Acquisitions, labour turnover and wages

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Unfinished and preliminary draft: April 2013

Abstract

In this paper we investigate the consequences of foreign and domestic acquisitions for the employees in these plants. The analysis is based on the idea that from a management perspective an ownership change can be viewed as a possibility to improve the match between management and the plant and resulting from this also between the labour force and the plant. We look for evidence of a poor match between workers and the plant before acquisitions, indications of an ongoing restructuring process and signs of an improved match after acquisitions both for workers that stay and that leave acquired plants. For this analysis we use a comprehensive panel of matched employer-employee data of Norwegian manufacturing firms for the period 1996-2007.

Keywords:

JEL Classification:

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1 Introduction

Mergers and acquisitions and other types of ownership change of firms have become commonplace occurrences in everyday business life. One the one hand, ownership changes are often perceived by the media, the general public and by the affected employees as a potential threat to wages and jobs. On the other hand, much of the academic literature views ownership change as a way to improve the allocation of resources towards more efficient firms and owners (Jovanovic and Rousseau, 2008), either by improving the match between the firm and its plants (e.g. (Lucas, 1978; Lichtenberg and Siegel, 1987; Maksimovic and Phillips, 2002; Maksimovic et al., 2011), or by improving the match between the firm and its employees (Siegel and Simons, 2010).[1] Put differently, this view of ownership change suggests that takeovers are attractive to those "who believe that they can manage the company more efficientl" (Manne, 1965, p. 113).

With this starting point, we would expect that new owners shortly after ownership change attempt to implement some of the envisaged changes that possibly motivated the takeover in the first place.[2] In particular, the idea that ownership change is an opportunity to improve the match between the firm and its employees, implies that we should observe more than "normal" employee turnover around acquisitions. These changes could result in a marked change in the composition and remuneration of employees within the plant. Thus, ownership change could be a threat to the jobs or wages of some employees, while representing new opportunities for others. Although an extensive empirical literature on the the effect of foreign acquisitions on individual wages exist,

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[1]When it comes to which plants a firm chooses to keep after mergers, Maksimovic et al. (2011), using data on US mergers, find that a merger is followed by a period of restructuring where firms retain assets that they have a comparative advantage in operating and sell assets where this is not the case. The authors argue that this is consistent with an improved match between the firm and its plants. In our analysis we will focus on plants that experience only one ownership change. Given that we observe the plant for some years after ownership change without the plant being sold off, this could be interpreted as evidence that the new owners have comparative advantage in running the plant.

[2]Other motives for ownership change than the potential to increase efficiency have been raised in the literature. Managers may use mergers and acquisitions to fulfill their desire to maximize firm size (Jensen, 1986) or to build empires (e.g. Baumol (1959) and Mueller (1969)). As argued by Maksimovic et al. (2011) such motives should imply less restructuring following ownership change than if the ownership change is seen as an opportunity to improve efficiency. We also conjecture a limited amount of restructuring following ownership change when the primary motivation for ownership change is to save taxes or to increase market power.

this literature provides limited insight into details of how the composition of a firm's workforce changes after such an event. In addition, there is little evidence on other individual level outcomes following ownership change using comprehensive employer-employee data. In this paper, we use comprehensive matched employer-employee data from Norwegian manufacturing for the period 1996-2007 to study individual level outcomes following ownership change. We contribute to the literature by looking at several different sets of individual outcomes following ownership change. First, we study the probability of hires and separations around ownership change.Second, we look at wage levels and wage growth for stayers, leavers and new hires in acquired plants. Third, we examine what happens to employees that are separated from their plants shortly after ownership change.

The existing empirical literature on the effect of ownership change using matched employer-employee data is limited, and focuses primarily on the impact of acquisitions on wages, e.g. see Martins (2004); Heyman et al. (2007, 2011); ?); Almeida (2007).[3] Further, most of these studies look only at foreign acquisitions of domestic firms.[4] There are several reasons why the extent of restructuring in a plant could differ depending on whether the new owners are of home country or foreign origin. The OLI-theory of Dunning (1981) suggests that ownership advantages are one possible reason for firms to become multinationals. This could lead to more change in technology or management practices following ownership change to new foreign owners as well as larger productivity improvements and larger changes in the desired composition of workers. Larch and Lechthaler (2011) argue that MNEs are better positioned to improve the match between the acquired plant and its workforce because MNEs have easier access to both a domestic and foreign pool of workers. In Helpman et al. (2010), firms with higher productivity screen more intensively in the labour market and therefore end up with a workforce of higher average ability than do low

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[3]Almeida (2007) use matched employer-employee data for Portugal, but aggregate wages and worker characteristics to the firm level.

[4]Some studies compare foreign acquisitions with acquisitions of firms by domestic multinationals, arguing that the OLI theory suggests that acquisitions effects should be primarily related to the multinationality, rather than the nationality of the acquirer, see Heyman et al. (2007).

productivity firms.[5] Based on these considerations, we distinguish between foreign and domestic ownership changes in our analysis.

When using individual wage data the evidence on the effects of foreign acquisitions is more mixed than when looking at plant-level average wages. While plant-level studies typically find that foreign acquisitions increase wages, results from papers using matched employer-employee data suggest that wage effects are limited. Heyman et al. (2007) even find a negative wage effect of foreign acquisitions in Sweden. There is some evidence that different groups of workers are affected differently by foreign acquisitions. Huttunen (2007) finds that the positive wage effect of foreign acquisitions increases with the level of education of the employees,[6] while Heyman et al. (2011) find that a positive wage effect in Sweden is concentrated on CEOs and other managers, while the wages of other groups are either not or negatively affected by acquisitions.

There is little evidence on the change in the composition of employees in plants after ownership change apart from evidence on the average skill composition of employees. Huttunen (2007) finds some evidence of a change in the skill composition via a reduction of the share of skilled employees after foreign acquisitions in Finland. Almeida (2007) finds no evidence of change in the composition of human capital following foreign acquisitions in Portugal. Even if the average skill composition does not change much, this could mask large changes in who works in a plant before and after acquisition. Based on an analysis of US manufacturing plants, Lichtenberg and Siegel (1990) conclude that job losses after mergers are largely confined to central office staff. Heyman et al. (2011) document the extent of turnover for different groups of workers after ownership change, but do not compare this to average or regular turnover at other times/in plants not subject to ownership change. ? find that the share of workers that are new to a plant increases substantially during a takeover year, this combined with a reduction in the total workforce indicates a substantial change in the composition of workers within the plant. Pesola (2009) studies job separations following

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[5]Helpman et al. (2010) combine international trade models with heterogeneous firms ala Melitz (2003) with search and matching frictions. In the model, high productivity is associated with exporting, but the extensive evidence showing that MNEs are more productive than domestic firms (see Navaretti et al. (2004)) indicates that the mechanism in the model could also apply to MNEs.

[6]Huttunen (2007) uses average wages for different skill groups, and not individual wage data.

both foreign and domestic acquisitions and also studies where workers who are separated from their plants following ownership change end up. She finds that changes following domestic and foreign acquisitions indicate similar types of restructuring, but that the extent of restructuring is somewhat larger after foreign acquisitions. She does not look at new hires following acquisitions.

We find evidence of excess turnover of employees in the years close to ownership change. The probability of separation from a job spell is higher than "normal" in years close to a foreign acquisition, both before and after, while for domestic acquisition the separation probability is higher before and including the year of acquisition, but is not higher than normal after the acquisition. The probability of separation is particularly high for high skilled workers before a domestic to domestic ownership change, and so is the probability of starting a job spell for the high skilled after domestic acquisitions. This indicates that there is substantial change in the top echelons of plants that undergo domestic acquisitions. For workers who stay in acquired plants for a five year period around foreign acquisition, we find a reduction in wages, this only applies to the medium-skilled employees of these plants.

In what follows, we present our data sources and definitions in section 2. In section 3 we briefly review some of the existing evidence on the effects of ownership change using plant or firm level data. In addition, this section presents descriptives on various plant-level variables that could indicate evidence of restructuring in our data. A novel feature of our descriptives is that we also present evidence on changes in trade status around ownership change. The plant-level evidence presented in section 3 provides limited insight into how individual employees are affected by the restructuring following ownership change, therefore, in section 4 we move to matched employer-employee data and study turnover and changes in the composition of the workforce following ownership change. In section 5 we look at wages and wage growth for workers in the acquired plants. We examine separately the effects for both stayers and new hires after acquisition. Section ?? looks at what happens to employees who are separated from their plants after ownership change. A brief summary and conclusions can be found in section 6.

