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ABSTRACT

Foreign-owned firms are often hypothesized to generate productivity "spillovers" to the host country, but both theoretical micro-foundations and empirical evidence for this are limited. We develop a heterogeneous-firm model in which ex-ante identical workers learn from their employers in proportion to the firm?s productivity. Foreign-owned firms have, on average, higher productivity in equilibrium due to entry costs, which means that low-productivity foreign firms cannot enter. Foreign firms have higher wage growth and, with some exceptions, pay higher average wages, but not when compared to similarly large domestic firms. The empirical implications of the model are tested on matched employer-employee data from Denmark. Consistent with the theory, we find considerable evidence of higher wages and wage growth in large and/or foreign-owned firms. These effects survive controlling for individual characteristics, but, as expected, are reduced significantly when controlling for unobservable firm heterogeneity. Furthermore, acquired skills in foreign-owned and large firms appear to be transferable to both subsequent wage work and self-employment.

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1. Introduction

The last decades have witnessed a significant increase in the amount of foreign direct investment (FDI) and the activities of multinational enterprises (MNEs). This has led to considerable academic and political interest in the role of FDI an MNEs for both source and host countries. One aspect of this concerns the potential for FDI and MNEs as important channels for productivity transfers to host countries. MNEs are hypothesized to possess superior knowledge, better production technology or better management techniques compared to the average domestic firm.

However, the microeconomic foundations of these ideas are weak, and empirical analysis is limited and indirect. In this paper, the productivity advantages of foreign firms are assumed to affect domestic workers directly. We assume that firms have different productivity levels, and that workers learn more (increase their productivity more) when they are employed by higher productivity firms. Similarly, they earn more in subsequent wage employment and self-employment if they have previously worked for a high-productivity firm.

Our model builds on Melitz's (2003) (also Helpman et al., 2004) model of industry structure with heterogeneous firms, and blends this with the learning-on-the-job models of Ethier and Markusen (1996), Markusen (2001), Fosfuri et. al. (2001), and Glass and Saggi (2002). Small numbers of domestic and foreign firms get high productivity "draws" and a potentially unlimited number of other domestic and foreign firms get low productivity draws. Foreign firms of both types face higher fixed costs of entry. All high-productivity firms can enter, but only low-productivity domestic firms can enter: they enter until profits are zero, which excludes the foreign low-productivity firms due to the latter's higher fixed costs.

The consequence of this is that foreign firms *on average* are larger and have higher productivity than domestic firms. But it also provides the hypothesis that, corrected for firm size, foreign firms are not more productive than domestic firms.

Our model does not rely on externalities or on foreign firms identifying and hiring better workers. All workers are ex ante identical and earn the same present value of income over a two-period working lifetime. Skills learned in the first period when employed by a high-productivity firm are transferable to other high-productivity firms and, to a less degree, to low-productivity firms. There is thus no ex post hold-up problem as in Antrás (2003): workers in the second period of their career are paid their full productivity, but first period workers joining high-productivity firms receive a discounted wage reflecting their later higher earnings in wage work or self-employment.

The model allows us to solve for outputs, wage levels and wage growth in high and low-productivity firms, and in domestic and foreign firms. In the base case, workers joining high-productivity firms receive a higher average wage and higher wage growth over their careers, but a lower initial wage. The foreign-firm effect disappears when correcting for firm size.

Then we conduct some experiments. Increasing the productivity of a worker who transits from a high- to a low-productivity firm or increasing the probability of getting a favorable draw on suitability for self-employment *lowers* the average wage premium for workers in high-productivity firms and that premium can go *negative*. Thus the model does not trivially produce a result that workers in high-productivity or foreign firms earn more.

Imposing a minimum wage which prevents high-productivity firms from capturing rents on inexperienced workers or imposing a progressive income tax *raises* the average earnings of

workers in high-productivity (larger) and foreign firms relative to those for low-productivity (smaller) and domestic firms.

A number of empirical implications concerning wages and wage growth can be derived from the theory model. Some of these are tested on matched employer-employee data from Denmark in the final part of the paper.

Specifically, both wage levels and wage growth are higher in foreign-owned and large firms. Also subsequent earnings as wage worker or self-employed increase with experience from large and foreign-owned firms. As consistent with our theory, these effects survive controlling for both observable and unobservable worker differences, but, as expected, they disappear when controlling for unobservable firm characteristics which proxy for the unobservable firm type.

In summary, most of the hypotheses advanced by the simple model are verified in the estimations. One difference is that empirically, wage *levels* and self-employment earnings in foreign firms are still greater than in domestic firms when controlling for firm size, though the difference is greatly reduced compared to estimates that do not control for firm size. Consistent with the simple model, however, wage *growth* in foreign firms is not greater when controlling for firm size. We comment on this residual positive effect of foreign firms in the concluding section.

2. Some Relevant Literature

Empirically, it is a well-established fact that foreign-owned firms (or MNEs more generally) pay higher wages on average than domestically-owned firms. Existing studies can be grouped under two headings: (i) studies based on firm-level data, as in, e.g., Feliciano and

Lipsey (1999) and Aitken et al. (1996); and (ii) studies based on matched employer-employee data, as in Martins (2004) and Heyman et al. (2004). The advantage of using matched employer-employee data is that it can be explicitly analyzed whether part of the wage differential is due to individual differences among the employees.

While a number of studies have shown that part of the overall "wage-gap" between foreign-owned and domestically-owned firms can be attributed to a higher average quality of workers in foreign-owned firms, a considerable part can only be explained by different firm characteristics than the average domestically-owned firm. Hence, the existing evidence points to a productivity advantage in foreign-owned firms which is somehow transformed into higher wages of the employees; see Lipsey (2002) for a recent review.

A number of studies have also analyzed how these productivity and wage advantages have influenced the productivity and/or wages of other firms, see, e.g., Haddad and Harrison (1993), Haskel et al. (2002), Almeida (2003), and Javorcik (2004) (see Keller 2004 for a more general approach). While we consider the productivity transfers that occur from foreign-owned firms to domestic firms via worker mobility and entrepreneurship, the empirical literature has to a large extent concentrated on wage and productivity spillovers (and transfers) *between* firms; see Lipsey (2002) for a review. While a positive effect has been found in the case of firm-to-market spillovers (higher average wages), the evidence is more mixed when it comes to firm-to-firm spillovers. However, studies of productivity spillovers between plants within industries have generally found positive effects of foreign-owned companies; see Lipsey (2002).

Only few empirical studies have analyzed productivity transfers via worker mobility; see Martins (2005) and Görg and Strobel (2005), where the latter, using data from Ghana, considers

transfers via worker mobility to self-employment. We return to these studies in the empirical part of the paper.

Similarly, very few studies have tried to provide a theoretical foundation for such productivity transfers. Glass and Saggi (2002) thus build a model where workers employed by MNEs immediately get access to their superior technology. Hence, MNEs must pay a wage premium to prevent workers from moving to other companies bringing along information about this technology. In Fosfuri et al. (2001), Ethier and Markusen (1996), and Markusen (2001) on the other hand, workers only get access to the superior technology following a period of training by the MNE. Hence, workers are not immediately paid a higher wage in MNEs. In both types of models, however, productivity transfers arise when workers employed (and trained) by MNEs move to domestic firms. Markusen and Trofimenko (2006) provides a more explicit model of skill transfer from foreign experts to domestic workers. Specifically, they assume that working with foreign experts is an alternative to studying as a means of obtaining skills.

