literature widely acknowledges the existence of a foreign ownership wage premium.

The rest of the paper is organised as follows. Section 2 provides an overview of the institutional framework in Denmark and argues that the question at hand can readily be studied with respect to Denmark. Section 3 and 4 describe the data and provide descriptive statistics. The empirical specification is discussed in Section 5. Section 6 presents the empirical results, while Section 7 concludes.

2. Institutional Framework

---

[5] See, for instance, Feliciano and Lipsey (2006) for the US, Girma et al. (2001) and Griffith (1999) for the UK.

Denmark is traditionally characterised by high levels of union density. Schnabel and Wagner (2007) report that in 2002/03 83.6 per cent of all employees in Denmark were members of a trade union. Adjusted union density, union membership as a proportion of wage and salary earners in employment, amounted to 70.4 per cent in 2003 according to Visser (2006). These figures put Denmark at the upper range of OECD countries. Similarly, the great majority of workers are covered by collective bargaining agreements. In the private sector, 71 per cent of all workers were covered by collective agreements with the figure reaching 100 per cent in the public sector (Behrens and Traxler, 2002).

Wage rates laid down in collective agreements may be founded on three different systems. First, the *standard wage system* specifies actual earnings in an industry wide agreement and was historically the predominant system for unskilled workers. Second, the *minimum wage system* determines a floor that provides a basis for actual earnings and is used for young or inexperienced workers only. In further negotiations supplements that typically depend on personal characteristics are fixed. Finally, the *minimum pay system* effectively delegates bargaining to the plant-level only subjected to some minimum wage floor.

In the 1990s there was a clear shift away from the standard wage system towards more decentralised forms of wage formation. Employers aimed at tailoring wages more strictly to the performance of the individual firm (Traxler et al., 2001). While the minimum pay system is now the most important of the systems described above, in 2004 only 16 per cent of the workers were employed under the centralised standard wage system (Dansk Arbejdsgiverforening, 2005).

The trend towards decentralisation of the wage bargaining is also reported by the OECD (2004). In the 1970s Denmark was classified as having the highest possible centralisation level on a scale ranging from 1 to 5. The country was accordingly characterised by "Central level agreements of overriding importance". Centralisation levels came down successively and the indicator reached a value of 2 for the period from 1995 to 2000. This suggests a combination of industry and company / plant level bargaining, with an important share of employees being covered by company bargains. Note that there exists no practice of administrative extension or enlargement of private-sector wage agreements in Denmark (OECD, 2004).

In summary, the institutional framework shares two features that allow me to study the question at hand. First, unions have a strong influence on the wage setting process in Denmark. Second, collective bargaining mainly takes place at the plant-level. Hence, one can expect plant-level characteristics in general and foreign ownership in particular to play an important role in wage settlements. A possible concern is, perhaps slightly paradoxically, the very high degree of unionisation in Denmark. In particular, one may expect widespread spill-over effects.[6] The union wage premium is then likely to be rather small despite of the importance of trade unions in Denmark.

---

[6] For a dicussion of this point and an empirical application for another country with a high degree of unionisation, namely Norway, see Mastekaasa (1993).

3. Data Description

The study utilises data from the Integrated Data Base (IDA) for Labor Market Research combined with firm level information both compiled by Statistics Denmark.[7] Based on administrative registers the data covers the total Danish population for the years 1999 to 2002. IDA provides a large number of individual socio economic characteristics such as age, gender, work experience, and educational attainment. The dependent variable of the regression is (the log of) the nominal hourly wage rate which is calculated by Statistics Denmark. Of particular importance to the present study is the information on membership in a trade union.

Each individual can be linked to a workplace which in turn can be matched with firm level information. In particular, I obtain data on the size of the firm in terms of its workforce, the capital-labour ratio, the share of exports in total sales, and industrial classification. Information about foreign ownership is available since 2000. A firm is classified as being foreign-owned when more than 50% of the firm are owned by foreigners. Moreover, the foreign direct investment has to amount to more than DKK 10 million. Therefore, the definition used by Statistics Denmark might fail to identify small foreign-owned firms in the data.

Another potential problem is the fact that it is not possible to identify Danish multinational enterprises. These firms may have a bargaining position which is comparable to foreign-owned firms. Hence, any established negative effect of foreign ownership on the union wage premium might be considered as a lower bound on the corresponding effect of multinationals on union wages.

The nature of the data set also allows me to calculate indicators for the average characteristics of the workers employed in a firm. Variables indicating the share of females, age composition and skill groups in the total workforce are computed. More importantly, union density at the company level is calculated as the fraction of employees that are members of a trade union.

For the analysis, attention is confined to full-time employees aged 18 - 65 working in the private sector. The sample then consists of 2169277 observations.