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2 Data and Definitions

2.1 Data sources and cleaning

In our analysis we use four different annual data bases for the years 1996-2007, all of which are censuses that can be linked to each other by firm or plant identifiers. All the data sources are administered by Statistics Norway. Our first starting point is the Norwegian Manufacturing Statistics, which is collected at the plant level. We then link our second data source, the administrative files containing the whole population of residents aged 16-74, to the plant-level data. The administrative files contain information on age, gender, identification of current employer, weekly work-hours, annual earnings and detailed education codes, among others. Weekly work-hours are recorded as a categorical variable in four groups, with the longest work-hours being 30 hours or more per week. Our intention is to restrict the analysis to full-time workers, to do this we proceed as follows: After matching workers to the plants in the Manufacturing Statistics, we drop workers who never work full-time and workers earning less than the 10th percentile for 80% or more of their years in a manufacturing plant. We then keep only plants that employ at least two remaining full-time workers each year.

In order to reduce the possible mistakes from discrepancies between the plant identification numbers in the manufacturing statistics and individual data, we drop plants with large differences between the number of matched workers and the number of employees as recorded in the manufacturing statistics (more than 400). We also drop plants where the change in the number of employees from one year to the next is very different depending on whether we calculate this according to the number of matched individuals or according to the information on the number of employees in the manufacturing statistics (more than 300).

The third data source we use is the SIFON register, which is a register of foreign ownership interests in Norwegian firms. This register provides information about shares of firm assets/stocks that are owned by foreign owners. The SIFON register is linked to the plants in the manufacturing panel using firm level identifiers. In order to focus on domestic plants experiencing ownership

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change and a comparison to domestic plants that never experience ownership change, we drop plants that are always foreign owned, and foreign divestures. In addition, we drop the few remaining plants with multiple ownership changes. In presenting our findings on firm and plant-level outcomes after acquisitions, our comparison group are always firms that do not experience ownership change. If ownership changes occur because the new owners see a potential for applying their comparative advantage to improve the target, we expect to see more evidence of restructuring following an ownership change than in plants that do not experience ownership change.

After the cleaning procedures mentioned above, we are left with 85 000 plant-year observations from 10 950 different plants over the period from 1996 to 2007. These plants employ in total over the period almost 370 000 different workers giving rise to more than 2,1 million worker-year observations. The firms in the panel account for on average over the period 72% of total manufacturing employment and 73% of total manufacturing production over the sample period.[7]

As a fourth data source we use firm level customs data in order to get information on total export and imports at the firm level per year. We also calculate the number of export and import destinations per firm, and the number of commodities (defined at the 3 digit sitc level) imported and exported per firm-year.

2.2 Definitions

With the information in the SIFON register we use a strict definition for foreign ownership: we define a plant as foreign owned if the ownership share of the largest foreign owner is above 50%. Our definition of a foreign acquisition occurring in year t is thus that the largest foreign ownership share is above 50% in year t, but was below this threshold in year $t-1$.

As a potential comparison group we are also interested in plants that experience ownership change from one Norwegian owner to a different Norwegian owner. In order to identify these changes in our data set, we make use of the plant and firm identifiers in the manufacturing

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[7]For both employment and production there is a gradual increase in the share of manufacturing that is contained in our sample, this is related to requiring plants to be observed a minimum number of years, which means that we drop more plants in the beginning of our sample period; i.e. the plants that exit in 1996-1998.

statistics. While the plant identifiers are connected to a specific location with production in a specific industry, the firm identifier is related to the legal owner (firm). The plant identifier does not change as long as the production is within the same industry and in the same location, while the firm identifier may change if the plant gets a new owner. Thus we identify a domestic ownership change for a plant in year t if the plant does not have the same firm identifier in year t and year $t-1$, and if there were other plant ids associated with the firm id in t-1. We add this second condition that the new firm id actually existed in the manufacturing statistics in t-1 to rule out mere changes to firm names. Further, the plant must not be defined as foreign owned in either year t or t-1. In earlier work we also identified domestic plants that were taken over by Norwegian multinationals (Balsvik and Haller, 2010). During our sample period we are able to identify less than 20 such cases and we therefore drop these plants from our analysis.[8]

The linked employer-employee data allow us to identify the workers that are new to a plant and those leaving a plant each year. We define a worker as new to a plant (i.e. a new hire) if the worker is observed in plant j in year t, but was not observed in this plant in t-1. We define a worker as a leaver (ie a separation) from plant j in year t if we observe the worker in plant j in year t, but the worker is not observed in plant j in year t+1.

2.3   Descriptive statistics

Table 1 provides descriptive statistics on all plants in our sample, and for those plants that experience ownership change. Overall there are around 7,000 plants in the sample in each year with an average of 25-29 employees amounting to 180,000-205,000 employees per year (columns 2-4). Columns 5-7 of table 1 show, respectively, for each year the number of domestic acquisitions, the average employment in these acquired plants and the total number of employees working in the acquired plants. Columns 8-10 provide the same information for the plants subject to foreign

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[8]A handful of other papers are able to identify domestic multinationals in their studies of ownership change, e.g Heyman et al. (2007), Bandick and Görg (2010) and Criscuolo and Martin (2009). These studies find that domestic and foreign MNE characteristics are much more similar than the characteristics of foreign and domestic firms, and also that the impact on firm performance are rather similar when a domestic and a foreign MNE acquires a local firm.

acquisitions. In total we have 244 plants that at some point during our sample period are subject to a domestic ownership change and 743 plants subject to foreign acquisition. The number of employees working in an acquired plant in the year of acquisition varies from year to year, for foreign acquisitions the number of affected employees ranges from 1,500 to 6,200.

Table 1: Plants and workers involved in ownership change, by year

| | All plants | | | Domestic acquisitions | | | Foreign acquisitions | | |
| | No. | Employment | | No. | Employment | | No. | Employment | |
Year		Mean	Total		Mean	Total		Mean	Total
1996	6687	28	189271	.	.	.	.	.	.
1997	6862	29	197693	14	53	744	28	53	1486
1998	7190	28	204299	18	31	554	69	91	6248
1999	7058	29	201628	14	75	1043	89	66	5866
2000	7217	27	196692	19	26	502	102	58	5907
2001	7151	27	195400	33	28	931	89	55	4874
2002	7164	26	189298	17	31	525	55	43	2382
2003	7139	25	181755	16	39	631	65	57	3685
2004	7148	25	179189	13	26	342	41	38	1572
2005	7183	25	180169	23	17	398	38	43	1628
2006	7222	26	186741	52	86	4451	101	50	5020
2007	7080	27	189773	25	33	821	66	47	3125

Table 2 provides a description of worker characteristics. The average wage over the period was around 300,000 NOK. Employees in plants ever subject to a domestic acquisition earn on average less than the average, while employees in plants ever subject to a foreign acquisition earn above average. The same pattern is observable also for low-, medium- and high-skilled workers.[9] Looking at the skill shares, plants subject to domestic acquisitions have higher shares of low-skilled employees than plants not subject to acquisition, whereas plants subject to foreign acquisitions have higher shares of medium- and high-skilled employees. Plants subject to domestic acquisitions have on average higher shares of females among their employees than non-acquisition plants, in turn plants subject to foreign acquisitions have lower than average shares of females.

[9]Skill-levels are defined by years of education: low-skilled workers have less than 10 years of education, medium-skilled workers have 10-13 years of education and high-skilled workers have 13 or more years of education, i.e. a college degree.