As a final point, we should mention Yeaple (2005) who provides an alternative to the Meltiz framework that we borrow here. Yeaple assumes that firms are ex ante identical while workers are not (both opposite to the present paper) and that there are alternative technologies to choose from. In general equilibrium, some firms choose technologies that make them larger and they pay higher wages because they hire more skilled workers. These larger firms are also the exporters (easy generalized to establishing subsidiaries). It strikes us that this alternative approach generates at least some predictions close to ours, and clearly deserves empirical investigation.

3. A model of entry, productivity, and industry structure

A principal objective of this theory section is to develop a plausible model that, at least in some circumstances, generates (1) higher average earnings in larger and/or foreign-owned firms, (2) a steeper earnings profile for the average worker in larger or foreign-owned firms, and (c) wage workers and newly self-employed workers (entrepreneurs) earn more, on average, if they previously worked in a large and/or foreign-owned firm. But we want to generate these results while assuming that (a) all workers are ex ante identical (foreign firms are not merely selecting the best workers) and (b) foreign firms are not arbitrarily more productive than domestic firms. The model will draw heavily on the contribution of Melitz's (2003) model of industry structure with heterogeneous firms with monopolistic competition. This is combined with a learn-on-the-job model of Markusen (2001).

We are attempting to keep the model relatively simple, and so will make a number of restrictive assumptions.

(1) There are two types of domestic and foreign firms: high-productivity (HP) firms and low- or moderate-productivity (MP) firms that produce differentiated goods, denoted X. Foreign firms face an added fixed cost of entering a foreign market with a subsidiary.[1]

(2) An unlimited number of domestic and foreign firms take productivity draws. A small number in each country draw high productivity, the rest all draw moderate productivity. Note that this avoids a more ad hoc assumption that foreign firms are inherently better.

(3) The number of high-productivity firms is sufficiently small and/or the domestic

[1]We originally called the MP firms LP for low productivity. But a lower-case L is confused with the number 1 in the notation, so we switched. The MP terminology is consistent with the Lake Woebegone principle that "all children are above average".

market is sufficiently large, such that all high-productivity foreign and domestic firms can enter the domestic market.

(4) The "residual" demand is then satisfied by a limited number of moderate-productivity domestic firms entering up to the point where a zero-profit condition holds for moderate-productivity domestic firms. Foreign MP firms cannot enter in competition with the domestic MP firms: the former face a higher fixed cost.

(7) The model is quasi-dynamic. Firms are long lived, but fixed costs are per period, and demand is stationary. There are no investment or borrowing decision or any other intertemporal features except that MP firms decide whether or not to enter in a given period. Thus, we can analyse a single period in this "steady-state" environment.

(8) The model also has a quasi-overlapping-generations feature. Each worker has a two-period career, and all workers begin their careers as identical inexperienced workers. Workers who join MP firms do not improve their productivity over time while workers who join HP firms have both higher productivity in their first period and learning results in an even higher productivity in the second period of their career. Skills are assumed not to be firm-specific, so experienced workers are priced in a competitive market, and their wage path is such that new workers are indifferent between joining MP and HP firms.

(9) We allow workers to transit from an HP to an MP firm (the opposite transition possibility did not seem to add anything interesting so we dropped it). These transiting workers have a lower productivity than if they stay in the HP firm but a higher productivity than new workers or workers with one period in an MP firm (who do not learn).

(10) In the second period of their careers, workers take a draw which determines whether

they will be good or bad as self-employed entrepreneurs in period 2. Among workers who get favorable draws, those who worked in HP firms will have a higher productivity than those who worked in MP firms.

(11) Finally, the model is largely partial equilibrium. There is an unlimited supply of new workers available at a fixed wage, and a given worker disappears after two periods. Expenditure on X goods is fixed, and those who go to self-employment disappear off to another industry. Both the exogenous number of HP and the endogenous number of MP firms hire experienced and inexperienced workers in a competitive market. The steady-state or stationarity assumption is that the number of experienced workers available is equal to the number of inexperienced workers hired by HP firms.

Our notation is as follows.

r_i^h - labor productivity (in physical units of X output) in HP firms, where i = 1 is an inexperienced worker and i = 2 is an experienced worker. Workers in MP firms do not learn and their productivity in both periods is normalized to $r_i^m = 1$.

r_t^m a worker with one-period of experience in an HP firm can transit to an MP firm, with r_t^m denoting that worker's productivity. We assume that $1 < r_t^m < r_2^h$. In other words, a worker transiting from an HP firm to an LP firm carries only part of the HP firm's productivity advantage with him/her. This will be a variable and discussed more below.

w_i^h - wage of an inexperienced worker (i = 1) and an experienced worker (i = 2) in an HP firm. If there are transiting workers, they are indifferent in equilibrium to transiting and so a worker employed by an HP firm in period 1 earns w_2^h in period 2 regardless of whether the worker is in an HP firm or transits to an MP firm.

n_d^h, n_f^h - number of HP firms of domestic (d) and foreign (f) origin respectively. These are *constants* (all existing HP firms can enter).

n^m - number of MP firms, determined by free entry. This is a *variable.*

p^h - price of a representative differentiated good produced by an HP firm.

p^m - price of a representative good produced by an MP firm.

X_1^h, X_2^h outputs of an HP firm produced by inexperienced and experienced workers, respectively.

X^m, X_t^m outputs of an MP firm produced by (first or second period) inexperienced workers and produced by transit workers from HP firms, respectively.

α - the share of workers who, at the beginning of period 2 of their career, learn that they have a higher productivity as self-employed

v - multiplier on the wage of an experienced worker that gives self-employment earings in period 2 for workers who get a favourable draw on self-employment productivity (e.g., self-employment earnings are $w_2^h * v$ for a worker from an HP firm).

δ - the discount factor, $0 < \delta = 1/(1+r) < 1$, where r is some rate of interest/discount

Consumers have Dixit-Stiglitz preferences over an endogenous number of differentiated goods, and spend a fixed amount of income I on X sector goods. σ denotes the elasticity of substitution between varieties. Each period's demands do not depend on prices in the other period. Demand for good i (k) is given by

$$X_i = p_i^{-\sigma}\left[\sum_k p_k^{1-\sigma}\right]^{-1} I \qquad (1)$$

Under the so-called "large-group" assumption, individual firms are assumed to be too small to influence the price index term in square brackets, and hence each firm's perceived elasticity of demand is just σ and the optimal markup is $1/\sigma$.

