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**by**

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# Paying More to Hire the Best?

## Foreign Firms, Wages and Worker Mobility\*

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### Abstract

In the context of the debate on the labour-market consequences of globalisation, we examine worker mobility in order to identify the wage differences between foreign and domestic firms. Using matched employer-employee panel data for Portugal, we consider virtually *all* spells of interfirm mobility over a period of ten years. We find that foreign firms offer significantly more generous wage policies, although there is also a (smaller) selection effect. The results are robust to the consideration of wage growth differences, the case of displaced workers and different subsets of workers.

*Keywords:* Foreign Direct Investment, Worker Displacement, Wage Growth.

*JEL Codes:* J31, J63, F23.

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# 1 Introduction

As globalisation evolves, there is greater interest in its labour-market implications. One dimension of this question concerns the role of foreign firms in terms of their remuneration of host-economy workers. While earlier cross-sectional evidence suggests that foreign firms offer more generous pay levels than their domestic counterparts (Aitken et al. 1996, Feenstra & Hanson 1997), some of these results have been questioned in recent research based on longitudinal worker-level data (Martins 2004, Heyman et al. 2007, Andrews et al. 2007).<sup>1</sup>

The main problem in research about the foreign-ownership wage differential concerns unobserved heterogeneity across workers employed in either domestic or foreign firms. If firm affiliation is correlated with other factors that may affect wages but that are not controlled for, then estimates will be biased. While some research aims to tackle this issue considers the case of acquisitions (when the same workers can be observed under the two types of firms), here we approach the unobserved heterogeneity challenge from the complementary angle of worker mobility.

Specifically, we draw upon a longitudinal census of the Portuguese labour market in order to consider virtually *all* spells of interfirm worker mobility over a period of ten years (1991-2000). Such spells allow us to observe the same workers when employed by domestic and foreign firms. We then examine the data for evidence of what we label ‘wage policy’ and ‘selection’ effects. The latter effect concerns unexplained differences in the wages of workers that are to experience a movement to a different firm, before such movement occurs. These unexplained wage differences are likely to capture additional skills not measured in the data but that are observable by those workers’ current employers such as ability, dedication, etc.

On the other hand, the ‘wage policy’ effect, which is perhaps more directly related to the goal of this paper, concerns differences in remuneration experienced by workers that engage in interfirm mobility, as they move between firms. Such differences in remuneration practices across firms are predicted by non-competitive models of the labour market, namely efficiency wages and search models. Moreover, those differences are also supported by abundant empirical evidence, including rent sharing, discrimination, cohort effects and other evidence of firm heterogeneity in general (Abowd et al. 1999, Bartelsman & Doms 2000).

As far as we know, our paper is the first to conduct a systematic analysis of interfirm worker

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<sup>1</sup>See Andrews et al. (2007) also for a thorough survey of the literature.

mobility drawing on census data. These data are particularly important for our purpose as the analysis of even large samples would dramatically diminish one's ability to follow workers over time. More importantly, we are the first to conduct this extensive analysis in the context of the foreign-ownership wage differential literature.<sup>2</sup> Our results may also be useful in terms of reconciling some contrasting evidence for different countries; and in terms of shedding light on the role of worker mobility as a channel of productivity spillovers from foreign to domestic firms (Fosfuri et al. 2001, Javorcik 2004).

Unlike earlier research based on acquisitions, our paper finds very strong evidence of a sizeable, positive 'wage policy' effect for foreign firms. However, 'selection' effects are also present, but at a much smaller scale. These results are robust to a number of checks, including the consideration of the case of displaced workers and an analysis of the wage growth patterns of movers when in hiring firms.

The structure of the paper is as follows: Section 2 describes the data; Sections 3 and 4 present the results and the robustness analysis; finally, Section 5 concludes.

## 2 Data

This paper draws on a particularly rich annual census of all firms in Portugal that employ at least one worker in any year - *Quadros de Pessoal* (Personnel Records). This census is administered by the Ministry of Employment, which requests information about a large set of variables concerning the firm, its establishments (if any) and also about each one of all the firms' employees.<sup>3</sup>

Crucially for the purpose of this paper, the list of variables available in the data includes unique identifiers for both firms and employees. These variables allow us to follow workers over time and, in particular, as they move between (foreign and domestic) firms. The set of variables at the firm level include industry (five digits), region (three digits), size (number of workers), age, foreign ownership percentage, sales, and equity. Moreover, at the worker level, the variables include education, age, gender, tenure (in months), occupation (five digits), wages, hours, job level (two digits) and promotions.

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<sup>2</sup>See Martins & Esteves (2008) for a different analysis of worker interfirm mobility, based on the case of Brazil. See also Bjelland et al. (2007) for recent evidence of interfirm mobility in the U.S.

<sup>3</sup>The census is designed to check compliance with employment laws. It also serves general statistical purposes. Firms that do not fill in the census questionnaire correctly are subject to penalties that are perceived to have ensured high levels of data quality.

There are a total of five wage variables (base pay, overtime pay, tenure-related pay, bonus, and a residual category) and two hours variables (normal time and overtime). The hourly wage measure we use throughout in this paper is defined as the sum of all five wage variables above divided by the sum of the two hours variables. This hourly wage is then deflated using the Consumer Price Index.

We then use the foreign ownership variable allows us to characterise firms as either foreign or domestic owned. We define a firm to be foreign owned when foreign investors control at least 50% of its voting rights.<sup>4</sup> Moreover, while we do not have information about domestic multinationals, we know that their number was particularly small over this period.<sup>5</sup>

While the census has been ongoing since 1982, in this paper we use data from 1991 to 2000.<sup>6</sup> This is also a period in which FDI into the Portuguese economy grew considerably, motivated at least in part by the accession to the European Community in 1986 - see Figure 1 for the evolution of FDI inflows and outflows from Portugal from 1986.

We constructed our main mobility data sets by matching each annual file of all employees (and their firms) from 1992 to 2000 with the equivalent file for the previous year. (Each year corresponds to a snapshot of the firms and their workers in the census month: March, up to 1993, and October, from 1994.) Workers are matched over each pair of years based on their personal identification number (and also using their gender and year and month of birth variables as further checks). Moreover, by comparing the firm identifier of each worker over the two subsequent years, the worker can be classified as either a ‘stayer’ or as a ‘mover’.<sup>7</sup> Spurious movers - when the worker’s firm identifier is different between  $t$  and  $t+1$  but the date of entry into the firm does not change in a consistent way (for instance because of mergers or movements across firms that belong to the same holding) - are dropped.

Moreover, as we acknowledge that many movers will not necessarily be present in the data in the following year’s census month, we also consider movers between years  $t$  and  $t+2$ . However, this case only applies when the individual’s identifier is not present in the data in

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<sup>4</sup>This threshold is not a necessary nor a sufficient condition for a firm to be controlled by a foreign investor. Although we believe 50% is the optimal level in terms of separating firms with a large enough foreign presence from the remaining firms. In any case, our results are not sensitive to a definition based on a threshold of 10% of voting rights, as the distribution of foreign voting shares indicates that the overwhelming majority of firms with some positive level of foreign presence have a share of foreign ownership of at least 50%.

<sup>5</sup>This enables us to consider that foreign firms are virtually the same as multinational firms, sidestepping the debate about whether it is multinationality or foreign ownership that matters (Heyman et al. 2007).

<sup>6</sup>Although it is possible to consider a longer period, worker-level data have not been made available by the Ministry of Employment for 1990 and 2001. We therefore decided to focus on the period considered here, as otherwise there would be time gaps in the analysis.

