Foreign Ownership Wage Premia in Czech Republic

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Abstract

In this paper we examine the relationship between wages, labour productivity and ownership using a linked employer-employee dataset covering a large fraction of the Czech labour market in 2006. We distinguish between different origins of ownership and study wage and productivity differences. The raw wage differential between foreign and domestically owned firms is about 24 percent. The empirical analysis is carried out on both firm- and individual-level data. A key finding is that industry, region, and notably human capital explain only a small part of the foreign-domestic ownership wage differential. Both white and blue collar workers obtain a foreign ownership wage premium. Joint estimation of productivity and wage equations show that, controlling for human capital, the difference in productivity is more than twice as large as the wage differential.

JEL Codes J31, D21

Keywords Foreign ownership, wages

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1 Introduction

In recent years a relatively large literature has built up that compares wage and productivity levels between domestic and foreign owned firms and attempts to explain the observed differences. All studies, using firm as well as worker level data, show that the foreign owned firms outperform the domestic ones with respect to pay levels.[1] The literature can be divided into two categories: studies comparing domestic and foreign owned firms (see e.g., Conyon et al. (2002), Girma et al. (2001), Lipsey and Sjöholm (2004), Martins (2004)) and investigations focussing on the wage consequences of observed changes in ownership (Huttunen (2007), Heyman et al. (2006), Martins and Esteves (2008)). The former examine the importance of differences in observable characteristics of the firms as well as their employees, whereas the latter exploit panel data and use fixed effects or difference-in-difference methods to control for unobservables.[2]

Summarising briefly the key findings, these are: (i) the foreign ownership premium is considerably larger in less developed countries, (ii) the premium estimates from estimations on firm level data are as a rule higher than those estimated on individual data, (iii) inclusion of firm and/or worker traits significantly reduces the foreign-domestic differential (and also between developed and less developed countries), and (iv) accounting for unobservables reduces the premium estimate further and this is now close to zero. Firm characteristics that turn out to be especially important are company size and industry affiliation.[3] Corresponding employee traits are human capital variables (education, training and experience).[4] Data in these studies come both from advanced economies (U.S., U.K., Germany and the Nordic countries) and less developed countries like Indonesia, Ghana and Mexico.

As noted above, the findings differ considerably between developed and less developed countries. It is not obvious that the results obtained either for mature, advanced market economies or less developed countries also hold for the new market economies in Central and

[1] For a comprehensive survey describing the design and the key results of 18 studies, see Andrews et al. (2007).
[2] It should be noted, that the studies of changes in ownership, typically from domestic to foreign, examine wage consequences of acquisitions. Greenfield births make up a non-negligible portion of foreign owned firms and are likely to differ from the acquired companies. Greenfield births do not, for example, "inherit" the wage structure and levels implemented by the previous, domestic owners.
[3] These results are interpreted as evidence of multinational firms entering industries with higher profits.
[4] This is considered as evidence of a sufficiently large pool of specialists in the local labour market playing an important role in international investors' location decisions. Thus, employees do not necessarily enjoy a wage premium for working in a foreign owned firm.

Eastern Europe. A common notion is that the location of foreign owned firms in these countries are driven by search for lower costs of production, and labour costs in particular, and that foreign investors are operating "sweatshops" in CEE countries. Another motivation for locating there is the closeness to new, expanding markets (see Konings and Murphy, 2006). In neither case is it obvious that the foreign owned firms would pay their employees more. On the other hand, in post-transition economies where skills learned in successful multinational companies is a particularly scarce resource, foreign firms may, in order to retain their employees and not loose the investments made in them, pay their workers a wage premium. Thus, one aim of this paper is to provide evidence on this matter from the Czech Republic and to inform the ongoing discussion about the pros and cons of attracting foreign investors. To the best of our knowledge, only one earlier study has dealt with ownership wage premiums in a CEE country context, namely Earle and Telegdy (2007), who compare wages in public, private and foreign owned firms in Hungary.

In this paper we examine the relationship between wages, labour productivity and ownership for the Czech labour market using a linked employer-employee dataset covering a large fraction of the Czech private sector labour market. We distinguish between different origins of owners and study wage and productivity differences. The remainder of the paper is structured as follows. The next section briefly summarises earlier research on the topic. Section 3 describes the data used and Section 4 contains the results of the empirical analysis. In the fifth section we discuss the results and offer some conclusions.

2 Previous Research and Hypotheses Development

It is by now considered as a stylized fact that foreign owned firms have higher productivity and pay higher average wages than domestically owned firms. Does this imply that wages will rise in a domestic firm after it has been acquired by a foreign investor? Does the existence of a foreign ownership premium mean that foreign Greenfield births pay higher wages than similar domestic firms? The answers to these questions depend on what causes thee foreign-domestic wage differential. Although there is no lack of suggestions for explanations and despite a growing empirical literature testing them, consensus concerning the main drivers of these differences has not yet been arrived at. One obvious fact is that foreign owned firms are typically located in certain industries and regions. In advanced

industrialised countries you often find them in high wage sectors and/or regions where sufficiently large pools of specialists are located. But studies for firm characteristics also find foreign ownership wage premia within industries or regions.