The equilibrium output of each high-productivity firm, whether foreign or domestic, is

determined by marginal revenue product equal to the wage. Outputs by experienced and inexperienced workers are identical (homogeneous), but these worker types differ by productivity. There are two first-order conditions for output from inexperienced workers (X_1^h) and for output from experienced workers (X_2^h). We adopt a complementarity representation of our model in which all equations are written as weak inequalities each with an associated non-negative complementary variable. The pricing inequalities for output from inexperienced and experienced workers followed by associated complementary variables are given by

$$p^h\ (1 - 1/\sigma) r_1^h \ \le\ w_1^h \qquad\qquad X_1^h \tag{2}$$

$$p^h\ (1 - 1/\sigma) r_2^h \ \le\ w_2^h \qquad\qquad X_2^h \tag{3}$$

MP firms can hire inexperienced workers, including those who have already been employed by an MP firm for one period (no productivity increase) and transit workers from HP firms. The latter must be paid the wage w_2^h.[2] Similar to equations (2) and (3), the two pricing equations and complementary quantity variables are

$$p^m\ (1 - 1/\sigma) \ \le\ 1 \qquad\qquad X^m \tag{4}$$

$$p^m\ (1 - 1/\sigma) r_t^m \ \le\ w_2^h \qquad\qquad X_t^m \tag{5}$$

Assume that the fixed costs for domestic MP firms require F^m number of inexperienced

[2]The reason that MP firms may employ transit workers at wage w_2^h even though they have lower productivity than when continuing to work in HP firms is that the latter are larger and hence have lower equilibrium prices $(p^h < p^m)$.

workers at wage = 1 or F^m/r_t^m number of transit workers at wage w_2^h. When there are transit workers in equilibrium, (4) and (5) imply that $w_2^h/r_t^m = 1$ and so fixed costs for MP firms are always given by F^m regardless of whether or not there are transit workers, and the firm is indifferent between the two types. Given this indifference, we assume that different worker types are used in proportion to their overall contributions to the output of the firm.

Fixed costs for domestic and foreign HP firms require F_d^h/r_1^h and F_f^h/r_1^h units of inexperienced workers, respectively, at a wage of w_1^h, or F_d^h/r_2^h and F_f^h/r_2^h units of experienced workers at a wage of w_2^h. By virtue of (2) and (3), the firm is indifferent between using inexperienced and experienced workers and, given this indifference, we assume that the two types are used in proportion to their overall contributions to output of the firm. Furthermore, we assume that $F_f^h > F_d^h$.

Turning now to wages of HP workers, the wage of second period experienced workers will be determined by a supply = demand relationship. Stationarity requires that the number of workers used in HP firms in the first period of their careers, minus losses to self-employment, equal the demand for experienced (second period) HP workers by HP firms and by MP firms hiring transit workers. To incorporate our assumptions about fixed costs, let

$$s_t^m = X_t^m/(X_t^m + X^m) \tag{6}$$

be the proportion of output by transit workers in the total employment of MP firms. Similarly,

let

$$s_1^h = X_1^h/(X_1^h + X_2^h) \qquad s_2^h = X_2^h/(X_1^h + X_2^h) \tag{7}$$

be the shares (in output) of inexperienced and experienced workers in HP firms. The stationarity relationship determining w_2^h is

$$w_2^h \tag{8}$$
$$(1-\alpha)[n_d^h(s_1^h F_d^h/r_1^h + X_1^h/r_1^h) + n_f^h(s_1^h F_f^h/r_1^h + X_1^h/r_1^h)] \geq$$
$$n_d^h(s_2^h F_d^h/r_2^h + X_2^h/r_2^h) + n_f^h(s_2^h F_f^h/r_2^h + X_2^h/r_2^h) + n^m(s_t^m F^m/r_t^m + X_t^m/r_t^m)$$

where the left-hand side is the use of inexperienced workers by HP firms minus losses to self-employment and hence "supply" of second-period experienced workers. The right-hand side is demand for second-period experienced workers by HP and MP firms.

Working backwards, the first-period wage for workers hired by HP firms will be given by a condition that the entering worker is indifferent over his or her two-period career to being hired by an HP firm or an MP firm. Note that if $w_2^h > 1$, this in turn implies that the first-period HP workers will accept a wage $w_1^h < 1 = w^m$. The resulting indifference condition takes into account the expected value of a good self-employment draw (probability α):

$$w_1^h \geq 1 - \delta(1-\alpha)(w_2^h - 1) - \delta\alpha(w_2^h v - v) \qquad w_1^h \tag{9}$$

As noted earlier, we assume free entry and exit of MP firms. This gives us a zero-profit condition, where the complementary variable is the number of firms active in equilibrium.

$$p^m X^m + p^m X_t^m \leq F^m + X^m + w_2^h X_t^m/r_t^m = F^m + X^m + X_t^m \qquad n^m \tag{10}$$

Finally, there are supply-demand equations for X output with complementary variables

being the X prices. Because of symmetry within firm types, we can reduce (1) to the supply-demand equalities for a representative good for each firm type. These two equations have prices as complementary variables:

$$X_1^h + X_2^h = (p^h)^{-\sigma}\left[(n_d^h + n_f^h)(p^h)^{1-\sigma} + n^m(p^m)^{1-\sigma}\right]^{-1} I \qquad p^h \qquad (11)$$

$$X^m + X_t^m = (p^m)^{-\sigma}\left[(n_d^h + n_f^h)(p^h)^{1-\sigma} + n^m(p^m)^{1-\sigma}\right]^{-1} I \qquad p^m \qquad (12)$$

Finally, consider the productivity of a transit worker, r_t^m. If this is fixed, the model has a bang-bang property with respect to the productivity of transiting workers (at some critical value all experienced workers go to MP firms and HP firms employ only inexperienced workers). In order to smooth this, we assume that r_t^m is a decreasing function of the share of transit workers in the workforce of MP firms. The idea is that the first HP worker hired has a big effect on productivity, but subsequent workers are less able to exploit their skills in low-tech production. Our final equation thus gives the productivity of a transit worker as

$$r_t^m = \gamma + \rho(1 - s_t^m) \qquad (\gamma + \rho) > 1 \qquad r_t^m \qquad (13)$$

γ is then the minimum productivity of a transit worker, taken on if all workers in MP firms are transit workers (this never happens in our simulations). $(\gamma + \rho)$ is the maximum productivity, attained for the first transit worker employed, assumed strictly greater than one as noted earlier, the latter being the productivity of an inexperienced worker.

Our model given by (2)-(13) thus constitutes thirteen non-linear inequalities (there are two equations in (7)) in thirteen non-negative variables. We solve this model analytically in

Appendix A to this paper. But in what follows from this point, we will just report some simulation results using the non-linear complementarity solver in GAMS, working directly with (2) - (13).

Before looking at some numerical outcomes, let us quickly summarize some general results. We do not think that these depend on the specific parameter values chosen (except of course they do depend on the inequality assumptions among parameters), but we can have no general proof in this regard. Most of these are shown analytically in the appendix.

(1) HP firms are bigger than MP firms in equilibrium both in terms of physical output and in value terms; the value difference is smaller, since the HP firm's higher output commands a lower price in equilibrium. Productivity differences are amplified in output and value difference, so a 75% productivity advantage generates about 350% more output and about 175% more value (revenue) depending on other parameters.

(2) HP firms pay a lower wage in the first period and a higher wage in the second period relative to MP firms. Obviously, the wage profile over time is steeper in an HP firm than in an MP firm. Higher wages paid to experienced workers in HP firms are not due to selection, but to higher learning within the HP firm.

(3) In our base cases, HP firms pay a higher average wage to its work force than MP firms, due to discounting. (In our numerical solutions, we use a high discount rate motivated by the view that one-period of the worker's career may be at least ten years.) However, this is not a general result, and it can be reversed by high equilibrium transit rates and high self-employment opportunities. These alter the composition of experienced and inexperienced workers in HP firms and so alter the average wage.

(4) Foreign firms will be observed to pay a higher average wage than domestic firms. However, this is due to the composition of the two groups, with domestic firms' wages being an average of those in low and high-productivity firms.

(5) Combining this with finding (1), it follows that, corrected for firm size, foreign firms do not pay experienced workers more than (large) domestic firms. Similarly, the higher wage to experienced workers in large firms is not due to selection, but to the fact that firm size is just a reflection of productivity.

