Foreign Ownership and Employment Growth in Indonesian Manufacturing*

Robert E. Lipsey, NBER and City University of NY

Fredrik Sjöholm, Research Institute of Industrial Economics, Stockholm,

and Örebro University

Jing Sun, City University of New York and Skidmore College

Abstract

Many developing countries would like to increase the share of modern or formal sectors in their employment. One way to accomplish this goal may be to encourage the entrance of foreign firms. They are typically relatively large, with high productivity and good access to foreign markets, and might therefore be better at creating jobs than domestic firms are. However, previous research on the issue has been limited by the paucity of long data sets for firm operations.

We examine employment growth in Indonesia in a large panel of plants between 1975 and 2005, and especially in plants taken over by foreign owners from domestic ones. Our results suggest that employment growth is relatively high in foreign-owned establishments. Foreign firms own relatively large domestic plants, which in general grow more slowly than smaller plants, but the growth in foreign plants' employment is still faster than in the average domestic establishment. For plants that change the nationality of ownership during our period, we find a strong effect of shifts from domestic to foreign ownership in raising the growth rate of employment, but little effect of shifts from foreign to domestic ownership.

Keywords: Foreign Direct Investment, Employment, Indonesia, Acquisitions

JEL codes: J21, J23, F23

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INTRODUCTION

One of the possible consequences of inward foreign direct investments (FDI) for developing countries, and one that is of particular interest to their governments, is the extent to which the investment creates new jobs in the industrial, or "modern" sector, to help in the transformation of the economies. Lewis' (1954) notion of a need to move people out of agriculture and into the modern sector is still a goal for many developing countries (ADB, 2005). There are several ways in which inward FDI might play this role.

There is considerable evidence that foreign-owned firms are relatively efficient, and may for that reason have access to foreign markets that would not be within the reach of domestically-owned firms, an advantage that should provide a positive effect on employment.[1] On the other side, the foreign-owned firms may compete with domestically-owned firms for some markets, so that the losses of employment by domestically-owned firms offset, to some extent, the gains in the foreign-owned firms. In addition, the foreign-owned firms may tend to be more capital-intensive than domestically-owned firms, and more intensive in the use of imported intermediate products, so that an increase in their sales adds less to employment than would a corresponding increase by domestically-owned firms.

Few studies compare employment growth in foreign- and domestically-owned firms. Alvarez and Görg (2007) examine the difference between firms' adjustment to a financial crisis by examining growth in employment at a plant level in Chilean manufacturing between 1990 and 2000. Their results suggest no major differences between employment growth in multinational and non-multinational firms. Karlsson et al.

[1] See Lipsey (2004) for a survey on host country effects of FDI. For related studies on Indonesia see e.g. Blomström and Sjöholm (1999), Lipsey and Sjöholm (2004), Takii (2005), and Blalock and Gertler (2008).

(2008), comparing employment growth in foreign-owned and domestically-owned Chinese firms between 1998 and 2004, find that employment in foreign-owned firms grew relatively fast and that the job creation advantage of foreign-owned firms was associated with their firm characteristics.

It is not obvious from these studies whether foreign ownership causes high employment growth or foreign owners have simply acquired firms with high growth potential, a selectivity sometimes referred to as "cherry picking" (Arnold and Javorcik, 2005). To examine the issue further, one might therefore focus on growth in employment before and after a foreign acquisition. A few such studies have been conducted on developed countries, but with a focus on employment composition rather than on total employment (e.g. Almeida, 2003; Bandick and Karpaty, 2007; Huttunen, 2007). More relevant for our study is Gong et al. (2006) who examine the effect of privatization and foreign acquisition on employment in a sample of Chinese state-owned enterprises, for the period 1999 to 2003. Domestic privatization leads to lower employment growth while foreign acquisition increases employment, as compared to firms that remained state-owned.

In this paper, we use Indonesian plant level data between 1975 and 2005 to analyze the effect of FDI on employment. We first compare rates of employment growth in foreign-owned and domestically-owned plants. Second, we examine employment growth after foreign acquisitions of domestically-owned establishment and domestic acquisitions of foreign-owned establishments. These observations hold constant the identity of the individual establishment, although not its characteristics. If foreign ownership provides superior technology or better access to world markets, establishments

should tend to raise their employment after foreign takeovers. If these advantages require continued foreign ownership, there may be employment losses when a foreign-owned establishment is acquired by a domestic firm. On the other hand, if the technological or other gains from foreign ownership are retained in the establishment, its growth of employment may continue after a domestic acquisition.

Acquisitions may not be random with respect to the prospects for an establishment. In order to control for unobservable acquired firm characteristics that could involve selection bias in foreign acquisitions, we combine propensity score matching techniques with the more general difference in difference estimator. To test whether any effects are due to foreign acquisitions or to any changes between foreign and domestic ownership, we examine both establishments that are acquired by foreign owners and foreign-owned establishments that are acquired by domestic owners.

