# The effect of foreign acquisition on the structure of employment in Hungary

By

Bence Czafit

Submitted to

Central European University

Department of Economics

In partial fulfillment of the requirements for the degree of MA in Economics

Supervisor: Professor Álmos Telegdy

Budapest, Hungary

2016

#### Abstract

I analyze how the technological change due to the foreign acquisition affects the structure of workers within firms between 2003 and 2008 in Hungary. In order to do that, I use a Linked Employer-Employee Database that connects the 50% sample of the working age Hungarian population with firm level data, that provides a larger employer level sample than in researches before. I estimate fixed effects model controlling for year, industry and firm level effect to find whether there is a change in the occupational skill content of the workers in acquired firms. In specific cases, to have more reliable results, I also expand my estimation strategy with matching. My findings suggest that foreign takeovers has little effect on the composition of the labor force in the acquired firms, the new owner would not shape the occupational skill content of the company.

## Contents

1	Intr	oduction	1
<b>2</b>	Dat	a and data management	<b>5</b>
	2.1	Linked Employer-Employee data	5
	2.2	Occupational classification	6
	2.3	Descriptive statistics	8
3	$\operatorname{Esti}$	mation procedures	10
	3.1	Regression	10
	3.2	Matching	11
4	Res	ults	<b>14</b>
	4.1	The results of the Fixed Effect estimations	15
	4.2	Results of the matching	16
5	Con	clusion	17
6	Tab	les and Figures	21
A	App	pendix	27

## List of Tables

1	Foreign acquisitions by year for firms with at least 20 employees in average	21
2	Descriptive statistics on always domestic and for eign acquired firms $\ . \ . \ .$	21
3	Selection into foreign acquisition	22
4	Common support after the matching	22
5	Changes in the share of manual, abstract and routine occupation	23
6	Effect of foreign acq. on changes in skills ratio	23
7	Effect of foreign acq. on skill ratios	23
8	Effect of foreign acq. on skill ratios, LEED	24
9	Effect of foreign acq. on skills ratio - matched employer sample	24
10	Effect of foreign acq. on skill ratios, LEED -matched sample	25
A1	Propensity score results	27
A2	Changes in the share of high, medium and low skilled occupation $\ldots$ .	28
A3	Effect of foreign acq. on changes in skills ratio	28
A4	Effect of foreign acq. on skills ratio	28
A5	Effect of foreign acq. on skill ratios, LEED	29
A6	Effect of foreign acq. on skill ratios, employer level - matched sample $\ldots$	29
A7	Effect of foreign acq. on skill ratios, employee level - matched sample $\ldots$	30
A8	Effect of foreign acq. on skill ratios, employee level, manufacturing - matched	
	sample	30
A9	Effect of foreign acq. on size	31

## List of Figures

1	Pscore distribution	25
2	Smoothed employment changes by percentile	26

## 1 Introduction

During the last decades computer revolution has become an important factor of the technological development. The literature of the Skill-Biased Technical Change (SBTC) argues that computerization of both production and administrative tasks is one of the main drivers of the increasing wage inequality among workers and also the reason why educated labor have been more intensely used ever since then (See Autor et al., 2003; Acemoglu and Autor, 2011)<sup>1</sup>.

Autor and Dorn (2013) argues that there are 3 categories of occupations - abstract, routine and manual -, instead of the high and low-skilled presented in the canonical model. When they approximated the skill level by the average log wage of occupations in 1980 base, they found that employment composition changed in a U-shape between 1980-2005. It means, that the share of the workers with lowest and the highest skills increased, while the share of middle skilled workers decreased this period.

The largely increasing literature of Skill-Biased Technical Change deals mostly with wages and the recent papers are trying to identify the main source of the wage inequality (See Barth et al., 2014; Mueller et al., 2015; Song et al., 2015). However, there is a small emphasis what happens besides that. We know only a little about the increased demand for higher skilled workers besides their higher education, that leaves territory for further researches.

Foreigner Direct Investment (FDI) is often associated with development, a transfer of technology into the acquired firms, that increases efficiency and market value. However, it is not always clear whether FDI causes productivity or the most productive firms are taken over in order to exploit their profit (See Harris and Robinson, 2002; Almeida, 2007; Shleifer and Summers, 1988; Conyon et al., 2002).

As labor is an important element of the production function of firms, foreign ownership also considered to play an important part in how the wage inequality changes between firms.

<sup>&</sup>lt;sup>1</sup>Nevertheless, as for instance Feenstra and Hanson (1999). shows, outsourcing can play a part in the decrease of the lower skilled workers wage

Workers tend to earn more in acquired firms than workers in domestic firms. Whether this comes from the concept of cherry-picking, since the most productive workers likely earn the most as well, or it is the consequence of the acquisition is also a question that economists are interested in. For this reason researchers analyze how the wage level changed in case of foreign takeover. The results confirm that there is significant difference between domestic and foreign owned enterprises and they found that there is positive impact of FDI beyond selecting the most productive firms. (See Earle et al., 2012; Feliciano and Lipsey, 2006). As Martins (2011) argues it is partly because the foreign firms try to keep their best workers with higher salary and also try to allure the best employees of other firms.

However, most of these papers are interested in how the wages shift due to foreign take over, thus there are little evidence on how the employment structure changes. Besides their main focus the wages and profitability, Earle et al. (2012) also considered the effect of acquisition on the composition for different worker types in terms of gender, experience and education. They found that university graduates are more likely to be employed in foreign owned companies.

As I presented in the literature above, both the literature of Skill-biased technical change and the literature of Foreign Direct Investment focuses on what happens with the wages of the workers and leaves the changes in the employment structure unrevealed. Thus, in my thesis on hand I plan to merge to framework and also fill this gap. Hungary, as a post-communist East-Central European country can be a very good subject to this, for one, due to its geographical location it is close to the most developed European countries. On the other hand, its development level is under the level of countries like Germany or France, but high enough to be able to apply new technologies if they come in.

Thus, using data on Hungarian acquisition I analyze the effect of foreign acquisition on the employment structure of the acquired firm, with the particular interest whether the skill composition of the workforce changes or not. Categorizing occupations into abstract, manual and routine occupation groups catches an important segment of the workers' skills and shows their relationship with technology, how substitutable they are. Thus, it can help to answer the question whether the foreign owner amplifies the importance of the technology in the production causing the substitution of workers to machines.