(6) It follows directly from the assumption that self-employment earnings are greater for a worker previously employed by an HP firm than by an MP firm that self-employed workers with a background in larger or (uncorrected for size) foreign firms earn more.

We now turn to some simulations, first presenting a "base" case, in which there is no self-employment and no transiting workers. Key parameter values are as follows:

Self-employment probability:	$\alpha = 0.0$	
Discount factor:	$\delta = 0.5$	
Elasticity of substitution among varieties:	$\sigma = 3.0$	
Income level (picked to give $n^m = 50$):	$I = 116.6667$	
Fixed costs:	$F^m = F_d^h = 0.5$	$F_f^h = 0.6$
Exogenous number of HP firms:	$n_d^h = n_f^h = 5$	
Productivity multiplier in self-employment:	$v = 1.2$	
Normalized wages in MP firms:	$w_1^m = w_2^m = 1$	
Productivities:	$r_1^h = 1.5$	$r_2^h = 2.0$
	$r_1^m = 1.0$	$r_2^m = 1.0$
	$\gamma = 0.94$	$\rho = 0.25$;[3]

Tables 3.1-3.4 present results. The first column is identical in all simulations, and this is

[3] $r_t^m = 1.19 = 0.94 + 0.25$ is then the initial calibrated value of the transit productivity.

our benchmark solution. HP firms have a higher average wage and higher wage growth (calibrated to zero growth for MP firms). The higher average wage is due entirely to discounting in this case. The output of an HP firm is 4.63 times the output of an MP firm. Income was picked so that the benchmark number of MP firms is 50.

Table 3.1 presents simulations that gradually increase γ with the initial (endogenous value) of r_t^m given by 1.19 from (13), where ρ is set at 0.25. Raising γ makes it more attractive for MP firms to hire workers who have spent one period in HP firms. Fixed values of MP wages, income and so forth give the model a critical value of r_t^m = 1.2 at which workers start to "defect" to MP firms. They would all jump at a higher value, and hence our formulation in (13) above "smooths" this. As indicated in the top two lines of Table 3.1, increases in γ are just offset by a falling share of continuing MP workers (rising share of transiting workers) and so r_t^m stays constant at 1.2 until all experienced HP workers are hired away (we don't run the values out that far in the table, but it can happen).

Table 3.1 shows that the increased productivity of transit workers does not affect wages in HP firms or wage growth of a given worker. However, it does affect the *average wage* paid by HP firms, because there are a lower and lower proportion of experienced workers in these firms. The bottom row of the Table indicates the share of first-period HP workers who transit to MP firms. At some point, the average wage paid by foreign firms falls *below* the wage (=1) paid by domestic firms. HP firms become "nurseries" where inexperienced workers learn skills that they take to MP firms. These results emphasize that the model by no means trivially produces an

outcome in which average wages are higher in HP or foreign firms versus domestic firms, but wage growth and wages corrected for experience continue to be higher in HP firms (and hence the average foreign firm).

Table 3.2 conducts an experiment in which the probability of a favorable draw on self-employment, α, is increased, starting at the benchmark value of 0. While α is the same for workers who chose HP and MP firms in the first period of their careers, the HP workers get a bigger absolute bonus (bonus is a proportion of what would have been their second-period wage). In equilibrium, this forces down the wages in HP firms proportionately in both periods of a worker's career: higher expected self-employment earnings reduce the wages needed to make workers indifferent to joining HP firms. While wage growth of HP workers is unaffected, the average wage in HP firms decreases and can fall below that in MP firms, and this is also true in this case corrected for experience as just noted. Similar comments then apply to foreign versus domestic firms.

Because of this fall in HP firm wages, MP firms can hire away workers. For the parameters we use, this begins to happen at $\alpha = 0.06$ in Table 3.2.[4] Employment in HP firms shifts toward inexperienced workers, but total output per firm rises due to the lower wages.

Table 3.3 considers a minimum wage. We begin the simulations with this unconstrained and equal to the free-market wage of 0.90 for HP workers in their first period, so these two are of course the same solution. Then we gradually raise the minimum until it hits $w = 1$ in the right-hand column, the wage of inexperienced workers available to the industry. In addition to having

[4]In order to get this to happen, we had to use a very large value of $v = 6$; so those that do get a favorable draw are very well off indeed.

the obvious effect of raising the wages of inexperienced workers in HP firms, it cuts output by HP firms (price rises), and so has the equilibrium effect of raising the wages of experienced workers in HP firms as well. Wage growth is in fact unaffected, but the average wage paid in HP firms is considerably higher in the right-hand column of Table 3.3. HP workers collect pure rents. There is no transit of workers to MP firms, which cannot afford these pricey experienced workers. Thus, minimum wages is a reason to expect to observe both higher wages and higher wage growth in high-productivity firms. The HP firms remain large, but less so.

Table 3.4 imposes a progressive income tax. We keep this very simple by assuming that the tax rate on wages less than or equal to one is zero, and that there is a constant tax rate t on wages in excess of one (the so-called "flat tax"). Table 3.4 shows that this acts somewhat like the minimum wage, but by making experienced rather than inexperienced labor more expensive for HP firms. The resulting fall in demand pushes up (before tax) wages for both experienced and inexperienced workers, although the growth rate remains the same. The average wage in HP firms is significantly higher than in MP firms and hence similarly much higher in foreign than in domestic firms.

However, care must be taken in the presence of income or payroll taxes. Results depend very much on which wage is reported in the data: the producer (before tax) cost or the household (take-home) wage. If it is the producer cost, then the income tax increases the average wage paid in HP firms relative to MP firms as we have just indicated. If it is the consumer (take home) wage that is measured, the difference in the average wage between HP and MP firms is smaller. The growth in take-home wage is reduced by the tax. The growth rate in the take-home wage is reported in the fourth row of Table 3.4, and so we see that the profile of the take-home

wage is flatter (higher initial wage, lower take-home wage) than in the base case.

We suspect that data is generally reporting producer cost of labor, or gross wage before tax, and hence here we have another reason why the average wage and wage growth is higher in HP firms and hence higher in foreign than in domestic firms. In the following sections, we use gross wages before taxes.

4. Data and Empirical Strategy

In this and the following section, we confront the empirical predictions of our theoretical model with the real world using matched employer-employee data from Denmark. The data come from the Integrated Data Base (IDA) for Labor Market Research compiled by Statistics Denmark, combined with firm level information about foreign ownership, size, turnover, and exports. IDA contains register based annual data since 1980 on all individuals with Danish residence. It provides detailed information on individual background variables such as education and family characteristics as well as detailed records of previous labor market performance, including occupations and income.

All workers are linked to workplaces (plants) which in turn can be linked to firm level information, which, *e.g.*, allows us to identify all employees in foreign-owned firms in Denmark. Information about foreign ownership is currently available only for the years 2000-2002.[5] As a consequence, in the regressions including foreign ownership, we have to rely on a panel for the years 2000 to 2002, while for the regressions without foreign ownership, we can extend the panel to the period 1981-2003. Note that information about occupation in a given year is based

[5] A firm is classified as foreign owned by Statistics Denmark if foreigners ultimately own more than 50% of the firm, and the foreign direct investment amounts to more than DKK 10 million.

on the individual's occupation in the last week of November. Hence, we cannot observe worker flows within a given year.