4. Descriptive Statistics

In line with previous empirical evidence Table 1 shows that on average workers earn considerably higher wages when employed in a firm owned by foreigners. The figure suggests that the unconditional wage premium stands at 11.85 per cent. Descriptive statistics also reveal that workers in foreign owned firms are better educated and more likely to be living in Copenhagen than in other areas of Denmark. However, there seems to be no difference in the inclination to join a trade union. Both in foreign-owned and in Danish firms at about 83 per cent of all individuals in our dataset are members of a trade union.

---

[7] For a more detailed description of the IDA dataset see, among others, Abowd and Kramarz (1999).

Next, descriptive statistics are provided for members of a trade union and for employees working in a firm with a union density of 75 % or above. Note first that low and medium skilled workers as well as males are overrepresented among trade union members. This may be part of the explanation for the perhaps surprising finding that union members earn slightly less than an average worker. While the effect is evident for union members in foreign-owned and in Danish firms, it is particularly strong for workers employed in the former type of firm. Accordingly, the unconditional foreign ownership premium shrinks to 9.74 per cent for union members.

A similar but more pronounced finding emerges when considering only those workers that are employed in highly unionised enterprises. On average the individual hourly wage is lower in firms with strong unions than it is in enterprises with lower union densities. While the effect is rather small for Danish firms, the negative union density effect is quite substantial for foreign-owned firm. Consequently, the foreign ownership premium declines to merely 6.66 per cent when considering only employees in high density firms.

Part of the foreign ownership premium may be due to differences in observable firm characteristics. Table 2 shows that indeed Danish and foreign-owned firms differ systematically from each other. In particular, foreign-owned enterprises tend to be larger, more capital-intensive and export more than their Danish counterparts.[8] There are also significantly more foreign-owned firms present in the wholesale and retail trade sector and in the manufacturing sector. On contrary, they are under-represented in the construction and transport sector. Note also that 21.2 per cent of the workforce of an average foreign-owned firm consists of high-skilled workers while the figure stands at just 8.9 per cent for Danish firms.

Finally, Table 2 also shows that high density firms tend to be somewhat larger than firms with a lower share of trade union members. Moreover, firms with a high union density are more frequent in the manufacturing and the construction sector as compared to an average enterprise. In contrast, they are underrepresented in the financial intermediation sector.

5. Empirical Specification

The following wage equation for individual i working in firm j at time t is estimated

$$\ln w_{ijt} = X_{it}\alpha + Z_{jt}\beta + UM_{it}\delta + UD_{jt}\phi + F_{jt}\gamma + UM_{it}F_{jt}\mu + UD_{jt}F_{jt}\rho + \lambda_t + \alpha_i + \theta_j + \varepsilon_{ijt}$$

with the dependent variable, $ln\ w_{ijt}$, being the gross hourly wage of individual i. X_{it} is a vector of observed individual characteristics including age, age squared, tenure, tenure squared, actual working experience, experience squared, as well as dummies for educational attainment, a full set of

---

[8] Note, however, that these findings may partly be due to the fact that smaller foreigned-owned firms are not identified according to the definition of foreign-owned enterprises used by Statistics Denmark.

occupational and regional dummies, and a dummy for small children in the household. Z_{jt} contains firm characteristics, namely the capital labour ratio, the percentage of exports in total sales and the logarithm of the number of full-time equivalent employees in the firm. Furthermore, Icontrol for average characteristics of the workforce.

In order to assess the influence of trade unions on the individual wage, a dummy variable for union membership of individual i and the union density in enterprise j are included as additional explanatory variable. The union density variable should be of particular interest to the analysis since it is likely to reflect the strength of a union in the wage bargain.[9] Among the studies that have found a positive wage effect of union density are Booth and Chatterji (1995) for the UK, Barth et al. (2000) for Norway and Reilly (1996) for Canada. Union membership differentials are also widely documented in the literature but open to a number of interpretations.[10] In fact, some studies find the union membership premium to vanish once union density is controlled for (see again, e.g., Barth et al., 2000, and Reilly, 1996).

The dummy F_{jt} indicates whether or not a firm is owned by foreigners. The union membership and the union density variable are interacted with the foreign ownership dummy. This allows me to study the central question of this paper, namely whether or not the influence of trade unions on the wage setting process in multinational firms differs from its influence in Danish firms. The theoretical literature predict the bargaining strength of a union to deteriorate in foreign-owned firms. Accordingly, the interaction term between union density and foreign ownership can be expected to enter the regression equation with a negative sign.

Finally, α_i, λ_t, and θ_j are fixed individual-, time- and firm-effects, respectively, and ε_{ijt} is the error term.