Putting foreign acquisition into the concept of SBTC, there are four possible scenarios. First, it is possible that when a foreign owner buys a domestic firm, in order to make it more profitable the newest and the most efficient foreign technology will be implemented into technology of the firm. This could mean either the automation of production processes with computerized machines or just replacing the old working method with a more productive new one. If that happens, due to the technical change those workers, who do routine tasks, are expected to be replaced by machines and with workers with higher skills .

The second possibility is that the foreign firms try to outsource their routine intensive tasks to a less developed country where the work force is cheaper instead of improving their technology in their home country. That means that in case of foreign acquisition the firm either select a firm that is already applicable for those routine intensive task or shape the worker composition in a way to satisfy their needs.

The third option that actually nothing happens. Even tough the foreign owner buys the company, no new technology will be implemented, the differences, can be observed in productivity comes from other sources. For instance, foreign firms replace their workers for workers with better skills, but they do same work with higher productivity, or the employers motivate their workers with higher wages.

The fourth possibility is basically a combination of the scenarios above. The foreign owner changes nothing in the production process of the acquired firm, but selects those firms that are the most eligible for the purposes. Thus, it can happen that foreign owner buys a firm where the skill biased technical change already took place.

In my thesis, I plan to test which one of this hypotheses proves to be true. In order to identify the effect of foreign acquisition I compare firms that were acquired to firms that were always under domestic ownership. In doing so, I control for time, industry and firm level changes to identify effect that comes.

The data set that I use for the analysis is a Linked employer-employee data that contains the 50% of the working age population of Hungary - randomized on population level-, who are followed for 5 consecutive years. Thus, for this short period the employer level data with the control firms and the acquired firms contains almost 2 million employer years.

During the analysis I consider acquisitions where both before and after the was observed in order to find the effect of the foreign effect, following the evaluation strategy that Earle et al. (2012) used on a similar, but earlier Hungarian data set. To find this effect, beside estimating linear models with firm, time and industry fixed effects, I also supplement my analysis with propensity score matching to control for the initial differences between domestic and acquired firms.

The structure of my paper is the following. In the following section I present the data sources I used during my analysis. Then, I describe my estimation strategy and the steps of the matching procedure. Finally, I interpret my results and I conclude.

### 2 Data and data management

#### 2.1 Linked Employer-Employee data

For the analysis, I use a merged administrative data set containing data from the Central Administration of National Pension Insurance and the National Tax and Customs Administration. It randomly contains half of the 5-74 age population of Hungary in 2003, who were followed until the end of 2008. The data is coming from the Central Administration of National Pension Insurance provide anonymous information on personal characteristics as sex and age, and indicates the source of the pension contribution payments, therefore it also includes the employer, the occupational category and the wage on which the contribution was based on.

The dataset that was provided by National Tax and Customs Administration contains detailed information on the employers as well, altogether on 426 424 firms. The declared information such as the size, revenue, assets, export revenue, expenditures and also the ownership information of the firms are available annually. These information are only available on firms that are under the scope of Act LXXXI of 1996, and are obligated to pay corporate tax. This means that the analysis is only possible for private firms. However, it does not cause any problem regarding the answer of the research question, public and private firms are usually very different. Also, privatization is very rare in the analyzed time period, thus public firms would have been excluded from the sample anyway.

Throughout in my research, in order to create an appropriate dataset that can be used for carrying out estimations properly, I had to make some decisions of the way how I handle the data. First, crucial part of the analysis is defining the sample of firms that were acquired. I consider a firm to be foreigner if the proportion of foreign ownership is above 50%, and analogously, foreigner acquisition takes place if the foreign ownership exceed this limit from one year to another. In order to have a well defined sample, I omit those firms in which the proportion of foreign ownership raise above the limit only for one year, and the next they were under domestic influence again. For similar reasons, I also restrict my sample for those firms that were never under the influence of the state. State owned firms can behave differently than other non-public firms, and also this restriction hardly reduces observed acquisition. During the analyzed time period, there were only three occasions when a former state owned firm was acquired by a foreign owner.

Secondly, there were some initial difference in the data coming from different sources. While the employer level data is provided annual, the database of the workers is in an individual-month structure, therefore in order to link them, I needed to collapse the employee level information to year level. Due the enormous size of the employer-month database and simplifying the data management, I used a snapshot from June in every year in order to get the relevant variables for carrying out the analysis.

One additional data restriction that I needed to implement was selecting the sample of the firms that I analyze later on. Since in my research I plan to focus on the changes of the employer composition, it is crucial to have the possibility to observe changes. Therefore I restricted my data to those firms that have in average at least 20 employees in the analyzed time period. As a consequence of this and due to the attribute of the data according to which half of the population is observed, the employee level data contains approximately 10 observation for every firm-year.

### 2.2 Occupational classification

The other important source of the data was the occupational categorization used by Autor et al. (2003) and byAutor and Dorn (2013). In their research they have used the American Standard Occupation Classifications (SOC) to measure routine, abstract, and manual task content by occupation. They used US Department of Labor's Dictionary of Occupational Titles, that contains the job description of the occupations and the tasks they had to carry out in 1980. They were able to calculate routine task-intensity (RTI) by occupation using the routine, manual, and abstract task inputs in each occupation. Thus, for instance, an occupation is considered a routine occupation if the routine tasks have the largest value among all the tasks that were present in the job description. Hence, Managers, professional, technicians and people who work in finance or public safety are considered as abstract occupation, while people who work in production, crafting, retail sales or work as a machine operators, assemblers and clerical workers are accounted as routine workers. Manual workers are, henceforth the people who work either in service occupations or in transportation, construction, mining, farming and mechanics.

Unfortunately, the correspondence between the Hungarian Standard Classification of Occupations (HCSO) and the American occupation codes is not trivial. There is no official correspondence table between the two system. However, a correspondence table exists between SOC and the International Standard Classification of Occupations (ISCO), although, this is not completely equivalent. Similarly to Mueller et al. (2015) who tried to use the same categorization on the UK SOC codes, I had to face with the problem that European occupations systems often comprises jobs with different skill levels under one title. Thus, in specific cases it was not possible to crosswalk perfectly between the two. Although, in most of the cases, when it was not possible to match the American and European occupations clearly, it was still possible to put them in the group of abstract, routine or manual occupation, if for the ISCO code all the corresponding SOC codes were in a given a group.

