

*Uros Delevic\**  
*James Kennell\*\**

## MULTINATIONALS AND WAGES: EVIDENCE FROM EMPLOYER–EMPLOYEE DATA IN SERBIA

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**ABSTRACT:** *Many studies have reported that foreign-owned companies pay higher wages on average than domestic companies. However, this can be attributed to the different composition of the workforce or to a wage premium at the individual worker level. This paper contributes to this literature by observing whether individuals that change their job from a domestic to a foreign-owned company experience a change in their wages. Furthermore, it investigates whether this difference in wage patterns is moderated by workers' education. This paper is one of the very few micro-economic studies that deal with this question*

*in a transition country, Serbia, using employer–employee data on the private sector over a long time period (15 years). Changing jobs is found to be positively associated with workers' wages: the change in wages is higher when moving from a domestic to a foreign company than vice versa. The evidence suggests that more-educated workers benefit the most from leaving domestic companies.*

**KEY WORDS:** *labour mobility, job change, wage change, MNEs and wages, transition economies*

**JEL CLASSIFICATION:** B21, C12, C01, C33, F16, F66

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\* University of Greenwich, u.delevic@gre.ac.uk

\*\* University of Greenwich, j.s.kennell@gre.ac.uk

## **1. INTRODUCTION**

This paper is about wage dynamics related to changing jobs. Specifically, we analyse labour mobility and wage change. This paper does not address the determinants of labour mobility per se – why workers are more likely to move from a domestic to a foreign company or vice versa – but investigates the effect of labour mobility on wages.

The investigation of the difference between wages paid by foreign and domestic companies, known as the ‘foreign-wage premium’, is a longstanding area of research. Various studies have found that multinational enterprises (MNE) pay higher wages than domestic companies (for example, Aitken et al., 1996; Lipsey and Sjöholm, 2004), although this claim has been contested recently and has produced calls for studies that reconsider this generic claim, particularly in the context of developing countries (Coniglio et al., 2015; van der Straaten et al., 2020; Cruz et al., 2018). Additionally, whether there is a true company ownership effect or whether the foreign wage premium is the result of workers’ different characteristics is a matter for discussion. In other words, multinational companies may on average pay higher wages than domestic companies because they employ more-skilled workers, who are normally paid higher wages (Doh, 2019). In developed countries the competitive advantage of multinational enterprises and domestic companies is similar, but in developing countries the foreign wage premium is likely to be higher (Glass and Saggi, 2002) because of the higher quality of jobs created by MNEs compared with domestic companies due to technological superiority and managerial sophistication (Gereffi et al., 2019; Pandit et al., 2020).

Labour mobility is a key channel through which MNEs can affect host country development (Masso & Vahter, 2019). Research has identified that workers moving from MNEs to local firms bring specific new or enhanced skills and experience with them (Davis & Poole, 2020), spreading new skills and training to the domestic sector (Poole, 2013; Pradhan, 2006). Additionally, studies have analysed the creation of ‘spinoffs’, new firms established by former MNE employees in the same industry (Andersson and Klepper, 2013).

In these cases, the research highlights how MNEs foster local development by increasing the potential for knowledge transfer (Park et al., 2021). The focus of

the current study, however, is on the relationship between MNEs and their host economies in terms of workers' welfare, which could lead to economic growth by increasing aggregate demand (Woodgate, 2021). This study considers this relationship using a novel data source and attempts to control for the influence of worker characteristics. As Earle et al. (2012) explain, studies with firm-level data are usually missing information about worker characteristics, so it is not possible to control for the effect of worker heterogeneity on the foreign wage premium. To the extent that a foreign wage premium exists, entry or expansion of foreign MNEs can benefit the workers who are employed in these companies (Glass and Saggi, 2002). Foreign companies not only contribute to employment but also train labour, which may become available to local competitors or result in the establishment of new businesses (Dunning, 1988; Narula, 1996). However, this may also lead to the crowding-out of domestic companies, which then face stiffer competition for a limited pool of skilled workers and face higher costs to attract talented workers (Ayentemi et al., 2018).

In order to develop an understanding of whether multinational companies – specifically foreign-owned firms operating in a given host country – pay higher wages than domestic companies for similar workers, it is crucial to control for workers' characteristics. In this study, worker characteristics are kept constant while observing whether changing jobs from domestic firms to MNEs affects workers' wages. Thus, this research analyses whether the higher wages paid by MNEs are due to the different characteristics of workers.

This study uses linked employer–employee data from Serbia for 2000 to 2014, provided by the Serbian Social Register. This is the first study to use data from this source, which is held by the national pension agency, part of the Ministry of Employment and Social Welfare. The object of this paper is to discover whether workers who move from domestic to foreign-owned companies experience a larger wage increase than those who do not change jobs (or move from foreign to domestic-owned companies), and whether the change in wages is moderated by the level of workers' education.

This research finds not only that MNEs in Serbia pay higher wages on average, but also that they pay higher wages to workers with similar characteristics, so the wage change is the result of changing from a domestic to a foreign company. The

wage increase is higher for more-educated workers, who are more able to benefit from the entry of MNEs to Serbia. This effect is significant, with the wages of more-educated workers who move from domestics to foreign companies increasing by 21%.

The remainder of this paper is organised as follows. Section 2 presents the literature review. Section 3 presents the methodology. The results are given in Section 4, and section 5 provides concluding remarks and some policy recommendations.

## **2. LITERATURE REVIEW**

This literature review is organised around the three main dimensions of the paper: (1) the effect of general labour mobility on wages, regardless of the type of company; (2) labour mobility and the effect of company ownership on wage change; and (3) the moderating effect of worker-specific characteristics, including education, on wage change.

### **2.1 Labour mobility and wage change**

Early research on job changes took a transactional, cost-benefit approach to understanding why people change jobs, and the impact this has on the employee. According to Kidd (1991), there are two forces that underly changing jobs. On the one hand, labour mobility benefits employees, as it rewards time spent on job search and training. In an analysis of wage growth and job turnover, Bartel and Borjas (1981) find that labour mobility substantially determines not only wage levels but also the dynamics of wage growth. However, this pattern is also age-dependent. Workers who change jobs voluntarily experience a wage increase if they change early in their career, but labour mobility negatively affects the wages of more-senior workers who decide to change jobs later in their career. Abbott and Beach (1994) investigate the dynamics of wage change resulting from female workers changing jobs in Canada and find that changing jobs results in short-run wage increases of up to 9%. From this perspective, labour turnover is the result of expected positive returns from investing time and resources in labour mobility (Kid, 1991). On the other hand, employees who change jobs can also experience negative impacts if they forego job-specific skills accumulated with their previous employer. Abbott and Beach (1994) also argue that those who change jobs can

bear costs due to the loss of previous investments in training, so that the gains from changing jobs need to be higher than these sunk costs.

