

**CHANGES IN FOREIGN OWNERSHIP AND WAGES IN INDONESIAN  
MANUFACTURING**

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**Introduction\***

It has long been recognized that inward foreign direct investment (FDI) has the potential to bring economic benefits to the host economy in the forms of capital, new technology, organizational and management skills, and access to foreign markets. In addition, foreign-owned firms and plants may pay higher wages than domestically owned ones. There are a few possible explanations to why foreign firms would choose to pay higher wages than domestic ones (Lipsey and Sjöholm, 2001). For instance, it could be the case that foreign firms with little knowledge of the local labour market have to pay a wage premium to attract suitable workers. It could also be the case that foreign firms try to prevent technology leakages to domestic competitors by minimizing labour turnover. Other possible explanations to high wages in foreign owned firms include goodwill reasons and the need to satisfy critical opinions in the host or home countries. On the contrary, it has also been suggested that FDI changes the bargaining positions between employers and employees, which will result in lower wages in foreign owned firms. The reason

is that foreign owners can credibly threaten to move the operation to another country if the wages are too high (Huizinga, 1990).

A number of empirical cross-country studies find wages in foreign firms being comparably high. This seems to be the case in both developing and developed countries and even after controlling for such factors as industry location, capital intensities and size of operation.<sup>1</sup> While the wage differentials seem well established in cross-country studies, it is risky to interpret them as implying that foreign ownership, or increases in foreign ownership, caused the differentials. The reason is that in a cross section there is always the possibility that, for example, they result from a tendency of foreign firms to acquire domestic plants that pay relatively high wages. One possible approach to control for this possibility would be to look at wage effects of changes in ownership (Conyon et al, 1999). By following a plant before and after a takeover, one can examine the effect of ownership after controlling for plant specific unobservable characteristics. We use this methodology to examine, firstly, the characteristics of plants that are taken over by foreign firms and, secondly, the effect of such takeovers on wages. The issues are examined on a plant level data set for the Indonesian manufacturing sector between 1975-1999. Finally, as a check on the influence of ownership, holding other initial characteristics constant, we also study cases of shifts from foreign to domestic ownership.

### **Ownership changes in Indonesian manufacturing**

We will analyze the issue at hand with Indonesian manufacturing data supplied by the Indonesian Statistical Office. The data includes all manufacturing plants with more than 20

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employees for the years 1975-1999. Inclusion of plant identification codes enables us to construct a panel and follow the plants over time. The number of plants in the Indonesian manufacturing sector increased from 7,355 in 1975 to 22,041 in 1999 and the number of plants with foreign ownership from 263 to 1,710.<sup>2</sup> The turnover of plants is high, and the plants are only present for an average number of seven years. The foreign share of Indonesian manufacturing employment and value added is shown in table 1. The foreign share was rather low until 1985, about ten percent of employment and 21 percent of value added. However, an economic crisis in the mid 1980s, caused by falling prices of oil and other raw-materials, forced Indonesia to liberalize its FDI regime from around 1986. The result has been a sharp increase in the relative importance of FDI, which amounts to about 21 percent of employment and 36 percent of value added in 1999. The foreign presence is relative low in Food products, Wood products, and Paper and Pulp, and relative high in Basic Metal Industries, Fabricated Metal Products and Other Industries.

The wage ratios between foreign owned and private-domestically owned plants are shown in table 2. The wage difference was very large in 1975; wages were about three times as high in foreign compared to domestic-private plants. The wage differences have gradually decreased over time and were in 1999 about 44 percent for blue-collar workers and 68 percent for white-collar workers. The difference in blue collar wages is high in Food products, Paper and Pulp, Chemicals and Non-Metallic Minerals, and in white-collar wages in Food products, Non-Metallic Minerals, Fabricated Metal Industries, and Other Industries. Finally, white-collar wages are higher in domestic-private than in foreign plants in Basic Metal Products.

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<sup>1</sup> See for instance Aitken et al (1997), Doms and Jensen (1998), Feliciano and Lipsey (1999), Girma et al (1999), and Lipsey and Sjöholm (2001).

<sup>2</sup> A foreign plant is defined as one with any foreign ownership. Most foreign plants are joint ventures with a majority foreign ownership.