The other problem that occurred during the data cleaning that the correspondence is not perfect between ISCO and HCSO either. Especially, because the data I have access for contains occupation categorization according to the HCSO93 system. This can be translated, however, only to ISCO88, and basically this correspondence only work perfectly for the 3 digit version of the codes, that contain less informatio than their four digit version<sup>2</sup>. Hereby, in cases where it was ambiguous which occupation category the 3 digit ISCO fits - for instance a 3 digit ISCO code was matched with routine and manual SOC codes - I manually corrected the crosswalk. For that, I compared the the Hungarian and the American job descriptions that came in question and manually classified the given HSCO code as either a routine, abstract or manual occupation.

Still, it is not absolutely certain that the classification of the Hungarian and American occupations and tasks that are required to handle during the job are completely equivalent. This is the reason why I used another measurement for separating occupations. Skill levels

<sup>&</sup>lt;sup>2</sup>Ever since then new occupation classifications of ISCO and HSCO became almost completely identical.

can be approximated by the mean wage of workers, thus I created three categories. The highest skilled workers belong to the top 20 percentiles of the occupational average wage in 2003, the lowest skilled worker are the bottom 20 percentiles, while the remaining occupations are considered as occupations requiring medium skills.

#### 2.3 Descriptive statistics

Among the firms that are present in the dataset, I focus on those that were acquired in the given period. Table 1 shows that we can observe 359 acquisitions between 2004-2007, and among them 88 firms function in the industrial sectors<sup>3</sup>. During this period the data contains 16056 firms that were domestically owned for the entire analyzed time period.

Besides the outcome variables, in my analysis I use two personal level covariates, sex and age by decades. On firm level I use variables that are associated with productivity and with foreign ownership in the literature (See Heyman et al., 2007; Girma and Görg, 2007; Earle et al., 2012). These are the number of employees the company has (size), the average discounted monthly wage of the workers, the annual Sales revenue per worker, the Capital/labor ratio, the Total Factor Productivity<sup>4</sup>, the ratio of export and sales revenue, as well as the changes in the average wage and employment size.

Table 2 shows the descriptive statistics for the most important variables that are characterizes the firms. We can see that in average those firms that were acquired have more employees, pay more in average and wages increases in a higher pace as well. Furthermore, the acquired firms tend to be more productive. The two group not only differ in the sense of size but in the sense of occupation composition. The firms that were in the entire period domestic owned have less abstract worker, but more manual worker in the share of all employees, while firms that later on owned by foreigners have slightly higher share of routine workers. This suggests that the two types of firm differs on many levels.

If we compare only the domestic years of the acquired firms with the firms that were always domestic, it can be seen more clearly that firms that were acquired, are already

<sup>&</sup>lt;sup>3</sup>Industrial sector contains the sector of Mining and quarrying, Manufacturing and Electricity, Gas and water supply

<sup>&</sup>lt;sup>4</sup>Fixed effects from panel or Wooldridge TFP, estimated on the initial sample, containing every firms

better than an average domestic firm, though not that much improved in wage level, export and revenue than they will be after the acquisition. It can be also observed that the difference in the composition of the workforce are already present.

Looking more into the issue of selection, Table 3 suggests, if we focus only the preacquisition years of the acquired firms and compare them to domestic firms that were not acquired, that there is some selection among occupational composition. We can observe that in average increase in the share of abstract workers rises the probability of being acquired. The magnitude is very low however, a 10 percentage point increase in abstract share ratio, if routine share remains the same and only manual share decreases, raise the probability of acquisition by 0.15-0.20 percentage points. If instead of employees in manual occupations the routine workers are replaced the effect is even smaller in magnitude. That also means that foreign owner seems to appriciate more routine workers than manuals.

### **3** Estimation procedures

In order to identify the effect of foreign acquisition on the structure of employment across firms, I also consider the problem in the program evaluation framework (See Girma and Görg, 2007; Huttunen, 2007; Earle et al., 2012). According to that, the treatment is the foreign acquisition, the potential controls are the firms have always been under domestic ownership, thus in my regression samples only those firms remain that were either acquired or were under domestic ownership during the analyzed time period. However, domestic and foreign-acquired firms can differ significantly among observable, and as well among unobservable variables, thus various regression tools need to be used in order to find the true effect. In specifying the regressions methodology, I follow the steps of Earle et al. (2012)'s estimation strategy.

#### 3.1 Regression

During my analysis, in order to get more credible results, I use both the employer and employee level data. The outcome variables of my interest are the occupational categories, and on the right hand side I control for the ownership and for for time and industry level fixed effects. Thus, in the case of employer level regression I estimate the following equation:

$$Y_{jt} = \delta Foreign_{j,t-1} + \lambda_t + Sector_j + \alpha_j + u_{jt},$$

where  $Y_{jt}$  is the observed proportions of the occupational categories in the *j*th firm at *t* year, *Foreignj*, *t* – 1 represents the lagged ownership of the firm, it is 1 if the firm was foreign owned in the previous year already. The year fixed effects are represented by  $\lambda_t$ , the industrial fixed effect are caught with *Sector*<sub>j</sub>. that is 1 if firm *j* belongs to the a given sector, and 0 for the others, while  $\alpha_j$  catch the firm fixed effects and  $u_{jt}$  is the error term. Since foreign ownership tends to correlate variables that are theoretically affect profitability and the worker composition, I do not include any other firm level covariate. In the regressions the standard errors are also clustered at firm level. In this formulation, I assume that fixed effects catches every firm, industry and time variant factors, thus  $\delta$ 

measures what is the additional effect of foreign acquisition on the firm.