Table 2: Descriptive statistics on worker panel

| | All workers | | Domestic acq | | Foreign acq | |
	mean	sd	mean	sd	mean	sd
avg. wage (NOK)	300,560	277,019	278,129	117,579	316,670	295,300
avg. wage - low skill	261,968	204,633	245,217	80,919	274,137	378,047
avg. wage - med skill	296,167	162,824	281,326	96,857	308,716	217,106
avg. wage - high skill	422,832	562,510	386,487	203,857	432,940	235,410
Share - low skill	0.40	0.49	0.43	0.50	0.37	0.48
Share - med skill	0.46	0.50	0.45	0.50	0.46	0.50
Share - high skill	0.14	0.35	0.12	0.32	0.17	0.37
Share - females	0.22	0.41	0.27	0.44	0.19	0.39
Experience	22.98	12.35	23.13	12.53	22.83	12.11
Age	40.87	11.69	40.91	11.81	40.88	11.40
Obs	2,130,910		100,699		423,051	

Note: Statistics on domestic and foreign acquisitions are for workers in plants ever subject to an acquisition.

3   Firm level evidence on restructuring

A large number of empirical studies document various aspects of the potential restructuring that takes place after ownership change.[10] With firm level data sources it is difficult to observe if the new owners implement substantial changes in technology, management practices or the composition of the workforce, and researchers are most often limited to observing what happens to productivity, employment, average wages and skill composition.[11]

We use our four data sources to construct several variables for plant and firm level outcomes that could provide some indication of restructuring taking place around ownership change. For each 3 digit industry-year cell we calculate the average of outcome x for plants never subject to acquisitions. For the plants that are subject to ownership change, we subtract the industry-year mean from the plant-level outcome of x, generating a deviation-from-mean variable. We then

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[10]Studies differ with respect to how they define and identify ownership changes, this depends to a large extent on the data sources used.

[11]The finance literature contains extensive empirical evidence finding that takeovers create value for the target and bidder shareholders combined, see Martynova and Renneboog (2008) for a survey. Evidence of an increase in stock market values provides little information on the actual restructuring that takes place after ownership change. Shleifer and Summers (1988) argue that an increases in stock market value need not be due to efficiency gains, but rather that a (hostile) takeover is a way to redistribute wealth from existing stakeholders to new shareholders.

regress the deviation-from-mean variable on dummy variables indicating whether the observation is 3 or more years prior to ownership change, 2 years prior to ownership change, etc, until 3 years or more after ownership change. The coefficients on the dummies are plotted in figures 1-3.

Figure 1: Turnover, skill composition and employment around acquisitions

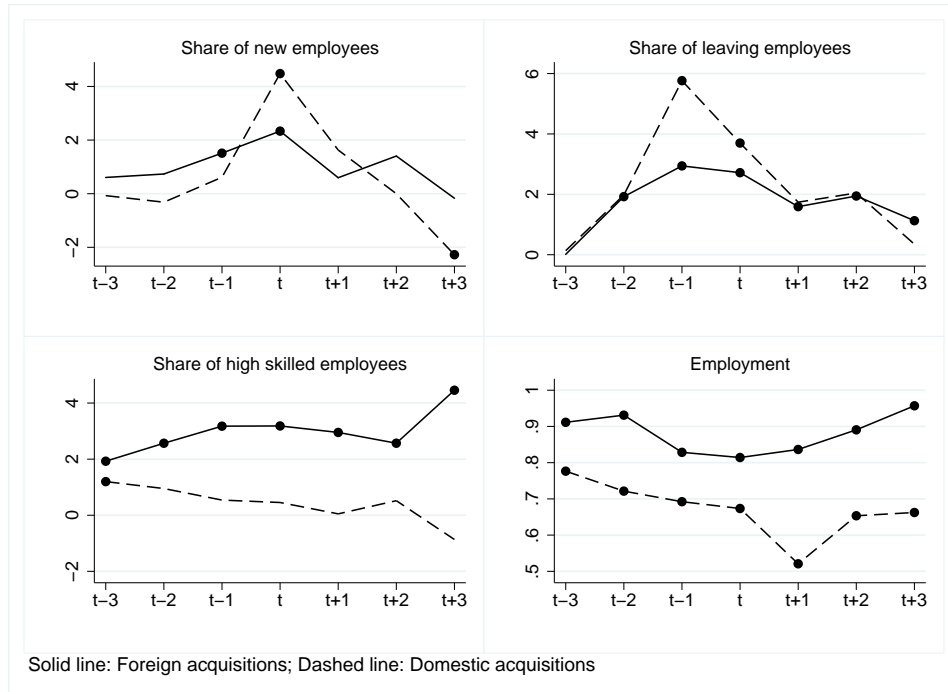Solid line: Foreign acquisitions; Dashed line: Domestic acquisitions

Figure 1 shows the development in the share of new hires, separations and share of high skilled workers as well as total employment in years around ownership change for plants experiencing foreign (solid line) and domestic (dashed line) ownership change in year t. The reference of industry-year means for plants not subject to acquisitions is the horizontal line at zero. Dots represent outcomes that are significantly different from zero at the 95% level of confidence. Thus, the upper panels of figure 1 shows evidence of excess turnover around the time of ownership change. Both plants that are acquired by domestic and foreign owners have significantly higher shares of new employees in the year of ownership change than the average hiring rate in the same industry and year. Firms subject to domestic acquisitions have on average 4 percentage point higher shares of new employees than plants not subject to acquisitions, the similar figure in the

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year of foreign acquisitions is 2 percentage points higher than the industry-year mean. Firms subject to domestic acquisitions also have a significantly lower than average hiring rate 3 years after acquisition. From two year before the acquisitions, plants also have higher separation rates than normal. The tendency of excess separation rates seems to start even before the ownership change occurs.[12] In line with our findings, **?** document that the share of employees that are newly hired in a firm is more than twice as large as "normal" during a foreign takeover year in Hungary.

Also, according to figure 1, the share of skilled employees increases following foreign acquisitions from about 2 to 4 percentage points above average, while the skill share in domestic acquisitions is not affected and does not significantly differ from average. Bandick and Karpathy (2011) also find that employment of skilled labor increases more than employment of less-skilled labor after foreign acquisitions in Sweden, and **?** find that the excess hiring in the year of foreign acquisition in Hungary is accompanied by a marked increase in the share of high skilled workers. Almeida (2007) finds no effect on skill composition in acquired firms in Portugal, while Huttunen (2007) finds that foreign acquisition has a negative effect on the share of highly educated workers in Finnish manufacturing plants.

Finally, figure 1 also confirms the "cherry picking" of large acquisition targets that is typically found in the empirical literature on foreign acquisitions, showing that this also applies, but to a lesser extent, to acquisitions by new domestic owners. Ex-ante is is not clear whether an acquisition and the associated restructuring increases or decreases overall employment. On the one hand, Siegel and Simons (2010) argue and find using data from Sweden that employment is likely to be reduced due to badly matched employees being separated from acquired plants.[13] On the other hand, if substantial restructuring strengthen the competitiveness and performance of the acquired

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[12]We do not have the exact timing of ownership change in our data, and we suspect that it is more likely for the data to err on the side of recording ownership change after it occurred rather than before. This means that in some cases t-1 could well be the year of ownership change.

[13]Bandick and Görg (2010) and Bandick and Karpathy (2011), also using Swedish data, find evidence of increased employment for some types of foreign acquisitions. While Conyon et al. (2002a), and Gugler and Yurtoglu (2004) find evidence for the UK and Europe that is consistent with the argument of Siegel and Simons (2010). Girma (2005) finds, on average, no impact of foreign acquisitions on employment in acquired domestic firms in the UK, which comprises a negative effect for large takeover targets, and a positive effect for small targets.

firms, this may involve higher employment, as found by Arnold and Javorcik (2009) for Indonesia. From figure 1 plants subject to foreign acquisitions seem to increase their employment from the year of acquisition to 3 years after from around 80% larger than industry-year mean to almost double the industry-year mean. After a substantial dip in employment one year after domestic acquisitions, also these plants are able to increase employment thereafter. The existing literature on employment effects of acquisitions focuses primarily on what happens after ownership change, but figure 1 also documents a reduction in employment relative to industry year mean in the period leading up to ownership change.