<sup>7</sup>See Martins (2007) for another example of worker longitudinal analysis based on the same data set.

year  $t + 1$ . In this case, the date of entry into the firm in year  $t + 2$  is required to be consistent with some spell outside the *Quadros de Pessoal* data during year  $t + 1$ , which implies that the individual was unemployed, inactive or worked outside the coverage of the data (informal sector or public servants) in, at least, some period during year  $t + 1$  (including that year's census month).

Finally, we also consider all other workers that can be defined as 'stayers'. These are workers present in years  $t$  and  $t + 1$  at the same firm. However, according to our classification, a 'stayer' between years  $t$  and  $t + 1$  can then, of course, become a 'mover' between years  $t + 1$  and  $t + 2$ , for instance. The only 'stayers' that we disregard are those employed in firms involved in acquisitions over the years in which the acquisition takes place. A subset of these workers involved in acquisitions are examined in Martins (2004).

Table 1 presents averages and standard deviations of the resulting data set, which corresponds to a total of more than 10 million observations. 7.4% of all observations are movers from domestic to another domestic firms. Movers from foreign to domestic firms are .5% while .6% move in the opposite direction. Only .1% move between different foreign firms. The remaining 91.4% of the data are 'stayers'.<sup>8</sup>

Moreover, in Tables 9, 10, 11 and 12, we present additional statistics for each subsample of movers, according to their specific path. In particular, we separately describe the workers that move from foreign to domestic firms (about 55,000 workers), from domestic to foreign firms (about 67,000 workers), between domestic firms (over 800,000 workers) and between foreign firms (about 14,000 workers). Perhaps the most remarkable difference amongst the four groups of movers concerns their wage growth averages. They range from 22% in the case of movers from domestic to foreign firms to -6.3% in the case of movers from foreign to domestic firms. In the cases of movers between domestic firms or movers between foreign firms, the average wage growth levels are similar: 6.4% and 5.8%, respectively.

This descriptive evidence suggests strongly that foreign firms do offer more generous wage policies. The following Sections will examine this preliminary result in more detail.

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<sup>8</sup>Amongst other results, almost 40% of all workers are female, the average tenure is 8.7 years, and 7.8% of workers are employed by foreign firms. The average net job creation rate (weighted by firm size) is 3.7%. (The net job creation rate is defined as  $NJC = \frac{L_t - L_{t-1}}{0.5(L_t + L_{t-1})}$ , in which  $L_t$  denotes the number of workers in period  $t$  (Davis et al. 1996).)

### 3 Results

#### 3.1 Wage levels

Following from the discussion in the Introduction, the main equation we consider in our empirical analysis is:

$$w_{it} = \beta_1 FD_{it} + \beta_2 DF_{it} + \beta_3 DD_{it} + \beta_4 FF_{it} + X'_{it}\beta_5 + F'_{it}\beta_6 + \gamma_t + \epsilon_{it}, \quad (1)$$

in which  $w_{it}$  represents the logarithm of the average real wage of worker  $i$  in year  $t$ ,  $X$  are worker controls (schooling, quadratics in tenure and experience, and gender),  $F$  are firm controls concerning the characteristics of the firm that employs worker  $i$  in year  $t$  (log firm size - measured by the number of workers, industry and region dummies, and a foreign-firm dummy), and  $\gamma_t$  are year fixed effects.  $DF_{it}$  is a dummy variable taking value one if a worker is employed by a domestic firm in year  $t$  (and in year  $t$ 's job spell)<sup>9</sup> and will in the following job spell be employed by a foreign firm. Similarly,  $FD_{it}$  is a dummy variable taking value one if a worker is employed by a foreign firm in year  $t$  (and in year  $t$ 's job spell) and will in the following job spell be employed by a domestic firm. More formally,

$$FD_{is} = \begin{cases} 1, & \text{if } For_{is} = 1 \text{ and } For_{i,s+1} = 0 \\ 0, & \text{if } For_{is} = 0 \text{ or } For_{i,s+1} = 1, \end{cases} \quad (2)$$

in which  $s$  denotes the spell of employment of the individual.<sup>10</sup> Similarly, we have for the remaining dummy variables the following definitions:

$$DF_{is} = \begin{cases} 1, & \text{if } For_{is} = 0 \text{ and } For_{i,s+1} = 1 \\ 0, & \text{if } For_{is} = 1 \text{ or } For_{i,s+1} = 0, \end{cases} \quad (3)$$

$$DD_{is} = \begin{cases} 1, & \text{if } For_{is} = 0 \text{ and } For_{i,s+1} = 0 \\ 0, & \text{if } For_{is} = 1 \text{ or } For_{i,s+1} = 1, \end{cases} \quad (4)$$

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<sup>9</sup>A job spell is defined here as a set of all years in which a worker is continuously employed by the same firm.

<sup>10</sup>We do not need to impose extra conditions such as  $\eta_{is} \neq \eta_{i,s-1}$ , in which  $\eta_{is}$  denotes the firm employing worker  $i$  in spell  $s$ , when  $FD_{is} = 1$ , indicating that the worker moves to a different firm, as we have ruled out acquisitions by our design of the sample.

and, finally,

$$FF_{is} = \begin{cases} 1, & \text{if } For_{is} = 1 \text{ and } For_{i,s+1} = 1 \\ 0, & \text{if } For_{is} = 1 \text{ or } For_{i,s+1} = 1. \end{cases} \quad (5)$$

Given the motivation of this paper,  $\beta_1$  and  $\beta_2$  are the main parameters of interest. Their coefficients indicate the average difference in wages for workers that subsequently move from foreign to domestic firms or from domestic to foreign firms, respectively, in comparison to workers that stay in the same firm. Moreover,  $\beta_3$  and  $\beta_4$  indicate the average difference in wages for workers that move from a domestic firm to another domestic firm or from a foreign firm to another foreign firm, respectively, before they move.

The first column of Table 2 presents the results for the estimation of equation (1). We find that foreign firms pay on average about 13.6% more, a result consistent with those from other countries when using similar specifications. More importantly, we find that workers in domestic firms that will have a subsequent spell at a foreign firm are already paid (2.3%) more before they move. There is also evidence that workers in foreign firms whose subsequent employment spell is at another foreign firm are already paid substantially more (about 7.1% more) than similar workers in foreign firms but that will stay on in their current firm. On the other hand, workers that are employed in foreign firms but that are, in subsequent years, employed at domestic firms do not earn a significantly different wage than those that stay in their current firm. Finally, workers that move from a domestic firm to another domestic firm are on average less well paid (-.9%) before they move.

As mentioned above, we also consider different versions of equation 1. First, we allow for firm unobserved heterogeneity by including firm fixed effects ( $\eta_j$ ) in that equation:

$$w_{it} = \beta_1 FD_{it} + \beta_2 DF_{it} + \beta_3 DD_{it} + \beta_4 FF_{it} + X'_{it}\beta_5 + F'_{it}\beta_6 + \eta_j + \gamma_t + \epsilon_{it}. \quad (6)$$

This model allows for systematic differences across different categories of movers in terms of the wage policies of their firms. For instance, movers from domestic to foreign firms may tend to be employed in low-wage domestic firms. In that case, the domestic-to-foreign dummy variable coefficient may be spuriously high if no controls for firm-specific heterogeneity are included.

Moreover, specification (6) is also attractive as it can be interpreted as presenting within-



firm evidence about the differences of each type of mover with respect to their colleagues at the same firm. In other words, we can compare the wages of each type of ‘mover-to-be’ (domestic to domestic or domestic to foreign, for instance) with the wages of their colleagues that will stay at the same firms. For the benefit of robustness, we also consider extended versions of the model in equation (6) by considering firm-year dummies ( $\eta_j * \gamma_t$ ), instead of including separately firm and year dummies ( $\eta_j + \gamma_t$ ).

