

Foreign ownership and effects on employment and wages: The case of Sweden

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Abstract

In this paper we study how foreign ownership of Swedish companies affect employment and wage setting. To study the effects we specify a model that is essentially based on the assumption that the Swedish labour market can be described as a market where trade unions and employers bargain over both wage and employment. Our hypothesis is that the bargaining power is affected by institutional settings and the ownership of the firm. The data we used to test our hypothesis is a panel data set including nearly 200 firms, spanning over the period 1980-1994. The results indicate that foreign ownership has no significant effect on employment, whereas the effect on wages is significantly positive.

Keywords: Bargaining power, foreign direct investment, employment, trade union, wages.

JEL classification: J30, J50, D21, C33.

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1. Introduction

Due to globalisation and deregulations of capital markets, capital movements have increased steadily during the eighties and nineties. This becomes evident when looking at Foreign Direct Investment (FDI) into Sweden and out of Sweden. Since the early eighties, both in- and outward FDI have raised considerably. In the early eighties, outward investment exceeded inward investment, but in the mid eighties inward investment exceeded outward investment. The share of employed in Swedish firms controlled by foreign owners was nearly doubled between 1980 and 1994. At the end of 1995 twelve percent of all employees in Sweden were employed in foreign owned firms.¹ Such increase of foreign control may have affected the labour market conditions.

The ultimate purpose of this paper is to examine how foreign ownership of companies acting in Sweden have affected employment and wage setting. The hypothesis is that a switch from domestic to foreign ownership has a detrimental effect on the trade unions bargaining power, due to a more credible threat of moving the activity abroad, which may have then affected both employment and wage setting. The implicit assumption is that foreign owned firms are not as committed to a “social contract” as domestically owned firms, which makes the threat credible. This line of reasoning reflects the public debate on this issue. According to our hypothesis then, foreign ownership will have a downward pressure on wages, whereas the employment effect is more ambiguous. On one hand lower wages may induce higher employment, but according to Modén (1998) foreign ownership have led to an increase in labour productivity in Swedish manufacturing, implying a reduction in employment (at least in the short run). In addition we will test if possible differences in wage setting and employment can be related to the investors' origin.

To accomplish our objectives we will specify a model that is essentially based on the assumption that the Swedish labour market can be described as a market where trade unions and employers bargain over both wage and employment (Alogoskoufis & Manning, 1991). The simple idea is that bargaining power, which affects both equilibrium wage and employment level, may be modelled as a function of various industry and labour market characteristics, including type of ownership. The data we use to test our hypothesis is a panel data set including nearly 200 firms, spanning over the period 1980-1994.

There are by now several theoretical studies trying to explain the effect of the flow of foreign direct investment on wages and employment. Most of the studies employ a Nash-Bargaining approach, modelling the strategic bargaining relationship between a union and a firm (see Bughin and Vannini, 1995, Naylor and Santoni, 1999, Zhao, 1995). In most studies the effects of ownership per se is not analysed. Rather it is the effect of more "openness" between countries, in terms of an increase in capital movement that is analysed.² As well as the theoretical literature, the empirical literature does not focus on ownership per se, but rather on the effects of changes in capital mobility. The argument, or hypothesis, usually is that an increase in capital mobility makes the "threat" of moving production abroad more credible, and that in turn may have a negative effect on the union wage premium.

Choi (2001), for example, investigates the effect on the union wage premium in the US due to outward direct investment. The underlying model is a Nash-Bargaining model where the firm have the possibility to, or a "threat", to move its operation abroad. Choi (2001) use a two-step procedure to test the hypothesis. In the first step a wage equation is estimated using individual data. The central variable in the first step is an interaction between a union dummy variable and a dummy describing industry affiliation. The corresponding parameter estimate gives then the union wage premium for each industry, which is used as the dependent variable in a second step regression where outward investment is one of the independent variables.

The main result from the analysis in Choi (2001) is that the union wage premium decreases with the stock of outward investment. Concerning inward direct investment there is a considerable empirical literature showing that foreign firms are more productive and pay higher wages (Lipsey, 1994, Feliciano and Lipsey, 1999). In these studies it is also shown that there might be spill-over effects to other industries in the area where the investment takes place. These results would thus work in the opposite direction of a possible "threat" effect. Concerning ownership per

¹ Statistic Sweden: F 18 SM 9601. For the manufacturing sector that we study, the percentage is much higher.