Figure 2: Productivity, wages and input use around acquisitions

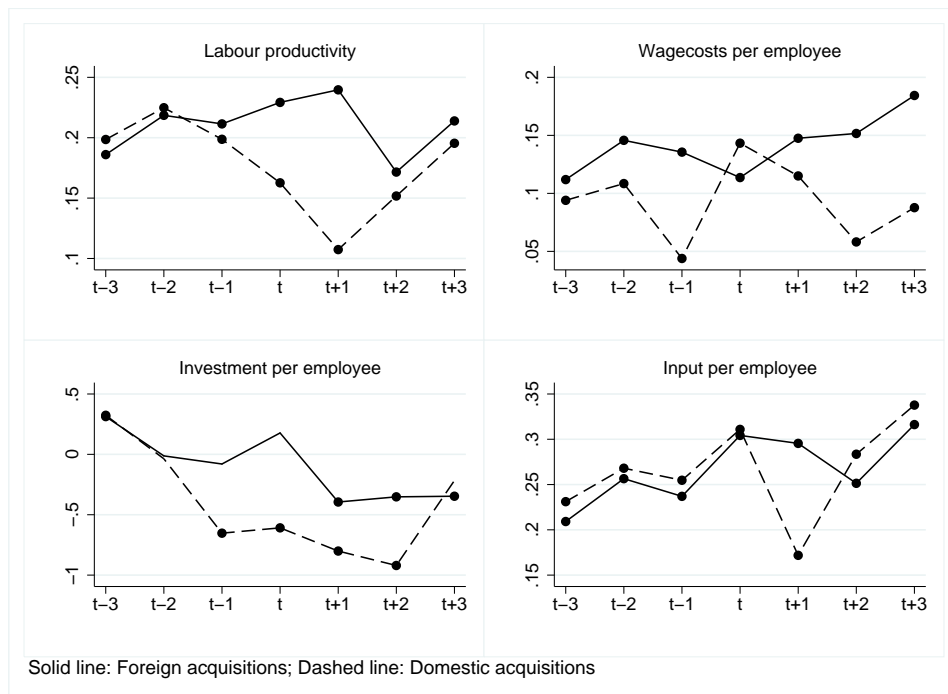Solid line: Foreign acquisitions; Dashed line: Domestic acquisitions

Figure 2 depicts the developments in output, wage costs, investment and the use of intermediate inputs, all normalized by the number of employees. Labour productivity, wages and intermediate input use are all substantially above average in plants subject to ownership change. Intermediate input use per employee seems to increase from before to after ownership change of both types. Plant-level average wages increase after foreign acquisitions, but this could well be explained by the

increase in the share of high skilled workers shown in figure 1.[14] Somewhat surprisingly, investment per employee is actually below average after both foreign and domestic ownership changes. Thus it could be that ownership changes in Norway may not be accompanied by substantial technology upgrading that requires large capital investments.

Turning to labour productivity the first panel of figure 2 does not show a clear change in productivity from three years before to three years after ownership change. In the case of successful restructuring, one would expect productivity to increase. Increased productivity after acquisitions is found by ?Lichtenberg and Siegel (1987); Harris et al. (2005) and Siegel and Simons (2010). These studies do not distinguish between foreign and domestic ownership changes, and do not attempt to account for possible selection bias of acquisition targets. A common methodology used to analyse the causal effect of ownership change is a combination of propensity score matching and difference-in-difference techniques, see for example Arnold and Javorcik (2009); Girma and Görg (2007); Karpaty (2007) who all find that productivity increases following foreign acquisition, using data from Indonesia, the UK and Sweden, respectively. The evidence on the causal effect of foreign acquisitions on plant-level productivity is mixed, Benfratello and Sembenelli (2006) find no effect on productivity following foreign acquisitions in Italy. In contrast, Harris and Robinson (2002) even find a slight decline in productivity in data for the UK, which could indicate difficulties associated with assimilating the established plants into the new organization, or that it takes time to implement changes successfully in an acquired plant.[15] Studies that compare the impact of foreign and domestic acquisitions of domestic firms, typically find that performance seems to improve more after foreign than after domestic ownership change, see (Balsvik and Haller, 2010; Bertrand and Zitouna, 2008; Gioia and Thomsen, 2004; Hanley and Zervos, 2007; ?; Conyon et al., 2002b).

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[14]Since the evidence on wages using plant-level data is not able to disentangle wage increases from changes in the composition of the workforce, we discuss the evidence on wages in section 5 where we use matched employer-employee data.

[15]Hanley and Zervos (2007) also find a post-acquisition dip in labour productivity in their study of UK takeovers.

Figure 3: Firm level trade patterns around acquisitions

Solid line: Foreign acquisitions; Dashed line: Domestic acquisitions
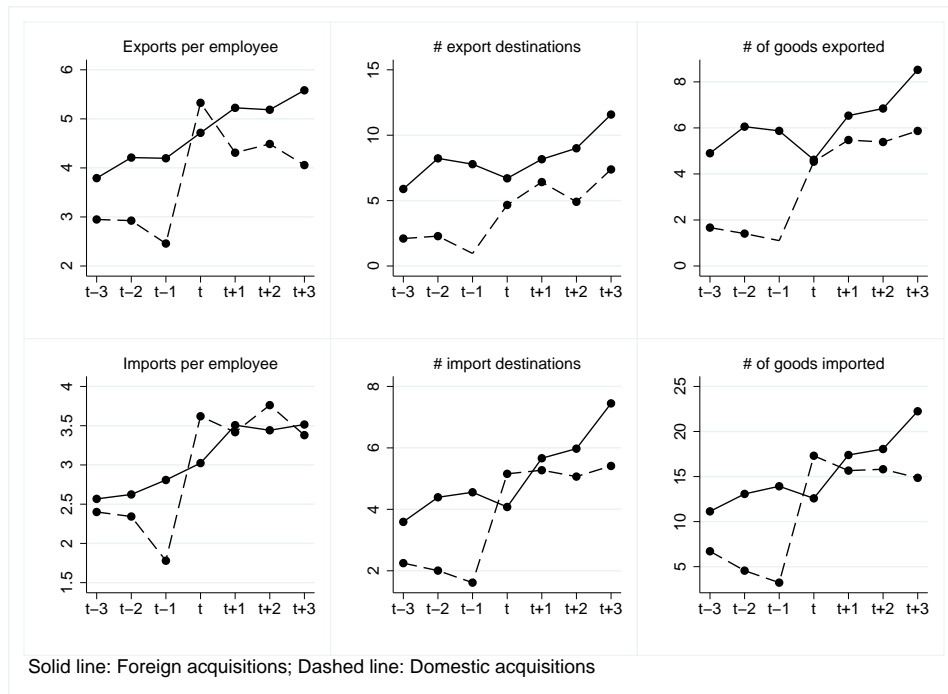
A further aspect of restructuring which accompanies ownership change could be that the new owner integrates the acquired plant into its existing global network of buyers and suppliers; this might affect the target plant's involvement in international trade. Figure 3 shows firm level data on exports and imports per employee, the number of destination countries for imports and exports, and the number of products imported and exported.[16] Here we see a clear picture that plants subject to foreign acquisitions are more global than average and than plants subject to domestic acquisitions, even before ownership change. Both types of ownership change make the acquired plants part of firms with more external trade than their previous owners. The study by Arnold and Javorcik (2009) is one of very few studies that provide evidence on this aspect of ownership change, they find that in Indonesia foreign ownership change increases exports and imports.

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[16]The customs data is at the firm level, thus we do not have plant-level information about international trade.