Our theoretical model implies that the firm type (HP or MP) affects (a) the current wage level; (b) the current wage growth; and (c) the wage level in future occupations, since acquired skills are, at least partly, transferable. However, as we cannot directly observe whether a firm is an HP or an MP firm, we use the following two additional implications of our theory to derive our testable hypotheses: (d) All foreign-owned firms are of type HP; and (e) HP firms are larger than MP firms. Combining these five predictions results in the following three sets of empirical hypotheses:

First, with respect to the relationship between *the current firm type and the wage level*, our model predicts that in a cross section, we should observe higher wages for workers in foreign-owned and/or large firms, as these firms should all be HP firms. Furthermore, the effect of foreign-ownership should disappear (or at least be reduced) when controlling for firm size, as all HP firms are large but not necessarily foreign-owned. In other words, size should be a better proxy for HP than foreign ownership.

Furthermore, as a positive relationship between firm size (or foreign ownership) and wages is hypothesised to reflect unobservable firm productivity differences and not just an accumulation of more able workers by larger (or foreign-owned) firms, we expect this relationship to survive when we control for observable worker characteristics as well as unobservable time-invariant worker differences (individual fixed effects). For the same reason, we expect the positive relationship to be reduced significantly when controlling for unobservable time-invariant firm differences (firm fixed effects).

Second, with respect to the relationship between *current firm type and wage growth*, we

expect a similar set of results: In a cross section, we should observe higher wage growth for workers in foreign-owned and/or large firms, where the effect of foreign-ownership should disappear (or be reduced) with the inclusion of firm size. A positive relationship should again survive controlling for worker differences, and be reduced significantly when controlling for unobservable time-invariant firm differences.

Third, when it comes to the relationship between *previous firm type and the current wage level*, our data only allow us to analyse the effects of previous experience from large firms, as foreign ownership is only observed since 2000. Thus, in a cross section, we should observe higher wages for workers with previous experience from large firms, and this relationship should not disappear when controlling for worker differences. Instead, it should increase with the amount of previous experience from a large firm. Similarly, we should observe higher earnings for new self-employed with a background in a foreign-owned and/or a large firm; an effect which should increase with the amount of experience from such firms.

We test these three sets of hypotheses formally in the following section by regressing wages and wage growth rates on worker and firm characteristics. However, before turning to that, we take a look at some descriptive statistics.

Table 4.1 presents the number of firms as well as the total employment of foreign-owned (F) and domestically-owned (D) firms in Denmark in the years 2000-2002 divided into different size classes. While the total stock of firms averaged approximately 245,000, only slightly more than 1% of these were foreign owned in the years 2000-2002. However, as also shown in the Table, the foreign firms were considerably larger on average, which implies that they accounted for 12-15% of total employment.[6] Note that this relationship between size and ownership is fully

[6] The employment figures in Table 4.1 are based on firm-level information about full-time employees. Note that part of the difference between foreign- and domestically-owned firms may be due to the fact that

consistent with the implications of our theory.

In Table 4.2, we provide a first check of the relationship between firm type, wage levels, and wage growth. The Table contains the average wages and average wage growth rates for employees in foreign-owned and domestically-owned firms, respectively, as well as in different size classes. The income measure used is an hourly (nominal) wage computed by Statistics Denmark. As hypothesized, the average wages reveal a significant wage gap between domestically- and foreign-owned firms (more than 16% in each of the three years) as well as between small and large firms (10-12%) .

The Table also shows that average wage growth is higher in larger firms. As an example, the difference in wage growth rates between small (<50 employees) and large (>500 employees) firms was 1.0 percentage points in 2001-2, which corresponds to 36% higher annual wage growth in large firms. The difference between foreign-owned firms and domestically-owned firms is much smaller.

While the numbers from Table 4.2 are fully in line with the predictions of our theory model, they do not control for any background characteristics of the individuals, such as education, age and experience. We return to this in the next section.

Note that the Danish labor market is characterized by a high degree of flexibility as firing costs are extremely low. In that vein, Denmark compares better to US and UK labor markets than to the labor markets of the larger European countries. At the same time, the Danish welfare state takes care of the unemployed through for example particularly high compensation rates which is why the Danish model is often termed "Flexicurity". Thus, Danish labor market data seem particularly useful for analyzing productivity transfers through worker mobility.

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some of the smaller foreign-owned firms are not classified as foreign-owned in the data, as it requires FDI of a certain amount (see footnote above).

The data also reveal that a considerable amount of individuals flow between foreign- and domestically-owned firms, and between small and large firms, each year. As an example, around 20% of those employed in a foreign-owned firm in a given year move to another firm the following year (see Table 4.3). Out of these, around two thirds end up in a domestically-owned firm. Of those employed in large (>500 employees) firms, a similar share move to another firm, but this time only around 1/3 end up in a small firm the following year (see Table 4.4). Thus, judged from the mere amount of observed mobility, there is considerable potential for transfers of acquired skills across firms.

5. Empirical Results

This section provides a formal test of the three sets of empirical hypotheses derived in the previous section. In Section 5.1, we test the hypothesis that wages are higher in large and/or foreign-owned firms, whereas in Section 5.2, we concentrate on the hypothesis of higher wage growth in these firms. Finally, in Section 5.3 we turn to the hypothesis of transferability of skills acquired in previous employments by focusing on (i) the relationship between the current wage level and previous experience from large firms; and (ii) the relationship between the earnings of new self-employed and previous experience from large and foreign-owned firms. Variable definitions can be found in Appendix B.

5.1 Wage Levels and Current Firm Type

In this section, we test the hypothesis of higher wage levels in large and/or foreign-owned firms by regressing individual wages on worker and firm characteristics. Columns 1-4 of Table 5.1 report the results of ordinary least squares (OLS) regressions for various specifications of the

right hand side. The dependent variable in all regressions is the log hourly wage.

In the first column, the individual wage is regressed only on a dummy for current employment in a foreign-owned firm, as well as a set of year dummies. The positive and strongly significant coefficient confirms the relationship from Table 4.2. In column 2, the log of firm size is also included. As hypothesised, the coefficient to this variable is also positive and strongly significant, and its inclusion reduces the coefficient to the foreign-ownership dummy, but does not eliminate it. In column 3, a dummy taking the value one if the worker is employed in an exporting firm is included as an additional proxy for HP firm type. Not surprisingly, the estimated coefficient to this dummy is also positive, and it decreases the estimated coefficient to firm size by approximately 1/4.

Addition of (observable) worker characteristics in column 4, such as age, experience, gender, region, and industry dummies, lowers, but far from eliminates, the effect of foreign ownership and firm size. Summarizing the OLS results in Table 5.1, the move from column 1 to column 4 reduces the foreign-ownership premium by about half (0.070 versus 0.134). Acknowledging that the theory presents a pure case in which the foreign-ownership premium should be reduced to zero, we feel that these results are consistent with the theory but still leave something of an unexplained premium. On the other hand, the fact that adding worker characteristics still leaves a large firm-size premium is perfectly consistent with the theory.

While the positive coefficients to firm size and foreign ownership found in columns 1-4 support the empirical predictions of our theory, namely that large and/or foreign-owned firms pay higher wages due to unobserved productivity advantages, they could alternatively reflect: (a) that large and foreign-owned firms pick or attract workers who are more “able” in some unobservable way; and/or (b) that growing firms or firms taken over by foreigners increase the wages of their

workers.