Provided that unobserved specific effects are uncorrelated with our variables of interest, consistent estimates could be obtained by pooling the data and estimating the model by conventional OLS. However, it is a problem well-known in the respective literature that union membership but also union density can be correlated with unobservable individual specific characteristics that affect the wage rate (see, for instance, Lewis, 1986). For instance, unionized firms might be able to choose from a larger pool of (queuing) workers. In such a situation, a positive correlation between (unobserved) individual ability and the degree of unionisation at the workplace can arise. Similar arguments might also cast doubt on the OLS estimates of the foreign ownership premium. Therefore, fixed effect estimation is used in order to remove unobservable (time-invariant) individual specific heterogeneity.

In principle, our estimates could still be confounded by unobserved firm-specific heterogeneity. This should not play a major role with respect to the union membership and union density estimates

---

[9] As mentioned in the introduction, Barth et al. (2000) set up a theoretical model in which union density improves the bargaining position of trade union through its impact on the conflict payoffs. Alternative explanation for why union density can affect wages are provided by Grossman (1983) and Booth and Chatterji (1995).

[10] An explanation for a positive union membership premium is preferential treatment of unions members with respect to promotions. See Barth et al. (2000) for an overview. Andrews et al. (1998) dicuss the importance of methodological differences in the estimations of union/non-union wage differentials.

since I am able to control for all important firm characteristics identified in the union wage premium literature.[11] However, foreign-owned firms might exhibit unobserved characteristics that systematically differ from domestic firms and affect individual wages. Both firm- *and* individual-specific effects can be eliminated by defining worker-firm combinations (or 'spells') and estimating a spell fixed-effects model. Note that the estimation then hinges solely on within-establishment variation. For instance, the foreign-ownership premium is only identified through changes of the ownership status of a given firm (but workers switching from a domestic to a foreign-owned firm or vice versa will not contribute to the identification). Consequently, in a short panel such as ours the spell-effects regression is only able to detect the immediate effects of foreign take-overs on wages.

Standard errors are adjusted by clustering on the firm-level thereby allowing for a shared error component. See Moulton (1990) for further details.

6. Empirical Results

6.1 Complete Sample

I start with estimating the wage equation for the complete sample consisting of 2169277 observations.

Linear Union Density Term

Table 3 presents the results of an individual fixed effects regression of the log individual hourly wage on foreign ownership, union density, union membership, and interactions of the union variables with the foreign ownership status. The foreign ownership variable enters positively and is highly statistically significant; the point estimate stands at .0616. The regression result also suggests that union density has a positive and highly statistically significant effect on wages. However, the positive coefficient estimate of .0532 for Danish firms is not confirmed for foreign-owned firms. Taking into account the interaction term between union density and foreign ownership, the influence of union density on wages vanishes. In fact, in foreign-owned firms wages are even slightly negatively affected by the percentage of workers organised in a trade union.

Nevertheless, even in firms with a high degree of unionisation workers still benefit from foreign owners. However, the foreign ownership wage premium is much smaller for employees in firms with a highly unionised workforce. To take the extreme case: for workers employed in firms with a union density rate of 100 per cent, the premium shrinks to merely 0.5 per cent.[12] This compares to 6.16 per cent for workers employed in companies without any trade union member. Clearly, in the

---

[11] In particular, it has been found that firm size is a non-negligible control variable when estimating union wage premia (see Andrews et al. 1998).
[12] $(.0616 - .0032 * 1.00) - .0532 * 1.00 = .0052$.

latter type of firms the deterioration of union's bargaining power due to foreign takeovers does not affect the wages of employees.

How robust are these results to the inclusion of control variables? In columns (2) to (7) individual characteristics, year, occupational and industry dummies, as well as firm and co-worker characteristics are added to the baseline equation. While the qualitative results remain unchanged, the coefficient estimates are markedly smaller once individual characteristics are controlled for. In particular, the effect of union density on individual wages shrinks and the coefficient estimates vary between .0098 and .0174 depending on the exact specification. The estimates of the foreign ownership premium for workers in non-unionised firms vary between 3.17 and 4.09 per cent. Due to the negative effect of foreign ownership on the wage setting capacity of unions, the premium falls for higher union density levels. Depending on the specification, the estimates range from 0.41 to 0.84 per cent for workers employed in fully unionised firms.

The picture changes drastically once firm specific heterogeneity is accounted for by running a spell fixed effects estimation. Column (8) documents that neither the foreign ownership nor the union density variable is statistically significant any more. Even the signs of the coefficient estimates are not preserved. This may point to the existence of unobserved firm-specific effects that are correlated with the explanatory variables under consideration.

However, at least with respect to the union density effect this would be somewhat surprising, since all relevant firm characteristics identified in the relevant literature were already controlled for in specifications (6) and (7). Given that the identification in spell-fixed effects models relies solely on within-establishment variation, the result may simply be due to the fact that an increase in the degree of unionization in a firm might not have effects on wages in the very short run. The non-significance of the foreign ownership variable may be explained along similar lines as already briefly discussed in the previous section. Unfortunately, with the data at hand the issue cannot be conclusively resolved.