For instance, foreign-owned plants in Indonesian manufacturing paid substantially higher average wages than did private Indonesian-owned plants in 1996. The margin was a little less than 50 per cent for blue-collar workers and a little more than 50 per cent for white-collar workers (Lipsev and Sjöholm, 2001, Table 2).<sup>3</sup> Part of the difference can be accounted for by the fact that foreign-owned plants hired more educated workers, particularly more high school and university graduates, and fewer workers with only primary education (*ibid*, Table 3). However, wages were higher in foreign-owned plants even for workers of a given educational level. That implies that foreign-owned plants were paying a higher price for labor of a given quality than were domestically-owned plants, by about a quarter for blue collar workers and over a half for white-collar workers (*ibid*, p. 13). Some of those differences in the price paid for labor were associated with the characteristics of foreign-owned plants. They were in different industries and different regions from those of domestically-owned plants, and they were larger and used more inputs per worker. Taking all these factors into account, it was still found that a foreign-owned plant of a given size, in a given industry in a given region paid more for a worker of a given level of education than a corresponding domestic plant. The margin was about 12 per cent for blue-collar workers and 20 per cent for white-collar workers.

Table 3 shows the number of domestic takeovers of foreign plants and the number of foreign takeovers of domestic plants. The number of takeovers is small; less than one percent of the total number of plants changes ownership from domestic to foreign or from foreign to domestic. However, the number increases over time, especially foreign takeovers that increase from an average of only 23 per year between 1975-1989 to 90 per year between 1990-1999. The sharp increase in foreign takeovers is caused by the previously mentioned liberalization of the

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<sup>3</sup> See also Hill (1990) and Manning (1998, Ch. 6) for a comparison of wages in domestic and foreign owned firms in Indonesia.

FDI regime, taking place in Indonesia since the mid 1980s. Domestic takeovers of foreign plants increased more than twofold, from 29 per year in the first period to 64 per year in the 1990s.

Takeovers are not evenly spread over sectors but take place mainly in Food products, Textiles, Wood products, Chemicals and Fabricated Metal Products. The sector distributions are similar between foreign and domestic takeovers. Takeovers in both directions are larger, on average, than existing domestic plants, but considerably smaller than existing foreign plants. Thus, with respect to size, they are clearly not a random selection among domestic plants and foreign plants, with a bias in foreign takeovers toward the larger domestic plants and a bias in domestic takeovers toward the smaller foreign plants.

Table 4 answers the question as to whether foreign firms pay high wages on average simply because they took over high-wage local firms. Table 4 shows the wages one year and two years before a foreign takeover of a private-domestically plant relative to wages in private domestically-owned plants. It also shows the same information for foreign-owned plants that were taken over by domestic owners.

Plants taken over by foreigners paid blue collar wages somewhat above the average in all privately owned plants. The differentials were in the range of 10 to 20 per cent, far below the differential in table 2. For white-collar employees, the contrast was even more striking. While existing foreign plants paid about 50 per cent more to such employees, the target firms, before takeover, had been paying them about average wages for privately-owned plants. Thus there is no evidence that the differentials in existing plants resulted from selective acquisition of high-wage domestic plants.

The evidence for selectivity with respect to wage levels is stronger for domestic takeovers of foreign-owned plants. White-collar wages in domestic takeovers were at about

average for domestically-owned plants, but blue-collar wages were about 30 per cent higher. Domestic firms were acquiring foreign-owned plants with blue-collar wage levels well above average domestic levels, but not as much above as in the average foreign plant.

Taken together, the two sets of averages suggest, first, that the tendency of foreign takeovers of domestic plants to be biased toward high-wage domestic plants did not account for most of the differentials found in existing plants between foreign and domestic owners. Second, the fact that domestic takeovers of foreign-owned plants were biased toward plants with higher wages than existing domestic plants tended to reduce the wage differential between foreign-owned and domestically-owned plants.

Given the starting point for foreign takeovers described in Table 4, we can observe the events that followed for the target plants in Table 5. For manufacturing as a whole, domestic plants taken over by foreign firms enjoyed large wage increases relative to existing domestically-owned plants. Blue-collar wages, which had been somewhat above average before takeover, increased somewhere between 25 and more than 50 percentage points relative to average wages, averaging about 50 per cent higher than average after 2 to 3 years of foreign ownership. White-collar wage levels, which had been close to average before takeover, rose even faster, by more than 50 percentage points. After 2 to 3 years, they were well over 50 per cent higher than average white-collar wages.

There is a lot of variation among the five industry groups for which there are sufficient numbers of observations. However, blue-collar wages increased relative to industry average wages in four of the five and white-collar wages in all five. After two to three years of foreign ownership, outside of industry group 33, wages in foreign-owned target plants ranged from 30 to more than 100 per cent above the average in private domestic plants.