To test the importance of (a), we run the regressions in columns1-4 including individual fixed effects to eliminate any time-invariant unobservable worker differences. The results are contained in columns 5-8 of Table 5.1. While this significantly reduces the coefficient to the foreign ownership dummy from around 10% to 1%, it only slightly affects the firm size effect. The elasticity of wages with respect to firm size is still found to be around 0.01 and strongly significant. Thus, the effects of firm size (and to some extent foreign-ownership) survive when controlling for all individual characteristics, including the unobservable ones, as our theory would predict.

Note, however, that with the short panel, the individual fixed-effects regression can only pick up the short run effects of a change in ownership status or firm size. This may explain why the coefficient to foreign ownership drops, as we would not expect the full wage premium to materialize until after a couple of years in a foreign firm.[7] In this light, it may be surprising that the coefficient to firm size only drops slightly, but it could reflect either rapid learning and/or the importance of minimum wages and/or progressive taxes. It could also reflect that large firms in general tend to attract less "able" workers which in itself would exercise a negative effect on the firm-size coefficient in the ordinary least squares regression.

In any case, the results are consistent with a wage premium in large (and to some extent foreign owned) firms already in the short run, which is not due to a different mix of workers in these firms. We shall get back to the long run effects in the following sections when considering wage growth (Section 5.2) and the effects in a longer panel (Section 5.3).

Finally, to test the importance of (b), we add firm fixed effects instead of individual fixed

[7] An alternative explanation for the drop in the coefficient to foreign ownership is of course that these firms tend to attract better (high-wage) workers.

effects in column 9 of Table 5.1. Our theory predicts that if we control for firm heterogeneity by using firm fixed effects, the estimated effect of firm size (and foreign ownership) should be reduced significantly. If, instead, (b) is the explanation for the positive relationship between firm size (and foreign ownership) and wages, the estimated relationship should not be affected by the inclusion of firm fixed effects.

From column 9, we observe that the positive coefficients to firm size and foreign ownership do in fact disappear (they even become negative) with the inclusion of firm fixed effects. This provides additional support for the hypothesis that the higher wages in large and foreign-owned firms are indeed caused by unobserved productivity advantages.

The result that foreign-owned firms pay higher wages is consistent with a number of existing studies; see, *e.g.*, Doms and Jensen (1987), Aitken et al. (1996), Feliciano and Lipsey (1999), Griffith and Simpson (2003), and Girma and Görg (2006). The few existing studies based on matched employer-employee data, as in the current study, also find that the overall "wage-gap" between foreign-owned and domestically-owned firms is reduced significantly when controlling for firm and worker characteristics; see Heyman et al. (2004) and Martins (2004).

The positive relationship between firm size and wages has also been documented in a number of studies, including Idson and Feaster (1990) and Bayard and Troske (1999). As opposed to our study, Abowd et al. (1999) find that individual fixed effects remove most of the relationship. Brown and Medoff (1989) and Evans and Leighton (1989) also find that controlling for individual heterogeneity by estimating the relationship in first differences reduces but does not eliminate the positive effect of firm size.

5.2 Wage Growth and Current Firm Type

In this section, we test the hypothesis of higher wage growth in large and/or foreign-owned firms by regressing individual wage growth within job spells on worker and firm characteristics. Using the change in log hourly wages as the dependent variable, Columns 1-4 in Table 5.2 report the results of ordinary least squares estimates for various specifications of the right hand side.

The results show that the coefficient to firm size is significantly positive, and robust to the inclusion of observable worker characteristics such as age, education and experience. The estimated coefficients imply that, *e.g.*, a doubling of firm size should be associated with approximately 0.2 percentage points higher wage growth. With an annual wage growth rate of 2%, this corresponds to 10% higher wage growth.

Foreign ownership also has a positive effect on wage growth when firm size is not included (column 1). However, this effect disappears with the inclusion of firm size in columns 2-3, as predicted by our theory. In fact, foreign ownership appears in itself to have a negative effect on wage growth when controlling for firm size, although the effect is much less statistically significant than that of firm size. In Column 3, we control for a number of observable worker characteristics as in Table 5.1. This in fact slightly increases the firms-size coefficient.

As in Section 5.1, we would like to control for unobservable worker differences as well to determine whether the positive relationship between firm size and wage growth could be the result of a different composition of worker types in these firms, *e.g.*, workers with higher learning potential and therefore higher wage growth. However, as we only observe one job spell for each individual due to the short nature of our panel, it is not possible to include individual fixed effects. Furthermore, the potential problem of unobservable worker differences seems much less pertinent when considering wage growth rates instead of wage levels. For example, unobservable

time-invariant ability differences that affect the wage level do not affect wage growth.

Finally, in column 4 of Table 5.2, we add firm fixed effects to test whether the positive relationship between firm size and wage growth just reflects that growing (or shrinking) firms increase (or decrease) their wage growth rates. This does not appear to be the case, as the coefficient to firm size becomes strongly negative with the inclusion of firm fixed effects.[8] Instead, the result strongly indicates that the higher wage growth in large firms does in fact reflect unobservable firm differences, as our theory predicts.

While a number of studies have previously dealt with the relationship between firm size (or foreign ownership) and wage *levels*, much fewer studies have considered the effects on wage *growth*, and the existing results are mixed. Using cross-section data, Pearce (1990) finds larger effects of tenure in large firms, whereas Baron et al. (1987) using panel data (for two years) find a negative relationship between size and wage growth. In a somewhat different context, Møen (2005) finds higher wage growth in R&D intensive firms using an estimation method similar to the one we use above.

5.3 Earnings and Previous Experience

In this section, we turn to the hypothesized relationship between previous experience from large and/or foreign-owned firms and current earnings, which should be brought about by a transfer of acquired skills from one occupation to the next. This is done by extending the estimations from Table 5.1 with measures of previous experience. To construct such measures, we need a longer

[8] An explanation for the negative coefficient to firm size in column 4 may be that expanding firms hire workers who have less wage growth in their first years of employment than already employed workers. This difference between new and old workers may in turn result from imperfect ex-ante information about the new workers' productivities and thus their potential for wage growth. Furthermore, if firms that downsize tend to lay off the unproductive workers (those with less wage growth) first, we will get a negative coefficient to firm size when controlling for firm fixed effects.

panel, and we therefore extend it to the period 1981-2003. This implies that we cannot include measures of foreign ownership (and exports) as this variable is unavailable prior to the year 2000 (1995 for exports). Furthermore, instead of firm size, we use plant size, as the link between plants and firms is also incomplete for the earlier years.

Columns 1-4 of Table 5.3 report the results of ordinary least squares wage regressions for various specifications of the right hand side, whereas columns 5-6 include individual fixed effects. The regressions show the same picture as in Table 5.1. The coefficient to the log of plant size is significantly positive in all regressions and robust to the inclusion of individual fixed effects. As previously, it disappears with the inclusion of firm (plant) fixed effects (column 7).

Furthermore, while tenure in the current firm in general increases the wage level, there is an additional positive effect of tenure if the current plant is large (column 3). This supports the finding from Table 5.2 that wage growth is higher in larger firms. Thus, our empirical findings are fully consistent with not only a short-run wage premium but also higher subsequent wage growth in large (and foreign-owned) firms.