² Using a Nash-Bargaining model, Zhao (1995) show that an increase in capital flow (cross-hauling foreign investment) decreases the negotiated wage for every level of employment. Employment, however, will increase if the union is "wage oriented".

se, Hatzius (2000) finds that the bargaining power of the employed was reduced when the domestic (British) firm was acquired by foreign owners.

The rest of the paper is organised as follows. Section 2 presents the theoretical model underlying our empirical model. Here we don't take foreign ownership explicitly into consideration, but focus on how employment and wages may be determined in a unionised economy. In section 3 we present the data. In Section 4 we set up the empirical model, where we take foreign ownership into account. The result from the econometric model is presented in section 5. Section 6, finally, offers some concluding comments.

2. The model

The models that will be used here follow to a large extent Manning (1987), Alogoskoufis and Manning (1991) and Vannetelbosch (1996). We derive the structural equations for employment and wage determination assuming that both employment and wages are determined in a sequential negotiation process between an employer and a trade union that both are completely informed. The resulting model will be used as the basis for an empirical analysis in the subsequent section. The basic idea here is that the employers seeks to maximize its profit given a production technology, and that the union maximizes its members utility given a utility function. How well the respective party succeeds to absorb profits/utility depends on its bargaining strength. Bargaining strength, in turn, may depend on a number of different things, such as institutional setting. In this paper we ultimately want to test whether foreign ownership affects employment and wage setting, and our hypothesis is that this effect may be transferred through the trade unions bargaining power.

To start we assume that supply of labour is a set of workers, where the workers have a unit of labour that they supply with no disutility. Furthermore, the members of the trade union are assumed to have identical preferences that are represented by the following (indirect) utility function:

$$U = \pi u(w) + (1 - \pi)u(R), \quad (1)$$

where w denotes the real wage, π is the probability of being employed in the firm, R denotes expected real income of a worker who loses his/her job in the firm (the reservation wage). $u(w)$ and $u(R)$ are strictly increasing and concave functions. If we normalize the labour force to unity, the union utility function (1) can be written as:

$$U(w, L, R) = Lu(w) + (1 - L)u(R), \quad (2)$$

where L is the share of the labour force that is employed, and $(1 - L)$ the unemployed share.

The profit-maximizing firm is assumed to use labour, L , and capital, K , and a strictly concave technology, f , to produce its output. Assuming that capital is fixed in the short run, the firm's short run profit can be written as:

$$\Pi(L, K, p, w) = pf(L, K) - wL \quad (3)$$

where w is the wage, K is capital and p is the price of output.

The negotiation process between the union and employer is formalized by the strategic model of bargaining between completely informed players. This can be set up with a Nash product, where the objective is to maximize a weighted product of the union's utility and the firm's profit. The weights are determined by the bargaining power, which in turn is a function of a vector of variables, \mathbf{z} , such as institutional setting, firm characteristics, labour market conditions, and type of ownership. The problem can be solved backwards, i.e. by solving for employment conditional on a given wage:

$$\max_L (U(w, L, R) - U_0)^{\Phi_2(\mathbf{z})} (\Pi(L, K, p, w) - \Pi_0)^{1 - \Phi_2(\mathbf{z})} \quad (4)$$

where $\Phi_2 \in (0,1)$ is the union bargaining power over employment. If $\Phi_2 = 0$, the firm sets the employment level. U_0 and Π_0 are the fallback utility and profit, where we assume $U_0 = u(R)$ and $\Pi_0 = 0$.

The first order condition to this problem can be written as:

$$\Phi_2(\mathbf{z}) \frac{pf(L, K)}{L} + (1 - \Phi_2(\mathbf{z})) pf_L(L, K) = w \quad (5)$$

From equation (5) we see that the employment is chosen such that a linear combination of the value of the average productivity of labour, and the value of the marginal productivity of labour is equal to the wage. If $\Phi_2 = 1$, the firm has no influence on employment determination and the wage will be set equal to the value of the average product. If $\Phi_2 = 0$, then employment is chosen such that the marginal product of labour equals the wage.