Identifying the difference between those whose wages change because they change company and those who experience a wage change within the same company is complex. The most accurate way to estimate short-run wage change is to compare workers who change jobs with those who stay in the same job, but in the long run this is difficult since unobservable factors can influence wage growth for stayers. Campbell (2001) points this out and finds that over a three-year period about 10% of wage increases arise from changing jobs. Only 40% of wage growth is related to job change, while the rest is related to a higher rate of wage growth. Widerstedt (1998) finds that returns on work experience are higher for workers who change jobs than for those who do not. However, this is not directly caused by the change but rather by the accumulation of knowledge and experience. In sum, previous research does not provide a conclusive answer as to whether changing jobs positively affects wages. It is suggested that this is an empirical question whose answer may depend on several contextual characteristics. Notwithstanding this lack of consensus on the relationship between changing jobs and wage growth, the underlying motive for changing company is an expectation that it will be followed by a positive change in either wages or job quality (Lisi, 2018), both of which lead to higher employee satisfaction, which is considered an important motive for changing jobs.

Changing employer has been shown to have a particularly positive impact on job satisfaction if it does not involve changing occupation (Zhou et al., 2017). There is an expectation that changing to a similar job will also have a positive impact on workers' wages because of their experience with their previous employer, whereas if changing jobs also means changing occupation, previous work experience might be worthless (Heinrichs et al., 2020). Zhou et al. (2017) highlight the difference between those who change both job and occupation and those who change their job within the same occupation. Both groups experience increased job satisfaction when they change, described as the 'honeymoon' effect. However, in the second year after the change the latter group experiences declining job satisfaction, which then increases slightly, while the former group experiences a decline in job satisfaction that does not increase later – the 'hangover' effect.

Longhi and Brynin (2010) combine these two approaches in an analysis of occupational change in Great Britain and Germany, and find that a change in jobs which also involves a change of occupation is, in general, beneficial for employees, as the wages of workers who change jobs increase more than the wages of workers who do not. The study focuses on wages as the main aspect of job satisfaction, which it measures at the moment of change, even though job satisfaction is normally understood to be a multi-dimensional construct (Knežević et al., 2020). Although job satisfaction cannot be reduced to its financial aspect, wage studies highlight that wages are an important element (Bossler & Brozseit, 2017; Hamermesh, 1999).

## **2.2 The effect of foreign ownership**

### **Conceptual literature**

The literature not only shows that changing jobs influences workers' wages but also that MNEs pay higher wages than domestic companies. Several studies have evaluated the impact of Foreign Direct Investment (FDI) on wages. A review of these studies by Barba Navaretti et al. (2004) suggests that MNEs support labour development in host countries by offering new jobs that require higher skills, thereby encouraging students to attend university (Blomstrom, 2002).

Some have argued that MNEs pay higher wages simply because they tend to be concentrated in knowledge- and technology-intensive industries that require higher wages (Sahu & Goel, 2019). Research on MNEs posits that in order to attract FDI, companies need to have firm-specific (or ownership-specific) advantages such as knowledge or technology, so MNEs will emerge in knowledge- and technology-intensive industries and create high-quality jobs that require more-educated workers (Dunning, 1998). If advanced technologies and knowledge are the main source of MNEs' advantage, foreign companies will demand more-educated workers whose compensation will be higher.

Over time, MNEs find it expensive to pay expatriates and so train local labour to take over some of the technical and managerial positions (Fosfuri et al., 2001). However, labour mobility means that MNE workers may start working for domestic companies, leading to knowledge spillover and thus increasing the competitive advantage of domestic competitors. Gorg et al. (2007), in their analysis of Ghanaian employers, find that on average employees of foreign

companies stay longer with the same employer than those in domestic companies. It has been argued that a reason for this reduced labour mobility is an increase in workplace training, because MNEs perceive investing in labour as a way to keep workers and avoid the spillover of knowledge to local competitors (Fosfuri et al. 2001), reducing the potential knowledge exchange benefits for host countries from FDI by MNEs (Poole, 2013; Pradhan, 2006). Miyamoto (2003) suggests that by investing in employee training, MNEs not only develop worker skills but also gradually increase the quality of MNE operations. The increased skill base of local labour then helps to attract better quality FDI, associated with higher-wage jobs.

Although much previous research focuses on the relationship between FDI and wages in terms of the novel job roles and higher skill requirements of MNEs, other studies examine the determinants of wages when jobs in MNEs and domestic firms are similar (Heyman, 2007). The causes of this MNE wage premium are fourfold. First, the likelihood that MNEs will close plants and offices and reallocate their activities (Bernard and Sjöholm, 2003; Dewit et al., 2019) results in lower job security, which has to be compensated for with higher wages. Once controlled for size and performance, MNEs are more footloose and more likely to close than domestic companies.

Second, MNEs may be forced to pay higher wages due to labour market information asymmetry. MNEs may be in a disadvantaged position when it comes to finding the best workers because of their lack of integration in local networks. Therefore, labour market imperfections induce MNEs to offer higher wages to attract the best workers (Dobbelaere & Kiyota, 2018; Girma and Gorg, 2007).

Third, to the extent that foreign companies are more productive than domestic companies and that their productivity advantage comes from ownership advantages such as technology or knowledge, they will offer higher wages to avoid high worker turnover. Egger and Kreickemeier (2013) explain that more-productive firms which make higher profits will pay higher wages, regardless of ownership. In fact, they argue that if foreign and domestic companies have the same level of productivity there will be no foreign wage premium. They propose that wage premium is related to a company's global as opposed to national profits, and that it is not just that productive MNEs with FDI pay higher wages.