Our results, presented in columns B and C of Table 2 are consistent with the findings without controls for firm unobserved heterogeneity reported in column A. We find that workers that will move to foreign firms (regardless of being employed in domestic or foreign firms) are already receiving significantly higher wages even before they move, even when compared to their colleagues in the same firm or in the same firm-year. Movers from domestic to foreign firms earn about 0.8% more than stayers, while movers from foreign to other foreign firms earn about 1.7% to 2.2% more. On the other hand, movers from foreign to domestic firms again do not earn statistically different wages than their colleagues at foreign firms.

Finally, we examine longitudinal variation in each workers’ wage, by including worker-specific fixed effects ( $\alpha_i$ ) and allowing for worker time-invariant unobserved heterogeneity:

$$w_{it} = \beta_1 DF_{it} + \beta_2 FD_{it} + \beta_3 DD_{it} + \beta_4 DD_{it} + X'_{it}\beta_5 + F'_{it}\beta_6 + \alpha_i + \gamma_t + \epsilon_{it}. \quad (7)$$

This specification provides evidence about possible differences in the path of wages for workers that change their firm, as the  $\beta_1$ ,  $\beta_2$ ,  $\beta_3$  and  $\beta_4$  coefficients are identified from firm switchers. It is important to underline that the mobility dummies ( $DF_{it}$ ,  $FD_{it}$ , etc) refer to the employment spell that predates the movement between firms. This implies that the interpretation of the results is symmetrical to the more common case of dummy variables that are switched on *after* some occurrence. In other words, in our specification, a negative coefficient for a type of worker that moves, for instance, from a foreign to a domestic firm should be interpreted as an increase in wages as the worker is employed by the domestic firm.

Moreover, for the benefit of robustness, we consider first a version of equation (7) without firm controls ( $F_{it}$ ) - see column D. Such specification has the advantage of not partialling out any differences in wages that may result from workers moving, say, from ‘high-wage’ to ‘low-wage’ firms. If such differences in firm attributes are driven by compensating differentials, then it will be appropriate to control for their role in wages. However, if those differences

are instead created by non-competitive forces (e.g. rent sharing), then one should not control for them.<sup>11</sup> By presenting the results from both approaches (first without and then with firm-level control variables), we instead obtain what can be argued to be lower and upward bounds of the wage effects of different types of mobility between firms.

The last two columns of Table 2 indicate that all mover dummy estimates are negative. However, one should also take into account that movers between foreign and domestic firms will gain or lose the wage premium associated to foreign ownership. This means that while domestic-to-foreign movers gain a total average wage increase of approximately 18% (9.5% + 8.5%) - see column D -, movers in the opposite direction have an average wage change of -8.4% (0.08% - 8.5%). On the other hand, movers from one domestic firm to another or from one foreign firm to another gain respectively 4.8% and 4.1% as they switch firms of the same ownership type. Moreover, we find that the results are attenuated when controlling for firm characteristics, but not in to a very large extent. In this specification (see column E), movers from foreign to domestic firms take a pay cut of 3.2% (1.1% - 4.3%), while movers from domestic to foreign firms gain a pay increase of 10.2% (5.9% + 4.3%). Movers between domestic (foreign) firms gain a wage increase of 3.1% (3.4%).

According to the discussion above, these findings are important evidence of more generous wage policies offered by foreign firms. On average, workers that move from a domestic to a foreign firm are more qualified (in terms of their wage residuals) than those that do not move at all from their domestic firms - a result that supports the existence of a 'selection effect'. However, when such workers switch to a foreign firm, they receive a very considerable pay increase. This finding supports the case that, on top of the selection effect, there is also a 'wage policy effect'. The latter result also suggests that a large number of such workers move voluntarily.

On the other hand, the wages of movers from foreign to domestic firms present very different characteristics. First, they tend to be (marginally) less well paid in the foreign firms from which they leave, either in a standard cross-section analysis or when comparing those movers-to-be with their colleagues. Second, movers from foreign to domestic firms take a considerable wage cut upon mobility. The contrast in the results for domestic-to-foreign and foreign-to-domestic movers give further support to the view that foreign firms offer more

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<sup>11</sup>For instance, if the positive relationship between firm size and wages is driven by rent sharing, then when controlling for firm size, the domestic-to-foreign mobility coefficient would wrongly fail to pick up the wage increase related to rent sharing.

generous wage policies.

### 3.2 Wage growth

One concern about the results presented above is that they may mask a trade-off between wage levels and wage growth. For instance, workers may accept lower starting wages (as they seem to do when moving from foreign to domestic firms) in exchange of steeper wage profiles at their new firms (Pakes & Nitzan 1983).

We test this hypothesis by estimating wage growth equations that allow for different wage growth levels depending on the type of between-firm mobility. We essentially adopt the wage equations described above (particularly the specifications presented in columns A and B of Table 2) but considering wage growth instead as the dependent variable:

$$\Delta w_{it+1} = \beta_1 DF_{it} + \beta_2 FD_{it} + \beta_3 DD_{it} + \beta_4 DD_{it} + X'_{it}\beta_5 + F'_{it}\beta_6 + \gamma_t + \epsilon_{it}, \quad (8)$$

in which  $\Delta w_{it+1} = w_{it+1} - w_{it}$  is the wage growth of worker  $i$  between years  $t + 1$  and  $t$ .

As before, we also consider models with firm fixed effects ( $\eta_j$ ), in order to allow for firm-specific wage growth patterns:

$$\Delta w_{it+1} = \beta_1 DF_{it} + \beta_2 FD_{it} + \beta_3 DD_{it} + \beta_4 DD_{it} + X'_{it}\beta_5 + F'_{it}\beta_6 + \eta_j + \gamma_t + \epsilon_{it}. \quad (9)$$

Moreover, we also compute wage growth over different periods: between the second year in which the worker is in the ‘new’ firm (domestic or foreign, depending on the specific mobility path) and the first year at that firm, between the third and the second year, and between the fourth and the third year ( $t + 2$ ,  $t + 3$  or  $t + 4$ ). The comparison group for each analysis corresponds to a 25% sample of all workers that have also stayed on in their firms for at least two, three or four years (depending on whether the wage growth is being measured at  $t + 2$ ,  $t + 3$  or  $t + 4$ ), but that have not moved between firms over the period.

Our results, presented in Table 3, systematically indicate evidence of higher wage growth for workers that move from domestic to foreign firms than for workers that move from foreign to domestic firms. For instance, in column A we find that the former experience average wage growth of 4.6%, while for the latter average wage growth is only 2.5%. Very similar results are obtained for the specification with firm fixed effects and for wage growth comparisons over

the third or fourth years, although the gaps in wage growth tend to fall with time.<sup>12</sup>

It is also interesting to notice that the inclusion of firm fixed effects in these wage growth equations dramatically increases the fit of the model, suggesting that there are very clear differences in wage profiles across firms. However, the coefficients of the mobility dummies hardly change when such fixed effects are introduced.

In conclusion, we find that the differences between the two main types of movers obtained from the initial analysis in Subsection 3.1 are actually strengthened, not weakened, when we consider wage growth patterns. Movers from domestic to foreign firms benefit not only from higher wage increases upon switching firms but also sustained higher wage growth levels after that, at least over the second and third years at their new firms.