FOREIGN PLANTS IN INDONESIAN MANUFACTURING

We analyze Indonesian manufacturing data supplied by the Indonesian Statistical Office. The data cover all manufacturing plants with more than 20 employees for the period 1975-2005. Inclusion of a plant identification code enables us to construct a panel and follow the plants over time.

Foreign establishments have played an increasing role in Indonesian manufacturing employment, as indicated by Figure 1. Manufacturing employment in plants with more than 20 employees increased from fewer than seven hundred thousand in 1975 to about 4 million in 1997 and later years. That growth was driven mainly by a

strong increase in employment in domestically-owned private plants, close to three quarters of the total during the entire period. Plants with some foreign ownership, accounting for less than 10 percent of manufacturing employment in 1975, employed around 20 percent in 1997, at the time of the Asian crisis. After that the share declined slightly, but then recovered to 20 percent again in 2005. The share of government-owned plants, much larger than the foreign plant share in 1975, shrank steadily after the late 1980s, and was only 5 percent of manufacturing employment in 2005.

The growth in employment in foreign firms was not concentrated in small segments of the manufacturing sector (Table 1). The foreign plants' share of employment grew between 1975 and 2005 in all the major manufacturing sectors except Wood products and Non-metallic minerals, although it fell in some other industries in between. The foreign share more than doubled in Food products, Textiles, Paper products, Fabricated metals, and Other manufacturing.

The industry sectors and the ownership groups differed in some important aspects. One extreme difference was in size: government-owned plants were far larger than domestically-owned private plants, five times as large, on average, in 1975 and still over three times as large in 2005. They were much larger also within the industry groups, with a few exceptions (Table 2). Foreign-owned plants were also much larger than domestically-owned private plants, about three times as large in both beginning and end years. In 2005, the foreign-owned plants were larger than government-owned ones in several industry groups and larger than domestically-owned private plants in every group. The size disparity may be an element in the frequency and success of takeovers.

To the extent that we can associate the share of blue-collar workers in total employment with the average skill level in an establishment, it appears that foreign firms tended to use a slightly higher skill labor force than private domestic firms in the same industry. Government-owned plants operated with the lowest proportions of blue-collar workers consistently across almost all industries. Only government-owned plants employed work forces made up to the extent of 30 percent or more of white-collar workers, almost 40 percent in a few cases, while private domestic plants employed more than 20 percent white-collar workers in only one industry group in one year.

FOREIGN TAKEOVERS AND EMPLOYMENT GROWTH

The changes in the share of Indonesian manufacturing employees in foreign-owned plants came about in several different ways. One was the establishment of new plants by foreign owners and the demise of existing plants. Another was takeovers of domestically-owned plants by foreign firms, offset by takeovers of foreign-owned plants by Indonesian owners. A third source of change was any differences in average rates of growth between locally-owned and foreign-owned plants.

The path of takeover activity between foreign and domestic owners, in terms of numbers of takeovers, is described by Figure 2. The numbers of takeovers had been fairly similar until the 1990s in the two directions, but since then, foreign takeovers have been more numerous, except in 1997, during the Asian crisis.

Not only the number of takeovers but also their role in the growth of the foreign share of Indonesian manufacturing employment fluctuated widely (Table 3). Up through 1989, they accounted for a large part of total growth in employment in foreign-owned

manufacturing establishments, but they were offset by declines in such employment from local takeovers of foreign-owned plants. After 1989, the foreign takeovers added more to the foreign-owned share than the domestic takeovers took away. However, the net effect of foreign and domestic takeovers was less important as a source of employment growth in foreign-owned establishments than the combination of new foreign-owned plants and their more rapid growth.

Both foreign and domestic takeovers were spread over the whole range of establishment sizes. A surprising 28 percent of domestic takeovers of foreign-owned plants were reported to be of establishments with fewer than 50 employees (Table 4). Despite the small number of foreign-owned plants, the number of domestic takeovers of foreign-owned plants with fewer than 50 employees was 32 percent greater than the number of foreign takeovers of domestically-owned plants of that size. At the three largest plant sizes, there were more foreign takeovers of domestically-owned establishments than domestic takeovers of foreign-owned plants.

Of course, there were many more domestic plants than foreign-owned plants in existence to be potential targets of takeovers. The frequency of takeovers (the ratios of foreign takeovers to the number of domestically-owned plants and of domestic takeovers to the number of foreign-owned plants) is therefore much higher for domestic takeovers than for foreign takeovers. The frequency of takeovers in both directions was highest for plants with between 100 and 200 employees, aside from the strange frequency of domestic takeovers of the smallest foreign-owned firms. But at the top sizes of plant, foreign takeovers were more common than domestic takeovers.

ECONOMETRIC APPROACH

We begin the econometric analysis by treating growth in employment as a function of various plant characteristics:

$$\Delta \ln L_{it} = \ln L_{it} - \ln L_{it-1} = \alpha + \lambda Plant_{it-1} + \sum \beta_w Ownership + \sum \beta_t Year\_dummy + \sum \beta_{ind} Ind\_dummy_j + \sum \beta_R Reg\_dummy + \varepsilon_{it}, \quad (1)$$

where i indexes firms, t indexes year.