Fourth, Gorg et al. (2007) suggest that the foreign wage premium is a gradual process that relates to the accrual of skills by the workforce. This implies that the foreign wage premium is gained over time because workers become more valuable to the company after they have gone through substantial training and acquired job-specific experience. MNEs have been shown to be larger and more productive, to have better access to capital through their headquarters, and to have higher profits, which can also explain their higher investment in employees and greater expenditure on wages (Pearce, 2018).

These four underlying factors are all expected to positively affect average wages (Earle et al., 2012). Whether foreign ownership will have a positive or negative impact on individual workers' wages depends on human capital quality and on the presence of domestic MNE competition, which is stronger in developed than in developing countries. The most productive companies in developed countries can bear the costs of the liability of being foreign and are prone to become MNEs. Since domestic companies in developing countries are less productive than MNEs because they are further away from the technological frontier, the foreign wage premium can be seen as inevitable, to a greater or lesser extent. However, MNEs face greater competition in developed countries where domestic companies are closer to the technological frontier, so the foreign wage premium may be lower in developed countries. The technological gap between MNEs' home and host country plays a role in determining the size of the foreign wage premium. Consequently, it is no surprise that research in this field has shown that the impact of FDI on wages is, on average, neutral in developed countries and positive in developing countries (Javorcik, 2014).

### **Empirical literature**

The empirical work on the foreign wage premium falls into three main categories. The first focuses on changes in company ownership while the workers remain in place, investigating whether changes in company ownership influence wages (Hijzen et al., 2013; Heyman et al., 2007). The second compares average wages in MNEs and non-MNEs (Heyman, 2007). The third focuses on the impact of company ownership on wage change by observing worker movement between companies and considering individual worker characteristics (Martins, 2011), and is the most closely related to this study. Although in explaining these phenomena we take the same broad approach as Martins, the methods used in



this research diverge from that study due to differences in data structure. Martins (2011) had data on domestic-to-domestic and foreign-to-foreign company change as well as firm or worker size and a measure of workers' experience, which is not available in the dataset from the Serbian Social Register.

Analysing the change of company ownership via foreign takeover in Sweden, Heyman et al. (2007) find that foreign ownership causes an 11% increase in wages at the company level, even after controlling for industry characteristics. However, company-level analysis is not perfect. As the authors acknowledge, foreign acquirers tend to target domestic companies that already pay above-average wages. Because of this, Heyman et al. (2007) compare the wage difference between foreign-owned and domestic MNEs. They conclude that wage differences at the worker level are not driven by foreign ownership and that they exist between MNEs and non-MNEs rather than between domestic and foreign companies. This means that a large part of the discrepancy in wages between foreign and domestically owned companies is explained by their level of multinationality. The foreign ownership wage premium was then only 2% and the difference between foreign and Swedish-owned MNEs was almost zero.

Heyman (2007) shows that at the worker level, foreign companies pay about 4% higher wages than domestic companies, but when individual characteristics such as experience and education are accounted for the premium drops to about 2.5%. However, it has been argued that the majority of studies analyse the causal effect of change in ownership by observing domestic companies that have been acquired by MNEs and not by observing the employee changes that come with acquisition: the dismissal of unskilled workers and hiring of skilled workers, which can bias the foreign wage premium upwards (Hijzen et al., 2013).

In a comparative cross-country analysis of the UK, Germany, Portugal, Brazil, and Indonesia, Hijzen et al. (2013) study the impact of company ownership on wage changes in developed and developing countries separately, at both the company and the worker level. They confirm that in less-developed countries there is a greater difference between foreign and domestic wages. At the firm level the acquisition of a domestic company by a foreign company would lead to a 2% wage increase in Germany and a 21% wage increase in Indonesia. However, both Hijzen et al. (2013) and Heyman (2007) confirm that the estimated foreign wage

premium is significantly reduced at the worker level when individual characteristics are controlled for. Even after controlling for these factors, foreign ownership maintains its significant effect on movers' wages. Hijzen et al. (2013) attribute the foreign wage premium to the higher quality jobs provided by foreign companies.

Martins' analysis (2011), based on Portuguese data, is most closely related to the analysis in this paper. He finds that workers moving from domestic to foreign companies experience an average wage change of 18%, while those moving in the opposite direction experience an average wage change of -8.4%. The study focuses specifically on labour mobility (workers changing between foreign and domestic companies) rather than companies changing ownership. The same approach is used in this paper, as observing workers makes it possible to disentangle the different abilities of workers and the company's wages. However, workers may work for low-paying domestic companies, in which case a change from domestic to foreign company would most likely provide biased results. This possibility is controlled for by taking firm-specific characteristics into account. Moreover, the phenomenon of wage growth is not only about wage change at the moment of a job change, but also about wage growth in the long run. Martins (2011) also finds that workers who move from a domestic to a foreign company experience a higher wage growth (of about 4%) than those who move from a foreign to a domestic company (about 2%). Therefore, changing jobs from a domestic to a foreign company is expected to have a positive impact not only on wage change but also on wage growth. Similar results have been found for Germany and Norway, where moving from a domestic to a foreign company leads to a wage increase (Balsvik, 2011; Andrews et al., 2010).

Overall, there seems to be a consensus in the literature that a wage premium is associated with foreign ownership of a firm, mostly evident in developing countries. Therefore, based on the literature discussed thus far on the foreign wage premium, the first hypothesis is proposed:

**H1: Changing from a domestic- to a foreign-owned employer is associated with increased wages.**

### **2.3 Heterogeneous effects: the role of workers' education**

Following Jovanovic (1979), one needs to allow for the fact that workers are heterogeneous, which means that they differ in productivity as in knowledge and skills. Therefore, wage growth should be related to workers' different abilities. At the same time, labour market information asymmetry results in uncertainty about labour productivity before employment. Consequently, as proposed by Campbell (2001:4), "the starting wage offered by companies is based on the expected value of productivity given the information available at the time the job commences. When starting the new job, there may initially be great uncertainty over actual productivity which implies that as new information arrives, future earnings may rise considerably above or below the starting wage".

Managing workers' wages is an important aspect of the human resource management that is responsible for the success of MNEs. An important aspect of MNEs' success is the ownership advantage that derives from knowledge; i.e., the firm's human capital. Therefore, human resource management is a core element of the advantage of MNE ownership. A company's human capital and financial performance are complementary (Narula & Verbeke, 2015). More-educated workers generate more knowledge and stronger ownership advantages for foreign companies; thus they are offered higher wages. This is one of the reasons for rewarding valuable workers, and the way MNEs appreciate employees has long-term consequences for the company's organisational strategy (Andersson et al., 2019).