4 Turnover and changes in employee composition

The descriptive evidence shown in figure 1 clearly indicates that some type of restructuring of the workforce takes place in plants that experience ownership change. In this section we study this in more detail by estimating the probability of being hired or separated from a plant in the years around acquisitions, using our matched employer-employee data. We define the indicator variable $leave_{ijt} = 1$ if worker i is observed in plant j in year t, but is not observed in this plant the year after. Our data does not allow us to distinguish between voluntary and involuntary separations. We define the indicator variable $new_{ijt} = 1$ if worker i is observed in plant j in year t, but was not observed in this plant the year before. In our estimations of the probability of separation, we estimate linear probability models of the following type

$$leave_{ijt} = \sum_{t=t-2}^{t+2} \alpha_{Dt}\text{Dom acq}_{j,t} + \sum_{t=t-2}^{t+2} \alpha_{Ft}\text{For acq}_{j,t} + X_{it}\beta + X_{jt}\beta + \epsilon_{ijt}. \tag{1}$$

In equation 1, $Domacq_{j,t}$ is a dummy variable equal to one if the observation of worker i in plant j is, two years before a domestic ownership change, one year before ownership change, and so on, until two years after ownership change. We construct a similar set of indicators around foreign acquisitions $Foracq_{j,t}$. Our main interest lies in finding out if years close to ownership change are associated with probabilities of being separated from a plant (job spell) that differ from the normal separation rate. Time varying individual and plant-level traits may affect the probability of separation, thus we control for these with the vectors X_{it} and X_{jt}[17] Unobserved individual and plant fixed effects could be correlated with the propensity of separation, thus we estimate equation 1 using spell fixed effects. In addition, we introduce year and industry dummies (and their interaction) to make sure our results are not confounded by both separations and ownership change being correlated with the business cycle, industry differences and industry specific shocks. For the probability of being new to a plant, we replace the dependent variable in equation 1 with

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[17]X_{it} is the vector of individual level control variables; age, years of education, tenure and its square. Our firm level controls in X_{jt} consist of employment, skill shares for medium and high skilled employees and an exporter dummy.

our indicator variable for new hires. We want to condition new hires and separations on the plant being in existence before hires, and after separations, thus we drop observations in the year of plant entry and the year of plant exit.

Results are reported in table 3. The upper part of the table shows the results for the probability of separations within a job-spell. In column 1, the average probability of separation, i.e. ending a job spell is 15 percent, and for job spells in plants subject to foreign acquisitions, the probability of separation is significantly larger in years close to takeover, both before and after the takeover. In contrast, for job spells in plants subject to domestic acquisitions, the probability of separation is higher than normal only before and in the year of acquisition. For instance, one year before a domestic to domestic ownership change, the probability of separation is 2.8 percentage points higher than in years that are two or more years away from ownership change. Columns 2-7 show the results when we split the sample by skill or quintiles of earnings. The tendency of excess separations is most pronounced for the high skilled (and earners in the top quintile of the within plant earnings distribution) in plants subject to domestic acquisitions. In the year prior to domestic acquisitions, the probability that the job spell of a high skilled worker ends is 12 percentage points higher than in years more than 2 years away from acquisition. The tendency that the separation probability for the low skilled increase after acquisitions is more pronounced in plants that are acquired by foreign owners than for job spells in plants taken over by domestic owners.

The lower part of table 3 shows the results for the probability of hires. Column 1 indicates that job spells in foreign acquisition plants are less likely to start after acquisitions, while the opposite is the case for job spells in domestic acquisitions. The probability of hire increases for all skill groups after domestic acquisitions increasing with the level of skill. The new hires after domestic acquisitions are not coming in at the bottom of the plant wage distribution.

Very few papers have investigated details in turnover by type of worker around acquisition using employer-employee data. Pesola (2009) uses matched employer-employee data for Finland for the period 1996-2002. She estimates hazard models of job duration and finds that the probability of separations is higher in the year after both domestic and foreign acquisitions in the

Table 3: Probability of separation and hires: Spell fixed effects

	All	lowskill	medskill	highskill	Q1	Q2-Q4	Q5
Probability of separation							
for acq_{t-2}	.018 (.002)**	.010 (.003)**	.023 (.003)**	.018 (.005)**	.035 (.012)**	.018 (.002)**	.013 (.007)(*)
for acq_{t-1}	.005 (.002)**	.000 (.003)	.006 (.003)*	.011 (.005)*	.017 (.012)	.003 (.002)(*)	.019 (.007)**
for acq_t	.011 (.002)**	.004 (.003)	.017 (.003)**	.008 (.005)	.013 (.012)	.011 (.002)**	.013 (.007)(*)
for acq_{t+1}	.012 (.002)**	.005 (.004)	.015 (.003)**	.013 (.006)*	.023 (.013)(*)	.010 (.002)**	.021 (.007)**
for acq_{t+2}	.021 (.002)**	.022 (.004)**	.023 (.003)**	.006 (.005)	.015 (.013)	.021 (.002)**	.025 (.008)**
dom acq_{t-2}	.021 (.004)**	.030 (.007)**	.017 (.007)*	.010 (.013)	.021 (.024)	.022 (.005)**	.022 (.016)
dom acq_{t-1}	.028 (.005)**	.024 (.007)**	.004 (.007)	.126 (.016)**	.058 (.026)*	.022 (.005)**	.069 (.017)**
dom acq_t	.009 (.005)*	.016 (.007)*	-.004 (.007)	.039 (.016)*	.012 (.028)	.006 (.005)	.050 (.017)**
dom acq_{t+1}	-.009 (.005)	.002 (.008)	-.017 (.008)*	-.027 (.014)(*)	.008 (.032)	-.011 (.006)*	.012 (.020)
dom acq_{t+2}	.002 (.006)	.017 (.009)(*)	-.009 (.009)	-.006 (.016)	.004 (.033)	-.002 (.006)	.043 (.023)(*)
R^2	.06	.07	.06	.07	.14	.06	.08
N	1843938	746637	842778	254523	153039	1535132	155767
Avg. leave prob.	.15	.14	.15	.15	.37	.12	.15
Probability of hires							
for acq_{t-2}	.004 (.002)*	.005 (.003)	.001 (.003)	.014 (.006)*	-.006 (.012)	.005 (.002)*	.012 (.007)(*)
for acq_{t-1}	.002 (.002)	.006 (.003)*	-.002 (.003)	.003 (.005)	-.007 (.012)	.003 (.002)	.005 (.006)
for acq_t	.000 (.002)	.005 (.003)(*)	-.007 (.003)*	.003 (.005)	.007 (.012)	-.001 (.002)	.004 (.006)
for acq_{t+1}	-.009 (.002)**	.000 (.003)	-.019 (.003)**	.000 (.005)	.003 (.013)	-.010 (.002)**	-.001 (.007)
for acq_{t+2}	-.001 (.002)	.002 (.003)	-.000 (.003)	-.011 (.005)*	-.011 (.012)	-.001 (.002)	-.001 (.007)
dom acq_{t-2}	-.008 (.004)(*)	-.014 (.006)*	.001 (.006)	-.011 (.013)	-.065 (.026)*	-.003 (.004)	-.017 (.013)
dom acq_{t-1}	.012 (.004)**	.002 (.006)	.025 (.006)**	-.004 (.013)	.008 (.026)	.013 (.004)**	.006 (.014)
dom acq_t	.097 (.005)**	.081 (.008)**	.107 (.007)**	.112 (.015)**	.039 (.029)	.097 (.005)**	.105 (.017)**
dom acq_{t+1}	.051 (.006)**	.015 (.008)(*)	.032 (.010)**	.227 (.020)**	-.069 (.033)*	.057 (.007)**	.056 (.022)*
dom acq_{t+2}	-.019 (.005)**	-.025 (.007)**	-.018 (.008)*	-.004 (.013)	-.032 (.032)	-.017 (.005)**	-.037 (.016)*
R^2	.14	.13	.13	.18	.25	.14	.14
N	1684987	670532	777094	237361	138039	1407398	139550
Avg. hire prob.	.18	.17	.20	.19	.45	.15	.28

Note: Column 1 uses the whole sample, columns 2-4 splits the sample by skill level, and columns 5-7 split the sample by location in the within-plant earnings distribution, where column 5 (7) reports results for employees in the lowest (highest) quintile, and column 6 for the middle quintiles. All regressions include worker age, years of education, tenure and its square, plant shares of high- and medium skilled workers, log employment and an exporter dummy. Year, industry and region dummies, industry-year interaction terms. **, * , (*) indicate significance at 1, 5, 10%.

industrial sector. Similar to our results she also finds that the the job separation hazard is higher for university-educated employees following domestic acquisitions. While we find this is more prominent the year before acquisition, Pesola (2009) only looks at the separation hazard after acquisitions. With Swedish matched employer-employee data Marsh et al. (2007) find no evidence that women and minority workers experience a greater incidence of unemployment or firm transfer due to ownership change. Using establishment level data for the US Lichtenberg and Siegel (1990) find that employment in central offices goes down after ownership change, suggesting that reductions in administrative overload is one motive for merger.[18]

5 Wage effects for stayers and new hires

In this section we compare wages for different groups of workers, namely those that stay in acquired plants, those who come new into the plant and and those who leave the plant, both before they leave and in their new job (if observed). Table 4 first gives an idea of the extent of worker turnover in plants that are ever acquired relative to plants that do not change ownership over the sample period. It shows that worker retention in plants acquired by foreign owners is similar or even slightly higher than in plants that do not change ownership. In turn, worker retention is lower in plants subject to domestic acquisitions, although a non-negligible share of these workers stays in the same firm, but joins a different plant.