### 3.3 Displacement

As mentioned before, this paper seeks to provide evidence about the *impact* of different types of mobility. This goal may not be rigorously achieved with observational data as ours, even when considering our extensive set of control variables. Intuitively, the wages earned by workers that do not move between firms may not provide an appropriate counterfactual for the wages of workers that move (if they had not moved). So, for instance, while we find that workers that move from domestic to foreign firms experience a very large wage increase with respect to workers that do not move, the former group of workers would perhaps also have experienced a large wage increase if they had stayed at their original domestic firm. In this case, the effect of the domestic-to-foreign mobility type would be overestimated.

In order to provide complementary evidence that may be less affected by the endogeneity of interfirm mobility, we conduct an analysis based on displaced workers (Jacobson et al. 1993). The displaced workers we consider are derived from two groups. The first group are those workers that leave firms that undergo mass layoffs, defined as a net job creation rate of -40% or less, provided the firm employs that year at least 20 workers. The second group of displaced workers are those who are employed in firms that go bankrupt, defined as firms whose identifiers stop appearing in the data.<sup>13</sup> Given the motivation of our analysis, all

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<sup>12</sup>For instance, column F of Table 3 indicates that there are virtually no differences in wage growth between workers that moved from foreign to domestic firms or from domestic to foreign firms when they reach their fourth year in their new firms. However, in the fourth year, there may be important selection issues, as the sample drops to almost one third of its original size in the second year.

<sup>13</sup>Strictly speaking, this second group is a subset of the first. See footnote 8 for our definition of the net job creation rate. Very occasionally, data for (smaller) firms exhibit gaps in some years. We conduct our analysis

displaced workers are required to be observed again in the data in years  $t + 1$  or  $t + 2$ .

We also consider a sample of 25% of all workers that have never switched firms (our ‘control’ group). All movers between firms that have moved outside the context of a displacement (as defined above) are dropped from our sample. Table 13 presents some descriptive statistics of the sample of displaced workers. These correspond to approximately 183,000 observations or about 18.6% of all movers. Amongst other results, we find a large percentage of industry switchers (46.3%), which is, however, smaller than in the set of all movers. It is also interesting to notice that there is a greater share of domestic-to-foreign movers in the displaced sample than in the set of all movers.

We find that our earlier results based on all workers hold in the displaced movers subsample - see Table 4. For instance, across specifications A, B and C, we find that displaced movers from domestic to foreign firms are systematically better paid (at the domestic firms) compared to workers that do not move to foreign firms (a significant premium ranging from 1.7% to 4.9%). However, displaced workers that move from foreign to domestic firms earn lower wages than their colleagues at the foreign firms. In this case, we find a negative and significant premium ranging from -3.8% to -7.6%, except when not considering firm heterogeneity, when the premium is insignificant. Recall that all such foreign-to-domestic coefficients were significant when considering the entire sample (Table 2).

Moreover, displaced movers from foreign to domestic firms also undergo considerable pay cuts, from -7.7% (-2.1% - 5.6%) to -5.6% (-2.6% - 3%). On the other hand, displaced movers from domestic to foreign firms do still enjoy a considerable increase in their pay, from 14.5% (8.9% + 5.6%) to 5.8% (2.8% + 3%).

Overall, these findings reinforce the earlier results on the different patterns of wages across different types of movers. Workers that move from foreign to domestic firms are paid less (or, at least, not more) than their colleagues before they move (the ‘selection effect’). On top of that, these workers subsequently take pay cuts when they move (the ‘wage policy effect’). On the other hand, workers that move from domestic to foreign firms are already paid more than their colleagues. These displaced movers from domestic to foreign firms then go on to earn considerable pay increases at their new firms.

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making sure these gaps are not regarded as displacements.

## 4 Robustness

In this Section, we consider the robustness of our results to different subsamples of our data set. We start by considering the specific case of ‘high-skill’ industries. Our motivation is twofold: First, ‘high-skill’ industries are more prevalent in developed countries. The analysis of such industries may therefore shed light on the international differences regarding the evidence on the foreign-firm wage differential mentioned above (Heyman et al. 2007, Andrews et al. 2007, Martins & Esteves 2008).

A second aspect, although related to the first, is that one may argue that there is less scope for large wage discrepancies between domestic and foreign firms in ‘high-skill’ industries than in ‘low-skill’ industries. In fact, the latter type of industries may allow for greater scope in terms of wage dispersion between firms and, in particular, between domestic and foreign firms, given the low wages typically paid there, especially when compared to the wages for similar jobs in the home country of the foreign firms.

Finally, we examine wage differences for the entire data set but adopting the point of view of differences and changes in wages after the spell of mobility, again for different types of mobility. This allows us to assess the wage increases upon mobility when controlling for the characteristics of the hiring firm (in our benchmark results we controlled instead for the characteristics of the firm the worker was leaving). Moreover, this approach also allow us to investigate the ‘ranking’ of the new workers in terms of their colleagues at the hiring firms.

### 4.1 High-skill industries

Our analysis of high-skill industries by selecting only industries which exhibit particularly high levels of worker tenure. In particular, we construct our sample by considering the average tenure of all workers in each firm and in each year. We then calculate the mean of that average tenure per firm-year across all firms in each industry over the ten years in our sample. Finally, we select only firms in industries whose average tenure is in the top third of the distribution of tenure across all firms.

The results, in Table 5, are similar to the main results from Section 3. Foreign-to-domestic firm movers are not positively selected and take large pay cuts upon moving. On the other hand, domestic-to-foreign movers tend to be positively selected and gain considerable wage increases.

An alternative measure of skill we consider is schooling. In this case, we construct our subsample similarly to the case of tenure, by considering average schooling within and across firms and selecting only firms in industries whose average schooling is in the top third of the distribution of schooling across all firms.

The results are presented in Table 6. Again, the findings are consistent with the earlier analysis, namely that there is a negative ‘selection effect’ regarding the workers in foreign firms that are hired by domestic firms, although the finding is reverted in the analysis within each firm. Moreover, while such movers do still take pay cuts at domestic firms, it is noticeable that the magnitude of these pay cuts is considerably smaller than in previous analysis. On the other hand, we still find the same pattern as to the wage level and wage growth differences for workers that move from domestic to foreign firms.

A final alternative measure of worker skill we consider are the wages earned by workers. We replicate the previous analysis considering now only firms from industries at the top third of the wage distribution across the entire economy. In other words, we select only firms in industries whose average wage is in the top third of the wage distribution across all firms.

Table 7 presents the results, which are similar to those from high-schooling industries. There is some evidence of positive selection of movers from foreign to domestic firms although such workers do still take pay cuts as they move, except if one controls for the different characteristics of the two employers (column E). Moreover, as in all other analysis, movers from domestic to foreign firms are positively selected and see their wages increase considerably at their new employers.

Overall, our results lend further strength to the main results from Section 3, especially in terms of the positive ‘selection’ and ‘wage policy’ effects concerning movers from domestic to foreign firms. However, the evidence concerning movers from foreign to domestic firms for some definitions of ‘high-skill’ industries presents some differences, as the wage cuts for those workers tend to be smaller and there is some evidence of positive selection.

As mentioned above, this difference between the main results and those regarding ‘high-skill’ industries may help one reconcile the contrasting results about the role of foreign firms in developed and developing economies in research using worker-level longitudinal data (Heyman et al. 2007, Andrews et al. 2007, Martins & Esteves 2008). The first two papers, covering the case of Sweden and Germany, respectively, find little evidence of wage differences between

foreign and domestic firms, unlike in the case of the third paper, who considers the case of Brazil. To the extent that, in developing economies, foreign firms are more likely to be located in ‘low-skills’ industries, then the scope for foreign firms to pay higher wages is greater. Our results, comparing different sectors of the same economy, are consistent with that hypothesis.