Whether wages rise or fall after changing jobs depends on many measurable factors such as worker's education and experience with previous employers, and also on factors that cannot be measured precisely, such as a worker's skill match with the job requirements (Widerstedt, 1998). Observing wages and United States-based MNE activity in Mexico in the 20<sup>th</sup> century, Feenstra and Hanson (1997) find that FDI was positively correlated with the demand for highly skilled labour. The study observes the activity of regional manufacturing facilities, since a big share of employment was generated by the outsourcing of US MNEs. The regions with the biggest concentration of FDI were also the regions with the biggest increase in the share of skilled labour in total wages. According to Heyman et al. (2007), those who change companies also have work experience with the previous employer that might be valuable. Therefore, wage changes are driven by worker heterogeneity, or the 'heterogeneity effect'.

According to Gorg et al. (2007), by controlling for education and other worker characteristics the coefficient of foreign ownership is reduced but is positive and highly significant. A 1% increase in foreign ownership leads to an increase in the hourly wage of about 0.45%. Batra and Tan (2002) support this argument and also find that there are high productivity gains from MNE training. Not only is the training provided valuable for employees' work but it also provides them with personal satisfaction and the sense of being valued. Employee training results in productivity gains of up to 75% in Indonesia and Nicaragua and up to 45% in Mexico and Malaysia (Batra and Tan, 2002). This relationship between training and productivity gains has been confirmed in multiple studies (Ben Jamaa Cherif, 2021; Chhetri et al., 2018; Moussaid et al., 2020).

Research by Poole (2013), although predominantly focusing on the spillovers from MNEs to domestic companies through workers who move from one company to another carrying knowledge, social capital, or management style, also suggests that more-educated MNE employees benefit more from positive wage change than less-educated employees when they move to domestic firms. They argue that higher-skilled former MNE workers are better able to convey information and technology to domestic company workers and that higher-skilled domestic company workers are better able to absorb new technology through interactions with former MNE workers. The largest spillovers occur when former MNE workers have greater educational attainment and experience than domestic company workers (Poole, 2013)

Abbott and Beach (1994) find evidence that the education of workers matters for a wage increase when changing jobs. Those with university degrees experience higher wage change when changing jobs than workers with lower educational attainment. Their argument is that more-educated workers have greater ability to absorb knowledge in the workplace and use it productively in the new workplace. Therefore, the level of education moderates the relationship between job mobility and wages in addition to accumulated firm-specific human capital, and is also an important determinant of job change itself. Sousa-Poza and Henneberger (2004) find that more years of schooling lead to a higher propensity to change jobs because more-educated workers overcome the transition between jobs and adapt to a new environment more easily (Bowlus and Neuman, 2006). Therefore, the objective expectation is that education plays a critical role in wage growth (Mincer, 2012).

Based on the discussed literature about the role of individual worker characteristics and education in wage change, the second hypothesis is proposed:

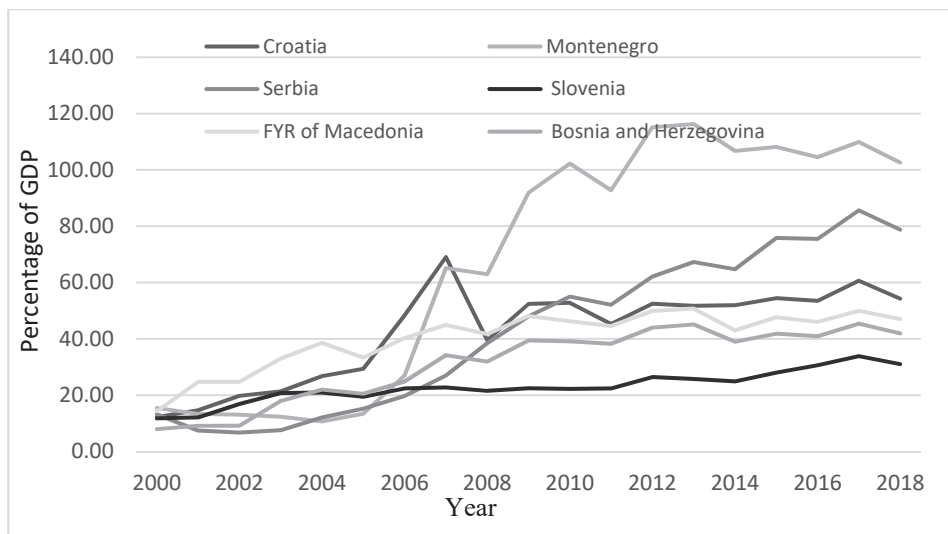
**H2: More-educated workers benefit more than less-educated workers from changing from a domestic to a foreign-owned company.**

### 3. METHODOLOGY AND DATA

#### 3.1 Country and data characteristics

This empirical analysis of labour mobility and wage change in Serbia is based on employer–employee data for the period 2000 to 2014 from the Serbian Social Register. This is a particularly interesting period for this kind of analysis, since inward FDI in Serbia was negligible before 2000 and grew at a high rate after that due to political changes and liberalisation policies that favoured foreign capital, as Serbia developed the characteristics of a transition economy (Knežević et al., 2020; Petrovic et al., 2017). As presented in Figure 1, the flow of inward FDI to Serbia was among the highest in the region. With the exception of early post-NATO-conflict years when investment stagnated, there was a sharp increase in inward FDI to Serbia. After 2009, of the former Yugoslav Republic countries only Montenegro had higher inward FDI.