The variables included in the model are:

L: Employment.

Plant:: A vector of lagged plant characteristics, i.e. plant size measured by employment, energy intensity (quantity of energy per employee), a proxy for physical capital intensity, and inputs of intermediate goods, defined as raw materials, fuel, and lubricants, per employee

$Ownership_i$: Ownership dummy variables indicating four ownership categories.

$Year_t$: Year dummy variables.

$Industry_j$: Industry dummy variables.

Region: Regional dummy variables.

The plant control variables might be endogenously determined and we try to control for this possibility by lagging them one period. Hence, we assume that growth in employment between period *t-1* and *t* is caused by, for instance, the size in period *t-1*.

Labor productivity, as measured by value-added per employee, added nothing to the equation and thus are dropped.

Ownership is divided into foreign, government-domestic and private domestic. Foreign establishments are defined as plants with any foreign ownership. Government-owned establishments are defined as plants without foreign ownership but with any government (central or local) ownership. The remaining plants are defined as private-domestically owned. In some later calculations, ownership is instead a dummy on foreign acquisitions of domestically owned plants and a dummy on domestic acquisitions of foreign owned plants. Finally, we include time dummies, industry dummies (2 digit level of ISIC) and regional dummies (5 regions).

In a second approach, we analyze the effect of an ownership change. We include all firms except those that experience multiple ownership changes. We include firm-specific effects, and also time dummies to control for changes in the relative task demand that are common to all firms. When we examine ownership changes, the ownership dummy variables are one when an ownership change is recorded and thereafter.

Propensity Score Matching and difference-in-difference

Acquisitions may not be random with respect to factors that determine future growth. This means that estimates on employment growth become biased if non-randomness is not taken into account. We therefore use propensity score matching (PSM) combined with the more general difference-in-differences technique, as suggested by e.g. Arnold and Javorcik (2005), Blundell and Costa Dias (2005), and Heyman et al. (2007).

The matching procedure aims to find a group of non-acquired firms that display the same characteristics as the group of acquired firms. For foreign takeovers, the control group is the plants that are always domestic, while for domestic takeovers, the control group is the plants that are always foreign.

The matching procedure can be described as follows. Let $A \in \{T,C\}$ be an acquisition indicator equal to T for firms being acquired (the treatment group) and equal to C for firms that are not acquired (the control group). $L^T_{k,t+s}$ is employment at time t+s for firm *k* that has been acquired at time t, and $L^C_{k,t+s}$ is employment that would have been observed if the firm had not been acquired. Obviously, no firm can be observed in two different states at the same time, so either $L^T_{k,t+s}$ or $L^C_{k,t+s}$ is missing for each firm *k*. This problem of causal inference is sometimes described as the evaluation problem of missing data. However, the average treatment effect on the treated can be identified as:

$$E\{L^T_{t+s} - L^C_{t+s} \mid A = T\} = E\{L^T_{t+s} \mid A = T\} - E\{L^C_{t+s} \mid A = T\}.$$

Matching techniques can be used to construct a sample of non-acquired twin firms to acquired firms and, thus, approximate the non-observed counterfactual event in the last term.

The probability of takeover, the propensity score, is obtained by fitting a probit model. The model specification is similar to the OLS regressions above but adds variables like plant age and log productivity, lagged one year (table A1). Table A1 shows that young and large domestic plants with high productivity and energy intensity are relatively likely to be acquired by foreign owners. By contrast, foreign plants that are small with low productivity and energy intensity are relatively likely to be taken over by

domestic owners. Hence, foreigners acquire what seem to be relatively good domestic plants (cherry picking) and domestic actors acquire relatively poor foreign owned plants. By constructing a matched sample based on the probability of takeover, the selection problem could be reduced.

We employ a nearest neighbor matching technique with replacement to construct our matched sample of plants. In case of foreign takeover, each domestic plant that would be acquired later by foreign plants is matched to an always domestic plant that has the closest propensity score. The same approach is used for domestic takeovers. Moreover, the matched treated and control units are from the same year and same industry.

Of the 1,037 foreign takeovers, 390 are in the treatment group. The drop in the number of foreign takeovers is mainly due to the fact that there are 475 foreign takeovers taking place in the second year since the plant starts operation, and thus there is no employment growth in the pre-acquisition period to compare with. Another 108 takeovers are dropped since there are some missing values in the observed characteristics used to estimate propensity scores. Of 652 domestic takeovers, 291 takeovers are included in the treatment group. Similarly, there are 233 domestic takeovers taking place in the second year of operation, and another 128 domestic takeovers are dropped because of missing values. It is a cause for concern that a large number of takeovers are dropped because of the takeovers taking place in the second year of existence. However, the regression analyses are carried out on samples with and without takeover in the second year, and the results are robust.

