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Should trade unions welcome foreign investors? First evidence from Danish matched employer-employee data

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Abstract

While foreign direct investment (FDI) is widely believed to have an adverse effect on the bargaining power of unions and hence on union wages, little empirical research has been done to substantiate this conjecture. The present paper aims at filling this gap by analysing the effect of foreign ownership on the union wage premium in Denmark. Using matched employer-employee data, the positive effect of plant level unionisation on wages is found to vanish in foreign-owned firm.

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1. Introduction

Over the last two decades or so foreign direct investment (FDI) has increased sharply, both in absolute terms but also relative to GDP and trade. While FDI is often perceived to be beneficial to the host country, trade unions frequently fight foreign take-overs. 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.[1]

The present paper aims at filling this gap by providing an empirical assessment of the effects of foreign ownership on the union wage premium in Denmark. The institutional framework in Denmark 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.[2] Second, to a large degree collective bargaining in Denmark takes place at the plant-level (cf. OECD, 2004). Hence, one can expect plant-level characteristics to play an important role in wage settlements.

2. Data and Descriptive Statistics

The study utilises data from the Integrated Data Base (IDA) for Labor Market Research combined with firm-level information both compiled by Statistics Denmark. Based on administrative registers the data covers the total Danish population for the years 2000 to 2002. IDA provides a large number of individual socio-economic characteristics, and in particular information on trade union membership. The dependent variable of the regression analysis is (the log of) the nominal hourly wage rate which is calculated by Statistics Denmark.

Each individual can be linked to a workplace which in turn is matched with firm-level information. A firm is classified as being foreign-owned when more than 50% of the firm is owned by foreigners. Moreover, the FDI has to amount to more than DKK 10 million. Therefore, the definition may fail to identify small foreign-owned firms.[3] The nature of the dataset also enables users to calculate average characteristics of the workers employed in a firm. Most importantly, union density at the firm-level is computed as the fraction of employees that are members of a trade union.

For the analysis, attention is confined to full-time private sector employees aged 18 - 65, for which the wage information was classified as being reliable. The sample then consists of 2169277 observations.

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[1] A number of studies discuss the wage effects of multinational enterprises in unionised labour markets and show that a credible threat to shift production abroad improves the bargaining position of a firm (cf. Mezzetti and Dinopoulos, 1991, for an early contribution). In contrast, to the best of my knowledge, Choi (2001) is the only study that comes up with evidence on the threat effect of FDI. Using industry-level panel data he shows that the union wage premium in US manufacturing is negatively associated with the stock of outward FDI.

[2] The high degree of unionisation in Denmark may induce spill-over effects from wage agreements in unionised firms to non-unionised firms. The union wage premium is then likely to be rather small.

[3] As a robustness check, I have therefore restricted the sample to firms with at least 35 employees. Qualitative results remain largely unchanged. Another potential problem is the fact that Danish multinational enterprises, which may have a bargaining position comparable to foreign-owned firms, can not be identified. Hence, any established negative effect of foreign ownership on union wages might be considered as a lower bound on the corresponding effect of multinationals on union wages.

In line with previous empirical evidence[4], Table 1 shows that on average workers earn considerably higher wages when employed in a firm owned by foreigners. The average hourly wage in foreign-owned firms is 13.4% higher than in Danish firms. Both in foreign-owned and in Danish firms at about 83% of all individuals in the dataset are members of a trade union.

Next, descriptive statistics are provided separately for members of a trade union and for employees working in a firm with a union density of 75% or above. High-skilled workers are underrepresented among union members. This may partly explain why on average union members earn slightly lower wages than non-members. The descriptive statistics also show that the foreign ownership premium is much lower for union members and for workers in highly unionised enterprises. For the latter the premium shrinks to merely 7.7%.

Table 2 provides descriptive statistics at the firm level and shows that Danish and foreign firms differ systematically from each other. In particular, foreign-owned enterprises are larger, more capital-intensive and export more than their Danish counterparts. Table 2 also documents that highly unionised firms tend to be somewhat larger than firms with a lower share of trade union members.