We obtain a similar picture when looking at transitions in the period before and after acquisition as in Table 5. One difference that emerges between workers in foreign and domestic acquisitions is that a higher share of employees in plants that change owner to a different domestic owner is higher before than after the ownership change. For plants that are acquired by a foreign owner the share of employees that leave after the acquisition is higher than that before.

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[18]There is a literature on how the probability of CEO turnover depends on firm performance, typically finding that CEOs are more likely to be replaced after bad performance, see Lehn and Zhao (2006). In our data, as ownership change to new domestic owners seems to be preceded by a period of deteriorating performance, the finding that the separation probability of high skilled, or the upper part of the earnings distribution increases, could signal the separation of CEOs. Unfortunately we do not have occupation indicators in our data set, and cannot pursue this any further here.

Table 4: Worker reallocations from manufacturing plants: Mean of annual values 1996-2005

	Mean number of workers at time T in		
Employment location at time T+2	Plants never changing ownership	Plants with foreign acq in T+1	Plants with domestic acq in T+1
Same plant	94801	2950	751
Other plant same firm	1102	25	1
Other plant in merged firm	0	68	53
Other manufacturing plant	11361	317	123
Non manufacturing	11630	347	135
Not working	14689	425	128
	Share of workers at time T		
Same plant	70.6	72.4	63.1
Other plant same firm	0.8	0.7	0.1
Other plant in merged firm	0.0	1.8	4.6
Other manufacturing plant	8.4	7.7	11.5
Non manufacturing	8.6	8.4	12.3
Not working	10.9	10.0	12.2

Table 5: Worker reallocations before and after acquisitions: Mean of annual values 1996-2005

	Change between time t-3 and t-1 for workers whose plant experiences a			
	foreign acq at time t		domestic acq at time t	
Employment location at time t-1	share	N	share	N
Same plant	72.2	2434	66.2	719
Other plant same firm	1.9	56	0.2	4
Other plant in merged firm	3.2	108	6.5	61
Other manufacturing plant	8.0	264	13.7	117
Non manufacturing	7.3	263	8.6	81
Not working	9.8	331	10.6	107
	Change between time t+1 and t+3 for workers whose plant experiences a			
	foreign acq at time t		domestic acq at time t	
Same plant	70.2	2905	68.7	524
Other plant same firm	0.1	4	0.1	1
Other plant in merged firm	0.7	27	1.6	13
Other manufacturing plant	8.1	323	8.0	63
Non manufacturing	8.9	376	9.5	72
Not working	11.5	495	11.7	94

A number of papers have established that even after controlling for firm- and individual-specific effects, foreign-owned firms pay higher wages, e.g. Martins (2004); Almeida (2007) for Portugal and Heyman et al. (2007) for Sweden.[19] The evidence on wage changes following foreign acquisitions is more ambiguous. Siegel and Simons (2010) find that employees in plants subject to mergers and acquisitions earn higher wages than comparable employees in plants not subject to M&A from two years before the acquisition to the year of acquisition. They also find that wages decrease from before to after acquisition. ? estimate a positive wage premium after foreign takeovers in a sample of Hungarian employees for the period 1992-2001; this premium is not present before acquisition and increases in subsequent years. They are unable to rule out that the increase in the wage premium is due to a slowly changing composition of the workforce, however. Hijzen et al. (2010) compare the effects of foreign acquisitions in a cross-country comparison of data sets with information on firms and employees. They find that wages increase after acquisitions in Germany, Portugal and Brazil but not in the UK.

Two papers analyse the effects of acquisitions on the wages of different skill groups. Huttunen (2007) finds wages to increase from the second year after a foreign acquisition in Finnish matched employer-employee data for the period 1988-2001. The effects are stronger for workers with low education and for university graduates. Heyman et al. (2011) examine the the effects of acquisitions on different groups of employees using matched employer-employee data for Sweden for the period 1996-2000. Their analysis shows that wages increase for managers and CEOs after acquisition by domestic or foreign multinationals, whereas the wages for medium and low-skilled/educated employees decrease.

Little of the work on wage effects of acquisitions distinguish between the case where workers stay in the plant, leave or are newly hired. Heyman et al. (2011) find that high- and medium-

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[19]The evidence using plant or firm level data typically find positive wage effects of foreign acquisitions that could be explained in a number of different ways: changes in the composition of the labour force, the need for skill upgrading due to technology transfer (Markusen, 1995), to prevent technology spillovers through labour mobility (Fosfuri et al., 2001; Glass and Saggi, 1998); rent sharing (this also applies to highly profitable domestic acquirers (Budd et al., 2005); compensation for higher labour demand volatility (Fabbri et al., 2003) or a higher closure rate (Bernard and Sjöholm, 2003).

Table 6: Wage levels around ownership change for stayers

			lowskill	medskill	highskill
for acq$_{t-2}$	.018 (.002)**	.001 (.002)	.007 (.003)*	-.004 (.002)$^{(*)}$	.022 (.005)**
for acq$_{t-1}$	.024 (.002)**	.006 (.002)**	-.003 (.003)	.004 (.002)$^{(*)}$	.028 (.005)**
for acq$_t$	.024 (.002)**	.008 (.002)**	-.001 (.003)	.004 (.002)$^{(*)}$	.032 (.005)**
for acq$_{t+1}$	.011 (.002)**	.000 (.002)	.003 (.003)	-.006 (.003)*	.040 (.005)**
for acq$_{t+2}$	.005 (.002)*	-.007 (.002)**	.011 (.004)**	-.017 (.003)**	.044 (.006)**
for acq$_{\geq t+3}$	-.006 (.001)**	-.010 (.002)**	.014 (.004)**	-.021 (.003)**	.047 (.006)**
dom acq$_{t-2}$	-.031 (.006)**	.003 (.004)	.003 (.009)	.001 (.007)	-.000 (.019)
dom acq$_{t-1}$	-.019 (.006)**	.017 (.005)**	-.004 (.009)	.018 (.007)*	.004 (.019)
dom acq$_t$	-.007 (.006)	.021 (.005)**	.014 (.009)	.014 (.007)*	.003 (.020)
dom acq$_{t+1}$	-.019 (.006)**	.014 (.005)**	.019 (.009)*	.004 (.007)	.006 (.020)
dom acq$_{t+2}$	-.034 (.006)**	.006 (.005)	.020 (.010)$^{(*)}$	-.004 (.008)	.009 (.020)
dom acq$_{\geq t+3}$	-.036 (.004)**	.008 (.006)	.009 (.011)	.006 (.008)	-.017 (.020)
R^2	.40	.28	.28		
N	1305830	1305830	1305830		
Spell fixed effects	no	yes	yes		

Note: Sample consists of workers with job spells of at least 5 years. Columns 3-5 report the coefficients from one regression with interaction terms between skill dummies and acquisitions dummies. All regressions include worker age, years of education, tenure and its square, plant shares of high- and medium skilled workers, log employment and an exporter dummy. Year, industry and region dummies, industry-year interaction terms. **, *, $^{(*)}$ indicate significance at 1, 5, 10%.

educated workers that are newly hired after foreign acquisition and those leaving acquired plants earn higher wages compared to workers in non-acquisition plants.[20] There is likely to be a selection effect in terms of which workers stay, leave and are newly hired to the firm. We have therefore chosen to look separately at wages for those who stay and those who are newly hired to the firm after acquisition.