The estimation is carried out similarly on the employee level as well. There I use linear probability models to predict whether the foreign acquisition increases the chance of working in given occupational category. The equation is the following:

$$y_{it} = \delta Foreign_{j,t-1} + \lambda_t + Sector_j \alpha_j + \beta_{it} X_{it} + v_{ijt},$$

where,  $y_{it}$  is a dummy for the analyzed occupation category,  $Foreign_{j,t-1}$  is the dummy for foreign ownership,  $\lambda_t$  correspond for time fixed effect,  $\alpha_j$  for firm fixed effects. In this equation, I also added personal level covariates like ten year age groups and whether the person is a male, while  $v_{ijt}$  is the unobserved components employee. Due to technical reason I could not add individual fixed effect, although, this is only a minor problem as worker not expected to do different kind of tasks, most probably a routine a worker will remain a routine worker. Also, due to the limitation of my dataset, there is no information on the actual education level of the people, that would likely correlate positively with abstract tasks.

#### 3.2 Matching

However, due to the low number of the occasions when acquisition takes place, it is impossible to find controls that have exactly the same characteristics as the firms in the treated group. Thus ensuring the common support, propensity score matching seems to best solution. As the data shows in Table 2, those firms that were acquired in the different period and those that were not, differ significantly on observable and unobservable level as well. Thus, I closely follow the literature in constructing the control group like Earle et al. (2012) did.

Similarly to Earle et al. (2012), I also restrict the sample to firms that one can observe sufficiently long this time period. Acquired firms are included if two years before acquisition is available, and moreover, we can observe them a year after, while potential controls have to be observed for at least 4 consecutive years. That is a necessary consequence of the annual structure of the data, because one can only know that the acquisition went through in a given a year, but cannot know exactly when. Thus, if one wants to analyze the effect of foreign acquisition then she has to consider the next year, when the firm was whole year long under the influence of the new owner. Also, if one wants to consider changes from one year to the next, at least two years need to be observed before the ownership has changed. However, this restriction causes that the effective sample decreased, since only those firms can be observed at least in two years before, and at least one year after the acquisition that are acquired between 2005-2007.

In order to have a balanced sample for the propensity score estimation, I also applied the weighting scheme, among the treats I only kept the year before the acquisition and I gave weight to the potential controls to have equal weight in the regression to treated and potential controls. This way it is possible pooling the data, and having larger sample size than running year-by-year regressions (Earle et al., 2012). I restricted my sample to those industries where acquisition happened and I excluded the industry of health and education as well, because these industries are strongly affected by the presence of the public sector.

In order to estimate the propensity score, I used a probit model to estimate the probability of being acquired by foreign capital on a vector of covariates:

$$Pr(Foreign_{jt} = 1 | \mathbf{X}_{jt}) = \Phi(\mathbf{X}_{jt}^{T}\beta)$$

where X contains the logarithm and the square of the logarithm of the average wage, the firm size and capital intensity, the logarithm of labor productivity, the proportion of abstract, routine and manual workers, and the levels of average wage changes and size changes from two year to one year before the acquisition. I also added year and two-digit industry dummies in order to control for time and industry level fixed effects.

The results of the propensity score estimation are presented in Table A1. The model produces hardly any significant result, however, at least the sign of the coefficients seems to be as expected. Firms with higher productivity are more likely to be acquired and higher average wage, labor productivity and capital intensity are also important factors in that, according the theory. Using the propensity scores, I matched the treats and controls exactly on industry and year, and then in every case, I kept the paired controls with closest propensity score (nearest neighbor matching). This mechanism helped to enforce the common support on propensity score as Figure 1 shows it, after the matching the propensity score distribution of the treats and controls became more similar, and for every bin of treats, there is a bin of controls. Resulting to the nearest neighbor matching, I found control pairs for 113 firms that were acquired by a foreign owner, that means that I found controls for 86% of the acquired firms in 2005, 2006.

As a more sophisticated check, for the variables that are associated with productivity, I use the same statistics as Imbens and Wooldridge (2009), because this statistics, unlike the t-test, is independent of the sample size:

$$\Delta x = \frac{\bar{X}_{treat} - \bar{X}_{control}}{\sqrt{\hat{\sigma}_{treat}^2 + \hat{\sigma}_{control}^2}}$$

where  $\bar{X}$  is the sample mean,  $\hat{\sigma}^2$  is the sample variance of the variable of the interest. As a rule of thumb, the treats and controls do not differ in the sense of a variable if the value of the normalized difference is less than 0.25 in absolute value. The result of this is presented in Table 4. The test statistics show that the 113 treated firms are not different from the matched control firms across the analyzed variables, thus the matching satisfies the common support assumption.

## 4 Results

As a preliminary result, on Figure 2, I illustrate how the share of the employment changed even in this short time of period. Grouping the occupation in to percentiles based on their mean wage in 2003, I plotted how there share changed among always domestic and among acquired firms. We can see that firms, that were all along under domestic ownerships show little changes in the work structure, the most unskilled and the most skilled occupations got bigger share among all workers.

On the other hand, we can see larger differences among the employees of firms that were taken over between 2003-2008. We can similar pattern and magnitude as Autor and Dorn (2013) have in their paper. The share of the occupations with lowest skill contents increasing, while the number of workers, who works in occupations that require medium skill, decreases. We can see also see that the number of workers, who worked in the occupation representing the highest skill contents, increased in this 5 year period.

I also present the average routine, manual and abstract ration in the sample. Table 5 shows that the share of abstract occupations decreases 5% in the whole sample, while the same time mostly manual workers are employed besides them. Among the industrial the picture is different. Here, the routine ratio falls, while manual and abstract rises instead.

However, if we compare always domestic and acquired firms, the picture changes. For every firm in the sample I calculate how much the occupation shares change between the first observation and last observation during observed time period. Table A3 shows the results of the simple OLS in which I only control for the industry level fixed effects. The results show that in firms that were acquired during this time period, the abstract ratio decreases by 4.4 percentage points, while the share of the routine workers increases by 3.6 percentage points. Similar patterns are observable in the industrial sectors, the share of the abstract workers declines in average if the firms were acquired between 2003-2008, and meanwhile, the share of the routine workers rises. Nevertheless, we cannot identify this as the pure effect of foreign acquisition, since it is also possible that foreign capital acquire those firms that are decreasing the share of their abstract workers and increasing the share of their routine workers. In order to distinguish between these two possibilities adding firm level fixed effect can be the solution.