Perhaps even more interestingly, there is an additional positive effect of experience if this experience is from a large plant. This can be seen from a comparison of the coefficients to "experience" and "experience from large plants". In fact, while each extra year of experience initially adds around 3% to the wage (an effect which is declining to around 1.5% per year after 10 years of experience due to the quadratic term in the regressions), this effect is increased by another 1.4 percentage points if the experience is from a large plant. This strongly supports the hypothesis of transferable skills. This is further confirmed by the finding that this effect is preserved with the inclusion of plant fixed effects in column 7. The effects of previously acquired skills do not disappear when controlling for current plant characteristics.

An additional test of the transferability of skills is to consider the earnings of new self-employed. Table 5.4 contains OLS estimates of the relationship between earnings of new self-employed and their previous experience from large and foreign-owned firms. Specifically, in columns 1 and 2, the log of annual earnings is regressed on a number of individual characteristics as well as dummies for the individual being employed in a foreign-owned and/or a large firm the year before. While employment in a foreign-owned firm increases income as self-employed by 13.5%, this effect is reduced to 7.3% when also controlling for the size of the firm.[9] The elasticity of firm size, on the other hand, is found to be around 2%.

In columns 3-5, we add the *amount* of experience from foreign-owned and large firms - computed as the tenure in the last job spell if that was in a firm that was large or foreign-owned, respectively, in the final year of employment. In the case of foreign-owned firms, this moves the effect away from the simple dummy variable to the experience variable, indicating that not just experience from a foreign-owned firm, but also the amount of this experience matters for self-employment income. However, this effect is not statistically significant when it comes to experience from large firms.

Very few papers in the literature have considered the effects of previous workplace (or firm) characteristics on current wages and self-employment income. Møen (2005), however, finds that a higher R&D intensity in previous employment increases the positive effect on wages of previous experience. Martins (2005) also finds some evidence of higher wages for workers moving from foreign to domestic firms compared to their colleagues in domestic firms. In a developing country context, Görg and Strobel (2005), using data from Ghana, find positive effects on self-employment earnings of previous experience from foreign-owned firms.

[9] Note that the smaller t-values in the estimations in Table 5.4 reflect the much smaller sample sizes when considering exclusively the new self-employed.

In sum, this section has provided considerable support for the empirical implications of our theoretical model. Wage levels and wage growth are higher in large and/or foreign-owned firms, and these effects survive controlling for worker characteristics but are reduced significantly when controlling for unobservable firm characteristics, as predicted by our model. Furthermore, skills appear to be transferable to both subsequent wage work and self-employment.

6. Summary and Conclusions

The paper is motivated by the interests by both researchers and policy makers in possible beneficial effects of foreign companies on local companies and workers. We focus on workers, and on the direct effects of working for a high-productivity firm on the individual's productivity in subsequent wage work or self-employment. Using a much-simplified version of Meltiz's heterogeneous firms model, our theory model predicts that foreign firms pay higher average wages, their workers have higher average wage growth, and they earn more in subsequent self-employment for workers who switch.

However, this is due to foreign firms having a higher average productivity, in turn due to the inability of low-productivity foreign firms to enter due to fixed entry costs. High productivity firms are larger, and hence our model also predicts that foreign firms are not more productive than larger domestic firms. In other words, most of the favorable effects of foreign firms disappear when correcting for firm size.

Several experiments with the model indicate that the average wage premium in foreign firms is reduced as either (1) the productivity in MP firms of workers who switch to MP firms from HP firms is increased or (2) the absolute expected value of self-employment earnings when switching from an HP firm grows relative to switching to self-employment from an MP firm.

This fall in the average wage premium is due to a decrease in the share of HP firm workers who are experienced and also in (2) by a willingness to work for less in the first period in a HP firm due to the higher expected payoff in self-employment. In these cases, the HP firms are partly performing the function of "nurseries", training inexperienced workers who work on the cheap and then leave for MP firms or self-employment.

On the other hand, the theory model also concludes that the wage premium is increased by either (1) a minimum wage which prevents HP firms from paying a low initial wage and/or (2) a progressive income tax that hits the second-period earnings of workers in HP firms (or transiting to MP firms). Both of these factors seem empirically relevant, and should lead to the observation of a higher wage premium simultaneously with higher wage growth in HP firms.

Our theory model can be used to derive a number of testable empirical hypotheses about wage levels, wage growth, and productivity transfers. These are tested using matched data between individual Danish workers and firms in the second part of the paper.

Consistent with our theory, we find that working for a foreign owned firm significantly (1) increases the worker's wage, (2) increases the worker's wage growth, and (3) increases subsequent earnings of new self-employed. We also find that effects (1) and (3) are significantly reduced, but not eliminated, by controlling for firm size. Effect (2) disappears completely when controlling for firm size. Firm (plant) size is also in itself found to have a significantly positive effect on subsequent earnings as wage employed (where information on foreign ownership is not available). Thus the empirical results are certainly close to our theoretical predictions although, the foreign ownership effect does not disappear in all cases.

However, as also consistent with our theory, the effects of firm size and foreign ownership do disappear with the inclusion of firm (or plant) fixed effects, while they survive controlling for

worker differences (observable and unobservable).

There are several plausible reasons for the residual foreign-ownership effect after controlling for firm size and observable worker characteristics. One is simply that the top end of the productivity distribution of foreign firms is higher than that for domestic firms and so the average entering foreign firm has a higher average productivity than the higher-productivity domestic firms. This is pretty ad hoc and again, within the heterogenous-firms approach, those higher productivity foreign firms would then have higher outputs, so the effect on wages should disappear controlling for size. Of course, the effect of size may be non-linear, offering a second explanation for the residual foreign-ownership effect, and we are considering that.

Second, and perhaps related, is that foreign firms are somehow able to pick the best workers and the characteristics in question are unobservable. This obviously calls for fixed effects at the worker level, but the short nature of our panel creates difficulties. All we are able to identify with our fixed-effects regressions is essentially the initial wage premium from switching to a foreign firm. We estimate this to be positive, but quite small . But this is perfectly consistent with the theory model, which predicts a low or negative initial wage premium in equilibrium which balances higher earnings later on. Thus the question of whether or not the foreign firms have a better ability to select must await further research.[10]

[10]As noted in our literature review, the alternative approach of Yeaple (2005) with ex ante identical firms and heterogeneous workers deserves a careful and thorough examination in the empirical context.

Appendix A: analytical solutions

This appendix gives analytical solutions to the model for the case where there is some (but not full) transiting in equilibrium, i.e. $X_t^m > 0$ and $X_2^h > 0$.

Wages for workers in HP firms can be solved for from (2), (3), and (9).

$$\frac{w_1^h}{w_2^h} = \frac{r_1^h}{r_2^h} \quad \text{from (2) and (3), so using these in (9) gives} \tag{A1}$$

$$w_1^h = \frac{(1+\beta)}{(1+\beta(r_2^h/r_1^h))} < 1 \qquad w_2^h = \frac{(1+\beta)}{(r_1^h/r_2^h+\beta)} > 1 \tag{A2}$$

where $\beta = \delta(1-\alpha+\alpha v)$. $\beta = \delta$ in the base case with no self-employment probability.