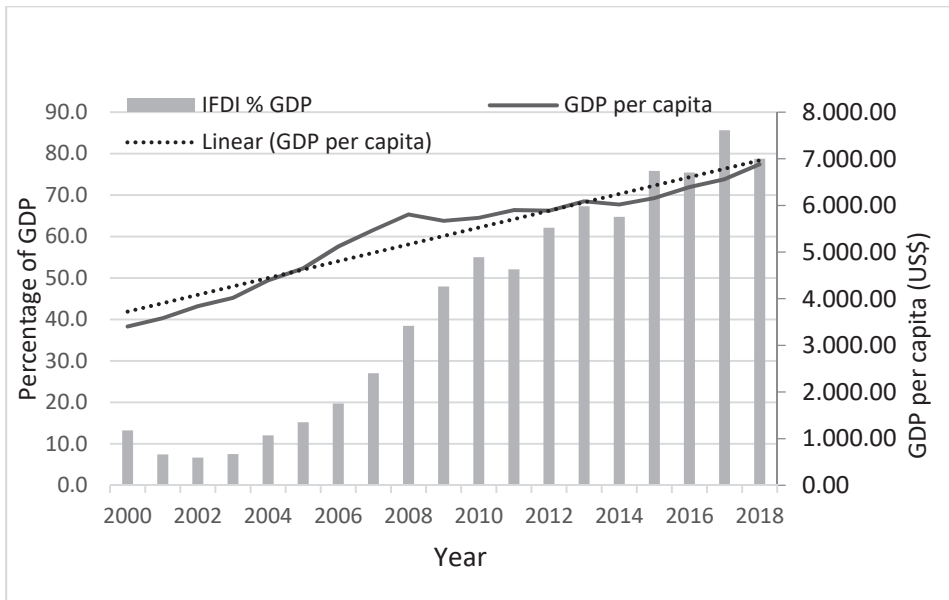
**Figure 1:** Inward FDI stock as % of GDP in ex-YU countries



*Source:* Author's illustration based on UNCTAD data

As shown in Figure 2, inward FDI stock to Serbia as a percentage of GDP started at about 13% in 2000 and reached almost 80% in 2018. However, average GDP per capita fluctuated slowly between around US\$4,000 in 2000 and US\$6,800 in 2018 – only a 33% increase over 16 years, giving an average annual growth of around 2%.

**Figure 2:** Serbia: Inward FDI stock, % of GDP and GDP per capita



*Source:* Author's illustration based on UNCTAD data

Serbia is an interesting case, as like many other former socialist countries its economic policies were based on FDI-driven economic growth. After the fall of Milošević in 2000, like other countries in the region, Serbia based its FDI policies on large subsidy packages. Conditions set by the Development Agency of Serbia<sup>1</sup> included the provision of urban construction sites, corporate tax exemptions, and a subsidy of up to EUR 10,000 for every new job.

This study focuses on employer–employee data which tracks workers over the period 2000 to 2014. This covers the history of inward FDI in Serbia, since MNEs

<sup>1</sup> <http://ras.gov.rs/en/invest-in-serbia/why-serbia/financial-benefits-and-incentives>

started investing in Serbia via FDI in 2000. The dataset allows observation of employees' gross annual wage and education level and employer ownership (foreign vs. domestic).<sup>2</sup> Observing the nominal wage would not have changed the pattern, so we did not need to deduct taxes from the gross wage provided by the Serbian Social Register. Entities are considered foreign if 10% or more is held by a foreign national, in line with International Monetary Fund criteria.

This paper does not analyse suggestions, for example, by Heyman (2007), that 'multinationality' matters and that the main wage differences are not primarily the result of differences between domestic and foreign-owned MNEs. This is not only because of data constraints but also because Serbia, as a transition country, does not have many privately owned domestic MNEs, a fact that is reflected in Serbia's extremely low outward FDI flows (UNCTAD, 2019).

The dataset consists of 1,500 individuals randomly chosen from people born between 1965 and 1975. No individual retired within the observed period. In 2014 Serbia had 3.1 million people active in the labour market, 2.5 million employed, 700,000 of them in the public sector, and an unemployment rate of 19%.

The sample excludes employees in the public sector and in state-owned enterprises. In the observed period the sampled individuals worked in around 3,000 private companies. None of the companies changed ownership via acquisition, so the focus is on workers changing company rather than companies changing ownership. The data allows identifying changes in ownership from foreign to domestic and from domestic to foreign, and investigating whether such changes led to changes in wages.

However, due to data limitations it is not possible to identify workers who changed jobs within the same type of company ownership, i.e., from domestic to domestic or foreign to foreign. Thus, the group of workers that do not change jobs could actually contain some that do: workers moving between domestic companies or between foreign-owned companies cannot be distinguished from workers staying in the same company. This is indeed a limitation. However, we do know that a substantial proportion of job-changers are accounted for. Based on current results, if all job-changers were considered, including those who

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<sup>2</sup> See Appendix 2.1 for variable explanation and descriptive statistics

moved between companies with the same type of ownership, the wage difference between those who changed jobs and those who did not would potentially be even higher, although this is beyond the scope of this study.

The data allows for the measurement of not only the difference in wage growth between workers moving from domestic to foreign companies and vice versa, but also for comparison of the wages of movers from foreign to domestic companies with the wages of those who worked only in domestic firms.

The available data does not show the hourly/daily wage, the overall number of days an individual worked during a year, or the days a worker was employed in domestic and foreign companies. This is an issue, because it means that wages in the year workers changed jobs cannot be compared, as they received unspecified wages from both foreign-owned and domestic firms.

This limitation was dealt with by considering the growth in wages from one year before changing jobs to one year after changing jobs, thus excluding the year the workers change employer. Robustness checks were made using longer periods before and after changing jobs. The data cleaning procedure involved removing observations with extreme values for wage change (over 3000%). Some individuals were missing wage data for the year after the change. Therefore, the final sample comprised 984 individuals.

Every individual's wage was observed in relation to the company employing them. The wage change  $Y$  is computed as the percentage change between the wage one year before and one year after changing company. In this paper we are interested in exploring the 'foreign-wage premium' phenomenon, not the domestic-wage premium that would occur when changing from a foreign to a domestic company. Therefore, the variable  $DF$  – domestic to foreign – is observed as the independent variable rather than  $FD$  – foreign to domestic. The dummy variable  $DF$  takes value 1 in a year of change from a domestic to a foreign company and value 0 in a year of no change.

On the other hand, the variable change  $N$ , the relationship between changing jobs and wages, is constructed regardless of whether it is from foreign to domestic company or vice versa. The variable  $N$  takes the value 1 if the worker changed employer and 0 otherwise.



The change in wages is also computed for a group of individuals who did not change type of company. They form a control group, which means they only worked for foreign or domestic companies but their wage change is observed with respect to workers who did change type of employer. Thus, two additional variables are created for foreign company workers only ( $F$ ) and domestic company workers only ( $D$ ). Variable  $F$  takes the value 1 if individuals worked for a foreign company only and 0 otherwise, and  $D$  takes the value 1 if individuals worked for a domestic company only and 0 otherwise. Their wage change is observed on a year-by-year basis.