Tests are conducted to make sure that our matched sample are balanced in the sense that the treated and control units have similar pre takeover values on the control variables (Tables A2 and A3). In the matched sample, the differences in means of the control variables are not significant between treated and control units.

Having obtained a control group of firms, we combine propensity score matching with the difference-in-difference estimator to estimate the impact of acquisitions on employment. The difference-in-difference approach compares employment growth for the treated group of acquired firms with the relevant control group of firms that are not acquired.

$$DD = \left(E\left(L_{post}^{treated}\middle|X\right) - E\left(L_{post}^{control}\middle|X\right)\right) - \left(E\left(L_{pre}^{treated}\middle|X\right) - E\left(L_{pre}^{control}\middle|X\right)\right)$$

L is employment growth rates (difference in log employment) or, in some estimations, employment itself. Post refers to the post-acquisition period, which could be in the year of acquisition, or one year after, or the average of the whole post-acquisition periods. Pre refers to the period before acquisition. Similarly it could be one year before the acquisition, or the average of the all the years before acquisition. The difference in the second parenthesis corrects the selection bias in the pre-acquisition period.

ECONOMETRIC RESULTS

Determinants of the Rate of Plant Employment Growth

We start in Table 5 with simple OLS analyses on the whole universe of manufacturing plants. The first equations include only the ownership variables *Foreign* and *Government*. Hence, the reference group is domestic-private firms. The coefficient

for *Foreign* is positive and statistically significant. The rate of growth in employment is 4.5 percent higher in foreign than in domestic-private plants. The coefficient for government is negative and statistically significant but its economic significance is marginal.

We include dummy variables for industry and region along with a dummy variable for the year, since there have been major changes over time in economic conditions and policies. The results remain robust, with high employment growth in foreign plants and a small difference between government and private domestic plants.

The equation includes plant characteristics that might affect employment growth. Large firms have comparatively low growth rates, in accordance with previous studies (e.g. Karlsson et al., 2008). Government-owned plants have growth in employment almost two percent higher than similar private-domestic plants.

The last two columns examine growth of the numbers of blue- and white collar workers. The positive effect on the employment of blue collar workers is substantially larger than the effect on white-collar workers: 6 percent compared to 3.6 percent. The effect of government ownership is also higher for blue than for white collar workers but both effects are small compared to the effect of foreign ownership. Finally, the negative effect of size and the positive effect of energy efficiency on employment growth primarily affect blue-collar workers, as is also the case for the positive effect from energy intensity.

The evidence of Table 5 is that foreign-owned plants tend to increase their employment faster than domestically-owned plants over the period as a whole, given the other characteristics of the plants.

Foreign Takeovers and Employment Growth

Table 6 is the fixed effect estimations of the acquisition effects. One advantage with this approach is that it looks at growth in employment within a firm before and after the acquisition and removes the time-constant unobserved plant characteristics that could confound the explanation of acquisition effects. Only firms that change ownership can be included. The fixed effect estimation increases the positive effect of foreign acquisitions further to about 10.8 percent. Domestic acquisitions result in a 3.2 percent decline in employment growth. Dividing employment between blue- and white-collar workers shows that the positive effect of foreign acquisitions applies to both blue-collar workers and white-collar workers, though the negative effect of domestic acquisitions are not significant in either type of workers.

The effect of FDI on employment might differ between trade regimes (Balasubramanyam et al., 1996). Induced by a more liberal trade policy, the FDI flows into developing countries to take advantage of cheaper labor costs and thus would respond to an export-oriented policy by expansion. By contrast, FDI induced by import substitution policy could be limited by the character of host-country market.

We therefore divide Indonesia in three different periods: the import substitution period 1975-1985; the trade liberalization period 1986-1996; and the crisis and post-crisis

period 1997-2005.[2] The results are shown in Table 7.[3] During the trade liberalization period 1986-1996, the employment effects of foreign acquisition is as high as 19 percent[4], though foreign takeovers have no significant effects on employment during the earlier import substitution period 1975-1985.

Matched Comparisons of Domestic and Foreign Takeovers

As previously said, acquisitions may not be random with respect to factors that determine future growth. We therefore use a matching approach combined with difference-in-difference estimations to control for a possible endogeneity problem. The results are shown in Tables 8 and 9.

Foreign takeovers raise the growth rate of employment to 10 percent on average per year during the post-acquisition period, after correcting for the pre-acquisition differences between acquired and non-acquired plants (table 8). This is similar to the fixed effect estimate. Most of the increase in employment growth rates occurred in the year of acquisition. Foreign takeovers do not significantly increase employment growth rates one-year and two-years after the acquisition. The domestic takeovers, according to the matched comparison, do not affect employment growth rates.

In addition to employment growth rates, employment in absolute levels is computed for comparison (table 9). It tells a similar story. During the post-acquisition years, on average plants that have foreign takeovers would have 181 more employees than always domestic plants. Again, most increase happens in the year of acquisitions

[2] See Aswicahyono et al. (1996; 2008), and Aswicahyono and Hill (2002) for discussions on Indonesia's policy regimes, and for similar distinctions in different periods.