The story was very different in plants that passed from foreign to domestic ownership. Blue-collar wages fell relative to the average in private plants. White-collar wages rose, according to the unweighted comparisons, and remained the same in relative terms according to the weighted calculations. After two years of domestic ownership, they were still somewhat above domestic average wages, but by nowhere near as much as the wages in the plants moving into foreign ownership. In the five industry groups, six out of 10 comparisons show declines in wage levels relative to the averages. Four out of the ten showed these plants to have lower than average wage levels after a period of domestic ownership.

One reason for comparing foreign takeovers with takeovers by domestic firms is to test whether the wage increases we see in the former group are the result simply of takeovers, regardless of ownership. The results indicate that change of ownership alone is not the source of the wage increases. It is the change to foreign ownership that produced rapid wage growth and high wage levels.

### **Econometric Estimations**

The previous discussion suggests that foreign plants pay relative high wages and that foreign takeovers of domestic plants raise both blue- and white-collar wages. Moreover it seemed that foreign takeovers of high-wage domestic plants only explain a very minor part of the higher wages in foreign plants. To further elaborate upon this issue, we estimate a logit model on the determinants of foreign and domestic takeovers in table 6. The first estimation examines foreign takeovers in a sample of all private-domestic plants and the second estimation examines domestic takeovers in a sample of all foreign owned plants. In addition to blue - and white-collar wages, we include variables on the size and the change in size of the plants as well as time-,

industry-, and regional specific dummy variables. The change in size is included to examine if takeovers tend to target expanding or contracting plants. The estimations confirm the previous results. Foreigners take over domestic plants that are larger in size and have higher blue-collar wages than the average private-domestic plant. There are no significant relation between white-collar wages or the change in size and the probability of a foreign takeover. Finally, domestic takeovers target plants with below average foreign blue- and white-collar wages and size.

We continue with an econometric analysis to further examine the wage difference by estimating different variations of the following equation:

$$\ln W_{it} = \alpha_1 ownership_{it} + \alpha_2 \ln X_{it} + \alpha_3 Sector + \alpha_4 Region + \alpha_5 Time + \alpha_6 \eta_{it} + \alpha_7 \mu_{it}. \quad (1)$$

Where  $i$  and  $t$  index are plants and years respectively.  $W$  is average wage, and  $ownership$  are dummy variables for foreign and government ownership.  $X$  is a vector with plant specific characteristics such as size, and the use of electricity and other inputs. Sector dummy variables, at a 2-digit level of ISIC, regional dummy variables, and time dummy variables control for sector, regional or time specific wage effects.  $\eta$  is a time invariant plant specific effect, which will be estimated both as a random and as a fixed effect.

Estimations of the effect of foreign ownership on wages are shown in table 7. Foreign plants pay roughly 67 percent higher blue-collar wages and more than 90 percent higher white-collar wages in comparison with domestic-privately owned plants. However, part of this wage premium seems to be caused by foreign plants using more energy and inputs and being larger in size. Controlling for these factors result in a wage premium of about 29 percent for blue-collar workers and 43 percent for white-collar workers. Publicly owned domestic plants pay higher blue-collar wages but lower white-collar wages than private-domestic plants. The coefficients for the control variables have positive and statistically significant coefficients, suggesting that plants

which use a lot of energy (are capital intensive) and inputs, and are large in size pay relatively high wages.

As previously mentioned, it is risky to interpret the results in table 7 as meaning that FDI increase wages, since foreign firms may take over high-wage domestic plants. We continue in table 8 with an econometric estimation where we divide foreign plants into greenfield investments, plants that have been foreign owned throughout their presence in Indonesia, and foreign takeovers, plants that have previously been domestically owned.<sup>4</sup> The first four columns are without plant specific effects. It is seen that foreign takeovers as well as greenfield investments pay comparatively high wages. The wage premium in foreign takeovers is about 60 percent for blue-collar wages and 87 percent for white-collar wages, which is broadly in line with the results in Table 4. Some of the increased wages following a foreign takeover is likely to be explained by increased capital intensity, use of intermediate inputs or expansion of the size. This explains why the wage differences decrease to about 28 percent for blue-collar wages and 41 percent for white-collar wages after inclusion of the control variables. The coefficients for *Foreign takeovers* are only marginally smaller than for *greenfield* which suggest that wages in domestic-private plants converge towards wages in established foreign plants after they are taken over by foreign firms. The coefficient for *Domestic takeover* is positive and statistically significant. It is important to emphasize that this does not mean that wages increase after a domestic takeover but instead that they remain higher than in other private-domestic plants. More specifically, the coefficient for foreign ownership was in table 7 found to be about 0.29 for blue-collar wages and 0.43 for white-collar wages. Hence, the wages seems to decline after a domestic takeover of a foreign plant but they still remain about 6 percent higher for blue-collar

wages and 10 percent higher for white-collar wages in comparison to the average private-domestic plant.