A number of hypotheses have been put forward to explain the ownership premium. One is that foreign owned firms employ workers who possess higher qualifications and are rewarded accordingly. The reason for why multinational firms employ employees with more human capital is that the success of firms in international markets is due to having higher quality capital, tangible as well intangible, and hence need more skilled labour to work with it. This implies that it is not only employees working in foreign owned firms who receive a premium but also those employed in domestically owned multinational firms receive a premium; for evidence of this from Sweden, see Heyman et al. (2006). Thus, they find that there is no premium associated with foreign ownership per se.

In many countries, local as well as national governments seek to attract foreign investors hoping that there will be positive (technological, skills and knowledge) spillovers from the foreign firms to the local companies. If these spillover effects are significant, this would imply that, at least in the medium or longer term, the foreign-domestic wage differential would be small. On the other hand, multinational firms are likely to be aware of these spillovers and therefore attempt to prevent them by means of paying higher wages in order to reduce labour turnover; see Fosfuri et al. (2001) for an analysis.

A growing number of studies have tried to find empirical evidence of spillover effects as well as of their magnitude. A study making use of panel data on U.K. firms, Haskel et al. (2007), (see also Fu (2008)) finds positive spillover effects, whereas two studies using similar data from transition economies, Konings (2001) and Javorcik (2004), find no or only limited evidence of their existence. Some recent studies have focussed on knowledge spillovers by considering what happens to the wages of employees working for a foreign employer when they move to domestically owned firms. Three studies (Andrews et al. (2007) for Germany, Balsvik (2006) for Norway, and Pesola (2007) for Finland) find evidence of foreign-to-domestic firm moves having a positive impact on the employee’s wage, while the studies by Martins (2005) and Martins and Esteves (2008) on Portuguese and Brazilian data respectively, find the opposite: movers from foreign to domestic firms take wage cuts. From this rather mixed bag of results, one may conjecture that spillovers are more likely to materialise in advanced economies with a relatively high proportion of skilled workers in the

labour force.[5] This in turn implies that the likelihood to observe foreign ownership premia is higher in countries like for instance the Czech Republic.

A distinguishing feature often attributed to foreign firms is that they exhibit different patterns of labour demand. In particular, it is claimed, and standard models of trade support this notion (Fabbri et al., 2003), that multinational firms have a more elastic demand for labour than domestic firms (save domestically owned multinationals). If this is the case, it is conceivable that employees in foreign firms are paid more in order to compensate for the higher insecurity in employment.

The empirical evidence on the matter is quite mixed, however. Barba Navaretti et al. (2003) and Balsvik and Hammer (2007) find that the multinationals' labour demand is in fact less elastic than that of domestic firms because of the higher skill levels of their workforces. On the other hand, Görg et al. (2006) do find a considerably higher elasticity in international companies operating in Ireland, and Hakkala et al. (2007), who compare domestic firms with foreign-owned and domestically owned multinationals in Sweden, do not find any differences in labour demand elasticity between the three ownership types.

Still another explanation for the observed wage differential is rent sharing within multinational companies. More specifically, within foreign owned firms profits are shared with workers across borders; for evidence see Budd et al. (2006).

3 Data Description

We use a linked employer-employee data set that includes all workers from 3,272 companies in year 2006.[6] This has been provided to us by a private consulting company which produces wage and wage costs statistics for the Czech Ministry of Labor and Social Affairs. The data set contains information about individual workers, their age, gender, education, occupation, workers firm tenure, hourly wage, annual working hours, total annual compensation as well as its wage and bonus components. The hourly wage information is of very high quality as it is

[5] This would be consistent with country pattern of the results. Also Pesola's (2007) finding, that it is only employees with higher education that obtain wage gains when moving from foreign to domestic firms, is consistent with it.

[6] We have also had access to corresponding data for 2005. The descriptive statistics as well as the regression estimates from this year are very similar and are therefore in order to save space omitted from the subsequent tables.

calculated by the employer in order to estimate the employee's vacation and absence pay. Moreover, by using the hourly wage reported by the employers we avoid measurement errors arising from division of aggregate income by the number of standard working hours. The data set provides some information about firm characteristics, such as sales, profits, industry (3-digit NACE), the region where the firm operates, and most importantly for the current paper, type and origin of ownership.[7] A firm is defined as foreign owned when at least 50 percent of the equity is in foreign hands.

Table 1 gives some basic descriptive statistics for the sample of firms for year 2006. More precisely it contains the number of firms, their average size (as measured by number of employees) and the average hourly wage for five groups of countries for the origin of the owners plus the Czech Republic. Most foreign-owned firms are, not surprisingly, from the EU15 countries (Germany, Netherlands, Austria and France) followed by other European countries (Switzerland and neighboring CEE countries) and the U.S. Firms with owners from

Table 1: Descriptive statistics

Ownership by origin	Number of firms	Average size	Average hourly pay
EU15/EEA + Switzerland	527	700	168
Other Europe	31	418	159
Asia	12	930	130
North America	18	694	205
Czech Republic	2184	376	122

the Asian and African continents account for a tiny proportion of foreign owned firms. Note, however, that the Asian owned firms are larger than other firms and thus their relative share of total employment is about the same as that of the other European countries than the EU15.