With respect to the effect of union membership on wages and its interaction with foreign ownership, the results are very stable across specifications. Leaving aside the baseline regression, union membership has a very small but statistically significant positive impact on individual wages. The membership in a trade union is estimated to increase wages by between 0.57 and 0.78 per cent and the membership premium does not differ between workers in foreign-owned and Danish firms. Hence, the individual union member is able to secure a (very small) premium vis-à-vis non-members, even in foreign-owned firms.

Union Density Dummies

Table 4 reports the results from a less restrictive specification. Instead of a linear union density term, four dummy variables, each with a 20 per cent band, are included. A union density of between 40 and 60 per cent serves as the reference category. The point estimates of the dummy

variables are generally increasing thereby confirming a positive wage effect of union density. However, once a certain threshold is reached, there seems to be no further wage effects. The point estimates of the dummies for a density of 60 to 80 and 80 to 100 per cent are almost identical.

In comparison to the linear specification, the estimates of unions' overall influence on wages are somewhat larger. According to specifications (2) to (7), workers in highly unionised firms (union density of 80 to 100 per cent) earn between 2.20 and 3.36 per cent higher wages than in firms with no or little union presence. The interaction terms between the dummies and foreign ownership have the expected signs but are only (highly) statistically significant for firms with a large proportion of union members among the workforce. Therefore, in foreign-owned firms union density has only a positive wage effect at small to medium levels. Further increases in the degree of unionisation even exhibit a small negative effect on wages. Consequently, the foreign ownership premium is again found to decline for highly unionised enterprises. While the wage premium amounts to between 2.30 and 3.36 among firms in the lowest union density band,[13] the estimate shrinks to a value of between 0.71 and 1.10 per cent for workers employed in firms with a degree of trade union organisation of at least 80 per cent.[14]

Finally, the spell-fixed effects model, reported in column (8), comes up with estimates that are consistent with previous specifications in terms of the estimated sign of the union density dummies and the corresponding interaction terms. However, estimates are largely statistically insignificant and no evidence for a foreign ownership premium can be established.

6.2 Large Enterprises Only

In a second step I restrict the analysis to firms with at least 35 full-time equivalent employees and tested the robustness of our results. The reasons for doing so are threefold. First, in small firms the measure of trade union density is likely to be very noisy since the measure is sensitive to the hiring or firing of a single worker. Second, foreign owned firms are typically large in size. More importantly, the definition of foreign ownership impedes the identification of small foreign-owned firms in the data set. Third, the role of trade unions and collective bargaining agreements may differ between smaller and larger firms where trade unions can be expected to play a more important role in the latter type of firms.

The threshold of 35 employees is clearly somewhat arbitrary. It was chosen because in Denmark a Cooperation Committee with equal representation from employer and employees can be set up in companies with more than 35 employees if one of the parties wishes to do so. Hence, one might expect

---

[13] Since interaction terms between foreign ownership and union density dummies are generally not statistically significant for the lower density ranges, the coeffient on the foreign ownership variable applies to all firms with union density levels between zero and up to 60 per cent. Hence, the ownership premium does not vary across firms with lower and medium levels of unionisation.

[14] Figures are based on the estimates obtained from specifications (2) to (7).

unions to have a say in these firms. At about two thirds of all workers in the data set are employed in firms with more than 35 employees.

The estimation results for the restricted sample are depicted in Tables 5 and 6. As before, first a linear relation between union density and individual wages is postulated. The coefficient on the foreign ownership variable remains positive and generally statistically significant but the size shrinks. In specification (2) to (7) the coefficient varies between .0164 and .0228. On contrary, the union density effect increases markedly and can now be found even after controlling for firm specific unobserved heterogeneity.

The interaction term between foreign ownership and union density has the expected negative sign (even in the spell fixed effects estimation) but statistical significance fluctuates around the 10 per cent level. Interestingly, the size of the coefficient suggests that the foreign ownership premium vanishes almost completely in fully unionised firms. The estimates also imply that unions retain some influence on wages in foreign-owned firms with more than 35 employees. The coefficient of the interaction term is always smaller in absolute terms than the coefficient of the union density variable.

Since the assumption of a linear relation between union density and wages may be too restrictive, I re-estimate the model with union density dummies. In general, the results confirm the findings of the previous sub-section. Foreign ownership enters with a positive sign and is highly statistically significant. Once control variables are added, the coefficient estimates fluctuate around .02.

Union density has a positive and statistically significant effect on wages, a finding which is largely confirmed even by the spell-fixed effects regression.[15] As evident from the interaction terms, the positive effect is almost completely offset - compared to the reference group - in foreign-owned firms with a high degree of unionisation. For workers employed in these firms, by far the majority in Denmark, the foreign ownership premium is still positive but tends to zero.