The last four estimations control for unobservable plant specific effects. The fixed effect examines variations within plants and variables that do not change over time will be fully absorbed by the plant specific fixed effect. Hence, foreign greenfield investments have been excluded from the estimations since their foreign ownership is constant over time and since we want to compare the takeovers with private-domestic plants. The random effect model includes plant specific effects in the error term and uses both variations between and within plants. The random effect estimation is more efficient but the error term might be correlated with the independent variables, which we test for by a Hausman specification test. The fixed effect estimates decrease the effect of foreign takeovers but not the coefficient for domestic takeovers. Foreign takeovers seem to increase blue-collar wages with about 17 percent and white-collar wages with about 33 percent. The random effect estimate increases the coefficients of both foreign and domestic takeovers in comparison with the fixed effect model. However, the Hausman specification test strongly rejects the hypothesis of no correlation between the error term and the independent variables.

We saw previously that most takeovers are concentrated to a few sectors. We therefore run the estimations at a sector level in table 9. There are positive effects of foreign takeovers on wages in all five sectors, ranging between 11 and 23 percent for blue-collar wages and between 23 and 50 percent for white-collar wages. The result for domestic takeovers is less clear with a positive and statistically significant coefficient for both blue- and white-collar wages in three sectors, and a negative and statistically significant coefficient for blue-collar wages in one sector.

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<sup>4</sup> We assumed that foreign establishments that were present in 1975 are greenfield investments. However, it is of course possible that they have been taken over by foreign before 1975. Hence, we experimented with excluding

Hence, it seems that foreign takeovers have a substantial positive effect on wages. Moreover, plants that have had foreign ownership continue to pay higher wages than average private-domestic plants after they are taken over by domestic owners. However, there might be a need for some caution in interpreting the results, since one can not rule out the possibility that the new owners are dismissing low-wage workers and that this, rather than actual wage increases, brings up average wage. We therefore examined what happened with employment after takeovers. The change in employment is strikingly different for blue- and white-collar employees as seen in table 10. Whereas the number of blue-collar workers increases with between 38 and 51 percent after foreign takeovers, the number of white-collar employees decreases with about 28 percent. The decrease in white-collar employees is even larger after a domestic takeover of foreign plant, between 32 and 36 percent. Moreover, domestic takeovers have only a small positive effect on the number of blue-collar workers. The figures at a sector level seems to confirm that foreign takeovers have a strong positive impact on the number of blue-collar workers and a negative impact on the number of white-collar workers. Domestic takeovers of foreign owned plant have a strong negative effect on the number of white-collar workers and a more uncertain effect on the number of blue-collar workers. Hence, it seems that the number of employees change after a takeover and this could have an impact on the average wages. We therefore continue in table 11 with estimations where we include the growth of blue- and white-collar workers compared to the previous year. Both variables are statistically significant with negative signs. Hence, an increase in employment has a negative effect on average wages, which suggests that new employees have on average relatively low wages. By the same argument, the decrease in white-collar workers found in table 10 is likely to have a positive effect on average white-collar wages. However, including growth in employment in the regressions has only a marginal effect on the coefficient for *Foreign takeovers* and no effect on the coefficient for *Domestic takeovers*, which suggest that the change in employment can not explain the change in wages following a takeover by foreign firms.

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these plants, which did not have much effect on the results.