#### 4.1 The results of the Fixed Effect estimations

Table 7 presents the result of the basic OLS regression. If we consider all industry, foreign dummy has negative coefficient not only in the case of routine ration but the abstract ratio as well. The -0.008 coefficient suggests that foreign ownership, in average decreases the share of the abstract worker by 3%, while the decline in the share of routine worker is hardly 0.5%, and since all the coefficients are insignificant, we cannot reject that foreign ownership has no effect at all on the occupation shares. In the subsample containing only the industrial sectors the coefficients are still insignificant, although, in this case only share of routine worker decreases due to the foreign acquisition.

The linked employer-employee database due the larger sample size and the personal level information can help to specify the regression more precise. The results of this are presented in Table 8. The whole sample provides slightly different result than the employer level regression. The changes in percentage points are very low, and most of all, the coefficient have very low p - values in every case. The pattern is similar if we consider only the industrial sectors. At least, there we can find a value that is significant at least on the 10% level. Comparing to the 69.0% base level of routine share among industrial firms, this 0.01 point decrease can be converted to a 1.5% fall. The point estimate of the foreigner ownership due to the law base line became 16, 6%.

Comparing the results of the employer and the employee level regression, we can conclude that in direction, the coefficients suggest that the foreign ownership hardly changes the composition of workers. The share of abstract and manual workers rises by few percentages, but we cannot reject the hypothesis that actually nothing happens in the sense of labor composition.

The results of the alternative outcomes, presented in the Appendix, show similar patterns in magnitude as the abstract-manual-routine classification, and suggest the same results as Figure 2, however, with hardly any significant results. Beside the alternative outcomes and the tables presented here, the estimations were carried out for other subsamples, like firms that have at least 50, or at least 100 employees in average. As the results there have similar coefficients in the sense of sign and magnitude and also the lack of significant coefficients suggest that my results are robust for the size as well.

### 4.2 Results of the matching

As it was highlighted in Section 2, the firms that were acquired during the analyzed time period are significantly different from the firms that were always under domestic ownership, thus matching should be able to control for these differences. The results of the regression based on the matched sample on employer are summarized in Table 9 and on employee level in Table 10. The matched employer sample shows the abstract share increases with 1.5 percentage points in average in case of foreign acquisition, while on the other hand, the manual share decreases with more than 1 percentage points. In the industrial sector the results are basically the same, the only difference is in that case routine share seems to be completely unaffected by the foreign ownership, the composition changes only due to the increase of abstract workers and decrease of manual workers. Still, these effect are very weak, cannot be distinguished from 0. Comparing this to employer level estimates we can see that adding employer level covariates somewhat reshapes the picture. Every coefficients are basically 0, both without and with restricting to the industrial sectors.

Thus, there is hardly any evidence which suggests that with the foreign capital also the higher level technology comes in which would result in automatizing the production processes and would result in replacing the routine workers in a firm. The results show that basically nothing happens among these firms, it is questionable whether the reason for this is that the large foreign firms outsources their routine tasks to Hungary and on the opposite side the technological change simply extinguish each other.

## 5 Conclusion

In my work, I attempted to identify how the technological change coming from a foreign acquisition affects the labor structure of firms. Using a Hungarian Linked Employer-Employee Database, I considered four competitive hypothesis in order to discover which one them can be supported by empirical evidence. Whether, through the acquisition the foreign owner brings new technology into the company and therefore replacing the routine worker by machine or in the other way, the foreign firms outsource there routine intensive working processes into a less developed country, where they can exploit the relatively cheap labor force. It can be also a possibility that foreign capital is only interested in taking over firms that are suitable for their production purposes or either they selecting the firms among productivity and leave them to function as before.

In order to decide which one of these hypotheses proves to be true, I classified workers into three groups according to their occupational skill content, and estimated whether their proportion is increasing or decreasing among their firm. I used fixed effects estimation and also matching to handle both industry, time and firm level heterogeneity and uncertainty. Therefore, the remaining effect is considered to come from the foreign acquisition.

My findings imply little evidence that the new foreign owner would shape the labor structure in any way. All the observed effects are small in magnitude and almost in every case we cannot argue that they are different from 0. This indicates that we have to reject both the theory that foreign technology reshape the employee structure of the firms because of computerization and no proof demonstrates that foreigners increase the share of routine workers either. Evidence suggests that there is only a little selection in the takeover among the initial labor structure of the firms as more abstract worker is slightly preferred, therefore that possibility seems to be right that says due to the foreign acquisition basically nothing happens in the occupational composition of the firm.

However, there are some potential issue that could bias the results presented here. One of them could be short time horizon of the analysis. My analyzed sample contains observation for 5 years, therefore it is impossible to control for longer pre-acquisition history and also follow the firms for multiple years. Thus, maybe the new owner would modify the labor composition but the firing and hiring procedure takes longer, also the adaption of the new technology. Although, we also have to consider that with an extended time period , in which the recession of 2008 plays more important part, the effect of the recession could interfere with the effect we would like to measure.

An other possible concern comes from the occupational classification I adapted. On the one hand, despite the troublesome correspondence process, the American occupation classification cannot be translated to the Hungarian, because they might measure skill and task content too differently. On the other hand, it is possible that the skill content of the occupations have been changed significantly in the last 30 years, thus it is possible that the 1980 skill content of an occupation used to be routine intensive, but ever since then it have been changed.

It is also possible that, foreign ownership affects the labor structure in a different way than the subject of this analysis. It might be that routine, abstract and manual assortment of occupation cannot catch the genuine mover of the change in structure.

Nevertheless, supporting my findings, it is also possible that foreign owner increases productivity in other way than reshaping the labor composition in sense of occupation. As Martins (2011) argues, with offering higher wages firms can keep their most productive workers for longer time period, therefore they can reduce productivity loss coming from the replacement of the workforce. Also, higher wages can help to motivate workers and makes easier to replace labor force in a way where workers are individually are replaced to more productive people, without changing the structure of employment in the company.