Finally, the results for the union membership effect are almost identical compared to the regression results for the complete sample. Individual membership is associated with a wage premium of between .45 and .68 per cent. Foreign ownership has no effect on the membership premium.

7. Conclusion

The paper at hand has presented first empirical evidence on the impact of foreign ownership on union wage effects. Confirming the theoretical prediction, the positive wage effect of plant-level

---

[15] However, the dummy for firms with a union density of below 20 per cent is mostly insignifcant and often even positive in size (though never signifcant and nonnegative). This would indicate that employees would not lose out from working in non-unionised firms when compared to the reference group. In three out of eight specifications, I also find a relatively large and weakly statistically significant negative coefficient on the interaction between foreign ownership and a union density of below 20 per cent. The estimate implies a negative wage effect of foreign takeovers for firms with little or no trade union presence. However, the proportion of larger firms with a union density of less than 20 per cent is negligleable in Denmark. Hence, the results should be taken with some caution as identification rest on few observations that may come from workers employed in peculiar firms.

unionisation in Denmark is found to vanish in foreign-owned firm. The (very small) union membership premium does not vary between Danish and foreign-owned firms.

While wages of workers employed in non-unionised firms are found to be between two and four per cent higher in foreign-owned firms, the foreign ownership premium tends to zero for workers employed in highly unionised enterprises. The result might help to understand why trade unions resist foreign take-overs even though the existence of a positive foreign ownership wage premium is widely acknowledged in the literature.

I believe that the effects established for Denmark are also of general significance. Nevertheless, Denmark is characterised by some peculiar institutional features, in particular a very high level of unionisation. Comparing the results with evidence from other countries with different institutional settings would therefore be an interesting exercise. Another interesting aspect for future work is to distinguish between the union wage effects in foreign-owned firms, national firms and in domestic multinationals.

References

Abowd, John M. and Francis Kramarz (1999), "The Analysis of Labor Markets Using Matched Employer-Employee Data," in: O. Ashenfelter & D. Card (ed.), *Handbook of Labor Economics*, ed. 1, vol. 3, pages 2629-2710.

Andrews, Martyn J. , Mark B. Stewart and Joanna K. Swaffield (1998), "The Estimation of Union Wage Differentials and the Impact of Methodological Choices," *Labour Economics*, vol. 5(4), pages 449-474.

Traxler, Franz, Sabine Blaschke and Bernhard Kittel (2001), *National Labour Relations in Internationalized Markets. A Comparative Study of Institutions, Change, and Performance*, New York: Oxford University Press.

Barth, Erling, Oddbjorn Raaum and Robin Naylor (2000), "Union Wage Effects: Does Membership Matter?," *Manchester School*, vol. 68(3), pages 259-75.

Behrens, Martin und Franz Traxler (2002): Collective Bargaining Coverage and Extension Procedures, *EIRObserver,* 02/2003, pages i-viii.

Booth, Alison L. and Monojit Chatterji (1995), "Union Membership and Wage Bargaining When Membership is Not Compulsory," *Economic Journal*, vol. 105(429), pages 345-60.

Choi, Minsik (2001). "Threat Effect of Foreign Direct Investment on Labor Union Wage Premium," *Working Papers wp27*, Political Economy Research Institute, University of Massachusetts at Amherst.

Dansk Arbejdsgiverforening (2005), *ArbejdsMarkedsRapport 2005*, Copenhagen.

Eckel, Carsten and Hartmut Egger (2006), "Wage Bargaining and Multinational Firms in General Equilibrium," *CESifo Working Paper No. 1711*.

Feliciano, Zadia M. and Robert E. Lipsey (2006), "Foreign Ownership, Wages, and Wage Changes in U.S. Industries, 1987-92," *Contemporary Economic Policy*, vol. 24(1), pages 74-91.

Girma, Sourafel, David Greenaway and Katharine Wakelin (2001), "Who Benefits from Foreign Direct Investment in the UK?," *Scottish Journal of Political Economy*, vol. 48(2), pages 119-33.

Girma, Sourafel and Holger Görg (2007), "Evaluating the Foreign Ownership Wage Premium Using a Difference-in-Differences Matching Approach," *Journal of International Economics*, vol. 72(1), pages 97-112.

Griffith, Rachel (1999), "Using the ARD Establishment Level Data to Look at Foreign Ownership and Productivity in the United Kingdom," *Economic Journal*, vol. 109(456), pages F416-42.

Grossmann, Gene (1983), "Union Wages, Seniority, and Unemployment," *American Economic Review*, vol. 73, pages 277-290.

Heyman, Fredrik, Patrik Gustavsson Tingvall and Fredrik Sjöholm (2007), "Is There Really a Foreign Ownership Wage Premium? Evidence from Matched Employer-Employee Data," *Journal of International Economics*, forthcoming.