## **Concluding Remarks**

This paper examined wage effects of FDI in the Indonesian manufacturing sector. It has long been recognized that foreign firms tend to pay relatively high wages. However, it has been less known whether this wage differences is caused by foreign ownership or if foreign firms take over high-wage domestic firms that would continue to pay high wages even in the event of no takeover. We tried to control for this possibility by, firstly, examine characteristics in firms before they are taken over, and secondly, by examining the wage change after the takeover. We found that foreign firms tend to take over large domestic plants with relatively high blue-collar wages but with average white-collar wages. Moreover, domestic takeovers targeted relatively small foreign plants with blue- and white-collar wages that were lower than the foreign average but higher than the domestic average. The effect of the two types of takeovers on wages differed substantially. Foreign takeovers have a strong positive impact on both white- and blue-collar wages where the former being the largest in size. On the contrary, wages tend to decline after a domestic takeover although they still remain above the private-domestic average. Hence, it is not takeovers in itself that increase wages but the change in ownership from domestic to foreign. Finally, we also examined the effect on employment after a takeover and we found a decrease in white-collar workers after foreign and domestic takeovers and a strong increase in blue-collar workers after a foreign takeover. The decline in the number of white-collar workers seems to explain only a small share of the increase in average white-collar wages following a foreign takeover. Hence, our conclusion is that FDI causes higher wages in the Indonesian manufacturing sector.

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Table 1. The foreign share of Indonesian manufacturing industry between 1975-1999 at a 2-digit level of ISIC (%).

Sector	1975		1985		1995		1999	
	ISIC	Empl. VA	Empl.	VA	Empl.	VA	Empl.	VA
<b>Total</b>	<b>8,5</b>	<b>22,9</b>	<b>10,0</b>	<b>21,4</b>	<b>17,8</b>	<b>30,5</b>	<b>20,7</b>	<b>35,7</b>
Food proucts	31	4,0 21,4	4,0	11,7	6,2	11,7	8,0	15,5
Textiles	32	7,8 26,5	11,3	29,1	23,5	25,1	24,8	37,5
Wood	33	11,2 23,9	11,7	13,3	8,0	13,2	10,4	20,0
Paper	34	7,1 16,9	5,6	9,6	16,3	32,1	14,3	21,6
Chemicals	35	16,9 28,6	14,0	27,7	16,7	43,0	17,7	45,4
Non-Mettalic Mineral	36	10,3 16,2	8,4	42,0	10,0	25,2	12,7	37,7
Basic Metal Industr.	37	12,7 15,8	20,0	12,8	17,6	41,6	25,2	43,0
Fabricated Metals	38	18,1 22,7	18,2	29,7	34,1	48,4	44,2	57,4
Other Manufacturing	39	4,2 1,6	12,9	41,2	40,0	61,3	44,5	53,9

Note: Empl. – Employment. VA- Value Added.

Table 2. The ratios of average wages in foreign owned and private-domestically owned plants between 1975-1999 at a 2-digit level of ISIC.

Sector	1975		1985		1990		1999	
	Blue-collar	White-collar	Blue-collar	White-collar	Blue-collar	White-collar	Blue-collar	White-collar
Total	2,80	3,11	2,27	1,81	1,67	1,70	1,44	1,68
31	4,10	4,64	3,55	1,98	1,94	1,70	1,70	2,11
32	2,21	3,15	1,46	1,55	1,13	1,28	1,31	1,69
33	1,24	1,24	1,18	1,27	1,23	1,53	1,12	1,49
34	2,56	4,44	1,74	2,42	1,80	1,18	1,79	1,22
35	3,98	2,81	2,98	1,96	1,97	2,24	1,79	1,41
36	4,69	4,75	2,66	2,02	2,63	2,06	2,19	1,71
37	0,86	1,30	1,45	0,69	1,31	1,28	1,04	0,80
38	1,58	1,48	1,85	1,73	1,49	1,54	1,29	1,96
39	0,76	1,00	1,61	2,28	1,45	2,16	1,16	2,08

Note: Average wages for domestic-private and foreign plants have been calculated at a 3-digit level of ISIC and aggregated up to a 2-digit level of ISIC using shares of total blue-collar and white-collar employees as weights. See table 1 for sector names

Table 3. The number of takeovers in the Indonesian manufacturing sector 1975-1999.

Sector	1975-1989				1990-1999							
	Domest. takeovers		Foreign takeovers		Foreign	Domestic	Domest. takeovers		Foreign takeovers		Foreign	Domestic
	Number	Av. size	Number	Av. size	Av. size	Av. Size	Number	Av. size	Number	Av. size	Av. size	Av. size
Total	408	210	326	250	358	103	637	418	917	426	539	153
31	116	160	92	219	303	105	95	226	127	316	358	119
32	96	243	80	265	732	105	177	701	226	681	1054	210
33	50	230	37	290	368	136	85	363	92	367	471	188
34	15	79	6	42	263	78	16	795	23	285	633	134
35	47	309	45	297	230	113	90	233	150	281	283	158
36	28	264	19	192	423	54	33	357	44	385	447	75
37	4	401	1	61	477	248	8	224	13	177	292	221
38	48	150	39	283	318	110	106	310	205	379	453	135
39	4	98	7	124	241	69	27	339	37	481	568	120

Note: Size is the average number of total employees. Domestic takeovers refers only to takeovers of foreign plants. See table 1 for sector names.