4 Empirical Analysis

[7] For more information about the dataset, see e.g. Eriksson and Pytlikova (2004) and Eriksson, Pytlikova and Warzynski (2009).

Figures 1 and *2* show the log wage and log labour productivity distributions for domestic and foreign owned firms, respectively. From these it stands out clearly that a significant part of the foreign firms' wage distribution lies to the right of that of the domestically owned firms. Moreover, we can see that the difference in the productivity distributions is even larger. For both wages and productivity the dispersion within the groups of domestic and foreign owned firms does not seem to differ much, however. *Table 2* provides some descriptive statistics for the sub-samples of foreign and domestically owned companies, respectively. From this we may notice that employees in foreign owned firms are on average younger and have a shorter tenure at their current employer. This is not surprising in view of the fact that in Czech Republic foreign owned firms for obvious reasons are younger. The differences in schooling levels are minor as are differences in the share of white collar employees. Foreign owned firms have, not surprisingly, almost twice as large share of foreign employees and, perhaps somewhat surprisingly, a higher share of female employees. Foreign firms are predominantly operating in the manufacturing industry and are twice as often as domestic firms located in the capitol area.

Before turning to look at the econometric estimation results, it should be emphasized out that our analysis focuses exclusively on the foreign-domestic wage and productivity differentials and we will not examine changes in wages in connection with changes in ownership. The reason is that in Czech Republic (and in other post-transition countries) the ownership change is often a rather patchy process where there is not only one event of ownership change but a whole series of them. Thus, the consequences of the ownership changes are hard to describe as results of well defined treatment effects.

Table 2. Descriptive statistics

	Foreign owned firms	**Domestic firms**
Human capital		
Average age (years)	37.5	42.2
Average tenure (years)	5.8	8.2
Share of employees (%):		
Vocational training	13.5	13.7
University level education	11.1	10.0

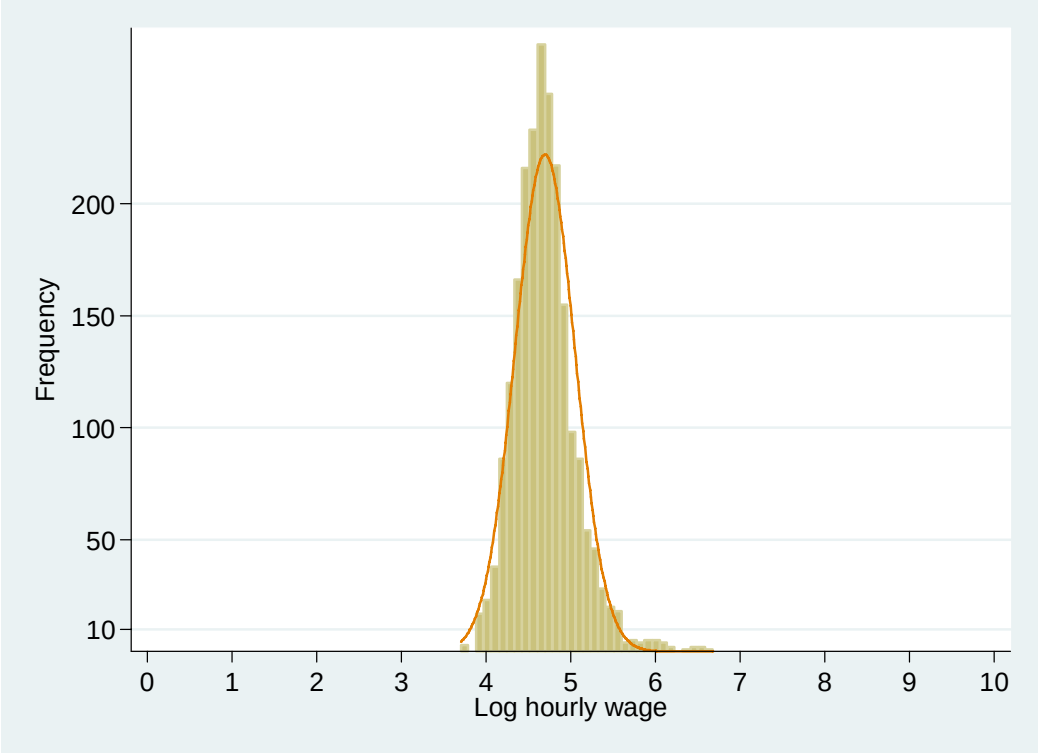
Females	43.1	37.2
White collar workers	43.3	44.3
Foreign employees	4.4	2.4
Other (%)		
Prague region	25.2	12.5
Mining, manufacturing	63.4	37.7
Retail	11.9	11.9
Hotels, transport	5.5	7.0
Banking	6.0	1.7
Business services	7.3	9.9
Education, health and culture	2.0	7.8

Firm level analyses

We begin with analyses of firm level data, i.e., regressions where the dependent variable is the average firm wage. As can be seen from the first column of *Table 3*, the raw difference in average wages between foreign and domestically owned firms is 23.5 percent. When accounting for differences in the compositions in firms' workforces (as measured by firm means and standard deviations of age and firm tenure, share of female employees and employees with foreign citizenship, and employees' educational qualifications), the difference changes by merely two percentage points. Note, that at the same time, the R^2 jumps from 0.06 to 0.53, implying that a substantial fraction of the variation in firm wages is in fact due to differences in workforce structures. Adding regions and industries to the regressors reduces the differential to 18 percent, and controlling further for firm size (number of employees) leads to an additional drop to 16 per cent. Thus, about 70 percent of the raw foreign-domestic firm-wage differential remains after all the explanatory variables have been entered.