## 4.2 ‘After-mobility’ analysis

In our final robustness analysis, we re-examine our earlier, benchmark results from the point of view of the firm to which a worker moves to, rather than from the point of view of the firm from which a worker leaves. This complementary perspective on the wage consequences of interfirm worker mobility serves two purposes. The first is to confirm the size of the wage changes following a movement to a different firm. This is important as at least part of the large wage increases documented for movers from domestic to foreign firms (and vice-versa) could be driven by the characteristics of foreign firms, particularly those that hire those movers. The second purpose of this analysis is to contrast the ‘selection effects’ before and after the worker moves between firms.

We conduct our analysis by estimating the following equation:

$$w_{it} = \beta_1 FD_{it} + \beta_2 DF_{it} + \beta_3 DD_{it} + \beta_4 FF_{it} + X'_{it}\beta_5 + F'_{it}\beta_6 + \gamma_t + \epsilon_{it}, \quad (10)$$

in which  $w_{it}$  represents the logarithm of the average real wage of worker  $i$  in year  $t$ ,  $X$  are worker controls (schooling, quadratics in tenure and experience, and gender),  $F$  are firm controls (log firm size - measured by the number of workers, industry and region dummies, and a foreign-firm dummy) that now concern the firm to which the worker moves, and  $\gamma_t$  are year fixed effects.

The mobility dummies are defined in a similar way than before, except that, as mentioned above, the point of view is now based on the period after the mobility took place. For instance,

$$FD_{is} = \begin{cases} 1, & \text{if } For_{i,s-1} = 1 \text{ and } For_{is} = 0 \\ 0, & \text{if } For_{i,s-1} = 0 \text{ or } For_{is} = 1, \end{cases} \quad (11)$$

in which  $s$  is the worker-firm spell, as defined above.

The results from different specifications based on equation 10 are presented in Table 8. The



results suggest a very strong ‘selection effect’ as regards to movers from foreign to domestic firms. These workers tend to be very generously placed along the wage distribution of their firms, as the premium ranges between 4.6% and 12.8% (columns A to C). On the other hand, movers from domestic to foreign firms are, on average, slightly below similar workers pay levels (a negative premium of between -1.2% and -.5%). Movers between domestic or between foreign firms tend to be relatively well rewarded, particularly the latter.

With respect to wage growth, our evidence from Table 8 is very consistent with earlier findings. Wage growth of movers from foreign to domestic firms is negative, particularly when not controlling for firm characteristics (columns D and E). On the other hand, movers from domestic to foreign firms experience massive wage increases (from 18.9% to 10.7%). Movers between domestic or between foreign firms also experience wage gains, particularly the latter.

## 5 Conclusions

This paper provides comprehensive empirical evidence about the wage consequences of worker mobility between domestic and foreign firms. Using detailed matched employer-employee panel data from Portugal (covering both the manufacturing and services sectors), we trace virtually all spells of inter-firm worker mobility in the country over a period of ten years (1991-2000).

Our results indicate that movements from domestic to foreign firms translate into considerable and robust average pay increases, of more than 10% in many cases. This pay increase is consistent with a ‘wage policy effect’ - greater ‘generosity’ in the remuneration practices of foreign firms *vis-à-vis* their domestic counterparts. On the other hand, there is also a ‘selection effect’, although typically much smaller. This latter effect arises as foreign firms hire workers that are, on average, already better remunerated in their domestic firms than ‘similar’ workers, even when conducting such comparison within each worker’s firm. Moreover, our results for domestic firms are largely symmetric to those for foreign firms. For instance, movers from foreign to domestic firms earn, on average, a large pay cut when they move, a finding that lends further support to the ‘wage policy’ effect documented above.

Our results also prove to be very robust across different specifications and samples. This is particularly the case for the subset of displaced workers, whose mobility can be argued to be less subject to endogeneity concerns. However, we find that both the ‘wage policy’

and the ‘selection’ effects are somewhat weaker in the specific case of mobility of workers from foreign to domestic firms in some ‘high-skill’ sectors. This result may help explain the apparent negative relationship between the foreign-firm wage premium and economic development (Heyman et al. 2007, Andrews et al. 2007, Martins & Esteves 2008) to the extent that high-skill sectors are more prevalent in developed economies.

Overall, our findings for the ‘wage policy’ and ‘selection’ effects can be easily reconciled. Foreign firms can attract the ‘best’ workers as they offer them large wage increases. Such wage increases will presumably more than compensate for the costs involved in the mobility process and increase welfare in the host country.

Our results may also inform the debate about the productivity spillovers of foreign firms (Javorcik 2004) and, specifically, the role of worker mobility in those spillovers (Fosfuri et al. 2001). Indeed, we find that domestic firms tend to hire ‘below-average’ workers from foreign firms who take, on average, pay cuts (which is consistent with involuntary mobility). These results suggest that worker mobility is unlikely to be a major source of productivity spillovers from foreign to domestic firms. In fact, our findings, including the result that foreign firms attract some of the ‘best’ workers in domestic firms, may suggest that, if any, productivity spillovers from worker mobility occur from domestic to foreign firms.

## References

- Abowd, J., Kramarz, F. & Margolis, D. (1999), ‘High wage workers and high wage firms’, *Econometrica* **67**(2), 251–334.
- Aitken, B., Harrison, A. & Lipsey, R. (1996), ‘Wages and foreign ownership: A comparative study of Mexico, Venezuela, and the United States’, *Journal of International Economics* **40**(3-4), 345–371.
- Andrews, M., Bellman, L., Schank, T. & Upward, R. (2007), The takeover and selection effects of foreign ownership in Germany: An analysis using linked worker-firm data, GEP, University of Nottingham, Research Paper 2007/08.
- Bartelsman, E. J. & Doms, M. (2000), ‘Understanding productivity: Lessons from longitudinal microdata’, *Journal of Economic Literature* **38**(3), 569–594.

- Bjelland, M., Fallick, B., Haltiwanger, J. & McEntarfer, E. (2007), Employer-to-employer flows in the united states: estimates using linked employer-employee data, Discussion Series 2007-30, Board of Governors of the Federal Reserve System.
- Davis, S. J., Haltiwanger, J. C. & Schuh, S. (1996), *Job Creation and Destruction*, MIT Press, Cambridge, MA.
- Feenstra, R. C. & Hanson, G. H. (1997), 'Foreign direct investment and relative wages: Evidence from Mexico's maquiladoras', *Journal of International Economics* **42**(3-4), 371–393.
- Fosfuri, A., Motta, M. & Ronde, T. (2001), 'Foreign direct investment and spillovers through workers' mobility', *Journal of International Economics* **53**(1), 205–222.
- Heyman, F., Sjöholm, F. & 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.
- Jacobson, L. S., LaLonde, R. J. & Sullivan, D. G. (1993), 'Earnings losses of displaced workers', *American Economic Review* **83**(4), 685–709.
- Javorcik, B. S. (2004), 'Does foreign direct investment increase the productivity of domestic firms? In search of spillovers through backward linkages', *American Economic Review* **94**(3), 605–627.
- Martins, P. (2004), Do foreign firms really pay higher wages? Evidence from different estimators, IZA Discussion Paper 1388.
- Martins, P. (2007), 'Heterogeneity in real wage cyclicalities', *Scottish Journal of Political Economy* **54**(5), 684–698.
- Martins, P. & Esteves, L. (2008), Foreign ownership, employment and wages in Brazil: Evidence from acquisitions, divestments and job movers, IZA Discussion Paper 3542.
- Pakes, A. & Nitzan, S. (1983), 'Optimum contracts for research personnel, research employment, and the establishment of rival enterprises', *Journal of Labor Economics* **1**(4), 345–65.