Lewis, H. Gregg (1986), *Union Relative Wage Effects: A Survey*. Chicago University Press.

Mastekaasa, Arne (1993), "Union-non-Union Wage Differentials: Individual Level and Organizational Level Effects," *European Sociological Review*, vol. 9(2), pages 109-124.

Mezzetti, Claudio and Elias Dinopoulos (1991), "Domestic Unionization and Import Competition," *Journal of International Economics*, vol. 31(1-2), pages 79-100.

Moulton, Brent R. (1990). "An Illustration of a Pitfall in Estimating the Effects of Aggregate Variables on Micro Unit," *The Review of Economics and Statistics*, vol. 72(2), pages 334-38.

OECD (2004), *Employment Outlook*, Paris: OECD.

Navaretti, Giorgio B. and Anthony J. Venables (2004), *Multinational Firms in the World Economy*, Princeton University Press.

Reilly, Kevin T. (1996). "Does Union Membership Matter? The Effect of Establishment Union Density on the Union Wage Differential," *The Review of Economics and Statistics*, vol. 78(3), pages 547-57.

Schnabel, Claus and Joachim Wagner (2007), "Union Density and Determinants of Union Membership in 18 EU Countries: Evidence from Micro Data, 2002/03", *Industrial Relations Journal*, vol. 38(1), pages 5-32.

Skaksen, Mette Y. and Jan R. Sørensen (2001), "Should Trade Unions Appreciate Foreign Direct Investment," *Journal of International Economics*, vol. 55(2), pages 379-390.

Visser, Jelle (2006), "Union Membership Statistics in 24 Countries, " *Monthly Labour Review*, vol. 129(1), pages 38-49.

Zhao, Laixun (1995), "Cross-hauling direct foreign investment and unionized oligopoly," *European Economic Review*, vol. 39(6), pages 1237-1253.

Zhao, Laixun (1998), "The Impact of Foreign Direct Investment on Wages and Employment," *Oxford Economic Papers*, vol. 50(2), pages 284-301.

	All Workers		Union Members		Working in High Density Firm (> 75 %)	
	Foreign	Non-Foreign	Foreign	Non-Foreign	Foreign	Non-Foreign
log hourly wage	5.285	5.173	5.252	5.160	5.227	5.162
tenure	6.234	6.107	6.399	6.126	6.732	6.268
age	43.26	43.58	43.47	43.55	43.80	43.72
experience	20.02	20.11	20.35	20.40	20.54	20.48
low-skilled	.2608	.2767	.2883	.2951	.3034	.2998
medium-skilled	.5729	.6071	.5802	.6112	.5750	.6062
high-skilled	.1663	.1162	.1314	.0937	.1216	.0940
immigrant	.0668	.0511	.0669	.0512	.0691	.0511
female	.3197	.3153	.3004	.2998	.3008	.2946
union member	.8299	.8321	1.000	1.000	.8953	.9119
Copenhagen	.4392	.2920	.3945	.2684	.3511	.2479
city	.2901	.3481	.3088	.3549	.3262	.3626
rural	.2758	.3713	.3023	.3884	.3287	.4019
N	331247	1838030	274907	1529418	255743	1445665

Table 1: Descriptive Statistics on the Individual Level

	All Firms		High Density (> 75 %)	
	Foreign	Non-Foreign	Foreign	Non-Foreign
General Characteristics				
export	.2482	.0620	.2783	.0581
firm size	82.56	15.56	102.6	18.95
capital/labour	5454	906.0	1160	906.3
Sector				
agriculture	.0046	.0015	.0074	.0017
manufacturing	.2095	.1625	.3175	.1828
construction	.0183	.1856	.0265	.2225
trade	.5337	.3775	.4861	.3448
transport	.0587	.0898	.0480	.0974
financial intermed.	.1797	.1846	.1219	.1526
Workforce Characteristics				
fraction low-skilled	.1722	.2564	.2103	.2720
fraction medium-skilled	.6157	.6551	.6283	.6571
fraction high-skilled	.2121	.0886	.1614	.0709
N	6281	191992	3625	119442

Table 2: Descriptive Statistics on the Firm Level

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Foreign	.0616***	.0353***	.0353***	.0351***	.0409***	.0356***	.0317***	-.0085
UD	.0532***	.0174***	.0174***	.0172***	.0152***	.0098**	.0113**	.0036
UD * Foreign	-.0564***	-.0269***	-.0269***	-.0267***	-.0332***	-.0315***	-.0268***	.0046
UM	-.0021	.0070	.0070***	.0070***	.0072***	.0078***	.0076***	.0061***
UM * Foreign	.0067***	.0022	.0022	.0021	.0022	.0011	.0007	.0035
Individual Charact.	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummies	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Occupation Dum.	No	No	No	Yes	Yes	Yes	Yes	Yes
Industry Dummies	No	No	No	No	Yes	Yes	Yes	Yes
Firm Characteristics	No	No	No	No	No	Yes	Yes	Yes
Co-worker Charact.	No	No	No	No	No	No	Yes	Yes
Firm Fixed Effects	No	No	No	No	No	No	No	Yes
R^2 (within)	.0023	.0855	.0870	.0879	.0882	.0913	.0918	.1058
N	2169277	2169277	2169277	2169277	2169277	2169277	2169277	2169277

***, **,* statistically significant at the 1, 5 and 10 percent level, respectively. Standard errors were calculated with clustering by firms.