The education  $E$  of workers is based on five education levels. The education variable takes value 1 – primary school, 2 – secondary school, 3 – upper secondary, 4 – Bachelor’s degree, 5 – Master’s degree. The median education of the worker is computed for the whole observed period and used as a time-invariant variable.

### 3.2 Econometric Analysis

This section presents the results of the econometric analysis. The role of this analysis is to estimate how the wage dynamic differs between workers who moved from domestic to foreign-owned firms or from foreign-owned to domestic firms, and those who remained in either domestic or foreign-owned firms.

The purpose of Equation (1) is to investigate whether changing jobs means a change in wages:

$$Y_{it} = \alpha + \beta_1 N_{it} + \delta_1 E_i + \varepsilon_{it} \quad (1)$$

where  $Y$  is the wage change for worker  $i$  at the time  $t$ ,  $A$  is constant, and  $N$  takes value 1 if the worker changed companies, and 0 otherwise.  $E$  is a measure of workers’ education level, constructed as an ordinal variable taking values from 1 to 4, where 1 = primary school, 2 = secondary school, 3 = undergraduate degree, 4 = Master’s degree.  $\varepsilon_{it}$  is the error term.

The purpose of Equation (2) is to investigate whether wage change at time  $t$  (between  $t-1$  and  $t+1$ ) is driven by company ownership:

$$Y_{it} = \alpha + \beta_1 DF_{it} + \delta_1 E_i + \varepsilon_{it} \quad (2)$$

In Equation (2)  $DF$  takes value 1 if the worker moved from domestic to foreign-owned company within a year, and 0 otherwise.

Equation (3) further distinguishes the  $N$ -type of workers who remain in domestic firms  $D$  or in foreign firms  $F$ :

$$Y_{it} = \alpha + \beta_1 DF_{it} + \beta_2 F_{it} + \beta_3 D_{it} + \delta_1 E_i + \varepsilon_{it} \quad (3)$$

where  $D$  takes value 1 if the worker remained in domestic companies, and 0 otherwise, and  $F$  takes value 1 if the worker remained in foreign companies, and 0 otherwise.

In order to test whether the level of education moderates the effect of worker mobility on wage change, we estimate the following Equation (4):

$$Y_{it} = \alpha + \beta_1 N_{it} + \beta_2 DF_{it} + \delta_1 E_i + \beta_3 DF_{it} * E_i + \varepsilon_{it} \quad (4)$$

The coefficient  $\beta_3$ , associated with the interaction between education and change from domestic to foreign company dummy ( $DF * E$ ) captures whether more-educated workers benefit more from moving from domestic to foreign company.

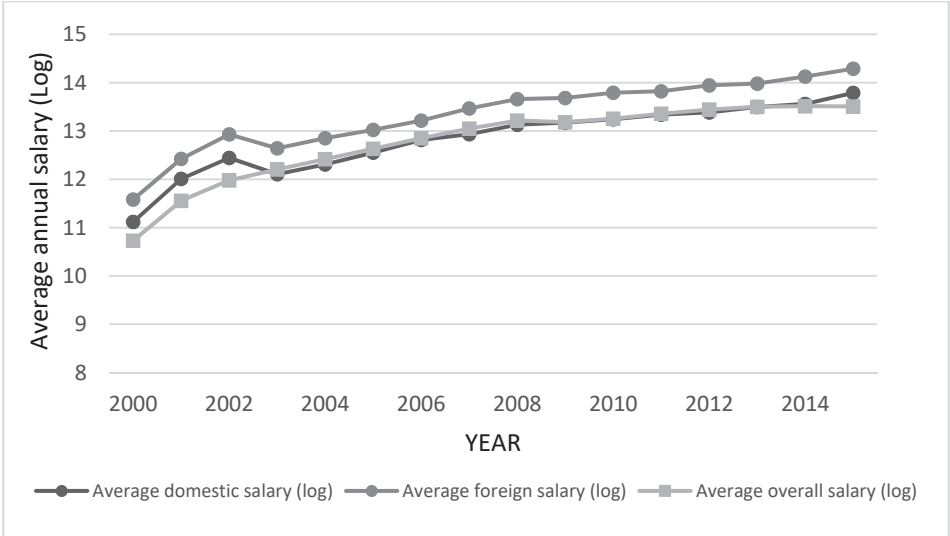
Regressions are run where the main explanatory variable  $FD$  is substituted with  $DF = 1 - FD$ . This allows for the presentation of results in a different form, to show whether workers moving from foreign to domestic firms enjoy a wage discount, as opposed to those staying in foreign or domestic firms.

## 4. RESULTS

### 4.1 Descriptive statistics

The descriptive data overview shows that, on average, MNEs pay higher wages than domestic companies. As presented in Figure 3, over the period 2000 to 2015 MNE wages were consistently higher than those paid by domestic companies, with national average wages fluctuating somewhere between the two.

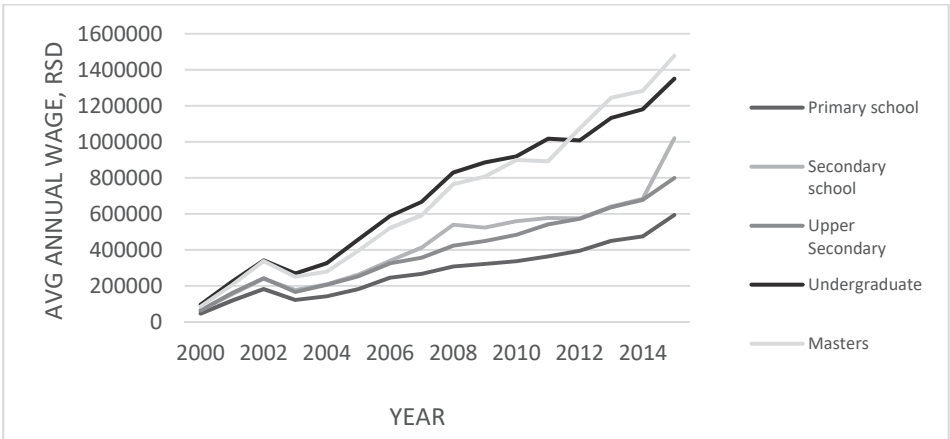
**Figure 3:** Salary average (log) – domestic vs. foreign