Figure 1. Log hourly wage distributions for domestic and foreign firms

a. Domestic firms



b. Foreign firms

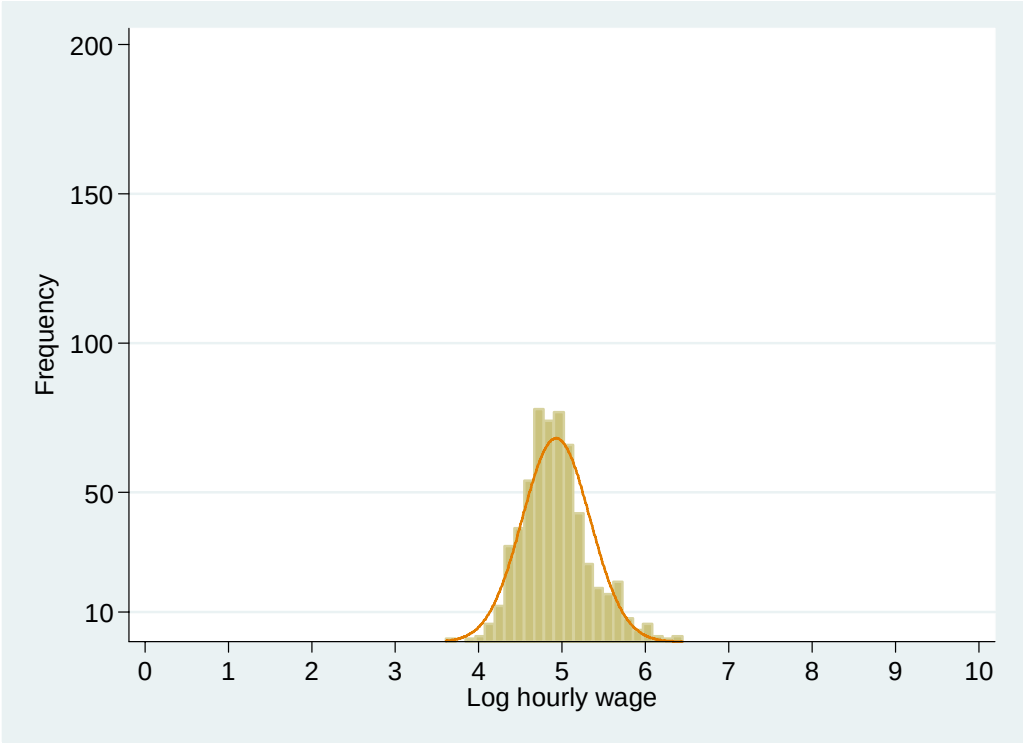
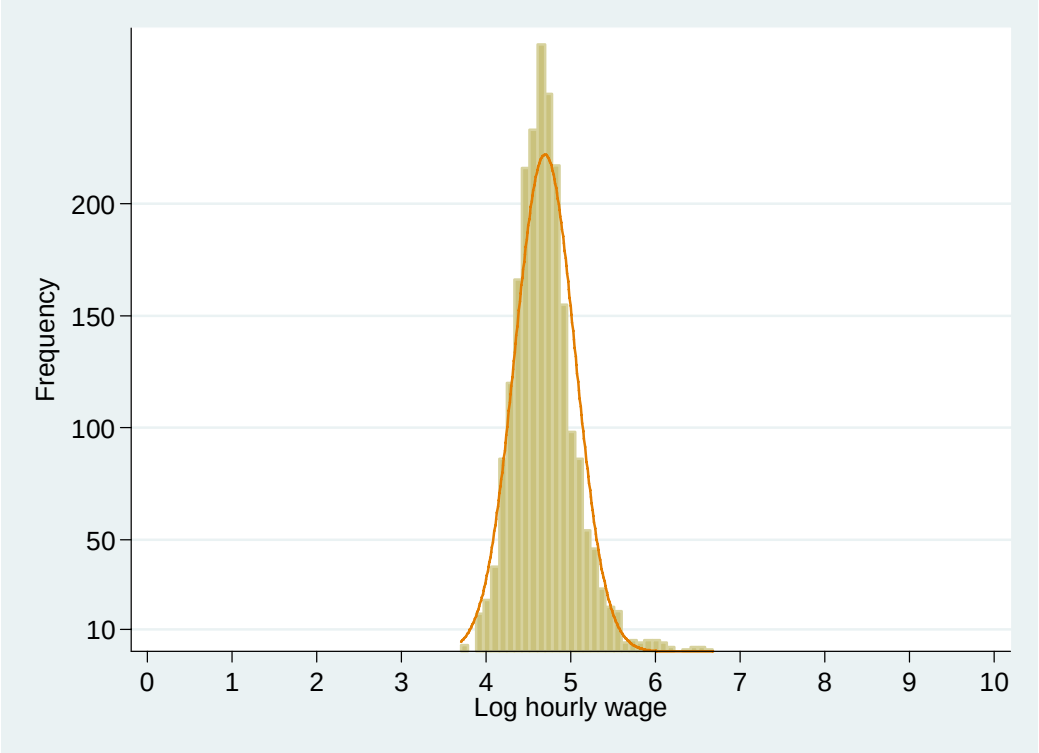