Equation (5) gives us then the employment level as a function of the given real wage, the

producer price, the capital stock, and the unions bargaining power i.e.,

$$L = L(w, p, K, \Phi_2(\mathbf{z})). \quad (6)$$

The first stage in the negotiation process is where the union and the employers negotiate over wages, given the employment level from the second stage, i.e.:

$$\max_w (U(w, R, L(w, p, K, \Phi_2(\mathbf{z}))) - U_0)^{\Phi_1(\mathbf{z})} (\Pi(L(w, p, K, \Phi_2(\mathbf{z})), K, w) - \Pi_0)^{1-\Phi_1(\mathbf{z})} \quad (7)$$

where $\Phi_1 \in (0, 1)$ is the union bargaining power in the wage determination stage. If $\Phi_1 = 1$ the trade union set the wage, which in combination with $\Phi_2 = 0$ gives us the monopoly model (see e.g. Dunlop 1944).³ If Φ_1 and Φ_2 turns out to be equal we have the efficient bargaining model of MacDonald and Solow (1981). The first order condition to equation (7) gives us then the equilibrium, or optimal, wage setting rule, which can be written as:

$$w^* = w(L(w, p, K, \Phi_2(\mathbf{z})), R, \Phi_1(\mathbf{z})). \quad (8)$$

Equation (8) shows that the optimal wage setting rule in general is a function on the employment level, and thus on bargaining power over employment, the reservation wage and bargaining power over the wage.⁴ Substituting equation (8) into (6) gives us then the equilibrium level of employment as:

$$L^* = L(w^*, p, K, \Phi_2(\mathbf{z})) = L(p, K, R, \Phi_2(\mathbf{z}), \Phi_1(\mathbf{z})) \quad (9)$$

Following Manning (1987) by assuming that $u(w) = w$, $u(R) = R$ and $U_0 = R$ it can be shown that:

$$\frac{\partial L^*}{\partial \Phi_1} \leq 0, \frac{\partial L^*}{\partial \Phi_2} \geq 0, \frac{\partial w^*}{\partial \Phi_1} \geq 0, \frac{\partial w^*}{\partial \Phi_2} \leq 0 \quad (10)$$

³ If $\Phi_1 < 1$ and $\Phi_2 = 0$ we have the right-to-manage model.

⁴ If the production function is of a Cobb-Douglas type it can be shown that the wage setting rule is independent of the employment level, and hence also independent of Φ_2 , bargaining power over employment (see for example Manning, 1987)

Perhaps the only surprising result is that we cannot say how the wage is affected by a change in bargaining power over employment without having a more explicit model. If the production function is, for example, of a Cobb-Douglas type, it can be shown that $\partial w / \partial \Phi_2 = 0$.

Equation (8) and (9) constitutes a system of equations describing equilibrium employment and wage determination that in principle can be estimated. A problem however is that the bargain parameters, Φ_1 and Φ_2 , are not directly observable. To get around this problem we will follow the approach suggested by Alogoskoufis and Manning (1991) in which it is assumed that bargaining power can be expressed as a function of a vector of exogenous variables, \mathbf{z} . In particular we are interested to investigate how differences in ownership affect bargaining power, and ultimately employment and wage setting.

3. Data

To study the effects from foreign ownership on wages and employment we use a panel data set for manufacturing firms in Sweden. The panel covers the years 1980 to 1994, and consists of firms with at least 50 employed. A classification of the industries is given in Table A1 in the appendix. Since the classification of industries has been changed, only firms that belong to the same industry in both SNI69 and SNI92 are included. In total the sample consists of 189 firms with at least five continuous observations. To be classified as a foreign owned company, foreigners should have more than 50 percent of the votes in the company.

The data for wages, employment and capital has been collected from the firm's annual reports. The variables that are assumed to affect the bargaining power through the Φ_1 and Φ_2 functions are, in addition to country specific ownership, trade union density, openness, and the unemployment rate for each trade union. Data over union density and unemployment has been collected from each trade unions annual report. To calculate the measure of openness for each industry, defined as (export + import) /total sales (see e.g. Leamar, 1987), data over exports, imports and total sales have been collected from Statistic Sweden's industry statistics.