3. Empirical Specification

I estimate the following wage equation for individual *i* working in firm *j* at time *t*

$$\ln w_{ijt} = X_{it}\alpha + Z_{jt}\beta + UM_{it}\delta + UD_{jt}\phi + F_{jt}\gamma + UM_{it}F_{jt}\mu + UD_{jt}F_{jt}\rho + \lambda_t + \alpha_i + \theta_j + \varepsilon_{ijt}\,. \quad (1)$$

The dependent variable, *ln* w_{ijt}, is the gross hourly wage. X_{it} is a vector of observed individual characteristics including age (squared), tenure (squared), actual work experience (squared), dummies for educational attainment and small children in the household, and a full set of occupational and regional dummies. Z_{jt} contains firm characteristics, namely the capital-labour ratio, the share of exports in total sales, the logarithm of the number of full-time equivalent employees in the firm, industry dummies, and average characteristics of the workforce.

In order to assess the influence of trade unions on individual wages, a dummy variable for individual union membership (UM_{it}) and four dummy variables,[5] each with a 20% band, indicating the union density (UD_{jt}) of enterprise *j* are included (a density of between 40 and 60 % serves as the reference category). High degrees of unionisation can be expected to improve the bargaining situation of unions through its impact on the ability of workers to inflict a loss on the firm during a labour dispute (Barth et al., 2000). Union membership differentials are also widely documented in the literature but open to a number of interpretations.[6] In fact, some studies find the membership premium to vanish once union density is controlled for (see again, e.g., Barth et al., 2000).

[4] A large literature documents a positive wage premium in foreign-owned firms even though recent evidence based on matched employee-employer data suggests that the premium is lower than previously thought (see e.g. Heyman et al., 2008).

[5] A linear union density term was also tested. The qualitative results do not change materially. Since I do find nonlinearities in the effect of union density on wages, attention is restricted to dummy specifications.

[6] A possible 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.

Table 1: Selected descriptive statistics at the individual level

	All workers		Union members		Working in firms with high union density (> 75 %)	
Firm ownership	Foreign	Danish	Foreign	Danish	Foreign	Danish
hourly wage (DKK)	212.7	187.5	204.3	183.1	197.9	183.7
union member	.8299	.8321	1.000	1.000	.8953	.9119
Skill level						
low	.2608	.2767	.2883	.2951	.3034	.2998
medium	.5729	.6071	.5802	.6112	.5750	.6062
high	.1663	.1162	.1314	.0937	.1216	.0940
N	331247	1838030	274907	1529418	255743	1445665

Table 2: Selected descriptive statistics at the firm level

	All firms		Firms with high union density (> 75 %)	
Firm ownership	Foreign	Danish	Foreign	Danish
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
N	6281	191992	3625	119442

The dummy F_{jt} indicates whether a firm is owned by foreigners. The union variables are interacted with the foreign ownership dummy to study the central question of this paper, namely whether the influence of trade unions on wages differ between foreign and Danish firms. The theoretical literature on the wage effects of multinational enterprises in unionised labour markets predicts that the bargaining strength of a union deteriorates in foreign-owned firms. Accordingly, the interaction between union density, i.e. the fraction of employees in a firm that are members of a trade union, and foreign ownership can be expected to enter the regression equation with a negative sign. Since the theoretical literature focuses on the overall bargaining strength of a firm-level union and does not consider the individual union membership wage premium, existing studies do not offer a prediction on the sign of the interaction between union membership and foreign ownership.

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 the variables of interest, consistent estimates could be obtained by pooling the data and estimating the model by OLS. However, union membership but also union density are likely to be correlated with unobservable individual-specific characteristics that affect the wage rate (cf. Lewis, 1986). Hence, fixed effect estimation is used to remove unobservable (time-invariant) individual specific heterogeneity.

Estimates could still be confounded by unobserved firm-specific heterogeneity. In particular, foreign-owned firms might exhibit unobserved characteristics that systematically differ from domestic firms and affect individual wages. Both firm- *and* individual-specific heterogeneity can be eliminated by defining worker-firm combinations ('spells') and

estimating a spell fixed effects model. Note that identification 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. Consequently, in a short panel the spell fixed effects regression is only able to detect the immediate wage effects of foreign take-overs.

Standard errors are adjusted by clustering on the firm-level (cf. Moulton, 1990).

4. Empirical Results

Table 3 presents the results of an individual fixed effects regression of the log hourly wage on foreign ownership, the union variables and interactions between the two. Foreign ownership enters positively and is highly statistically significant with a point estimate of .0402. The coefficient estimates of the union density dummies are statistically significant and increasing in size. Workers in highly unionised firms (union density of 80 to 100%) are found to earn almost 5% higher wages than employees in firms with no or little union presence. However, taking into account the interaction terms between union density and foreign ownership, the influence of union density on wages vanishes in foreign-owned firms. Nevertheless, even in highly unionised firms workers still benefit from foreign owners. However, for these workers the foreign ownership wage premium shrinks to merely 1.09%[7] and is hence much smaller than for employees in firms with little or no union presence.