Figure 2. Log labour productivity distributions for domestic and foreign firms

a. Domestic firms



b. Foreign firms

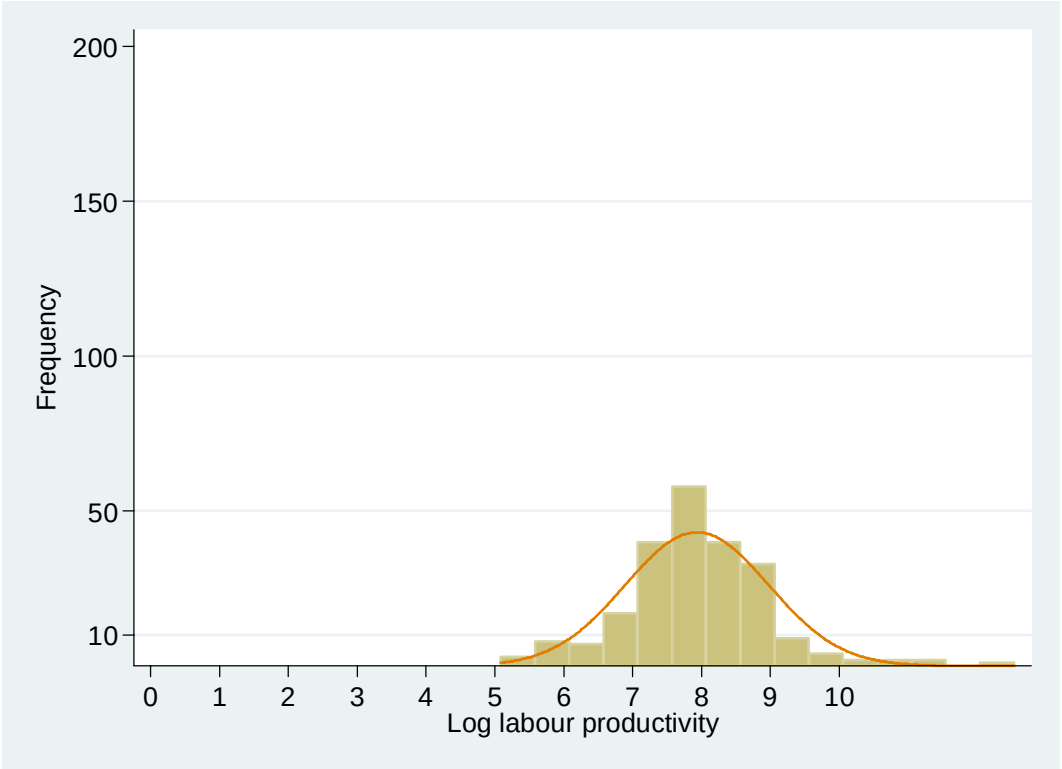


Table 3: Firm-level wage regressions

Firm level variables	1	2	3	4
Foreign	0.235	0.215	0.177	0.162
	[0.017]***	[0.013]***	[0.013]***	[0.013]***
Average age	-	-0.011	-0.011	-0.009
	-	[0.001]***	[0.001]***	[0.001]***
St dev age	-	-0.014	-0.005	-0.006
	-	[0.003]***	[0.003]	[0.003]*
Average tenure	-	0.01	0.012	0.013
	-	[0.002]***	[0.002]***	[0.002]***
St dev tenure	-	0.00002	-0.003	-0.006
	-	[0.003]	[0.002]	[0.003]**
Share females	-	-0.384	-0.414	-0.419
	-	[0.021]***	[0.022]***	[0.022]***
Share foreigners	-	-0.296	-0.286	-0.302
	-	[0.056]***	[0.053]***	[0.053]***
Share no or primary	-	-0.208	-0.038	-0.057
	-	[0.143]	[0.133]	[0.133]
Share vocational tarining	-	-0.185	-0.102	-0.113
	-	[0.033]***	[0.031]***	[0.031]***
Share university	-	1.503	1.490	1.505
	-	[0.036]***	[0.042]***	[0.042]***
Firm size	-	-	-	0.019
	-	-	-	[0.004]***
Regions	-	-	Yes	Yes
Industry	-	-	Yes	Yes
Observations	2766	2754	2754	2754
R-squared	0.06	0.53	0.61	0.61