Source: Author’s illustration based on Serbian Social Register data

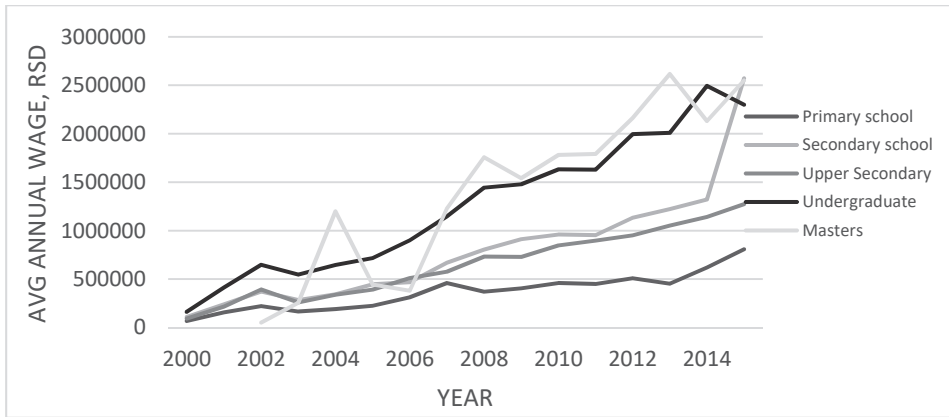
However, if observed individually (Figure 4 and Figure 5), in both types of company more-educated workers receive higher wages than less-educated workers.

**Figure 4:** Average wages in domestic companies, by education level



Source: Author’s illustration based on Serbian Social Register data

**Figure 5:** Average salaries in foreign companies, by education level



*Source:* Author’s illustration based on Serbian Social Register data

Over the observed period (2000 to 2015) the vast majority of workers that changed employer (about 83%) did it only once during their career. Furthermore, local firms were observed to experience an influx of former MNE employees during this period: in the observed sample, 63.4% of workers changed from a foreign to a domestic company. On the other hand, 22% changed from a domestic to a foreign company. This is based on the observation of employee movement between different ownership categories within the given sample, rather than on an investigation of the causes for this particular trend where the majority of workers move from foreign to domestic companies. The observed sample shows such a trend but the subject of this investigation is whether those movements led to a change in wages.

#### 4.2 Regression Analysis

The regression output shows that the model has high explanatory power. About 18% of the variation in wages is explained by changes from domestic to foreign companies. According to Table 1 column (1), changing jobs already has a positive impact on wages, regardless of the direction: the wage growth of those who change jobs is about 80% higher than for those that do not change. However, as shown in column (2), that impact is even greater when the change is from domestic to foreign company. On average, the change in the wages of workers moving from domestic to foreign firms is over 90% higher than the change in the wages of workers that either do not change employer or move from foreign to

domestic companies. The emphasis here is not on wages doubling but on them having higher growth. For example, if the wages of those who change from foreign to domestic companies increases by 2%, the wages of those who change from domestic to foreign companies will increase by 4.2%. Hence, HP 1 is confirmed.

**Table 1:** The effect of changing jobs on wages

	(1)	(2)	(3)	(4)
Variable	Y			
N	83.61***			61.42***
	(7.591)			(13.11)
DF		92.61***	32.30**	-13.99
		(9.081)	(15.91)	(34.19)
F			-53.60***	
			(14.31)	
D			-62.21***	
			(13.32)	
E	6.461***	6.401***	6.605***	6.517***
	(2.312)	(2.314)	(2.315)	(2.241)
DF*E				21.28*
				(13.98)
Year dummies	yes	yes	yes	yes
Constant	-85.24***	-85.24***	-24.20	-99.70***
	(14.86)	(14.87)	(19.82)	(15.66)
Observations	14,756	14,756	14,756	14,756
R-squared	0.187	0.186	0.188	0.188

Standard errors in parentheses

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

When controlling for the wage growth of non-changers in column (3), it is noticeable that changing jobs from a domestic to a foreign company leads to a positive wage change compared to those who stay in foreign or domestic

companies only. Those workers that change from domestic to foreign companies have a 32% higher wage change compared to those who change from a foreign to a domestic company.

Finally, as shown in column (4), education has a direct effect that is unrelated to changing jobs and change of ownership. The change in wages is greater for workers with higher education, independent of whether they change jobs. This also means that the wages of more-educated workers and less-educated workers diverge. The results in column (4) show that education has a positive and significant moderating effect. Workers with the lowest education level experience the least positive effect of job change, while workers with the highest educational attainment experience higher wage increases which confirms HP2. This supports the view that MNEs reward higher-educated workers more, as they are key to maintaining and developing the ownership advantage of MNEs.

Interestingly, the change from domestic to foreign company is completely insignificant in column (4), as all the effect is captured by the interaction of that change with education. In other words, for workers with education below secondary education ( $E=2$ ), changing jobs has no effect.

#### **4.3 Robustness checks**

The wage change in Table 1 was observed one year before and one year after changing company. In order to test the validity of this observation, the robustness test estimates the impact of changing company on an average wage change, two years before and two years after (Table 2). The results remain qualitatively the same. A change from domestic to foreign company causes a significant change in wages, and the more educated the worker the higher the wage change. However, in this case the direction of change (domestic to foreign) matters and not the change itself. If the same analysis is conducted on the basis of a wage change that is computed as an average change three years before and three years after changing companies, the results remain very similar. Although this reduces the number of observations, it confirms the robustness of the analysis.