[3] There are 43 foreign takeovers in our sample in the first period, 365 in the second, and 630 in the third. The corresponding figures for domestic takeovers are 129, 247, and 277.

[4] $\left(\exp^{\hat{\beta}_{foreign\ takeover}} - 1\right) \cdot 100 = \left(1.1901 - 1\right) = 0.1901$

when foreign takeovers result in roughly 145 more employees than in always domestic plants. Domestic takeovers result in less employment on average during the post-acquisition period than the matched always foreign group, though it is not statistically significant.

CONCLUSIONS

There seems to be considerable evidence that foreign ownership of Indonesian manufacturing plants is associated with more rapid growth in employment. Employment in plants that were foreign-owned throughout our period has grown, on average, about 5 percent faster than plants that were always domestically owned. Plants that were acquired by foreigners grew about 10 percent faster according to fixed effect estimates. Considering that foreign plants are on average considerably larger than domestic plants, the difference in the number of jobs created is large. For instance, taking the average size of foreign firms in 1999 as benchmark (509 employees), the estimated growth effect suggest that the average foreign firm creates between 40 and 76 more jobs annually than the average private-domestic firm.

The propensity score matching consistently confirmed the advantages of foreign ownership for establishment employment growth. It also confirmed the loss of employment growth that resulted from the move from foreign to domestic ownership, although the results are not statistically significant. In addition, it finds out that most of the expansion after foreign takeovers occurs in the year of acquisition.

The negative or insignificant effect of domestic acquisition on foreign-owned plants, as in the fixed effects estimate and the difference-in-differences estimate from a

matched sample, show that the expansion brought by the advantages of foreign-owned plants requires continued foreign ownership. And plants acquired by foreigners are more responsive to trade policies.

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Figure 1. Employment in Indonesian Manufacturing Ownership