## References

- Acemoglu, D. and Autor, D. (2011). Skills, Tasks and Technologies: Implications for Employment and Earnings. Handbook of Labor Economics, Elsevier.
- Almeida, R. (2007). The labor market effects of foreign owned firms. Journal of International Economics, 72(1):75–96.
- Autor, D. H. and Dorn, D. (2013). The Growth of Low-Skill Service Jobs and the Polarization of the US Labor Market. *American Economic Review*, 103(5):1553–1597.
- Autor, D. H., Levy, F., and Murnane, R. J. (2003). The Skill Content of Recent Technological Change: An Empirical Exploration. *The Quarterly Journal of Economics*, 118(4):1279–1333.
- Barth, E., Bryson, A., Davis, J. C., and Freeman, R. (2014). It's Where You Work: Increases in Earnings Dispersion across Establishments and Individuals in the U.S. Working Paper 20447, National Bureau of Economic Research.
- Conyon, M. J., Girma, S., Thompson, S., and Wright, P. W. (2002). The Productivity and Wage Effects of Foreign Acquisition in the United Kingdom. *The Journal of Industrial Economics*, 50(1):85–102.
- Earle, J. S., Telegdy, I., and Antal, G. (2012). FDI and Wages: Evidence from Firm-Level and Linked Employer-Employee Data in Hungary, 1986-2008. IZA Discussion Paper 7095, Institute for the Study of Labor (IZA).
- Feenstra, R. C. and Hanson, G. H. (1999). The Impact of Outsourcing and High-Technology Capital on Wages: Estimates For the United States, 1979–1990. The Quarterly Journal of Economics, 114(3):907–940.
- Feliciano, Z. and Lipsey, R. E. (2006). Foreign Ownership, Wages, and Wage Changes in U.S. Industries, 1987-92. SSRN Scholarly Paper ID 904940, Social Science Research Network, Rochester, NY.
- Girma, S. and Görg, H. (2007). Evaluating the foreign ownership wage premium using a difference-in-differences matching approach. *Journal of International Economics*, 72(1):97–112.
- Harris, R. and Robinson, C. (2002). The Effect of Foreign Acquisitions on Total Factor Productivity: Plant-Level Evidence from U.K. Manufacturing, 1987-1992. The Review of Economics and Statistics, 84(3):562–568.

- Heyman, F., Sjöholm, F., and Tingvall, P. G. (2007). Is there really a foreign ownership wage premium? Evidence from matched employer–employee data. *Journal of International Economics*, 73(2):355–376.
- Huttunen, K. (2007). The Effect of Foreign Acquisition on Employment and Wages: Evidence from Finnish Establishments. *Review of Economics and Statistics*, 89(3):497– 509.
- Imbens, G. W. and Wooldridge, J. M. (2009). Recent Developments in the Econometrics of Program Evaluation. *Journal of Economic Literature*, 47(1):5–86.
- Martins, P. S. (2011). Paying More To Hire The Best? Foreign Firms, Wages, And Worker Mobility. *Economic Inquiry*, 49(2):349–363.
- Mueller, H. M., Ouimet, P. P., and Simintzi, E. (2015). Wage Inequality and Firm Growth. Working Paper 20876, National Bureau of Economic Research.
- Shleifer, A. and Summers, L. H. (1988). Breach of trust in hostile takeovers. In *Corporate takeovers: Causes and consequences*, pages 33–68. University of Chicago Press.
- Song, J., Price, D., Guvenen, F., Bloom, N., and Wachter, T. v. (2015). Firming Up Inequality. NBER Chapters, National Bureau of Economic Research, Inc.

## 6 Tables and Figures

	2004	2005	2006	2007	Total
All firms	116	56	76	111	359
Firms in industry	25	18	21	24	88

Table 1: Foreign acquisitions by year for firms with at least 20 employees in average

	Domestic	Ever_Foreign	Foreign_Domestic_year
Discounted monthly av.wage	114572	173847	151976
	(81755)	(152868)	(131682)
Firm size	66.4	107	93.5
	(147)	(302)	(220)
Sales revenue per worker (annual)	21687	97262	83463
	(257701)	(882409)	(895675)
Capital/labor ratio	5887	10982	10677
	(31625)	(70999)	(71216)
Change in the average wage	8742	15493	11152
	(30019)	(61697)	(62777)
Change in the employment size	1.02	8.93	.485
	(50.8)	(81.4)	(53.5)
Total Factor Prod	133	0651	0704
	(1.4)	(.911)	(.992)
Ratio of abstract workers	.241	.358	.36
	(.26)	(.31)	(.315)
Ratio of abstract routine	.349	.363	.362
	(.306)	(.298)	(.304)
Ratio of abstract manual	.41	.279	.278
	(.336)	(.312)	(.312)
Export revenue/ sales revenue	.0934	.182	.142
	(.23)	(.312)	(.29)

Standard error in parentheses

Table 2: Descriptive statistics on always domestic and foreign acquired firms

	(1)	(0)
	(1)	(2)
VARIABLES	Foreign	Foreign
Log(Average wage)	$0.0047^{**}$	$0.0049^{**}$
	(0.0024)	(0.0023)
Log(Size)	-0.0011	0.0010
	(0.0012)	(0.0011)
Log(Revenue)	0.0042***	0.0035***
	(0.0009)	(0.0008)
Log(Capital ratio)	-0.0008	-0.0003
	(0.0005)	(0.0005)
Change in the average wage		-0.0000
		(0.0000)
Change in the employment size		0.0000
		(0.0000)
Total Factor Prod	0.0009	0.0008
	(0.0010)	(0.0009)
Ratio of abstract workers	0.0205***	$0.0136^{***}$
	(0.0039)	(0.0035)
Ratio of abstract routine	$0.0071^{***}$	$0.0051^{**}$
	(0.0024)	(0.0021)
Export revenue/ sales revenue	$0.0153^{***}$	$0.0104^{**}$
	(0.0047)	(0.0043)
Constant	-0.0790***	-0.0865***
	(0.0260)	(0.0251)
Observations	63,303	49,867
R-squared	0.0069	0.0055
Robust standard errors	in parenthes	20g

Robust standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 3: Selection into foreign acquisition

	Control	Treat	Test stat	Differ?
Number of obs.	113	113		
Average wage	157418.489	156397.294	0.008	0
Size	97.965	136.124	-0.147	0
Revenue	30238.626	37368.753	-0.115	0
Capital ratio	8399.534	19292.292	-0.083	0
Average wage change	6780.915	12193.355	-0.111	0
Size change	2.248	-3.810	0.071	0
Total Factor Productivity	-0.273	-0.170	-0.092	0
Ratio of abstract workers	0.273	0.272	0.004	0
Ratio of routine workers	0.386	0.341	0.132	0
Ratio of manual workers	0.341	0.387	-0.127	0
Export revenue/ sales revenue	0.139	0.160	-0.055	0