In *Table 4*, we divide foreign owned firms into four groups of countries of origin: the 15 old EU member states + countries belonging to the European Economic Area + Switzerland, other European countries, Asia and the Americas. The unconditional differences relative to domestic firms vary substantially: the difference is 24 per cent for the EU15+EEA countries, 22 per cent for other European countries and 41 per cent for the U.S. owned companies. There is no significant pay difference between domestic firms and the Asian owned firms. Controlling for human capital, firm size, region and industry, the differentials shrink for the EU15+EEA group by a third, for American firms by more than half, and it

Table 4: Firm wage regressions, foreign ownership by continents of origin

Firm level variables	1	2	3	4	5
EU15EEA	0.235	0.225	0.224	0.184	0.169
	[0.018]***	[0.014]***	[0.014]***	[0.013]***	[0.014]***
Other Europe	0.218	0.076	0.107	0.108	0.103
	[0.066]***	[0.047]	[0.047]**	[0.044]**	[0.044]**
Asia	-0.003	0.021	0.044	0.057	0.035
	[0.106]	[0.079]	[0.079]	[0.073]	[0.073]
US	0.412	0.226	0.225	0.174	0.157
	[0.087]***	[0.062]***	[0.061]***	[0.057]***	[0.057]***
Average age	-	-0.01	-0.011	-0.011	-0.009
	-	[0.001]***	[0.001]***	[0.001]***	[0.001]***
St dev age	-	-0.013	-0.014	-0.005	-0.007
	-	[0.003]***	[0.003]***	[0.003]	[0.003]**
Average tenure	-	0.011	0.01	0.012	0.013
	-	[0.002]***	[0.002]***	[0.002]***	[0.002]***
St dev tenure	-	0	0	-0.003	-0.006
	-	[0.003]	[0.003]	[0.002]	[0.003]**
Share females	-	-0.377	-0.384	-0.414	-0.419
	-	[0.021]***	[0.020]***	[0.022]***	[0.022]***
Share foreigners	-	-	-0.270	-0.268	-0.286
	-	-	[0.057]***	[0.054]***	[0.054]***
Share no or primary	-	-0.216	-0.208	-0.038	-0.056
	-	[0.144]	[0.143]	[0.133]	[0.133]
Share vocational training	-	-0.211	-0.19	-0.105	-0.116
	-	[0.033]***	[0.033]***	[0.031]***	[0.031]***
Share university	-	1.497	1.503	1.491	1.506
	-	[0.036]***	[0.036]***	[0.042]***	[0.042]***
Firm size	-	-	-	-	0.019
	-	-	-	-	[0.004]***
Regions	-	-	-	Yes	Yes
Industry	-	-	-	Yes	Yes
# observations	2766	2754	2754	2754	2754
R-squared	0.07	0.53	0.54	0.61	0.61

is halved for the other European countries group. Thus the average differential masks considerable heterogeneity across owner-country groups.

It should be noted that although we include relatively many firm characteristics in the regressions in Tables 4 and 5, the foreign ownership premium estimates may still be overestimated as the foreign owned firms are significantly larger (and larger firms have typically been found to pay higher wages) but in our analysis all firms have the same weight. Furthermore, our firm-level aggregate variables we use to describe differences in workforce composition may not be capturing the full extent of employee heterogeneity. As we will see below, this conjecture is indeed confirmed by the estimations carried out on the individual level data.

Individual level analyses

Turning to the estimations where the units of observation are individual employees – see *Table 5* – we may first notice that the unconditional foreign ownership premium is now considerably lower than for firm average wages[8] – 6 per cent – confirming the findings obtained by Heyman et al (2006) and Martins and Esteves (2008). Secondly, and more importantly, when we enter human capital variables, firm size, region and industry dummies to the wage regression, the differential increases substantially. In the full model, the foreign ownership premium is twice as large as the unconditional difference: 14 per cent.

Table 5: Individual-level wage regressions

	1	2	3	4
Foreign	0.064	0.144	0.151	0.144
	[0.001]***	[0.001]***	[0.001]***	[0.001]***
Age		0.018	0.02	0.02
		[0.000]***	[0.000]***	[0.000]***
Age-squared		-0.023	-0.025	-0.025
		[0.000]***	[0.000]***	[0.000]***
Tenure		0.028	0.024	0.024
		[0.000]***	[0.000]***	[0.000]***
Tenure-squared		-0.053	-0.045	-0.044
		[0.000]***	[0.000]***	[0.000]***
Female		-0.217	-0.205	-0.207
		[0.001]***	[0.001]***	[0.001]***
Foreigner		-0.015	-0.024	-0.025
		[0.002]***	[0.002]***	[0.002]***
No or primary		-0.252	-0.202	-0.199

[8] This differential is moreover significantly lower than what is observed by Earle and Telegdy (2008) for Hungary (in their study the raw difference was about 44 per cent controlling for year and region).