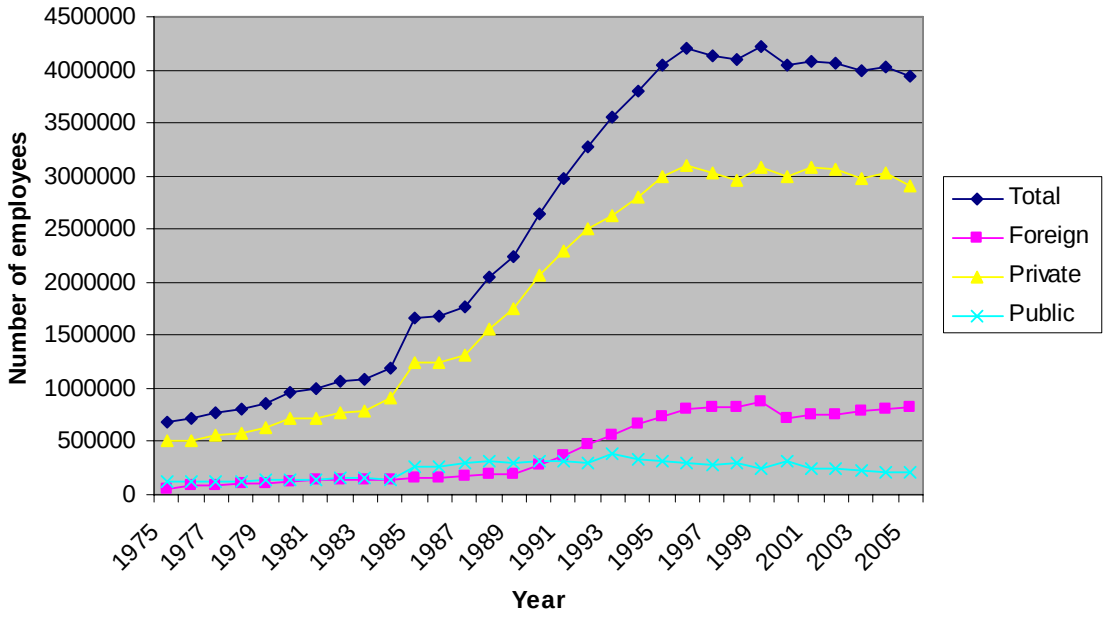

Figure 2. The number of takeovers in Indonesian manufacturing 1976-2005

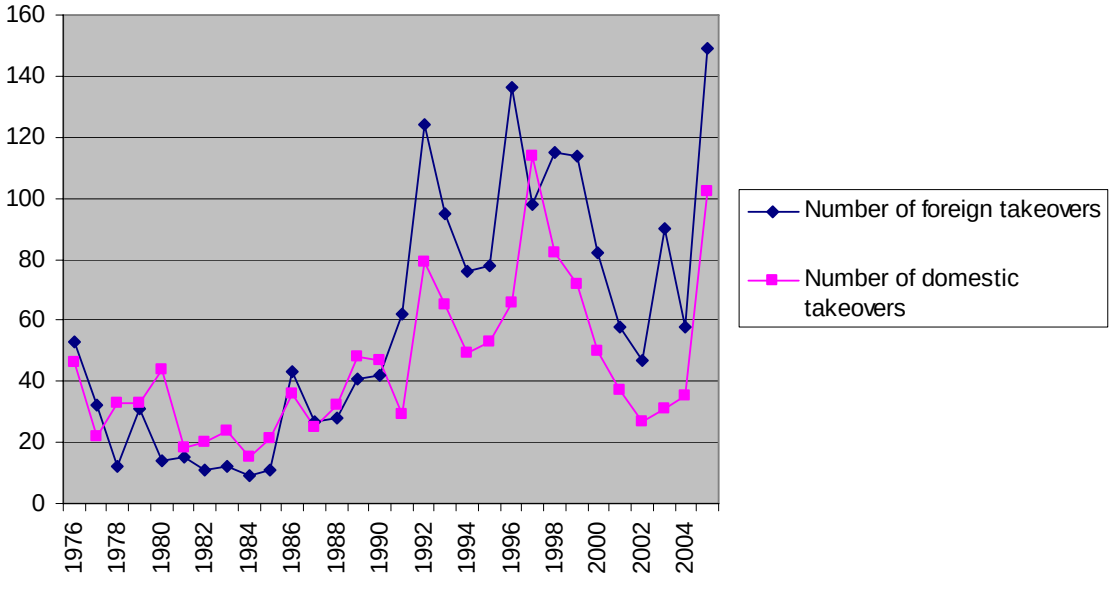

Table 1. Share of Foreign-owned Manufacturing Establishments in Indonesian Manufacturing Employment

(total and 2-digit sector level) 1975, 1990, 2005.

Sector	ISIC	1975	1990	2005
Total		8.5	10.5	19.9
Food products	31	4.1	4.4	10.4
Textiles	32	7.8	12.0	23.6
Wood	33	11.2	7.2	8.2
Paper	34	7.1	9.1	15.4
Chemicals	35	16.8	15.7	20.0
Non-Metallic Minerals	36	10.2	7.1	9.5
Basic Metal Industries	37	12.7	24.4	18.7
Fabricated Metals	38	18.1	17.8	49.8
Other Manufacturing	39	4.2	16.7	28.7

Table 2. Average number of employees per establishment and the share of blue-collar workers, 1975 and 2005

		Private-domestic		Gov't-domestic		Foreign	
Sector	ISIC	Aver, no. of empl. per plant	Share of blue-collar workers	Aver.no. of empl. per plant	Share of blue-collar workers	Aver.no. of empl. per plant	Share of blue-collar workers
1975							
Total		75	0.88	365	0.75	219	0.77
	31	91	0.88	537	0.75	179	0.81
	32	72	0.93	507	0.81	431	0.90
	33	58	0.82	90	0.86	146	0.81
	34	52	0.84	228	0.71	157	0.78
	35	74	0.83	243	0.68	167	0.64
	36	41	0.88	385	0.71	325	0.85
	37	174	0.82	72*	0.65*	96*	0.75*
	38	87	0.86	210	0.72	223	0.73
	39	47	0.90	191*	0.82*	167*	0.92*
2005							
Total		157	0.85	481	0.74	563	0.79
	31	135	0.85	507	0.74	517	0.75
	32	206	0.89	204	0.85	1060	0.89
	33	168	0.87	116	0.83	280	0.83
	34	145	0.78	519	0.75	647	0.78
	35	178	0.79	530	0.68	389	0.70
	36	89	0.87	725	0.67	398	0.80
	37	205	0.78	1822*	0.75*	215	0.76
	38	142	0.82	619	0.66	536	0.80
	39	120	0.87	287*	0.90*	664	0.87

* - Fewer than 5 observations

Table 3: Employment Growth in Foreign-owned Manufacturing Establishments in Indonesia, by Source of Growth, 1975-2005

Year	Foreign	Foreign Takeover	Domestic Takeover	Other[a]
1975~1979	49,379	21,190	10,765	38,954
1980~1984	9,197	18,463	27,435	18,169
1985~1989	30,615	47,488	47,997	31,124
1990~1994	384,856	182,561	87,909	290,204
1995~1999	135,759	216,927	181,210	100,042
2000~2005	108,500	300,782	110,081	-82,201

Note:

a). New establishments minus disappearances, firm growth after takeover, and miscellaneous changes.