**Table 2:** The effect of changing jobs on wages (2-year window)

	(1)	(2)	(3)	(4)
Variable	Y (2-year window)			
N	77.35***			29.13***
	(4.960)			(8.706)
DF		98.41***	69.93***	-28.95
		(5.901)	(10.40)	(22.83)
F			-28.60***	
			(9.471)	
D			-29.05***	
			(8.737)	
E	7.439***	7.439***	7.475***	7.976***
	(1.287)	(1.287)	(1.289)	(1.610)
DF*E				45.07***
				(9.319)
Year dummies	yes	yes	yes	yes
Constant	8.984	8.984	37.98***	-8.724
	(8.974)	(8.960)	(12.51)	(9.620)
Observations	10,363	10,363	10,363	10,363
R-squared	0.100	0.102	0.103	0.108

Standard errors in parentheses

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

## 5. CONCLUSIONS

This paper contributes to the empirical literature on wage change and foreign ownership by studying the case of Serbia, using rich employer–employee data. Previous research on labour mobility and wage change shows that job change is not always related to increased wages. There are many additional factors that influence wage change, including demographic characteristics. Some previous studies have suggested that change within rather than across occupation is important. However, the literature also shows that company ownership and

worker characteristics are independent drivers of wage change. The foreign wage premium has been mostly observed in developing countries because domestic competitors lack the knowledge and technology to compete with MNEs (Coniglio et al., 2015; Hijzen et al., 2013; van der Straaten et al., 2020).

The findings of this study are in line with other studies on wage change and FDI in developing countries: MNEs in Serbia not only pay higher wages on average, but they also pay higher wages to similar workers, so the change from a domestic to a foreign company alone leads to a wage change. Although the lessons from this study are based on Serbian data, the results are in line with those obtained for other countries, so the findings apply more generally.

At the same time, data limitation makes it impossible to identify whether workers who change jobs within the same type of company ownership (domestic to domestic or foreign to foreign) also experience a salary change. Furthermore, other worker and company characteristics (such as worker experience with a previous employer or company industry) are not observed, so strong causality as such cannot be claimed. As Gorg et al. (2007) suggest, even when observing different worker and company characteristics and accounting for training provision, it is hard to isolate the specific causes of the foreign wage premium since factors like experience, social capital, and learning by doing are hard to measure.

These results do not simply suggest that MNEs pay higher wages on average because they simply employ a greater proportion of skilled workers, as some previous studies have proposed. More-educated workers who change from domestic to foreign companies benefit more from such a change than less-educated workers. This is in line with Heyman's (2007) finding that a higher education level has a positive impact on average wage change. Kidd (1991) also confirms the positive relationship between years of schooling and the probability of changing companies. More-educated workers who move from a domestic to a foreign company experience a 21% higher wage change.

It is important to highlight that job change may be the result of dismissal or voluntary change. However, the dataset used in this study does not provide information on dismissals. It is possible that the foreign wage premium is driven by the fact that the foreign company dismisses workers who then have to accept



a lower salary in a domestic company. However, other foreign employers are available to dismissed workers.

This paper also shows that the wage increases are higher for workers with higher education, independent of changing jobs. On top of this, the wage gain from moving to foreign MNEs is concentrated in the more-educated workers. This means that the wages of more-educated workers and less-educated workers diverge.

Although there is a strong correlation between increased wages and changing companies, it is not known if this is caused by asymmetric labour market information, higher productivity within MNEs, or higher investment in training. The argument that training is a driver of higher wages in MNEs has been made in previous studies but is not a variable controlled for in this paper.

The findings have important policy implications. First, attracting MNEs can increase the wages of Serbian workers, thus increasing welfare and consumption and boosting Serbian economic growth. However, since these gains will go disproportionately to more-educated workers, the resulting wage inequality and the potential tensions that this could create need to be considered (Alili and Adnett, 2018). Figini and Gorg (2011) show that wage inequality in developing countries increases with inward FDI stock (as a percentage of GDP). Hale and Xu (2016) suggest that this is mostly due to FDI bringing more sophisticated technologies and managerial practices to secondary industries, which demands more-educated workers.

Consequently, a higher demand for more-educated labour leads to higher wages for this group of workers, creating a gap between the more- and less-educated. However, this effect diminishes as countries approach the technological frontier. By measuring total wage inequality,<sup>3</sup> Figini and Gorg (2011) find that while FDI, on average, increases wages in host countries and makes some workers better off in absolute terms, this undermines the balance in wages between skilled and unskilled workers (Figini and Gorg, 2011).

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<sup>3</sup> By means of Gini and Theil inequality indices

Second, the evidence is consistent with the idea that attracting MNEs can leverage investment in education and support knowledge transfer (Park et al., 2021; Zidan, 2001). The larger the share of workers with a high level of education, the larger the benefits from attracting MNEs. However, while wage increase is good news for Serbian workers, it could have an adverse effect on local Serbian companies, which are likely to face the prospect of their best workers moving to MNEs, or having to pay higher wages in order to retain their workers. Without a corresponding increase in productivity, this may severely harm the competitiveness of Serbian companies.

A more precise answer to the question of the impact of MNEs on labour could be provided by observing worker development within MNEs. In particular, the progress of employees in the corporate hierarchy would reveal more than just the relevance of their education to the company. The foreign wage premium might be accompanied by other benefits like training or by negative conditions such as blocked ability to progress to managerial positions. Employing local labour in managerial positions in foreign companies would indicate that MNEs are contributing to higher wages. Career progress and eventual pay rises over time would suggest that employees gain valuable experience, in addition to their education. Possible directions for future research include observing the role of current SME owners' experience gained in MNEs, and looking at the spinoff effect of the presence of MNEs in the labour market, rather than just the financial effect.

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**APPENDIX**

**2.1: Descriptive statistics and variable explanation**

Variable	Label	Obs	Mean	Std. Dev.	Min	Max
Salary change	Y	14,756	57.08401	211.6524	-100	2979.677
Domestic to foreign company change	DF	14,756	0.0321903	0.1765112	0	1
Foreign company workers only	F	14,756	0.0879642	0.2832525	0	1
Domestic company workers only	D	14,756	0.8652074	0.3415135	0	1
Change of company	N	14,756	0.0468284	0.2112783	0	1
Education	E	14,756	2.144517	0.7101322	1	4
Education interaction with domestic to foreign company change	E*DF	14,756	0.0700393	0.4006065	0	4
t – year, j – company, i – worker						

**Correlation coefficients**

Variable	Y	N	DF	F	D	E	E*DF
Y	1						
N	0.0969	1					
DF	0.0935	0.8228	1				
F	-0.001	-0.0688	-0.0566	1			
D	-0.0591	-0.5616	-0.4621	-0.7868	1		
E	0.0269	0.0049	0.008	-0.0511	0.0394	1	
E*DF	0.0952	0.7888	0.9587	-0.0543	-0.443	0.0534	1