Table 3: Fixed Effects Estimation Results: Complete Sample, Linear Union Density Term

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Foreign	.0402***	.0248***	.0249***	.0247***	.0266***	.0229***	.0216***	-.0033
	(.0069)	(.0048)	(.0046)	(.0046)	(.0047)	(.0048)	(.0048)	(.0067)
UD1	-.0218***	-.0222***	-.0229***	-.0225***	-.0223***	-.0155***	-.0160*	-.0054*
	(.0047)	(.0034)	(.0033)	(.0033)	(.0033)	(.0031)	(.0031)	(.0030)
UD2	-.0122**	-.0062***	-.0075***	-.0073***	-.0071***	-.0041*	-.0042*	-.0025
	(.0057)	(.0024)	(.0022)	(.0022)	(.0023)	(.0022)	(.0022)	(.0022)
UD4	.0174***	.0098***	.0097***	.0096***	.0095***	.0075***	.0074***	.0044
	(.0049).	(.0021)	(.0017)	(.0017)	(.0018)	(.0021)	(.0021)	(.0028)
UD5	.0252***	.0097***	.0107***	.0106***	.0098***	.0065**	.0070***	.0025
	(.0061)	(.0025)	(.0021)	(.0021)	(.0022)	(.0026)	(.0025)	(.0037)
UD1 * Foreign	.0304**	.0150	.0131	.0131	.0135	.0062	.0067	.0271**
	(.0140)	(.0161)	(.0170)	(.0170)	(.0165)	(.0204)	(.0192)	(.0135)
UD2 * Foreign	.0218	.0153	.0159	.0157	.0152	.0176	.0182	.0048
	(.0147)	(.0118)	(.0116)	(.0116)	(.0116)	(.0118)	(.0117)	(.0145)
UD4 * Foreign	-.0224***	-.0125***	-.0127***	-.0123***	-.0124***	-.0126***	-.0121***	-.0063
	(.0065)	(.0045)	(.0042)	(.0042)	(.0043)	(.0044)	(.0043)	(.0053)
UD5 * Foreign	-.0293***	-.0139***	-.0139***	-.0137***	-.0157***	-.0158***	-.0142***	-.0008
	(.0078)	(.0046)	(.0043)	(.0043)	(.0044)	(.0044)	(.0044)	(.0058)
UM	-.0013	.0060***	.0057***	.0057***	.0059***	.0068***	.0067***	.0057***
	(.0029)	(.0014)	(.0014)	(.0014)	(.0014)	(.0015)	(.0015)	(.0016)
UM * Foreign	.0060**	.0020	.0024	.0024	.0023	.0011	.0009	.0041
	(.0028)	(.0024)	(.0024)	(.0024)	(.0024)	(.0024)	(.0024)	(.0034)
Individual Charact.	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummies	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Occupation Dum.	No	No	No	Yes	Yes	Yes	Yes	Yes
Industry Dummies	No	No	No	No	Yes	Yes	Yes	Yes
Firm Characteristics	No	No	No	No	No	Yes	Yes	Yes
Co-worker Charact.	No	No	No	No	No	No	Yes	Yes
Firm Fixed Effects	No	No	No	No	No	No	No	Yes
R² (within)	.0023	.0858	.0872	.0881	.0885	.0915	.0920	.1059
N	2169277	2169277	2169277	2169277	2169277	2169277	2169277	2169277

***, **, * statistically significant at the 1, 5 and 10 percent level, respectively. Standard errors, reported in brackets, were calculated with clustering by firms.

UD1: $0.0 \le UD < 0.2$; UD2: $0.2 \le UD < 0.4$; UD4: $0.6 \le UD < 0.8$; UD5: $0.8 \le UD \le 1.0$.