In specifications (2) and (3) I add individual and firm characteristics to the baseline equation. While the qualitative results remain largely unchanged, coefficient estimates are markedly smaller. Workers in highly unionised firms are now found to earn between 2.30% and 3.31% more than their colleagues in firms with no or little union presence. The interaction terms have the expected signs but are only statistically significant for firms with a large proportion of union members. This suggests that in foreign-owned firms union density has only a positive wage effect at small to medium levels. Consequently, the overall foreign ownership premium declines in highly unionised enterprises. While the premium amounts to between 2.16% and 2.47% for firms in the lowest union density band, the estimate shrinks to a value of between 0.74% and 1.10% in highly unionised enterprises.

The spell fixed effects model (column 4) is consistent with previous specifications in terms of the estimated signs of the union density dummies and the interaction terms. However, estimates are largely statistically insignificant and no evidence for a foreign ownership premium is found. This may point to important unobserved firm-specific effects. However, with respect to the union density estimates this seems unlikely, since all relevant firm characteristics identified in the literature (cf. Andrews et al., 1998) are controlled for in specification (3). Given that identification relies solely on within-establishment variation, the result could simply be due to the fact that an increase in union density may not affect wages in the very short run. Unfortunately, with the data at hand the issue can not be conclusively resolved since a more thorough treatment would require a sufficient number of before- and after-acquisition observations for a longer time period.

[7] (.0402 + .0252 - .0293) - .0252 = .0109.

Table 3: Fixed effects estimation results

	(1)	(2)	(3)	(4)
Foreign	.0402***	.0247***	.0216***	-.0033
	(.0069)	(.0046)	(.0048)	(.0067)
UD1: 0.0≤UD<0.2	-.0218***	-.0225***	-.0160***	-.0054*
	(.0047)	(.0033)	(.0031)	(.0030)
UD2: 0.2≤UD<0.4	-.0122**	-.0073***	-.0042*	-.0025
	(.0057)	(.0022)	(.0022)	(.0022)
UD4: 0.6≤UD<0.8	.0173***	.0096***	.0074***	.0044
	(.0049).	(.0017)	(.0021)	(.0028)
UD5: 0.8≤UD≤1.0	.0252***	.0106***	.0070***	.0024
	(.0061)	(.0021)	(.0025)	(.0037)
UD1 * Foreign	.0304**	.0131	.0067	.0271**
	(.0140)	(.0170)	(.0192)	(.0135)
UD2 * Foreign	.0218	.0157	.0182	.0048
	(.0147)	(.0116)	(.0117)	(.0145)
UD4 * Foreign	-.0224***	-.0123***	-.0121***	-.0063
	(.0065)	(.0042)	(.0043)	(.0053)
UD5 * Foreign	-.0293***	-.0137***	-.0142***	-.0008
	(.0078)	(.0043)	(.0044)	(.0058)
UM	-.0013	.0057***	.0067***	.0057***
	(.0029)	(.0014)	(.0015)	(.0016)
UM * Foreign	.0060**	.0024	.0009	.0041
	(.0028)	(.0024)	(.0024)	(.0034)
Individual characteristics	No	Yes	Yes	Yes
Firm characteristics	No	No	Yes	Yes
Spell fixed effects	No	No	No	Yes
R^2 (within)	.0023	.0881	.0920	.1059
N	2169277	2169277	2169277	2169277

***, **, * statistically significant at the 1, 5 and 10 % level, respectively. Standard errors, reported in brackets, were calculated with clustering by firms. Year dummies included in all but the baseline regression (1). Reference Category: Non-union member in Danish firm with a union density of between 0.4 and 0.6.

With respect to the effect of union membership on wages and its interaction with foreign ownership, the results are stable across specifications. Leaving aside the baseline regression, union membership has a small but statistically significant positive impact on wages. The membership in a trade union is estimated to increase wages by between 0.57% and 0.67% and the membership premium does not differ between workers in foreign-owned and Danish firms.

5. Conclusion

The paper at hand has presented first empirical evidence on the impact of foreign ownership on union wage effects. Confirming the theoretical prediction, we find the positive wage effect of plant-level unionisation in Denmark to largely vanish in foreign-owned firm. 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.

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