Summary statistics for some of the variables are given in Table A2. The table reveal that there is an increase in both the real wage per employed, and in real capital during the sample period. There is also an increase in openness. At the same time there is a reduction in the average number of employed per firm, which reflects the general trend of structural change towards less industrial employment. The average trade union density varies between 79 and 89 percent with the highest value in 1985. The sharp increase for the unemployment benefit in 1991 and onwards is to some extend an effect of altered accounting principles. To account for this we include a dummy variable in the regression model.

Figure 1. About here.

From Figure 1 we can see that the percentage of foreign owned firms in the sample have increased sharply. From a level of about 28 percent in 1985, the percentage increases to

approximately 57 percent in 1994. Most of the new owners originate from the European countries. The share for the European countries, exclusive the Nordic countries, nearly tripled during the sample period. The same pattern is found for the percentage share of the Nordic countries, exclusive Sweden. For this group of countries the share increased from about 5 percent in 1980 to 16 percent at the end of the sample.

4. Econometric specification

To test our hypothesis of differences in bargaining power between trade unions and firms with different owners, we estimate the derived wage and labour equations simultaneously. Equation (6) and (8) in Section 2 gives the following system

$$\begin{aligned} w &= w(L, R, \Phi_1(\mathbf{z}_1)) \\ L &= L(w, p, K, \Phi_2(\mathbf{z}_2)). \end{aligned}$$

In addition to the country specific ownership of the firm, the bargaining power in the wage equation $\Phi_1(\mathbf{z}_1)$ is assumed to be a function of the industries union density, openness and the fraction of the trade-unionists living on unemployment benefit. The bargaining power for the labour equation $\Phi_2(\mathbf{z}_2)$ includes the same set of variables as $\Phi_1(\mathbf{z}_1)$, with the exception of the fraction of the trade-unionists living on unemployment benefit. We have chosen to exclude this variable due to the short run dependence between the number of workers in a firm and industry unemployment.

Among the industries classified according to Table A1, the lowest mean wage per employed is found for the workers in the pulp, paper and paperboard industry. The reservation wage at time t has therefore been specified as the lowest observed wage per employed among these workers at time t .

In the specification of the simultaneous equation system we consider two different specifications of the Φ functions, both a linear and a non-linear specification. The non-linear specification has been included to ensure that the bargaining power lies between zero and one, and to facilitate the

analysis of the trade unions bargaining power. In the linear case the system is specified as a one-way error component model

$$\begin{aligned} w_{it} &= L_{it}\beta_1 + x_{1it}\gamma_1 + \mathbf{z}_{1it}\boldsymbol{\rho}_1 + \mu_{1i} + v_{1it}, & i &= 1, \dots, N \\ L_{it} &= w_{it}\beta_2 + \mathbf{x}_{2it}\boldsymbol{\gamma}_2 + \mathbf{z}_{2it}\boldsymbol{\rho}_2 + \mu_{2i} + v_{2it}, & t &= 1, \dots, T, \end{aligned}$$

where μ_i is an unobservable individual specific effect and v_{it} is the reminder disturbance in respective equation. $x_{1it} = R_{it}$, $\mathbf{x}_{2it} = [p_{it}, K_{it}]$ and $\boldsymbol{\gamma}'_2 = [\boldsymbol{\gamma}'_p, \boldsymbol{\gamma}'_K]$. In the non-linear case the Φ functions are specified as logistic distribution functions, $\Phi_1(\mathbf{z}_1) = 1/[1 + \exp(-\mathbf{z}_1\boldsymbol{\rho}_1)]$ and $\Phi_2(\mathbf{z}_2) = 1/[1 + \exp(-\mathbf{z}_2\boldsymbol{\rho}_2)]$ so that $\Phi_1 \in [0, 1]$ and $\Phi_2 \in [0, 1]$. With additive unobservable variables the system can be written as

$$\begin{aligned} w_{it} &= \alpha_1 + L_{it}\beta_1 + x_{1it}\gamma_1 + \Phi_{1t}(\mathbf{z}_{1it}, \boldsymbol{\rho}_1) + \mu_{1i} + v_{1it}, & i &= 1, \dots, N \\ L_{it} &= \alpha_2 + w_{it}\beta_2 + \mathbf{x}_{2it}\boldsymbol{\gamma}_2 + \Phi_{2t}(\mathbf{z}_{2it}, \boldsymbol{\rho}_2) + \mu_{2i} + v_{2it}, & t &= 1, \dots, T. \end{aligned}$$