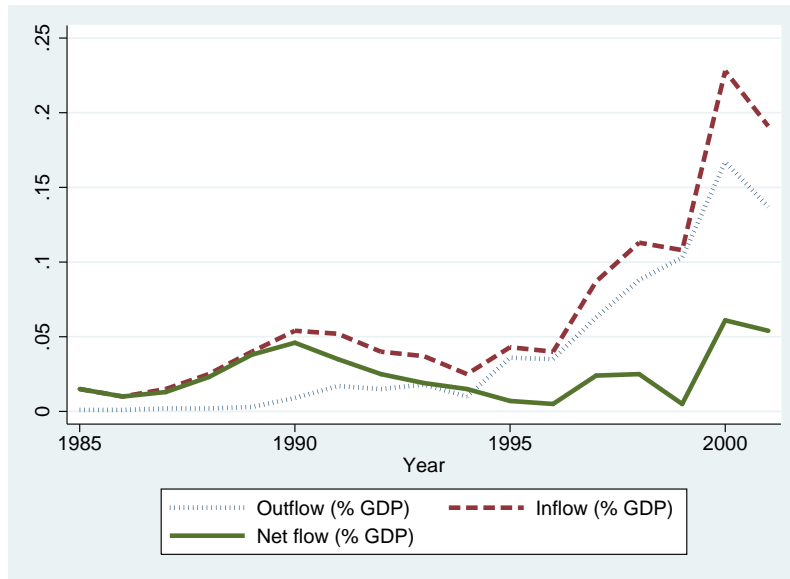


Figure 1: Foreign Direct Investment in Portugal, 1986-2001

Source: Bank of Portugal.

Table 1: **Descriptive statistics - all workers**

<b>Variable</b>	<b>Mean</b>	<b>(Std. Dev.)</b>	<b>N</b>
Log hourly pay	1.383	(0.612)	10419465
Schooling	6.892	(3.689)	11302053
Female	0.39	(0.488)	11552228
Tenure	8.705	(8.599)	11552228
Experience	23.892	(12.318)	11302053
Foreign firm	0.078	(0.268)	11552228
For-to-Dom	0.005	(0.069)	11552228
Dom-to-For	0.006	(0.076)	11552228
Dom-to-Dom	0.074	(0.261)	11552228
For-to-For	0.001	(0.035)	11552228
Log firm size	4.469	(2.316)	11552228
Net job creation rate	0.037	(0.259)	10697558

**Notes:** ‘Foreign’ is a dummy taking value one if the firm-year is foreign owned (and value zero otherwise). ‘Dom-to-For’ is a dummy taking value one if the worker moves in that period from a domestic firm to a foreign firm (and value zero otherwise) - i.e. if in the next period the worker will be at a foreign firm. ‘Dom-to-Dom’ is a dummy taking value one if the worker moves from a domestic firm to another domestic firm (and value zero otherwise). ‘For-to-Dom’ is a dummy taking value one if the worker moves from a foreign firm to a domestic firm (and value zero otherwise). ‘For-to-For’ is a dummy taking value one if the worker moves from a foreign firm to another foreign firm (and value zero otherwise).

Table 2: Wage equations - all workers

	A	B	C	D	E
Foreign firm	.136 (.001)***	-.002 (.002)		.085 (.001)***	.043 (.001)***
For-to-Dom	.002 (.003)	-.004 (.002)	-.002 (.002)	-.0008 (.002)	-.011 (.002)***
Dom-to-For	.023 (.002)***	.008 (.002)***	.008 (.002)***	-.095 (.002)***	-.059 (.002)***
Dom-to-Dom	-.009 (.0006)***	.005 (.0006)***	.007 (.0007)***	-.048 (.0006)***	-.031 (.0006)***
For-to-For	.071 (.005)***	.017 (.004)***	.022 (.004)***	-.041 (.003)***	-.034 (.003)***
Worker controls	x	x	x	x	x
Firm controls	x	x	x		x
Worker fixed effects				x	x
Firm fixed effects		x			
Firm-year fixed effects			x		
Obs.	4285462	4285467	4285467	4285467	4285462
$R^2$	.579	.713	.77	.874	.879

**Notes:** Dependent variable: log real hourly wage. Worker-level controls are schooling, experience and its square, tenure and its square, and a female dummy variable. Firm-level controls are region and industry dummies and firm size. ‘Foreign firm’ is a dummy taking value one if the firm-year is foreign owned (and value zero otherwise). ‘Dom-to-For’ is a dummy taking value one for workers that are in the current employment spell at a domestic firm and will in the next employment spell be at a foreign firm (and value zero otherwise). ‘For-to-For’ is a dummy taking value one for workers that are in the current employment spell at a foreign firm and will in the next employment spell be at a foreign firm (and value zero otherwise). ‘For-to-Dom’ is a dummy taking value one for workers that are in the current employment spell at a foreign firm and will in the next employment spell be at a domestic firm (and value zero otherwise). ‘Dom-to-Dom’ is a dummy taking value one for workers that are in the current employment spell at a domestic firm and will in the next employment spell be at a different domestic firm (and value zero otherwise). ‘For-to-For’ is a dummy taking value one for workers that are in the current employment spell at a foreign firm and will in the next employment spell be at a different foreign firm (and value zero otherwise). All specifications include year dummies. Robust standard errors, clustered at the worker level. Significance levels: \*: 0.10; \*\*: 0.05; \*\*\*: 0.01.

Table 3: Wage growth equations - only workers that stay in  $t + 2$ ,  $t + 3$  or  $t + 4$  in same firm as in  $t + 1$

Wage growth in:	$t + 2$		$t + 3$		$t + 4$	
	A	B	C	D	E	F
Foreign firm	.002 (.001)**	.0002 (.003)	.003 (.001)**	.018 (.004)***	-.002 (.002)	-.015 (.005)***
For-to-Dom	.025 (.003)***	.020 (.004)***	.007 (.003)**	.008 (.004)*	.005 (.004)	.005 (.005)
Dom-to-For	.046 (.003)***	.046 (.003)***	.021 (.003)***	.022 (.003)***	.014 (.003)***	.018 (.004)***
Dom-to-Dom	.014 (.0008)***	.015 (.001)***	.009 (.0009)***	.009 (.001)***	.005 (.001)***	.008 (.002)***
For-to-For	.042 (.006)***	.040 (.006)***	.030 (.006)***	.029 (.007)***	.009 (.007)	.004 (.009)
Worker controls	x	x	x	x	x	x
Firm controls	x	x	x	x	x	x
Firm fixed effects		x		x		x
Obs.	1343810	1343813	839529	839532	552900	552902
$R^2$	.007	.119	.005	.153	.005	.186

**Notes:** Dependent variable: growth of the real hourly wage. Worker-level controls are schooling, experience and its square, tenure and its square, and a female dummy variable. Firm-level controls are region and industry dummies and firm size. ‘Foreign firm’ is a dummy taking value one if the firm-year is foreign owned (and value zero otherwise). ‘Dom-to-For’ is a dummy taking value one for workers that are in the current employment spell at a domestic firm and will in the next employment spell be at a foreign firm (and value zero otherwise). See notes to table 2 for descriptions of remaining variables. All specifications include year dummies. Robust standard errors, clustered at the worker level. Significance levels: \*: 0.10; \*\*: 0.05; \*\*\*: 0.01.