Table 4: Fixed Effects Estimation Results: Complete Sample, Union Density Dummies

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				Linear Union Density Term				
Foreign	.0493*	.0228**	.0194*	.193*	.0222**	.0220**	.0164	.0019
UD	.0562	.0293**	.0293***	.0291***	.0294***	.0290***	.0416***	.0358***
UD * Foreign	-.0452	-.0222*	-.0178	-.0177	-.0207*	-.0211*	-.0151	-.0078
UM	.0033	.0068***	.0065***	.0066***	.0065***	.0066***	.0055***	.0045**
UM * Foreign	.0024	.0015	.0016	.0016	.0017	.0014	.0017	.0049
Individual Charact.	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummies	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Occupation Dum.	No	No	No	Yes	Yes	Yes	Yes	Yes
Industry Dummies	No	No	No	No	Yes	Yes	Yes	Yes
Firm Characteristics	No	No	No	No	No	Yes	Yes	Yes
Co-worker Charact.	No	No	No	No	No	No	Yes	Yes
Firm Fixed Effects	No	No	No	No	No	No	No	Yes
R² (within)	.0012	.0012	.1136	.1144	.1147	.1152	.1168	.1254
N	1445201	1445201	1445201	1445201	1445201	1445201	1445201	1445201

***, **, * statistically significant at the 1, 5 and 10 percent level, respectively. Standard errors were calculated with clustering by firms.

Table 5: Fixed Effects Estimation Results: Firms with more than 35 Employees, Linear Union Density Term

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Foreign	.0494***	.0207***	.0196***	.0195***	.0211***	.0213***	.0188***	.0063
	(.0130)	(.0070)	(.0066)	(.0066)	(.0067)	(.0067)	(.0067)	(.0090)
UD1	-.0548***	.0198	.0178	.0186	.0212	.0192	.0083	-.0235**
	(.0225)	(.0260)	(.0257)	(.0257)	(.0258)	(.0254)	(.0260)	(.0095)
UD2	-.0373***	-.0123	-.0149*	-.0146*	-.0133*	-.0129*	-.0158**	-.0083
	(.0106)	(.0084)	(.0078)	(.0079)	(.0076)	(.0075)	(.0078)	(.0053)
UD4	.0392***	.0168***	.0152***	.0151***	.0151***	.0150***	.0148***	.0126**
	(.0135)	(.0045)	(.0040)	(.0040)	(.0039)	(.0040)	(.0037)	(.0056)
UD5	.0341***	.0171***	.0158***	.0158***	.0160***	.0153***	.0175***	.0116*
	(.0158)	(.0046)	(.0039)	(.0039)	(.0039)	(.0040)	(.0036)	(.0066)
UD1 * Foreign	.0007	-.0344	-.0386	-.0389	-.0521*	-.0598*	-.0537*	.0042
	(.0255)	(.0303)	(.0299)	(.0298)	(.0305)	(.0305)	(.0322)	(.0144)
UD2 * Foreign	.0243	-.0014	.0011	.0004	-.0016	-.0004	.0043	-.0140
	(.0311)	(.0231)	(.0226)	(.0226)	(.0224)	(.0222)	(.0226)	(.0239)
UD4 * Foreign	-.0437***	-.0180***	-.0171***	-.0169***	-.0166**	-.0171***	-.0160**	-.0149*
	(.0132)	(.0069)	(.0065)	(.0065)	(.0065)	(.0066)	(.0065)	(.0082)
UD5 * Foreign	-.0398***	-.0166***	-.0150**	-.0149**	-.0165***	-.0174***	-.0149**	-.0094
	(.0141)	(.0067)	(.0062)	(.0062)	(.0063)	(.0064)	(.0063)	(.0085)
UM	.0025	.0067***	.0065***	.0066***	.0065***	.0067***	.0063***	.0059***
	(.0028)	(.0021)	(.0021)	(.0021)	(.0021)	(.0021)	(.0022)	(.0022)
UM * Foreign	.0021	.0006	.0008	.0008	.0009	.0005	.0008	.0040
	(.0032)	(.0028)	(.0027)	(.0027)	(.0027)	(.0027)	(.0027)	(.0037)
Individual Charact.	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummies	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Occupation Dum.	No	No	No	Yes	Yes	Yes	Yes	Yes
Industry Dummies	No	No	No	No	Yes	Yes	Yes	Yes
Firm Characteristics	No	No	No	No	No	Yes	Yes	Yes
Co-worker Charact.	No	No	No	No	No	No	Yes	Yes
Firm Fixed Effects	No	No	No	No	No	No	No	Yes
R² (within)	.0023	.1123	.1138	.1145	.1149	.1153	.1168	.1253
N	1445201	1445201	1445201	1445201	1445201	1445201	1445201	1445201

[***], [**], [*] statistically significant at the 1, 5 and 10 percent level, respectively. Standard errors, reported in brackets, were calculated with clustering by firms.

UD1: $0.0 \leq UD < 0.2$; UD2: $0.2 \leq UD < 0.4$; UD4: $0.6 \leq UD < 0.8$; UD5: $0.8 \leq UD \leq 1.0$.

Table 6: Fixed Effects Estimation Results: Firms with more than 35 Employees, Union Density Dummies