Before estimation the original time series is transformed into deviations from time mean, such that the typical element (of e.g. the wage series) become $w_{it}^\circ = w_{it} - \bar{w}_i$, with $\bar{w}_i = T^{-1} \sum_{s=1}^T w_{is}$. Although this within-group transformation eliminates time invariant regressors, a constant is still needed in the non-linear case since $E[\Phi_k(\mathbf{z}_k)] \neq 0$. No transformation has been done to the dummy variables indicating country specific ownership and the variables affecting Φ_k in the non-linear model⁵. All variables, except the ones included in \mathbf{z}_k° and \mathbf{z}_k [$k = 1, 2$] have been log transformed. To both equations we have also added a linear time trend.

The within-group estimation of the linear and non-linear simultaneous equation systems has been carried out by GMM, with the same set of instruments for each equation. In the linear model we use the instrumental set $Z_L^\circ = [x_1^\circ, \mathbf{x}_2^\circ, \mathbf{z}_2^\circ]$, while we apply $Z_{NL}^\circ = [x_1^\circ, \mathbf{x}_2^\circ, \mathbf{z}_2]$ in the non-linear

⁵ For the non-linear model a within-group transformation would affect the value of Φ_k towards $1/2$.

case.⁶ The country specific dummy variables in Z_L° are still in levels and have not been transformed into deviations from time mean. A general description of simultaneous equation estimation is e.g. given in Hausman (1983), while a description of linear and non-linear GMM estimation of simultaneous equations based on panel data can be found in e.g. Arellano (2003). To account for heteroskedasticity and autocorrelation we use a Newey and West estimator of the covariance matrix. The covariance matrix has been adjusted to account for the non-estimated fixed effects.

5. Results

In the calculations of the Newey and West covariance matrix autocovariances of lag 1 is used, as test statistics indicate that the error terms in both equations follow an AR1 process. If we study the variables that are not included in the \mathbf{z} vectors, we see from the wage equation that a higher reservation wage will increase the wage. We also see that the number of employed has a significantly positive effect on the wage, which indicate that larger companies on average pay a higher salary to their employees. Turning to the labour equation we can note that an increase in the wage has a significant negative effect on employment, while a larger capital stock has a significantly positive effect. A higher producer price will also increase employment, although this effect is not significant.

Looking at the variables that are assumed to affect the bargaining power, we see that foreign ownership generally has a small negative effect on the bargaining power in the employment equation, while the effect is positive in the wage equation. However, none of the effects in the labour equation are significant, and F-tests as well as regressions with a common dummy variable for foreign ownership indicate that we can not reject the hypothesis that employment are unaffected by the ownership of the firm.

For the linear wage equation the dummy variables for Austria/Switzerland and Norway are significantly positive. The results from the non-linear wage equation also support the finding of a

⁶ We have excluded trade unionists living on unemployment benefit from the instrumental set since this variable may be endogenous for the labour equation.

significant effect of Norwegian ownership. The effect of Austrian/Swiss ownership is however insignificant in this equation. Instead the effects of English/Irish and US/Canadian ownership turn out to be significant. Although the results for country specific ownership is not clear-cut between the two model specifications, regressions with a common dummy variable for foreign ownership indicate a significant effect in both models. The point estimates for these parameters were 0.029 (s.e. 0.011) in the linear model and 0.094 (s.e. 0.037) in the non-linear model.

Table 1. About here.

A potential problem is that our results may suffer from selection bias in the sense that foreigners tend to invest in more productive firms that pay higher wages. To test for this we have estimated the wage and employment equations for Swedish owned firms, controlling for future foreign acquisition. We have done this by including a dummy variable that take the value one for firms that later will be classified as foreign owned firm. The results suggest that the future foreign owned firms do not pay significantly higher wages to their employees, which indicates that our results do not suffer from this selection problem.