Table 4: Wage equations - only movers included are those displaced

	A	B	C	D	E
Foreign firm	.140 (.001)***	.0001 (.002)		.056 (.002)***	.030 (.002)***
For-to-Dom	.009 (.008)	-.038 (.008)***	-.076 (.015)***	.021 (.005)***	.026 (.005)***
Dom-to-For	.049 (.006)***	.017 (.006)***	.031 (.008)***	-.089 (.004)***	-.028 (.004)***
Dom-to-Dom	-.0003 (.001)	.013 (.002)***	.022 (.005)***	-.028 (.001)***	-.008 (.001)***
For-to-For	.062 (.016)***	-.003 (.015)	-.045 (.021)**	-.019 (.009)**	.006 (.009)
Worker controls	x	x	x	x	x
Firm controls	x	x	x		x
Worker fixed effects				x	x
Firm fixed effects		x			
Firm-year fixed effects			x		
Obs.	2260710	2260713	2260713	2260713	2260710
$R^2$	.621	.752	.809	.933	.934

**Notes:** ‘Displaced movers’ are those that left firms that leave the data or that left firms that were undergoing major downsizing (see more details in the main text). Dependent variable: log real hourly wage. Worker-level controls are schooling, experience and its square, tenure and its square, and a female dummy variable. Firm-level controls are region and industry dummies and firm size. ‘Foreign firm’ is a dummy taking value one if the firm-year is foreign owned (and value zero otherwise). ‘Dom-to-For’ is a dummy taking value one for workers that are in the current employment spell at a domestic firm and will in the next employment spell be at a foreign firm (and value zero otherwise). See notes to table 2 for descriptions of remaining variables. All specifications include year dummies. Robust standard errors, clustered at the worker level. Significance levels: \*: 0.10; \*\*: 0.05; \*\*\*: 0.01.



Table 5: Wage equations - only workers from ‘high-tenure’ industries

	A	B	C	D	E
Foreign firm	.147 (.002)***	.006 (.002)***		.081 (.002)***	.045 (.002)***
For-to-Dom	.006 (.003)**	-.001 (.003)	-.002 (.003)	.002 (.003)	-.008 (.003)***
Dom-to-For	.015 (.002)***	.007 (.002)***	.006 (.003)**	-.123 (.002)***	-.077 (.002)***
Dom-to-Dom	-.016 (.0008)***	.006 (.0009)***	.009 (.001)***	-.061 (.0009)***	-.041 (.0009)***
For-to-For	.036 (.005)***	.008 (.005)	.010 (.006)*	-.043 (.005)***	-.034 (.004)***
Worker controls	x	x	x	x	x
Firm controls	x	x	x		x
Worker fixed effects				x	x
Firm fixed effects		x			
Firm-year fixed effects			x		
Obs.	2439091	2439093	2439093	2439093	2439091
$R^2$	.608	.722	.777	.895	.899

**Notes:** ‘High-tenure’ industries defined as those at the top third of the tenure distribution. Dependent variable: log real hourly wage. Worker-level controls are schooling, experience and its square, tenure and its square, and a female dummy variable. Firm-level controls are region and industry dummies and firm size. ‘Foreign firm’ is a dummy taking value one if the firm-year is foreign owned (and value zero otherwise). ‘Dom-to-For’ is a dummy taking value one for workers that are in the current employment spell at a domestic firm and will in the next employment spell be at a foreign firm (and value zero otherwise). See notes to table 2 for descriptions of remaining variables. All specifications include year dummies. Robust standard errors, clustered at the worker level. Significance levels: \*: 0.10; \*\*: 0.05; \*\*\*: 0.01.

Table 6: Wage equations - only workers from ‘high-skill’ industries

	A	B	C	D	E
Foreign firm	.167 (.002)***	-.003 (.003)		.063 (.002)***	.041 (.002)***
For-to-Dom	-.017 (.003)***	.008 (.003)**	.007 (.004)**	-.027 (.003)***	-.037 (.003)***
Dom-to-For	.021 (.003)***	.013 (.003)***	.011 (.003)***	-.117 (.003)***	-.090 (.003)***
Dom-to-Dom	-.025 (.001)***	.009 (.001)***	.011 (.001)***	-.082 (.001)***	-.060 (.001)***
For-to-For	.057 (.005)***	.024 (.005)***	.028 (.006)***	-.053 (.004)***	-.050 (.004)***
Worker controls	x	x	x	x	x
Firm controls	x	x	x		x
Worker fixed effects				x	x
Firm fixed effects		x			
Firm-year fixed effects			x		
Obs.	1534477	1534482	1534482	1534482	1534477
$R^2$	.581	.722	.776	.903	.906

**Notes:** ‘High-skill’ industries defined as those at the top third of the schooling distribution. Dependent variable: log real hourly wage. Worker-level controls are schooling, experience and its square, tenure and its square, and a female dummy variable. Firm-level controls are region and industry dummies and firm size. ‘Foreign firm’ is a dummy taking value one if the firm-year is foreign owned (and value zero otherwise). ‘Dom-to-For’ is a dummy taking value one for workers that are in the current employment spell at a domestic firm and will in the next employment spell be at a foreign firm (and value zero otherwise). See notes to table 2 for descriptions of remaining variables. All specifications include year dummies. Robust standard errors, clustered at the worker level. Significance levels: \*: 0.10; \*\*: 0.05; \*\*\*: 0.01.

Table 7: Wage equations - only workers from ‘high-wage’ industries

	A	B	C	D	E
Foreign firm	.146 (.002) <sup>***</sup>	-.001 (.002)		.063 (.002) <sup>***</sup>	.035 (.002) <sup>***</sup>
For-to-Dom	-.004 (.003)	.007 (.003) <sup>***</sup>	.008 (.003) <sup>***</sup>	-.032 (.003) <sup>***</sup>	-.033 (.003) <sup>***</sup>
Dom-to-For	.014 (.002) <sup>***</sup>	.012 (.002) <sup>***</sup>	.011 (.003) <sup>***</sup>	-.137 (.002) <sup>***</sup>	-.089 (.002) <sup>***</sup>
Dom-to-Dom	-.026 (.001) <sup>***</sup>	.008 (.001) <sup>***</sup>	.011 (.001) <sup>***</sup>	-.091 (.001) <sup>***</sup>	-.061 (.001) <sup>***</sup>
For-to-For	.062 (.005) <sup>***</sup>	.024 (.005) <sup>***</sup>	.030 (.005) <sup>***</sup>	-.056 (.004) <sup>***</sup>	-.044 (.004) <sup>***</sup>
Worker controls	x	x	x	x	x
Firm controls	x	x	x		x
Worker fixed effects				x	x
Firm fixed effects		x			
Firm-year fixed effects			x		
Obs.	1915256	1915261	1915261	1915261	1915256
$R^2$	.559	.706	.761	.89	.894

**Notes:** ‘High-wage’ industries defined as those at the top third of the wage distribution. Dependent variable: log real hourly wage. Worker-level controls are schooling, experience and its square, tenure and its square, and a female dummy variable. Firm-level controls are region and industry dummies and firm size. ‘Foreign firm’ is a dummy taking value one if the firm-year is foreign owned (and value zero otherwise). ‘Dom-to-For’ is a dummy taking value one for workers that are in the current employment spell at a domestic firm and will in the next employment spell be at a foreign firm (and value zero otherwise). See notes to table 2 for descriptions of remaining variables. All specifications include year dummies. Robust standard errors, clustered at the worker level. Significance levels: \*: 0.10; \*\*: 0.05; \*\*\*: 0.01.