First we estimate standard mincer wage regressions at the individual level for stayers. In plants subject to ownership change, we define stayers as workers who stay in the firm from at least two years before ownership change until two years after the ownership change, while stayers in plants never subject to acquisitions have job spells of at least five years. The results from our mincer wage regressions on the sample of these workers are shown on table 6. The first column shows the results of OLS estimation, workers in plants subject to foreign acquisitions have higher earnings than workers in plants not subject to acquisition. Compared to the wage premium suggested when using plant-level average wages in figure 2, the premium is now substantially lower, a typical finding when going from plant to individual level wage data. In addition, in table 6, the premium falls after the acquisition, while in figure 2 it increases. For workers in plants subject to domestic acquisitions, the somewhat erratic average wage premium in figure 2 has disappeared in column 1 of table 6, and there is even a negative premium. In column 2 we report results from our preferred spell-fixed effects estimations that would take out any correlation between unobserved worker and plant fixed effects and wages. Here, the interpretation of the coefficients on the acquisition dummies is relative to within-job-spell wages 3 or more years before acquisition. For job spells in plants taken over by foreign owners, there is a reduction in the wage-levels of stayers after acquisition. For job-spells in plants subject to domestic takeovers, wages after acquisition are not significantly different from wages 3 or more years before acquisition, though there is a temporary wage-hike in the last years before the takeover. Columns 3-5 repeats the spell fixed effects regression of column

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[20]Another focus in this literature is on workers who move to foreign-owned plants. For Germany (Andrews et al., 2009), Norway (Balsvik, 2011), Germany, Portugal, the UK and Brazil (Hijzen et al., 2010) they all find that workers which move from a domestic to a foreign-owned plant earn higher wages than comparable stayers in their original plant. Martins (2011) confirms this for Portugal, but also shows that these workers earn lower wages compared to similar employees that are already employed in foreign-owned plants.

2, this time introducing interaction terms between the takeover indicators and skill dummies. The overall effects in column 2 are dominated by the effects for the medium skilled, while neither the high skilled or low skilled in foreign acquisition plants experience a reduction in wages after ownership change.

Table 7: Wages of newly hired employees: after hire

	Wage level new in year t	2 y wage growth new in year t	Wage level in t new in year t-1	2 y wage growth in t new in year t-1
Newly hired in for acq plant (a)	-.142 (.010)**	-.016 (.004)**	.039 (.005)**	.027 (.007)**
Newly hired in dom acq plant (b)	-.081 (.012)**	.010 (.007)	.047 (.007)**	.031 (.010)**
Newly hired in other plant (c)	-.146 (.003)**	-.017 (.001)**	.035 (.001)**	.013 (.002)**
R^2	.27	.30	.25	.07
N	1945699	1372417	1945699	1372417
Plant fixed effects	yes	no	yes	no
P-value test a=c	.65	.85	.39	.04
P-value test b=c	.00	.00	.11	.09
P-value test b=a	.00	.00	.39	.76

Note: Newly hired in for acq plant is a dummy equal to 1 if the employee is new to the plant one of the following four years close to the acquisition in year t: t−1, t, t+1 and t+2. A similar definition applies to the variable newly hired in dom acq plants. The last variable is an indicator equal to 1 for all other newly hired employees. Columns 1-2 report regressions where the dependent variable is measured the same year as the employee is newly hired, while in columns 3-4 the dependent variable is measured the year after the employee was hired, (conditional on staying in the plant). All regressions include worker age, years of education, tenure and its square, plant shares of high- and medium skilled workers, log employment and an exporter dummy. Year, industry and region dummies, industry-year interaction terms. **, *, (*) indicate significance at 1, 5, 10%.

Second, we estimate similar type of mincer wage equations for the full sample, but where we introduce indicator variables for individuals that are newly hired to plants undergoing ownership change in one of the four years from the year before ownership change until two years after.[21] One possible indication that newly hired employees are selected into their new plants, and contribute to an improved match between the firm and its employees would be if newly hired employees earn

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[21]The results are very similar if we define the dummy only for new hires in the year of acquisition and the year after.

a wage premium compared to other employees with similar characteristics in the plant. Thus the coefficient on the indicator variable for being newly hired should be positive in a Mincer wage equation, even after controlling for plant fixed effects. Columns 1 and 3 present the results of regressions where the wage level is the dependent variable. In column 1 of table 7 we use the recorded earnings in the year of hire, the coefficients on the new indicators are negative and significant, indicating that newly hired employees earn between 8 and 14 % less than comparable employees in their new plants. This result could partly be driven by the likely fact that our wage variable does not capture a full year of work in the plant, thus in column 3 we use the wages of newly hired the year after their accession to the plant instead. Now the wage premium is positive. There is no evidence that the newly hired employees in plants that are close to ownership change are more selected that newly hired employees at other times, or to plants not subject to acquisitions. This can be seen from the p-values of the tests of the equality of the coefficients of the different types of new hires.

Another possible indication that newly hired employees are positively selected could be that their earnings growth when changing employers is larger than the earnings growth of others. We investigate this in columns 2 and 4 of table 7, where the dependent variable is wage growth from two years earlier. Looking at the preferred result in column 4, there is again evidence that workers who change jobs have on average somewhat higher wage growth than stayers. There is now a significant difference in the wage growth of workers going to plants that experienced ownership change, compared to movers to other plants, but no difference in wage growth for newly hired workers in foreign or domestic acquisition plants.

If workers that are newly hired after acquisition earned a premium in their previous workplace, this could also be taken as evidence of selection. Table 8 shows the results of Mincer wage regressions for workers who leave a plant conditioning on their next workplace. Here, there is no evidence of selection of workers by future employers that are subject to ownership change. The coefficients for the workers who will be hired by an acquisition plant are not significantly different from workers who move to non-acquisition plants.

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Table 8: Wages of newly hired employees: before hire

	Wage level year before leave	Wage level 2 years before leave
Separation going to for acq plant (a)	-.007 (.007)	.013 (.008)
Separation going to dom acq plant (b)	-.015 (.011)	.011 (.013)
Separation going to other plant (c)	-.022 (.002)**	.007 (.002)**
Separation going out of our sample (d)	-.082 (.002)**	-.036 (.002)**
R^2	.26	.26
N	1938298	1938298
Plant fixed effects	yes	yes
P-value test a=c	.05	.48
P-value test b=c	.49	.75
P-value test b=a	.59	.93
P-value test a=d	.00	.00

Note: Separation going to for acq plant is a dummy equal to 1 if the employee next year will be new in a for acq plant, and the plant is either t−1, t, t+1 or t+2 yeras from acquisition. A similar definition applies to the variable separation going to dom acq plant. Column 1 report a regression where the dependent variable is measured the last year the employee is observed in the plant before leaving, while in column 2 the dependent variable is measured one year earlier. All regressions include worker age, years of education, tenure and its square, plant shares of high- and medium skilled workers, log employment and an exporter dummy. Year, industry and region dummies, industry-year interaction terms. **, *, (*) indicate significance at 1, 5, 10%.

6   Discussion and Conclusions

To be completed..

References

Almeida, Rita (2007) 'The labor market effects of foreign owned firms.' *Journal of International Economics* 72(1), 75 – 96

Andrews, Martyn, Lutz Bellmann, Thorsten Schank, and Richard Upward (2009) 'The takeover and selection effects of foreign-owned establishments: an analysis using linked employer-employee data.' *Review of World Economics* 145(2), 293–317

Arnold, Jens M., and Beata S. Javorcik (2009) 'Gifted kids or pushy parents? foreign direct investment and plant productivity in indonesia.' *Journal of International Economics* 79(1), 42–53

Balsvik, Ragnhild (2011) 'Is mobility of labour a channel for spillovers from multinationals to local domestic firms?' *Review of Economics and Statistics* 93(1), 285–297

Balsvik, Ragnhild, and Stefanie A. Haller (2010) 'Picking "lemons" or picking "cherries"? domestic and foreign acquisitions in Norwegian manufacturing.' *Scandinavian Journal of Economics* 112(2), 361–387

Bandick, Roger, and Holger Görg (2010) 'Foreign acquisition, plant survival and employment growth.' *Canadian Journal of Economics* 43, 547–573

Bandick, Roger, and Patrick Karpathy (2011) 'Employment effects of foreign acquisitions.' *International Review of Economics and Finance* 20(2), 211–224

Baumol, William (1959) *Business Behavior, Value and Growth* (New York: Macmillan)

Benfratello, Luigi, and Alessandro Sembenelli (2006) 'Foreign ownership and productivity: Is the direction of causality so obvious?.' *International Journal of Industrial Organization* 24(4), 733 – 751