The other variables that are assumed to affect the bargaining power, i.e. trade union density, unemployment and openness, are all significant in the linear model. Although the magnitude from increased openness is at about the same level (with opposite sign) in the two equations, the total impact on wages from increased openness is positive. On the other hand increased openness has a negative effect on employment, both from the direct effect and the indirect effect since increased wages lowers employment.

Table 2. About here.

The bargaining power over wages and employment is positively affected by increased union density. The total effect on wages and employment is also positive, although the effect on employment is reduced due to a negative indirect effect. From the wage equation we also see that an increase in unemployment reduces the trade unions bargaining power and also wages.

Considering the composite effect from increases in \mathbf{z}_1 and \mathbf{z}_2 the estimation results are consistent with the first three derivatives in (10), i.e. $\partial L^* / \partial \Phi_1 < 0$, $\partial L^* / \partial \Phi_2 > 0$ and $\partial w^* / \partial \Phi_1 > 0$. The fourth derivative that could not be signed in (10), i.e. the effect on wages due to an increase in the trade unions bargaining power over employment, is positive $\partial w^* / \partial \Phi_2 > 0$.

From the non-linear model the results indicate that the trade unions bargaining power over wages ($\Phi_1 = 0.39$, s.e. 0.08) are less than the bargaining power over employment ($\Phi_2 = 0.64$, s.e. 0.07). The linear model also supports these results. The results also indicate that we can reject the monopoly union model, the right-to-manage model and the efficient bargaining model.

6. Discussion

In this paper we have used a sequential bargaining model between firms and trade unions to study the effects of foreign ownership on wages and employment. The hypothesis is that the bargaining power of the trade union may differ depending on the management and ownership of the firm. One advantage with the sequential bargaining approach is that the bargaining power of the trade unions and firms is allowed to differ in the wage setting stage and in the employment negotiations.

Although foreign ownership generally has a negative effect on the trade unions bargaining power over employment, the results indicate that this effect is not significant. Thus we cannot reject the hypothesis that employment is unaffected by the ownership of the firm. On the other hand the results reveal that foreign ownership has a significantly positive effect on wages and the trade unions bargaining power over wages. So in this case we can reject the hypothesis that wages are unaffected by the ownership of the firm, although the results are not clear-cut concerning country specific ownership. In the linear model Austrian/Swiss and Norwegian ownership have a significant positive effect, whereas the non-linear model indicate that English/Irish, Norwegian and US/Canadian owners pay higher wages. The results from an alternative regression suggest that this effect is not a result of a selection bias, in the sense that foreigners tend buy Swedish high productive companies that pay higher wages.

Openness, here defined as $(\text{export} + \text{import})/\text{total sales}$, turned out to have a significant effect in the linear model. The results indicate that an increase in openness will increase wages and reduce employment. The reduction in employment and increases in wages, which are shown in the descriptive statistics, are thus partly an effect of increased trade between countries. The result that increased openness leads to higher wages is also consistent with findings in other studies, e.g. Lipsey (1994) and Feliciano and Lipsey (1999) who studied the effects on US wages. Although their definition of openness considers capital movements in the form of inward direct investments whose effect mainly affects the wages of foreign companies.

The additional variables in the bargaining functions are all significant, in the linear model, and both wages and employment will be positively affected by increased union density. The results

from the wage equation also indicate that increased unemployment will reduce the bargaining power for the trade union and lower wages. Finally, the results indicate the trade unions bargaining power over employment are larger than its bargaining power over wages.

Although the approach we have applied in this study make it possible to test whether foreign ownership effect wages and employment, the approach do not present any theoretical explanation to why the bargaining power of domestic and foreign owners should differ. To test our hypothesis that foreign owners are likely to have a more creditable threat to move the production abroad we have included foreign ownership in the bargaining function. Even if this approach seems reasonable, one would ideally like to control for ownership of similar plants in other countries. This information is however not included in the dataset used in this study.