		[0.006]***	[0.006]***	[0.006]***
Vocational training		-0.2	-0.175	-0.175
		[0.001]***	[0.001]***	[0.001]***
University		0.672	0.632	0.633
		[0.001]***	[0.001]***	[0.001]***
Firm Size		No	No	0.011
		No	No	[0.000]***
Regions		No	Yes	Yes
Industry		No	Yes	Yes
# observations	1,015027	1,015027	1,015027	1,015027
R-squared	0.004	0.38	0.45	0.45

When we next distinguish between different origins of foreign ownership – see *Table 6* – we find that the unconditional premium is highest for firms owned by investors from European countries outside the EU15 or EEA, followed by American and EU15+EEA owned firms, whereas individuals employed in firms with Asian owners receive a lower wage than workers in domestically owned firms. (The differences relative to the average foreign ownership premium in Table 5 are much smaller than the corresponding differences for firm wages.) After controlling for the same regressors as before, we can observe an increase in the premium for employees in EU15- and U.S.-owned firms and a small decrease in the wage premium in firms with the non-EU/EEA European owners. The premium for employees in Asian owned firms turns positive and is now just below that of EU15 and U.S. owned firms. Thus, the results in table 4 indicate that there are clear differences in human capital, industry affiliation and firm size between firms with owners from different groups of countries. Accounting for these differences significantly affects the wage premium estimate.

Table 6: Individual wage regressions, foreign ownership by continents of origin

	1	**2**	**3**	**4**
EU15EEA	0.066	0.148	0.154	0.147
	[0.001]***	[0.001]***	[0.001]***	[0.001]***
Other Europe	0.100	0.037	0.085	0.084
	[0.005]***	[0.004]***	[0.004]***	[0.004]***
Asia	-0.040	0.075	0.119	0.118
	[0.005]***	[0.005]***	[0.005]***	[0.005]***
US	0.066	0.183	0.165	0.159

	[0.005]***	[0.004]***	[0.004]***	[0.004]***
Human capital, firm size	No, no	Yes, no	Yes, yes	Yes, yes
Regions	No	No	Yes	Yes
Industry	No	No	Yes	Yes
# observations	1,015027	1,015027	1,015027	1,015027
R-squared	0.004	0.38	0.45	0.45

White- and blue- collar workers

Next, we examine whether the wage premium paid by foreign firms differs between white- and blue-collar workers. This is motivated by the expectation that if foreign firms pay their employees a premium to reduce labour turnover, this is likely to accrue mainly to white-collar workers thorough whom most of the potential knowledge transfer would occur. However, as can be seen from *Table 7* both categories of employees receive a premium and the differential between white- and blue-collar workers is relatively small: about 4 percent. Unlike before, the premium does not increase as we account for human capital, region and industry.

When we distinguish between owner-country groups, some differences surface again. The conditional wage premia for employees in EU15+EEA owned enterprises are quite robust to differences in specification and are very close to those found in the aggregate. For employees in U.S.-owned companies the premia are slightly higher. For both of them, we may note that the difference between blue- and white-collar workers' premia is rather small. Also Asian firms pay both categories of employees a wage premium, but the premium is about twice as large for white-collar employees than for blue-collar workers. The firms with owners from "other Europe" pay their white-collar workers more than domestically owned firms do, while their blue-collar workers receive the same pay as employees in Czech owned firms.

Wage and productivity differences

Next, we approach the question why foreign firms pay higher wages than domestic ones from another angle by considering to what extent the pay differences are (merely) reflecting differences in productivity. Recall that in Figures 1 and 2 we showed that the differences in productivity between foreign and domestic firms seem to exceed those in wages. A simple

regression of firm-level labour productivity on the same country-group dummies as above in table 6 documents large differences between domestic and foreign owned firms. In particular, the American and the EU15+EEA owned firms have a productivity that is on average 70-80 higher than in the domestic firms. It thus seems natural to ask whether the differences in wages between foreign and domestic that remain after controlling for human capital, industry and location reflect differences in productivity. These could be due use of superior capital and production technology but also intangibles (like management style, work organization, branding, etc.). (In the next version of the paper we will replace the labour productivity equation with a production function which also includes physical capital as an independent variable.)

Table 7: Individual wage regressions, white-collar and blue-collar workers

	White	Blue	White	Blue	White	Blue	White	Blue
Foreign	0.159	0.157	0.169	0.131				
	[0.002]***	[0.001]***	[0.002]***	[0.001]***				
EU15/EEA					0.160	0.163	0.170	0.138
					[0.002]***	[0.001]***	[0.002]***	[0.001]***
Other Europe					0.123	-0.038	0.162	-0.028
					[0.006]***	[0.004]***	[0.006]***	[0.003]***
Asia					0.153	0.091	0.162	0.083
					[0.011]***	[0.005]***	[0.011]***	[0.004]***
US					0.175	0.232	0.166	0.173
					[0.007]***	[0.004]***	[0.006]***	[0.003]***
Human capital, firm size	No	No	Yes	Yes	No	No	Yes	Yes
Regions	No	No	Yes	Yes	No	No	Yes	Yes
Industry	No	No	Yes	Yes	No	No	Yes	Yes
R^2	0.38	0.32	0.45	0.43	0.38	0.33	0.45	0.43

In the sequel we will use the data at the firm level to compare productivity and wages to test for whether the foreign ownership premium is associated higher productivity. Following Brown and Medoff (1978), Hellerstein and Neumark (1999) and Hellerstein et al. (1999) we jointly estimate firm level labour productivity functions and hourly wage functions and compare the relative marginal products and relative wages across firm types (and for various demographic groups[9]). The wage equations are essentially the same as those presented earlier (only the estimation sample is slightly different due to somewhat less availability of adequate data on sales which is our measure of output). Thus, we allow productivity to vary with the composition of the firms' workforces and by industry and region. Note that to the extent that biases due to unobservables affect our estimated productivity and wage differentials similarly, they do not affect our comparison of relative productivity and wages.