Bernard, Andrew B., and Fredrik Sjöholm (2003) 'Foreign owners and plant survival.' NBER Working Paper 10039, National Bureau of Economic Research

Bertrand, Olivier, and Habib Zitouna (2008) 'Domestic versus cross-border acquisitions: which impact on the target firms' performance?' *Applied Economics* 40(17), 2221–2238

Budd, John W., Jozef Konings, and Matthew J. Slaughter (2005) 'Wages and international rent sharing in multinational firms.' *The Review of Economics and Statistics* 87(1), 73–84

Conyon, Martin J., Sourafel Girma, Steve Thompson, and Peter W. Wright (2002a) 'The impact of mergers and acquisitions on company employment in the United Kingdom.' *European Economic Review* 46(1), 31–49

_ (2002b) 'The productivity and wage effects of foreign acquisitions in the United Kingdom.' *The Journal of Industrial Economics* L(1), 85–102

Criscuolo, Chiara, and Ralf Martin (2009) 'Multinationals and US productivity leadership: Evidence from Great Britain.' *Review of Economics and Statistics* 91(2), 263–281

Dunning, John H. (1981) *International Production and the Multinational Enterprise* (London: George Allen and Unwin)

Fabbri, Francesca, Jonathan E. Haskel, and Matthew J. Slaughter (2003) 'Does nationality of ownership matter for labor demands?' *Journal of the European Economic Association* 1(2-3), 698–707

Fosfuri, Andrea, Massimo Motta, and Thomas Ronde (2001) 'Foreign direct investment and spillovers through workers' mobility.' *Journal of International Economics* 53(1), 205–222

Gioia, Carmine, and Steen Thomsen (2004) 'International acquisitions in denmark 1990-1997: Selection and performance.' *Applied Economics Quarterly* 50(1), 61–87

Girma, Sourafel (2005) 'Safeguarding jobs? acquisition fdi and employment dynamics in u.k manufacturing.' *Review of World Economics* 141(1), 165–178

Girma, Sourafel, and Holger Görg (2007) 'Multinationals' productivity advantage: Scale or technology?' *Economic Inquiry* 45(2), 350–362

Glass, Amy Jocelyn, and Kamal Saggi (1998) 'International technology transfer and the technology gap.' *Journal of Development Economics* 55(2), 369–398

Gugler, Klaus, and B. Burcin Yurtoglu (2004) 'The effects of mergers on company employment in the usa and europe.' *International Journal of Industrial Organization* 22(4), 481–502

Hanley, Aoife, and Vasilios Zervos (2007) 'The performance of uk takeovers: Does the nationality of acquirers matter?' *International Journal of the Economics of Business* 14(2), 283–297

Harris, Richard D., and Catherine Robinson (2002) 'The effect of foreign acquisitions on total factor productivity: Plant-level evidence from U.K. manufacturing, 1987-1992.' *Review of Economics and Statistics* 84(3), 562–568

Harris, Richard D., Donald S. Siegel, and Mike Wright (2005) 'Assessing the impact of management buyouts on economic efficiency: Plant-level evidence from the united kingdom.' *The Review of Economics and Statistics* 87(1), 148–153

Helpman, Elhanan, Oleg Itskhoki, and Stephen Redding (2010) 'Inequality and unemployment in a global economy.' *Econometrica* 78(4), 1239 – 1283

Heyman, Fredrik, Fredrik Sjöholm, and Patrik Gustavsson Tingvall (2007) 'Is there really a foreign ownership wage premium? Evidence from matched employer-employee data.' *Journal of International Economics* 73(2), 355–376

Heyman, Fredrik, Fredrik Sjöholm, and Patrik Gustavsson Tingvall (2011) 'Multinationals, cross-border acquisitions and wage dispersion.' *Canadian Journal of Economics* 44(2), 627–650

Hijzen, Alexander, Pedro S. Martins, Thorsten Schank, and Richard Upward (2010) 'Do foreign-owned firms provide better working conditions than their domestic counterparts? A comparative analysis.' IZA Discussion Papers 5259, Institute for the Study of Labor (IZA)

Huttunen, Kristiina (2007) 'The effect of foreign acquisition on employment and wages: Evidence from Finnish establishments.' *The Review of Economics and Statistics* 89(3), 497–509

Jensen, Michael C. (1986) 'Agency costs of free cashflow, corporate governance, and takeovers.' *American Economic Review* 76, 323–329

Jovanovic, Boyan, and Peter L. Rousseau (2008) 'Mergers as reallocation.' *Review of Economics and Statistics* 90(4), 765–776

Karpaty, Patrik (2007) 'Productivity effects of foreign acquisitions in swedish manufacturing: The fdi productivity issue revisited.' *International Journal of the Economics of Business* 14(2), 241–260

Larch, Mario, and Wolfgang Lechthaler (2011) 'Multinational firms and labor market pooling.' *Review of International Economics* 19(4), 728 – 749

Lehn, Kenneth M., and Mengxin Zhao (2006) 'Ceo turnover after acquisitions: Are bad bidders fired?.' *Journal of Finance* 61(4), 1759 – 1811

Lichtenberg, Frank, and Donald Siegel (1987) 'Productivity and changes in ownership of manufacturing plants.' *Brookings Papers on Economic Activity* 3, 643–673

Lichtenberg, Frank R., and Donald Siegel (1990) 'The effect of ownership changes on the employment and wages of central office and other personnel.' *Journal of Law and Economics* 33(2), 383 – 408

Lucas, Robert (1978) 'On the size distribution of business firms.' *Bell Journal of Economics* 9, 508–523

Maksimovic, Vojislav, and Gordon Phillips (2002) 'Do conglomerate firms allocate resources inefficiently across industries? theory and evidence.' *Journal of Finance* 57(2), 721 – 767

Maksimovic, Vojislav, Gordon Phillips, and N.R. Prabhala (2011) 'Post-merger restructuring and the boundaries of the firm.' *Journal of Financial Economics* 102(2), 317 – 343

Manne, Henry G. (1965) 'Mergers and the market for corporate control.' *Journal of Political Economy* 73(2), 110–120

Markusen, James R. (1995) 'The boundaries of multinational enterprises and the theory of international trade.' *The Journal of Economic Perspectives* 9(2), 169–189

Marsh, John, Donald S. Siegel, and Kenneth L. Simons (2007) 'Assessing the effects of ownership change on women and minority employees: Evidence from matched employer-employee data.' *International Journal of the Economics of Business* 14(2), 161 – 178

Martins, Pedro S. (2004) 'Do foreign firms really pay higher wages? evidence from different estimators.' IZA Discussion Papers 1388, Institute for the Study of Labor (IZA)

— (2011) 'Paying more to hire the best? Foreign firms, wages, and worker mobility.' *Economic Inquiry* 49(2), 349–363

Martynova, Marina, and Luc Renneboog (2008) 'A century of corporate takeovers: What have we learned and where do we stand?' *Journal of Banking & Finance* 32(10), 2148 – 2177

Melitz, Marc J. (2003) 'The impact of trade on intra-industry reallocations and aggregate industry productivity.' *Econometrica* 71(6), 1695–1725

Mueller, Dennis (1969) 'A theory of conglomerate mergers.' *Quarterly Journal of Economics* 83(4), 643–659

Navaretti, Giorgio Barba, A. Falzoni J. Haaland K-H. Midelfart Anthony J. Venables with F. Barry, K. Ekholm, and A. Turrini (2004) *Multinational Firms in the World Economy* (Princeton: Princeton University Press)

Pesola, Hanna (2009) 'Labour market transitions following foreign acquisitions.' Technical Report 251, Helsinki Center of Economic Research

Shleifer, Andrei, and Lawrence H. Summers (1988) 'Breach of trust in hostile takeovers.' In *Corporate Takeovers: Causes and Consequences,* ed. Alan J. Auerbach (Chicago (Il.): University of Chicago Press)

Siegel, Donald D., and Kenneth L. Simons (2010) 'Assessing the effects of mergers and acquisitions on firm performance, plant productivity, and workers: New evidence from matched employer-employee data.' *Strategic Management Journal* 31, 903–916