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Appendix

Table A1: Industries included in the data set

SIC	Industries
154,155 and 158	Manufactures- of vegetable and animals oils and fats,- of dairy products and -of other food products.
211	Manufactures of pulp, paper and paperboard.
241	Manufactures of basic chemicals.
243,245 and 246	Manufactures- of paints, varnishes and similar coatings, printing ink and mastics, - of soap and detergents, cleaning and polishing preparations, perfume and toilet preparations and of other chemical products
261	Manufactures- of glass and glass products.
265, 266 and 268	Manufactures- of cement, lime and plaster -of articles of concrete, plaster and cement and -of other non- metallic mineral products
272, 273 and 274	Manufactures of tubes, other first processing of iron and steel, basic precious and non- ferrous metals.
282, 283	Manufactures- of tanks, reservoirs and containers of metals, central heating radiators and boilers, -of steam generators, except central heating, hot water boilers.
286, 291 and 295	Manufactures of cutlery, tools and general hand ware, and manufactures- of machinery for the production and use of mechanical power, except aircraft, vehicle and - of other special purpose machinery.
313 and 314	Manufactures of insulated wire and cable and - of accumulators, primary cells and primary batteries.

Table A2: Sample statistics

Year	Employed	Real wage	Capital	Trade union density	Openness	UBF ^a	PPI	Number of obs.
1980	388 (461)	101 (15)	45.3 (83.1)	0.828 (0.067)	0.715 (0.259)	0.020 (0.0037)	1.00	135
1981	357 (427)	95 (16)	40.1 (69.0)	0.823 (0.069)	0.715 (0.262)	0.022 (0.0042)	1.09 (0.038)	143
1982	343 (407)	105 (18)	40.2 (65.7)	0.842 (0.060)	0.769 (0.288)	0.036 (0.0081)	1.12 (0.025)	146
1983	322 (374)	121 (20)	40.8 (66.2)	0.856 (0.057)	0.802 (0.280)	0.043 (0.0039)	1.10 (0.018)	159
1984	341 (392)	131 (26)	46.7 (70.9)	0.867 (0.059)	0.817 (0.279)	0.044 (0.0039)	1.09 (0.032)	163
1985	341 (390)	145 (29)	54.4 (79.4)	0.878 (0.061)	0.820 (0.276)	0.037 (0.0047)	1.06 (0.017)	173
1986	343 (393)	164 (28)	59.7 (89.0)	0.843 (0.054)	0.829 (0.297)	0.031 (0.0037)	1.04 (0.020)	178
1987	333 (378)	171 (32)	62.8 (91.4)	0.854 (0.053)	0.842 (0.322)	0.033 (0.0042)	1.03 (0.024)	181
1988	326 (369)	182 (32)	63.1 (92.5)	0.867 (0.056)	0.857 (0.333)	0.027 (0.0031)	1.07 (0.019)	186
1989	328 (369)	208 (30)	66.4 (94.1)	0.826 (0.066)	0.912 (0.438)	0.024 (0.0036)	1.08 (0.032)	183
1990	304 (331)	220 (35)	72.6 (10.5)	0.826 (0.064)	0.830 (0.334)	0.035 (0.0050)	1.03 (0.033)	186
1991	296 (320)	227 (45)	79.3 (11.2)	0.828 (0.058)	0.880 (0.423)	0.069 (0.0097)	1.02 (0.035)	179
1992	278 (290)	271 (39)	83.1 (11.1)	0.789 (0.073)	0.935 (0.446)	0.088 (0.0045)	1.01 (0.054)	171
1993	264 (265)	258 (45)	82.6 (11.0)	0.829 (0.038)	1.100 (0.637)	0.118 (0.0131)	1.06 (0.049)	162
1994	270 (267)	284 (45)	83.2 (11.5)	0.803 (0.050)	1.115 (0.637)	0.121 (0.0151)	1.11 (0.040)	155

^aUBF = percentage of the trade unionists living on unemployment benefit.