Table 4. Wages in Target Establishments Relative to All Private Establishments

	Foreign takeovers of private-domestic plants		Private-domestic takeovers of foreign plants	
	T-2	T-1	T-2	T-1
Unweighted				
TotalBlue	1.18	1.22	1.30	1.31
TotalWhite	0.95	0.99	0.98	0.98
Weighted by sector employment				
TotalBlue	1.09	1.06	1.43	1.38
TotalWhite	0.87	0.91	1.35	1.32
By Sector				
31 Blue	0.99	1.03	2.12	2.08
31 White	0.73	0.72	1.70	1.52
32 Blue	1.16	1.12	1.13	1.21
32 White	1.15	1.38	1.40	1.41
33 Blue	1.17	0.90	1.05	0.81
33 White	0.75	0.74	1.29	1.19
35 Blue	1.22	1.21	1.84	1.52
35 White	1.01	0.82	0.98	1.05
38 Blue	0.88	0.94	1.09	1.07
38 White	0.65	0.82	1.16	1.24

Note: T-2 (T-1) refers to two (one) years before the year of the takeover.

Table 5. Changes after Takeover in the Ratio of Wages in Target Establishments to Wages in All Privately-owned Establishments

	Foreign takeovers of private-domestic plants		Private-domestic takeovers of foreign plants	
	(T+2)-(T-1)	T+2	(T+2)-(T-1)	T+2
Unweighted				
TotalBlue	+0.26	1.48	-0.16	1.15
TotalWhite	+0.82	1.81	+0.17	1.15
Weighted by sector employment				
TotalBlue	+0.58	1.64	-0.23	1.15
TotalWhite	+0.65	1.56	0	1.32
By Sector				
31 Blue	+1.04	2.07	-0.98	1.10
31 White	+0.65	1.37	-0.93	0.59
32 Blue	+0.44	1.56	-0.27	0.94
32 White	+1.02	2.40	+0.39	1.80
33 Blue	-0.04	0.86	+0.39	1.20
33 White	+0.27	1.01	-0.17	1.02
35 Blue	+0.52	1.73	+0.64	2.16
35 White	+0.58	1.40	+1.39	2.44
38 Blue	+0.95	1.89	-0.11	0.96
38 White	+0.50	1.32	-0.47	0.77

Note: (T+2)-(T-1) refers to the change between two years after the year of the takeover and one year before the year of the takeover.

Table 6. Logit estimations on the determinants of ownership changes.

	Foreign takeovers of domestic plants	Domestic takeovers of foreign plants
Constant	-11.49 (0.55)***	2.78 (0.44)***
Average white-collar wage (t-1)	0.07 (0.05)	-0.37 (0.04)***
Average blue-collar wage (t-1)	0.42 (0.07)***	-0.28 (0.06)***
Size (t-1)	0.40 (0.03)***	-0.48 (0.04)***
Change in size (t-1)-(t-2)	0.09 (0.11)	-0.01 (0.11)
Time dummies	estimated	estimated
Industry dummies	estimated	estimated
Regional dummies	estimated	estimated
Pseudo R-square	0.06	0.11
No of observations	177,137	11,557

Note: Standard errors within brackets. \*\*\*) significant at the one percent level; \*\*) significant at the five percent level; \*) significant at the ten percent level.

Table 7. The relation of average plant wage to ownership and plants characteristics 1975-1999 (dependent variable – average wage per employee).

	Blue Collar	White Collar	Blue Collar	White Collar
Constant	3.70 (0.01)***	4.61 (0.01)***	2.39 (0.01)***	2.90 (0.01)***
Foreign owner	0.67 (0.01)***	0.92 (0.01)***	0.29 (0.01)***	0.43 (0.01)***
Government Owner	0.42 (0.01)***	0.09 (0.01)***	0.27 (0.01)***	-0.16 (0.01)***
Energy per worker	--	--	0.08 (0.00)***	0.06 (0.00)***
Inputs per worker	--	--	0.20 (0.00)***	0.18 (0.00)***
Size	--	--	0.01 (0.00)***	0.14 (0.02)***
Time dummies	estimated	estimated	estimated	estimated
Industry dummies	estimated	estimated	estimated	estimated
Regional dummies	estimated	estimated	estimated	estimated
R-square	0.64	0.53	0.72	0.61
No of observations	336,576	269,536	316,031	256,852

Note: Standard errors within brackets. \*\*\*) significant at the one percent level; \*\*) significant at the five percent level; \*) significant at the ten percent level.