Table 4: Size Distribution of Foreign and Domestic Takeovers

Plant Employment	No. of Foreign Takeovers	% of Total	Share of Domestic IDs (%)[a]	No. of Domestic Takeovers	% of Total	Share of Foreign IDs (%)[b]
1-49	139	13.40	0.05	184	28.22	11.15
50-99	152	14.66	0.18	105	16.10	4.33
100-199	233	22.47	0.42	121	18.56	3.35
200-299	127	12.25	0.64	65	9.97	2.99
300-399	88	8.49	0.75	40	6.13	3.07
400-499	40	3.86	0.52	20	3.07	2.14
500-599	47	4.53	0.93	21	3.22	3.28
600-699	40	3.86	0.99	17	2.61	2.94
700-799	22	2.12	0.61	20	3.07	3.85
800-899	25	2.41	1.47	16	2.45	5.43
900-999	21	2.03	1.01	7	1.07	1.80
1,000-1,499	57	5.50	1.01	19	2.91	1.94
>1,500	46	4.44	0.69	17	2.61	1.65
Total[c]	**1,037**	**100**	**0.71**	**652**	**100**	**3.69**

Note:

a). Ratios of numbers of foreign takeovers in year t to numbers of existing domestic establishments of the same size class in year t-1;

b). Ratios of numbers of domestic takeovers in year t to numbers of existing foreign establishments of the same size class in year t-1;

c). Total for share of domestic IDs is the average of ratios from a) over time regardless of size, and Total for share of foreign IDs is the average of ratios from b) over time regardless of size.

Table 5: Ownership and Growth in Employment, OLS estimations

	Total empl.	Total empl.	Total empl.	Blue-collar workers	White-collar workers
Foreign	0.045	0.042	0.060	0.060	0.036
	(20.77)***	(19.29)***	(20.74)***	(19.93)***	(10.27)***
Government	-0.005	-0.007	0.023	0.021	0.011
	(1.75)*	(2.47)**	(6.28)***	(5.31)***	(2.01)**
Size (t-1)	--	--	-0.038	-0.036	-0.026
			(47.47)***	(46.27)***	(27.38)***
Energy (t-1)	--	--	0.011	0.011	0.005
			(31.86)***	(29.51)***	(9.45)***
Inputs (t-1)	--	--	0.012	0.012	0.009
			(27.53)***	(25.17)***	(13.76)***
Time dummy	--	Estimated	Estimated	Estimated	Estimated
Ind. Dummy	--	Estimated	Estimated	Estimated	Estimated
Region dummy	--	Estimated	Estimated	Estimated	Estimated
R-square	0.001	0.007	0.028	0.021	0.006
No. of obs.	397,580	397,570	324,387	324,268	277,653

Note: a constant is included in all estimations. Energy, Inputs and Productivity are in log form. T- values based on robust (cluster at plant level) standard deviations are in parentheses.
* Significant at the 10% level; ** Significant at the 5% level; *** Significant at the 1% level.

Table 6. Acquisitions and Growth in Employment.

	Total empl.	Total empl.	Blue-collar workers	White-collar workers
	OLS	Fixed effect	Fixed effect	Fixed effect
Always Foreign.	0.054	--	--	--
	(16.21)***			
Foreign Acquis.	0.089	0.108	0.117	0.070
	(14.68)***	(5.81)***	(6.30)***	(3.44)***
Domestic Acquis.	0.004	-0.032	0.001	-0.005
	(0.68)	(1.60)	(0.03)	(0.20)
Government	0.024	--	--	--
	(6.45)***			
Size (t-1)	-0.039	-0.426	-0.374	-0.261
	(47.62)***	(25.76)***	(82.04)***	(48.84)***
Energy (t-1)	0.011	0.002	0.005	-0.004
	(31.73)***	(0.78)	(5.63)***	(2.97)***
Inputs (t-1)	0.012	0.006	0.015	0.005
	(27.41)***	(1.23)	(14.56)***	(3.33)***
Time dumm.	Estimated	Estimated	Estimated	Estimated
Ind. Dumm.	Estimated	--	--	--
Region dum.	Estimated	--	--	--
R-square	0.028	0.264	0.171	0.038
No. of obs.	319,390	15,427	285,673	242,112

Note: a constant is included in all estimations. Energy, Inputs and Productivity are in log form. T- values based on robust (cluster at plant level) standard deviations are in parentheses. Significant at the 10% level; ** Significant at the 5% level; *** Significant at the 1% level.

Table 7: Acquisitions and Growth in Employment in Different Time Periods,

Fixed Effects (Only Acquired Plants)

	Import Substitution 1975-1985	Export Oriented 1986-1996	Crisis and post-crisis 1997-2005
Foreign Acquis.	-0.002	0.174***	0.125***
	(0.118)	(0.048)	(0.029)
Domestic Acquis.	-0.037	0.008	0.001
	(0.040)	(0.041)	(0.035)
Size (t-1)	-0.505***	-0.551***	-0.654***
	(0.061)	(0.030)	(0.024)
Energy (t-1)	-0.002	0.007	0.013***
	(0.007)	(0.006)	(0.005)
Inputs (t-1)	0.032*	0.004	-0.000
	(0.018)	(0.009)	(0.006)
Time dumm.	Estimated	Estimated	Estimated
R-square	0.28	0.35	0.36
No. of obs.	1,644	5,459	7,483

Note: Only plants with one takeovers are used, either foreign or domestic. A constant is included in all estimations. Size, Energy and Inputs are in log form. Standard errors clustered at plant level. Significant at the 10% level; ** Significant at the 5% level; *** Significant at the 1% level.