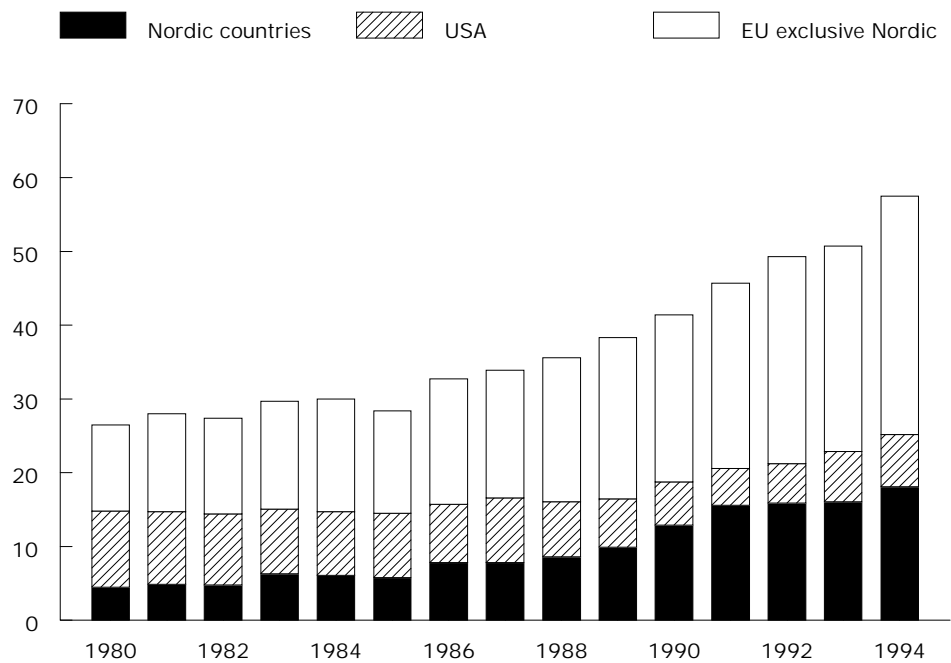


Figure 1. Foreign ownership of Swedish firms, 1980-1994, in percent.

Table 1. Estimation results for the wage equation

	Linear model		Non-linear model	
	Est.	s.e.	Est.	s.e.
Reservation wage	0.815	0.026	0.466	0.022
Employed	0.528	0.083	0.268	0.063
Openness	0.102	0.027	0.029	0.051
Trade union density	0.395	0.195	0.024	0.287
UBF	-0.220	0.083	-1.160	0.390
Dummy UBF ^a	0.195	0.041	0.288	0.191
Austria & Switzerland	0.043	0.020	0.042	0.062
Denmark	-0.016	0.032	0.142	0.090
England & Ireland	0.026	0.037	0.256	0.110
France	0.040	0.032	0.050	0.105
Germany	0.011	0.030	0.036	0.099
Italy	0.046	0.032	0.175	0.091
Belgium & Holland	0.019	0.020	0.085	0.070
Norway	0.069	0.030	0.176	0.089
US & Canada	0.010	0.018	0.118	0.064
Finland	0.039	0.035	-0.103	0.144
Time	-0.33 10 ⁻⁴	0.6 10 ⁻⁵	0.048	0.002
Constant			-96.51	4.191
Mean Φ_1			0.39	0.08 ^b
R-squared	0.58		0.73	
Durbin-Watson	1.43		1.50	

^a UBF = unemployment benefit fund. In the estimation UBF has been multiplied with 10. ^b The Delta method has been used to calculate the standard errors.

Table 2. Estimation results for the labour equation

	Linear model		Non-linear model	
	Est.	s.e.	Est.	s.e.
Wage	-0.266	0.037	-0.181	0.058
Capital	0.197	0.020	0.184	0.021
PPI	0.048	0.123	0.054	0.125
Openness	-0.103	0.029	-0.161	0.063
Trade union density	0.541	0.158	0.722	0.378
Austria & Switzerland	0.006	0.019	0.007	0.081
Denmark	0.010	0.020	-0.027	0.085
England & Ireland	-0.001	0.038	-0.131	0.158
France	-0.010	0.029	-0.092	0.125
Germany	-0.012	0.026	-0.058	0.116
Italy	-0.014	0.028	-0.124	0.117
Belgium & Holland	-0.008	0.027	-0.067	0.111
Norway	0.009	0.026	-0.033	0.110
US & Canada	0.001	0.015	0.009	0.064
Finland	-0.057	0.035	-0.097	0.151
Time	$0.33 \cdot 10^{-5}$	$0.34 \cdot 10^{-5}$	-0.007	0.004
Constant			13.91	7.396
Mean Φ_2			0.64	0.07^b
R-squared	0.23		0.22	
Durbin-Watson	0.86		0.80	

^b The Delta method has been used to calculate the standard errors.