Table 8. The relation of average plant wage to changes in ownership and plants characteristics 1975-1999 (dependent variable – average wage per employee).

	Blue Collar	White Collar	Blue Collar	White Collar	Blue Collar	White Collar	Blue Collar	White Collar
Constant	3.70 (0.01)***	4.61 (0.01)***	2.40 (0.01)***	2.91 (0.01)***	3.39 (0.01)***	3.83 (0.02)***	2.74 (0.01)***	3.08 (0.02)***
Foreign takeovers	0.61 (0.01)***	0.87 (0.01)***	0.28 (0.01)***	0.41 (0.01)***	0.17 (0.01)***	0.33 (0.02)***	0.20 (0.01)***	0.37 (0.02)***
Foreign greenfield	0.70 (0.01)***	0.95 (0.01)***	0.30 (0.01)***	0.45 (0.01)***	--	--	0.21 (0.01)***	0.46 (0.01)***
Domestic takeovers	0.20 (0.01)***	0.30 (0.01)***	0.06 (0.01)***	0.10 (0.01)***	0.05 (0.01)***	0.17 (0.02)***	0.11 (0.01)***	0.24 (0.02)***
Public	0.42 (0.01)***	0.09 (0.01)***	0.27 (0.01)***	-0.16 (0.01)***	0.01 (0.01)	-0.01 (0.01)	0.06 (0.01)***	-0.03 (0.01)***
Energy per worker	--	--	0.08 (0.00)***	0.06 (0.00)***	0.07 (0.00)***	0.06 (0.00)***	0.08 (0.00)***	0.06 (0.00)***
Inputs per worker	--	--	0.20 (0.00)***	0.18 (0.00)***	0.14 (0.00)***	0.13 (0.00)***	0.16 (0.00)***	0.15 (0.00)***
Size	--	--	0.01 (0.00)***	0.14 (0.00)***	-0.02 (0.00)***	0.07 (0.00)***	0.00 (0.00)	0.12 (0.00)***
Time dummies	estimated	estimated	estimated	estimated	estimated	estimated	estimated	estimated
Industry dummies	estimated	estimated	estimated	estimated	estimated	estimated	estimated	estimated
Regional dummies	estimated	estimated	estimated	estimated	estimated	estimated	estimated	estimated
Random effect	--	--	--	--	--	--	estimated	estimated
Fixed effect	--	--	--	--	estimated	estimated	--	--
R-square	0.64	0.53	0.72	0.61	0.66	0.57	0.72	0.61
No of plants	--	--	--	--	44,050	38,145	45,448	39,531
No of observations	336,576	269,536	316,031	256,852	304,738	245,837	316,031	256,852
Hausman test (chi2)	--	--	--	--	--	--	2434.1***	2030.8***

Note: Standard errors within brackets. \*\*\*) significant at the one percent level; \*\*) significant at the five percent level; \*) significant at the ten percent level. Domestic takeovers refers only to takeovers of foreign plants.

Table 9. The relation of average plant wage to changes in ownership and plants characteristics at a sector level (dependent variable – average wage per employee).