Table 4: Common support after the matching

		A year before	Year of acquisition	A year after acquisition
All firms	Abstract	32.40%	31.68%	27.43%
	Manual	30.95%	32.80%	35.27%
	Routine	36.65%	35.53%	37.29%
	Abstract	17.96%	17.82%	19.87%
Industrial sectors	Manual	35.42%	35.52%	38.67%
	Routine	46.62%	46.66%	41.46%

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	$diff_abstract$	diff_routine	diff_manual	$diff_abstract$	diff_routine	diff_manual
Foreign	-0.044***	$0.036^{***}$	0.008	-0.055***	$0.056^{***}$	-0.001
	(0.007)	(0.007)	(0.007)	(0.010)	(0.012)	(0.011)
Constant	-0.036	-0.003	0.039	-0.000	$0.205^{**}$	-0.205**
	(0.030)	(0.031)	(0.031)	(0.075)	(0.089)	(0.080)
Observations	13 30/	13 304	13 304	1 235	1 235	1 935
	15,554	10,004	10,004	4,200	4,200	4,200
R-squared	0.008	0.006	0.005	0.011	0.011	0.005
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Industrial sectors	No	No	No	Yes	Yes	Yes
		Standard o	rrorg in paron	thosos		

Standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Abstract	Routine	Manual	Abstract	Routine	Manual
Foreign	-0.008	-0.002	0.010	0.005	-0.011	0.005
	(0.010)	(0.009)	(0.008)	(0.012)	(0.015)	(0.013)
Constant	$0.266^{***}$	$0.348^{***}$	$0.387^{***}$	0.180***	$0.500^{***}$	0.320***
	(0.039)	(0.035)	(0.025)	(0.051)	(0.050)	(0.076)
Observations	$68,\!808$	$68,\!808$	68,808	$21,\!668$	$21,\!668$	$21,\!668$
R-squared	0.884	0.910	0.930	0.814	0.912	0.920
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Industrial sectors	No	No	No	Yes	Yes	Yes
Observations R-squared Year FE Industry FE Firm FE Industrial sectors	(0.039) 68,808 0.884 Yes Yes Yes No	(0.035) 68,808 0.910 Yes Yes Yes No	(0.025) 68,808 0.930 Yes Yes Yes No	(0.051) 21,668 0.814 Yes Yes Yes Yes	(0.050) 21,668 0.912 Yes Yes Yes Yes	(0.076) 21,668 0.920 Yes Yes Yes Yes

Table 6:	Effect	of	${\rm foreign}$	acq.	on	changes	in	skills	ratio	

Robust standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 7: Effect of foreign acq. on skill ratios

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Abstract	Routine	Manual	Abstract	Routine	Manual
Foreign	0.003	-0.004	0.001	0.011	-0.010*	-0.000
	(0.006)	(0.005)	(0.008)	(0.010)	(0.006)	(0.013)
Constant	$0.093^{***}$	$0.590^{***}$	$0.317^{***}$	$0.066^{*}$	$0.690^{***}$	$0.244^{***}$
	(0.023)	(0.021)	(0.020)	(0.036)	(0.037)	(0.036)
Observations	$2,\!154,\!597$	$2,\!154,\!597$	$2,\!154,\!597$	864,795	864,795	864,795
R-squared	0.246	0.360	0.410	0.111	0.279	0.287
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Industrial sectors	No	No	No	Yes	Yes	Yes

Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 8:	Effect of	of foreign	acq.	on skill	ratios,	LEED
----------	-----------	------------	------	----------	---------	------

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	High	Middle	Low	High	Middle	Low
Foreign	0.000	0.001	-0.001	0.000	0.001	-0.001
	(0.011)	(0.013)	(0.009)	(0.011)	(0.013)	(0.009)
Constant	$0.092^{*}$	0.731***	$0.176^{***}$	$0.092^{*}$	0.731***	$0.176^{***}$
	(0.052)	(0.057)	(0.017)	(0.052)	(0.057)	(0.017)
Observations	$1,\!273$	$1,\!273$	$1,\!273$	$1,\!273$	$1,\!273$	$1,\!273$
R-squared	0.863	0.897	0.933	0.863	0.897	0.933
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Industrial sectors	No	No	No	Yes	Yes	Yes

Robust standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 9: Effect of foreign acq. on skills ratio - matched employer sample

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Abstract	Routine	Manual	Abstract	Routine	Manual
Foreign	-0.003	-0.003	0.006	0.001	-0.008	0.008
	(0.008)	(0.006)	(0.008)	(0.012)	(0.010)	(0.015)
Constant	$0.806^{***}$	$0.110^{***}$	$0.084^{**}$	$0.079^{***}$	$0.646^{***}$	$0.274^{***}$
	(0.029)	(0.036)	(0.042)	(0.025)	(0.053)	(0.037)
Observations	77,816	77,816	77,816	37,067	37,067	37,067
R-squared	0.138	0.269	0.334	0.066	0.195	0.275
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Industrial sectors	No	No	No	Yes	Yes	Yes

Robust standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 10: Effect of foreign acq	on skill ratios, LEED	-matched sample
---------------------------------	-----------------------	-----------------



Figure 1: Pscore distribution.