Table 8: Wage equations - all workers, variables measured ‘after’ moving to new firm

	A	B	C	D	E
Foreign firm	.157 (.001)***	-.009 (.003)***		.100 (.002)***	.054 (.002)***
FD	.128 (.002)***	.052 (.002)***	.046 (.003)***	.039 (.002)***	.042 (.002)***
DF	-.005 (.002)**	-.015 (.002)***	-.012 (.002)***	.089 (.002)***	.053 (.002)***
DD	.047 (.0007)***	.016 (.0007)***	.013 (.0008)***	.040 (.0007)***	.037 (.0007)***
FF	.125 (.005)***	.064 (.005)***	.062 (.005)***	.066 (.003)***	.053 (.003)***
Worker controls	x	x	x	x	x
Firm controls	x	x	x		x
Worker fixed effects				x	x
Firm fixed effects		x			
Firm-year fixed effects			x		
Obs.	4183008	4183009	4183009	4183009	4183008
$R^2$	.562	.704	.764	.88	.884

**Notes:** Dependent variable: log real hourly wage. Worker-level controls are schooling, experience and its square, tenure and its square, and a female dummy variable. Firm-level controls are region and industry dummies and firm size. ‘Foreign firm’ is a dummy taking value one if the firm-year is foreign owned (and value zero otherwise). ‘Dom-to-For’ is a dummy taking value one for workers that are in the current employment spell at a domestic firm and will in the next employment spell be at a foreign firm (and value zero otherwise). See notes to table 2 for descriptions of remaining variables. All specifications include year dummies. Robust standard errors, clustered at the worker level. Significance levels: \*: 0.10; \*\*: 0.05; \*\*\*: 0.01.

Table 9: Descriptive statistics - all workers moving from foreign to domestic firms, while at foreign firm

Variable	Mean	(Std. Dev.)	N
Log hourly pay	1.573	(0.664)	51434
Wage growth	-0.063	(0.551)	48085
Schooling	8.734	(4.103)	52954
Female	0.398	(0.49)	54565
Tenure	2.89	(4.284)	54565
Experience	15.173	(9.743)	52954
Foreign firm	1	(0)	54565
Log firm size	5.769	(1.709)	54565
Net job creation rate	0.12	(0.383)	51058
Industry switcher	0.668	(0.471)	54564
Year gap	1.28	(0.449)	54565
1992	0.071	(0.257)	54565
1993	0.1	(0.3)	54565
1994	0.075	(0.264)	54565
1995	0.099	(0.298)	54565
1996	0.107	(0.309)	54565
1997	0.144	(0.351)	54565
1998	0.167	(0.373)	54565
1999	0.14	(0.347)	54565

**Notes:** See description of variables in notes to Table 1. ‘Wage growth’ denotes the difference in the logarithm of the hourly wage between years  $t + 1$  and  $t$ . ‘Industry switcher’ is a dummy variable taking value one if the worker is in a different two-digit industry in year  $t + 1$  when compared to year  $t$ . ‘Year gap’ is the year difference between the two years over which the worker moves between firms (by design, this is between one and two).

Table 10: Descriptive statistics - all workers moving from domestic to foreign firms, while at domestic firm

Variable	Mean	(Std. Dev.)	N
Log hourly pay	1.334	(0.642)	61811
Wage growth	0.217	(0.526)	59583
Schooling	8.314	(3.961)	64371
Female	0.442	(0.497)	66609
Tenure	2.8	(4.413)	66609
Experience	14.592	(9.638)	64371
Foreign firm	0	(0)	66609
Log firm size	4.437	(2.079)	66609
Net job creation rate	0.099	(0.386)	59346
Industry switcher	0.684	(0.465)	66607
Year gap	1.252	(0.434)	66609
1992	0.097	(0.296)	66609
1993	0.114	(0.317)	66609
1994	0.085	(0.279)	66609
1995	0.091	(0.288)	66609
1996	0.099	(0.299)	66609
1997	0.124	(0.33)	66609
1998	0.148	(0.355)	66609
1999	0.166	(0.372)	66609

Notes: See description of variables in notes to Tables 1 and 9.

Table 11: Descriptive statistics - all workers moving between domestic firms, while at first domestic firm

Variable	Mean	(Std. Dev.)	N
Log hourly pay	1.174	(0.55)	776666
Wage growth	0.064	(0.507)	726018
Schooling	6.821	(3.471)	821424
Female	0.368	(0.482)	849294
Tenure	3.132	(4.494)	849294
Experience	17.871	(10.747)	821424
Foreign firm	0	(0)	849294
Log firm size	3.656	(1.934)	849294
Net job creation rate	0.072	(0.368)	744665
Industry switcher	0.529	(0.499)	849293
Year gap	1.263	(0.44)	849294
1992	0.103	(0.304)	849294
1993	0.118	(0.323)	849294
1994	0.087	(0.282)	849294
1995	0.098	(0.297)	849294
1996	0.105	(0.306)	849294
1997	0.127	(0.333)	849294
1998	0.14	(0.347)	849294
1999	0.124	(0.329)	849294

Notes: See description of variables in notes to Tables 1 and 9.

Table 12: Descriptive statistics - all workers moving between foreign firms, while at first foreign firm

Variable	Mean	(Std. Dev.)	N
Log hourly pay	1.741	(0.702)	13588
Wage growth	0.058	(0.529)	13238
Schooling	9.896	(4.189)	13838
Female	0.426	(0.495)	14232
Tenure	3.789	(5.579)	14232
Experience	14.086	(9.388)	13838
Foreign firm	1	(0)	14232
Log firm size	5.781	(1.74)	14232
Net job creation rate	0.116	(0.418)	13346
Industry switcher	0.576	(0.494)	14232
Year gap	1.281	(0.45)	14232
1992	0.062	(0.242)	14232
1993	0.093	(0.29)	14232
1994	0.067	(0.251)	14232
1995	0.096	(0.294)	14232
1996	0.116	(0.32)	14232
1997	0.192	(0.394)	14232
1998	0.166	(0.372)	14232
1999	0.141	(0.348)	14232

**Notes:** See description of variables in notes to Tables 1 and 9.

Table 13: Descriptive statistics - only movers that are displaced

Variable	Mean	(Std. Dev.)	N
Log hourly pay	1.157	(0.562)	163652
Wage growth	0.065	(0.493)	152025
Schooling	6.685	(3.432)	177144
Female	0.401	(0.49)	183638
Tenure	3.686	(5.059)	183638
Experience	19.29	(11.176)	177144
Foreign firm	0.048	(0.213)	183638
For-to-Dom	0.038	(0.192)	183638
Dom-to-For	0.056	(0.229)	183638
Dom-to-Dom	0.897	(0.304)	183638
For-to-For	0.009	(0.096)	183638
Log firm size	3.165	(1.956)	183638
Net job creation rate	0.024	(0.443)	149013
Industry switcher	0.463	(0.499)	183636
Year gap	1.269	(0.443)	183638
1992	0.099	(0.298)	183638
1993	0.157	(0.364)	183638
1994	0.082	(0.274)	183638
1995	0.097	(0.296)	183638
1996	0.099	(0.299)	183638
1997	0.119	(0.324)	183638
1998	0.131	(0.338)	183638
1999	0.136	(0.342)	183638

**Notes:** ‘Displaced movers’ are those that left firms that leave the data or that left firms that were undergoing major downsizing (net job creation of -40% or less). See description of variables in notes to Tables 1 and 9.