	Blue Collar	White Collar	Blue Collar	White Collar	Blue Collar	White Collar	Blue Collar	White Collar	Blue Collar	White Collar
	Food Products (ISIC 31)		Textiles (ISIC 32)		Wood Products (ISIC 33)		Chemicals (ISIC 35)		Fabricated Metal Products (ISIC 38)	
Constant	2.74 (0.03)***	3.48 (0.04)***	3.64 (0.02)***	4.04 (0.04)***	3.67 (0.05)***	3.94 (0.07)***	3.74 (0.04)***	3.93 (0.06)***	4.04 (0.04)***	4.31 (0.06)***
Foreign takeovers	0.23 (0.03)***	0.29 (0.04)***	0.11 (0.03)***	0.26 (0.04)***	0.14 (0.04)***	0.23 (0.06)***	0.15 (0.03)***	0.29 (0.04)***	0.21 (0.03)***	0.50 (0.04)***
Domestic takeovers	0.06 (0.03)*	0.26 (0.05)***	0.15 (0.02)***	0.18 (0.04)***	0.07 (0.05)***	-0.03 (0.07)	-0.08 (0.05)*	0.02 (0.07)	0.05 (0.04)	0.18 (0.06)***
Public	-0.01 (0.01)	-0.01 (0.02)	0.02 (0.02)	0.03 (0.03)	0.01 (0.03)	0.03 (0.04)	0.03 (0.02)	-0.01 (0.03)	0.07 (0.03)***	-0.11 (0.04)***
Energy per worker	0.11 (0.00)***	0.08 (0.00)***	0.06 (0.00)***	0.04 (0.00)***	0.09 (0.00)***	0.06 (0.01)***	0.04 (0.00)***	0.04 (0.00)***	0.04 (0.00)***	0.04 (0.00)***
Inputs per worker	0.17 (0.00)***	0.13 (0.00)***	0.11 (0.00)***	0.09 (0.00)***	0.15 (0.00)***	0.13 (0.01)***	0.12 (0.00)***	0.15 (0.01)***	0.12 (0.00)***	0.11 (0.01)***
Size	-0.03 (0.00)***	0.05 (0.01)***	0.00 (0.00)	0.09 (0.01)***	-0.01 (0.01)	0.07 (0.01)***	-0.02 (0.01)***	0.05 (0.01)***	-0.04 (0.01)***	0.08 (0.01)***
Time dummies	estimated	estimated	estimated	estimated	estimated	estimated	estimated	estimated	estimated	estimated
Fixed effect	estimated	estimated	estimated	estimated	estimated	estimated	estimated	estimated	estimated	estimated
R-square	0.66	0.56	0.78	0.63	0.56	0.49	0.71	0.55	0.71	0.59
No of plants	11,551	9,903	11,051	8,715	6,490	5,871	4,814	4,629	4,440	4,123
No of observations	86,456	66,867	72,626	52,276	34,468	30,244	34,147	31,876	29,822	27,012

Note: Standard errors within brackets. \*\*\*) significant at the one percent level; \*\*) significant at the five percent level; \*) significant at the ten percent level. Domestic takeovers refers only to takeovers of foreign plants.

Table 10. Employment of blue- and white-collar workers before and after takeovers.

Sector		Foreign takeovers of private-domestic plants			Private-domestic takeovers of foreign plants		
		T-1	T+2	Growth	T-1	T+2	Growth
	Unweighted						
Total	Blue	327	452	38,4%	243	243	0,1%
Total	White	61	44	-27,4%	66	45	-32,1%
	Weighted by sector employments						
Total	Blue	380	573	50,8%	336	355	5,6%
Total	White	64	46	-28,7%	70	45	-36,1%
	By Sector						
31	Blue	167	247	47,9%	90	108	21,2%
31	White	97	74	-23,5%	86	28	-67,2%
32	Blue	595	1002	68,3%	670	737	10,0%
32	White	67	37	-45,4%	66	78	18,2%
33	Blue	431	524	21,4%	140	112	-19,9%
33	White	84	73	-13,4%	46	40	-12,8%
35	Blue	216	223	3,1%	91	99	9,0%
35	White	29	19	-33,6%	73	25	-65,2%
38	Blue	223	264	18,3%	224	159	-29,1%
38	White	29	19	-33,6%	61	53	-12,4%

Note: T-1 (T+2) refers to one year before (two years after) the year of the takeover



Table 11. The relation of average plant wage to changes in ownership and plants characteristics including changes in employment (dependent variable – average wage per employee).

	Blue Collar	White Collar
Constant	4.58 (0.02)***	3.95 (0.02)
Foreign takeovers	0.16 (0.01)***	0.30 (0.02)***
Domestic takeovers	0.05 (0.02)***	0.17 (0.02)
Public	0.01 (0.01)	0.01 (0.01)
Growth in Blue Collar	-0.10 (0.00)***	--
Growth in White Collar	--	-0.20 (0.00)***
Energy per worker	0.07 (0.00)***	0.05 (0.00)
Inputs per worker	0.13 (0.00)***	0.11 (0.00)
Size	0.01 (0.00)***	0.12 (0.00)
Time dummies	estimated	estimated
Fixed effect	estimated	estimated
R-square	0.66	0.57
No of plants	38,201	31,501
No of observations	259,514	201,787

Note: Standard errors within brackets. \*\*\*) significant at the one percent level; \*\*) significant at the five percent level; \*) significant at the ten percent level.