Table 8: Estimated Effects of Takeovers on Employment Growth Rates After Takeover, Propensity Score Matching

	Foreign Takeover (Control: Always Domestic)		Domestic Takeover (Control: Always Foreign)	
	DD	Std. Err.	DD	Std. Err.
Acquisition year	0.304***	(0.052)	-0.001	(0.060)
One year after acquisition	0.044	(0.039)	-0.007	(0.038)
Two year after acquisition	0.003	(0.038)	0.001	(0.051)
Average of post-acquisition	0.103***	(0.029)	0.024	(0.037)

Table 9: Estimated Effects of Takeovers on Employment Growth After Takeover, Propensity Score Matching

	Foreign Takeover (Control: Always Domestic)		Domestic Takeover (Control: Always Foreign)	
	DD	Std. Err.	DD	Std. Err.
Acquisition year	145**	(58.5)	1	(26.4)
One year after acquisition	188***	(62.0)	-11	(34.5)
Two year after acquisition	250***	(60.7)	-60	(37.8)
Average of post-acquisition	181***	(55.0)	-25	(32.5)

Note:

1. For foreign takeovers, the average number of years after acquisition for both treated and control group is approximately 6 years. For domestic takeovers, both treated and control groups have on average 6 years after acquisition.
2. The pre-acquisition for this calculation uses information at one year before acquisition. It would not change the story if the average from all the years before acquisition is used instead.
3. Standard errors are bootstrapped.

APPENDIX

Table A1: Results from Probit Model for Foreign and Domestic Takeovers

	Foreign Takeover	Domestic Takeover
Age	-0.146***	-0.054***
	[0.007]	[0.013]
Age Squared	0.003***	0.002***
	[0.000]	[0.000]
Employment	0.592***	-0.454***
	[0.076]	[0.152]
Employment Squared	-0.035***	0.022
	[0.007]	[0.014]
Ratio of White-collar Workers	0.630***	-0.842***
	[0.078]	[0.171]
Inputs	0.014	-0.053***
	[0.010]	[0.017]
Energy	0.022***	-0.021
	[0.008]	[0.015]
Productivity Before Acquisition[1]	0.092***	-0.101***
	[0.015]	[0.020]
Year Fixed Effects	Y	Y
# of Observations	221,062	9,416
Chi-squared	1,318	349
Pseudo R-squared	0.1751	0.1112

1. Productivity at one-period before acquisition

Table A2: Balancing Property Test for Difference in Means, Foreign Takeover

Variables	Sample	Mean in the Group of Treated	Mean in the Group of Control	T-stat for Differences in Means	P-Values
Age	Unmatched Sample	6.13	11.68	-23.36	0.00
	Matched Sample	9.05	8.77	0.75	0.46
Age squared	Unmatched Sample	69.46	188.67	-17.33	0.00
	Matched Sample	121.43	120.60	0.07	0.94
Employment	Unmatched Sample	5.01	4.18	21.83	0.00
	Matched Sample	4.99	4.89	1.24	0.22
Employment squared	Unmatched Sample	26.66	18.83	21.07	0.00
	Matched Sample	26.49	25.61	0.99	0.32
Ratio of white-collar workers	Unmatched Sample	0.21	0.15	11.69	0.00
	Matched Sample	0.22	0.21	0.98	0.33
Inputs	Unmatched Sample	10.23	9.40	15.34	0.00
	Matched Sample	10.12	10.15	-0.23	0.82
Energy	Unmatched Sample	7.62	6.66	14.66	0.00
	Matched Sample	7.46	7.42	0.34	0.74
Productivity before acquisition	Unmatched Sample	9.99	9.13	22.72	0.00
	Matched Sample	9.99	9.99	-0.03	0.97

Table A3: Balancing Property Test for Difference in Means, Domestic Takeover

Variables	Sample	Mean in the Group of Treated	Mean in the Group of Control	T-stat for Differences in Means	P-Values
Age	Unmatched Sample	7.71	9.80	-7.07	0.00
	Matched Sample	10.54	9.81	1.43	0.15
Age squared	Unmatched Sample	100.46	142.09	-5.13	0.00
	Matched Sample	156.23	137.95	1.21	0.23
Employment	Unmatched Sample	4.98	5.49	-9.83	0.00
	Matched Sample	5.27	5.38	-1.65	0.10
Employment squared	Unmatched Sample	26.21	31.59	-9.06	0.00
	Matched Sample	29.08	30.39	-1.78	0.08
Ratio of white-collar workers	Unmatched Sample	0.20	0.24	-5.06	0.00
	Matched Sample	0.21	0.20	1.28	0.20
Inputs	Unmatched Sample	10.27	10.96	-9.64	0.00
	Matched Sample	10.58	10.66	-0.85	0.40
Energy	Unmatched Sample	7.66	8.12	-5.82	0.00
	Matched Sample	7.96	8.13	-1.30	0.20
Productivity before acquisition	Unmatched Sample	9.94	10.64	-11.53	0.00
	Matched Sample	10.18	10.30	-1.45	0.15