Figure 2: Smoothed employment changes by percentile

## A Appendix

	(1)
VARIABLES	treat
$ln_abstract$	0.052
	(0.174)
ln_routine	-0.009
	(0.190)
ln_manual	-0.032
	(0.167)
ln_avwage	-0.922
	(9.333)
ln_avwage_sq	0.067
	(0.398)
ln_size	0.509
	(0.826)
ln_size_sq	-0.036
	(0.089)
ln_revenue	0.185
	(0.137)
ln_capratio	-0.336
	(0.355)
ln_capratio_sq	0.023
	(0.024)
avwage_change	-0.000
	(0.000)
size_change	-0.001
	(0.002)
Constant	-0.996
	(54.753)
Observations	17.043
Year dummies	Yes
Industry dummies	Yes
Pseudo R-squared	0.164
Standard errors in r	parentheses
*** p<0.01. ** p<0.	05, * p<0.1

Table A1: Propensity score results

		A year before	Year of acquisition	A year after acquisition
	High	17.86%	18.28%	19.82%
All firms	Medium	66.50%	64.59%	61.42%
	Low	15.74%	17.13%	18.75%
	High	12.44%	12.37%	13.79%
Industrial sectors	Medium	74.49%	70.15%	65.52%
	Low	13.06%	17.47%	20.69%

Table A2: Chang	es in the	e share o	of high,	medium	and lov	v skilled	occupation
	,		0 /				1

	(1)	(2)	(2)	( 1 )	(~)	(0)
	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	diff_high	diff_middle	diff_low	diff_high	diff_middle	diff_low
Foreign	-0.035***	$0.030^{***}$	0.005	-0.043***	$0.048^{***}$	-0.005
	(0.005)	(0.007)	(0.006)	(0.008)	(0.012)	(0.010)
Constant	-0.004	0.038	-0.034	-0.041	0.085	-0.044
	(0.025)	(0.033)	(0.029)	(0.062)	(0.087)	(0.077)
Observations	$13,\!394$	$13,\!394$	$13,\!394$	4,235	4,235	4,235
R-squared	0.009	0.007	0.004	0.013	0.013	0.006
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Industrial sectors	No	No	No	Yes	Yes	Yes
	St	andard errors	in narent	theses		

Standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table A5. Effect of foreign acq. on changes in skins ratio	Table A3:	Effect of	foreign	acq. c	on changes	in	skills ratio
--	-----------	-----------	---------	--------	------------	----	--------------

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	High	Middle	Low	High	Middle	Low
Foreign	-0.0075	0.0131	-0.0056	-0.0104	0.0108	-0.0004
	(0.0087)	(0.0100)	(0.0076)	(0.0110)	(0.0149)	(0.0103)
Constant	$0.1036^{***}$	$0.5863^{***}$	$0.3101^{***}$	$0.1235^{***}$	$0.5829^{***}$	$0.2936^{***}$
	(0.0302)	(0.0352)	(0.0344)	(0.0212)	(0.0630)	(0.0539)
Observations	$68,\!808$	$68,\!808$	$68,\!808$	$21,\!668$	$21,\!668$	$21,\!668$
R-squared	0.8498	0.9092	0.9333	0.8066	0.9244	0.9439
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Industrial sectors	No	No	No	Yes	Yes	Yes

Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table A4: Effect of foreign acq. on skills ratio

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	High	Middle	Low	High	Middle	Low
Foreign	0.003	-0.008	0.005	0.008	-0.017**	0.009
	(0.004)	(0.007)	(0.008)	(0.006)	(0.009)	(0.012)
Constant	-0.003	$0.570^{***}$	$0.434^{***}$	0.006	$0.653^{***}$	$0.340^{***}$
	(0.017)	(0.021)	(0.022)	(0.009)	(0.035)	(0.033)
Observations	$2,\!154,\!597$	$2,\!154,\!597$	$2,\!154,\!597$	864,795	864,795	864,795
R-squared	0.217	0.354	0.469	0.148	0.343	0.504
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Industrial sectors	No	No	No	Yes	Yes	Yes

Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table A5:	Effect of	foreign	acq.	on skill	ratios,	LEED
-----------	-----------	---------	------	----------	---------	------

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Abstract	Routine	Manual	Abstract	Routine	Manual
Foreign	0.003	0.006	-0.010	0.007	0.009	-0.016
	(0.013)	(0.012)	(0.012)	(0.020)	(0.021)	(0.021)
Constant	0.260***	0.402***	0.338***	0.206***	$0.425^{***}$	0.370***
	(0.047)	(0.035)	(0.025)	(0.015)	(0.015)	(0.017)
Observations	1,273	$1,\!273$	1,273	450	450	450
R-squared	0.848	0.901	0.921	0.812	0.904	0.903
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
$\mathbf{Firm} \ \mathbf{FE}$	Yes	Yes	Yes	Yes	Yes	Yes
Industrial sectors	No	No	No	Yes	Yes	Yes
Debugg standard smars in research and						

Robust standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table A6: Effect of foreign acq. on skill ratios, employer level - matched sample

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	High	Middle	Low	High	Middle	Low
Foreign	-0.008	-0.009	$0.018^{**}$	0.008	-0.019*	0.011
	(0.008)	(0.007)	(0.009)	(0.009)	(0.010)	(0.010)
Constant	$0.859^{***}$	-0.052	$0.193^{***}$	$0.215^{***}$	$0.623^{***}$	$0.162^{***}$
	(0.021)	(0.036)	(0.033)	(0.005)	(0.015)	(0.017)
Observations	$77,\!816$	77,816	77,816	37,067	37,067	37,067
R-squared	0.217	0.280	0.402	0.285	0.318	0.447
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Industrial sectors	No	No	No	Yes	Yes	Yes
	<b>D</b> 1			. 1		

Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table A7: Effect of foreign acq. on skill ratios, employee level - matched sample

	(1)	(2)	(3)
VARIABLES	High	Middle	Low
Foreign	-0.00276	-0.00558	0.00834
	(0.00799)	(0.00942)	(0.00991)
Constant	$0.221^{***}$	$0.823^{***}$	-0.0440***
	(0.0172)	(0.0239)	(0.0145)
Observations	40,971	40,971	40,971
R-squared	0.258	0.292	0.440
Year FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes
Industrial sectors only	Yes	Yes	Yes

Robust standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table A8: Effect of foreign acq. on skill ratios, employee level, manufacturing - matched sample

	(1)	(2)
VARIABLES	In(Size)	In(Size)
Foreign	0.011	$0.107^{*}$
	(0.110)	(0.055)
Constant	$3.931^{***}$	$3.772^{***}$
	(0.273)	(0.248)
Observations	$1,\!273$	$1,\!273$
R-squared	0.180	0.890
Year FE	Yes	Yes
Industry FE	Yes	Yes
Firm FE	No	Yes

Robust standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table A9: Effect of foreign acq. on size