Table 8: SUR estimates of wage and labour productivity equations[a]

	Log labour productivity	Log hourly wage	Wald test (chi2 (1))[b]
Foreign owned	0.386***	0.157***	15.23***
	(0.064)	(0.017)	
Age	-0.047***	-0.014***	23.97***
	(0.007)	(0.002)	
Tenure	0.009	0.008***	0.05
	(0.006)	(0.002)	
Share females	-0.737***	-0.385***	11.52***
	(0.113)	(0.030)	
Share no education	-0.442	-0.317	0.01
	(1.241)	(0.327)	
Share lower secondary	-0.576***	-0.138***	8.24***
	(0.166)	(0.044)	
Share university degree	3.377***	1.706***	47.54***
	(0.264)	(0.070)	
Share foreign workers	-0.971**	-0.310***	2.26
	(0.478)	(0.126)	
Controls: region, industry	Yes	Yes	
"R^2"	0.461	0.639	
N of observations	1,111	1,111	

[a] Note that all continuous variables have been de-meaned.
[b] Test of difference in estimates equal to zero.

[9] As for demographic variables it should be noted that our results do not allow us to distinguish between two explanations: that the demographic group in question has a lower productivity or that the group is overrepresented in low-productivity firms.

Once we have estimated the two equations we can make use of a Wald test to test for equality of the foreign-domestic productivity and wage differential estimates. *Table 8* reports results of the joint estimation of the productivity and wage equations. The last column contains the Wald tests. Beginning with the labour productivity differentials we may note that firms with an older workforce, higher shares of female employees, less educated workers and foreign workers have lower labour productivity. Foreign owned firms have a labour productivity which is, ceteris paribus, approximately 40 percent higher than in the domestic firms. Thus, a notable fraction of the raw productivity differential – 73 per cent – is explained by differences in human capital, region and industry. In fact, the proportion attributable to these factors is vastly higher than in the case of firm-level wages.

Comparing next the estimated wage and marginal productivity differentials shows that the foreign firms' marginal productivity is clearly higher than their relative wage. Thus, if the foreign owned pay their employees their marginal productivity, the wage gap between foreign and domestic firms would be at least twice as large as now. In general we find that for most groups of worker the analysis rejects the hypothesis that wage differentials reflect differences in marginal products. The only exceptions are the estimates to tenure and share of foreign workers. For employees with a university education the difference is particularly large: their wage is considerably lower than their contribution to productivity. Notably, the gender wage gap is smaller than gender productivity gap. This is not consistent with notions of wage discrimination, although it should be noticed that cannot account for gender segregation in the estimations.

4 Discussion and Concluding Remarks

Summing up, we find that location in industry or region plays only a marginal role in explaining the wage differential between foreign and domestic firms. Thus, the bulk of the difference is within industry and region. Strikingly, the differential is not explained by differences in human capital. First, unlike in some other countries, foreign multinational firms in Czech Republic do not seem to employ more highly qualified labour than domestic firms. Second, controlling for human capital variables leads to only a small reduction in the foreign ownership premia in the firm-level analysis, and actually gives rise to an increase in the differential in the individual-level regressions.

Having ruled out location and human capital as the main drivers of the foreign ownership premium, remaining candidate explanations are rent-sharing and payment of higher pay as a means to reduce

worker turnover and knowledge spillover. Beginning with the latter, we would expect this motive to be more important for white collar workers. Our findings suggest that the premium is indeed higher for white collar workers but the difference relative to the blue collar workers is quite small. Although one cannot exclude the possibility that the firms pay a premium to both categories of employees in order to preserve a good workplace atmosphere, the results do not lend strong support to the prevention of spillover hypothesis. As for rent-sharing, our joint estimation of productivity and wage equations yields results that are consistent with it. The gap in labour productivity between foreign and domestically owned firms is more twice as large as the corresponding gap in wages.

The discussion above refers to the overall results. Estimations recognising four groups of owner countries revealed some differences between them. The category “other European countries (than EU15 and EEA)” turned out to deviate most from the average picture. Accounting for human capital has a bigger impact on the premium for firms from these countries which are like Czech Republic mainly transition economies from Central and Eastern Europe. They also differ in that they only pay their white collar workers a premium, whereas the pay for blue collar workers in these firms is below that in the domestically owned firms. However, these firms make up only about five percent of all foreign owned firms in our data set and, because their smaller average size, account for three percent of employment in foreign owned firms.

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