The price of a representative good from an HP firm is solved for from (3) given that we know w_1^h from (A2).

$$p^h = \frac{\sigma}{\sigma-1}\frac{1+\beta}{(r_1^h+\beta r_2^h)} \tag{A3}$$

And the price of a representative good from an MP firm is solved for from (4).

$$p^m = \frac{\sigma}{\sigma-1} > p^h \tag{A4}$$

The output of a representative good from an MP firm is solved for from (10) given that we know the output price from (A4).

$$X^m + X_t^m = (\sigma-1)F^m \tag{A5}$$

The total output of a representative good from an HP firm is solved for from the consumer's marginal rate of substitution condition.

$$\frac{X_1^h + X_2^h}{X^m + X_t^m} = \left[\frac{p^h}{p^m}\right]^{-\sigma} \tag{A6}$$

Given that we know $X^m + X_t^m$, p^h, p^m, we then have

$$X_1^h + X_2^h = \left[\frac{r_1^h + \beta r_2^h}{1 + \beta}\right]^{\sigma}(\sigma - 1)F^m > X^m + X_t^m \qquad \text{(A7)}$$

We then have one remaining variable, n^m, and parameter, *I*. The expenditure-income equation is

$$p^m n^m (X^m + X_t^m) + p^h (n_d^h + n_f^h)(X_1^h + X_2^h) = I \qquad \text{(A8)}$$

All of the endogenous variables except n^m are now known and so this gives one remaining equation in one unknown. In our base case numerical solution, we chose an initial value of $n^m = 50$ and this then calibrates, given our choice that $n_d^h + n_f^h = 10$ and the endogenous values of prices already solved for, to a value of $I = 116.6667$. This is given by the equation

$$I = n^m \frac{\sigma}{\sigma - 1}(\sigma - 1)F^m + (n_d^h + n_f^h)\frac{\sigma}{\sigma - 1}\frac{1 + \beta}{(r_1^h + \beta r_2^h)}\left[\frac{r_1^h + \beta r_2^h}{1 + \beta}\right]^{\sigma}(\sigma - 1)F^m$$

or just

$$I = n^m \sigma F^m + (n_d^h + n_f^h)\sigma\left[\frac{r_1^h + \beta r_2^h}{1 + \beta}\right]^{\sigma - 1} F^m \qquad \text{(A9)}$$

The calibrated value of *I* is then held constant in the subsequent analysis, and (A9) can be inverted to give the equilibrium value of n^m.

To get average wages within the firm, we have to push the analysis further and must solve for the shares in (6) and (7). This requires us to make use of (8). From (13),

$$s_t^m = 1 - (r_t^m - \gamma)/\rho \qquad \text{where} \qquad r_t^m = w_2^h = \frac{(1 + \beta)}{(r_1^h / r_2^h + \beta)} \qquad \text{(A10)}$$

and $s_t^m \geq 0$ by virtue of the non-negativity constraint on X_t^m .

Briefly, we have the share of transit workers in MP firms along with the equilibrium output per firm in (A5)

$$s_t^m = \frac{X_t^m}{X_t^m + X^m} = 1 - \frac{(1+\beta)}{(r_1^h/r_2^h + \beta)}\frac{1}{\rho} + \frac{\gamma}{\rho} \qquad X^m + X_t^m = (\sigma - 1)F^m \tag{A11}$$

These two equations can be solved to get X_t^m .

$$X_t^m = \left[\rho + \gamma - \frac{1+\beta}{r_1^h/r_2^h + \beta}\right]\frac{(\sigma-1)}{\rho}F^m \tag{A12}$$

Finally, (A11), (A12), and the number of MP firms from (A9) are inserted into equation (8). The only remaining variables in (8) are then X_1^h and X_2^h . As a consequence, (8) can be reduced to

$$(1-\alpha)X_1^h/r_1^h - X_2^h/r_2^h = T/R \tag{A13}$$

$$R = n_d^h(F_d^h/Q^h + 1) + n_f^h(F_f^h/Q^h + 1) \qquad Q^h = X_1^h + X_2^h$$

$$T = n^m(s_t^m F^m/r_t^m + X_t^m/r_t^m)$$

Equation (A13) and (A7) allow us to solve for two equations in two unknowns.

$$X_1^h = \frac{Q^h/r_2^h + T/R}{(1-\alpha)/r_1^h + 1/r_2^h} \qquad X_2^h = \frac{(1-\alpha)Q^h/r_1^h - T/R}{(1-\alpha)/r_1^h + 1/r_2^h} \qquad X_1^h + X_2^h = Q^h \tag{A14}$$

The above equations hold as long as there is transit in equilibrium. The minimum value

such that below this value there is no transit, is given by setting (A12) equal to zero.

$$\gamma_{\min} = \frac{1 + \beta}{r_1^h / r_2^h + \beta} - \rho \tag{A15}$$

The maximum value such that above this value all workers transit from HP firms is given by setting the number of first-period workers who do not go into self-employment equal to the number of transit workers. This is just equation (8) without the first two terms on the right hand side. Using that $s_1^h = 1$ and that X_1^h equals (A7), we get:

$$\frac{n^m}{r_t^m}\left(s_t^m F^m + X_t^m\right) = \frac{(1-\alpha)}{r_1^h}\left[\left(n_d^h + n_f^h\right)\left(\frac{r_1^h + \beta r_2^h}{1+\beta}\right)^{\sigma}(\sigma - 1)F^m + n_f^h F_f^h + n_d^h F_d^h\right] \tag{A16}$$

which using (A11) and (A13) can be solved to.

$$\gamma_{\max} = \gamma_{\min} + \frac{\rho(1-\alpha)}{r_1^h}\left[\frac{\left(n_d^h + n_f^h\right)\left(\frac{r_1^h + \beta r_2^h}{1+\beta}\right)^{\sigma}(\sigma - 1)F^m + n_f^h F_f^h + n_d^h F_d^h}{I - \sigma F^m\left(n_d^h + n_f^h\right)\left(\frac{r_1^h + \beta r_2^h}{1+\beta}\right)^{\sigma-1}}\right]\frac{1+\beta}{\left(r_1^h / r_2^h + \beta\right)} \tag{A17}$$

With respect to the experiments conducted in the paper, note that the share of transiting workers (or alternatively we report the share of first-period HP workers who transit) is increasing in γ, which is the experiment in Table 3.1. Also, β is increasing α, and ν, the probability of a successful self-employment draw and the self-employment premium, respectively. The share of transiting workers is increasing in β and therefore in α and ν. The former is the experiment in Table 3.2, so both analytical findings are confirmed in the simulations.

Appendix B: Definitions of variables used in regressions:

Variables available in both panels	
Variable	*Definition*
Hourly wage (Continuous variable)	Wages divided by number of hours worked. The number of hours is imputed from mandatory pension payments, which are determined by the number of hours in employment per week. These estimates are computed by Statistics Denmark.
Gross annual earnings (Continuous variable)	All taxable income.
Experience: (Continuous variable).	This variable is a continuous measure of actual labor market experience based on the number of days in employment over the worker's career. Experience is measured in number of years of full time work.
Years of education (Count variable).	Scheduled number of years of completed of education. Examples: High-school = 12 years; Master degree = 18 years.
Variables only available in the short panel	
Variable	*Definition*
Foreign (Dummy variable).	Takes the value one for workers employed in firms where foreigners ultimately own more than 50% of the firm, and FDI amounts to more than DKK 10 million. Zero otherwise.
Firm size (Count variable).	The average number of full-time employees (within a year) in the firm where the individual is employed. The firm is defined as the legal entity which employ the worker.
Exporter (Dummy variable).	Takes the value one for workers employed in firms with exports. Zero otherwise.
Variables only available in the long panel	
Variable	*Definition*
Plant size (Dummy variable).	The number of employees in the last week of November at the workplace (plant) where the individual is employed. A workplace is defined by its address.
Tenure (Count variable)	The number of years employed at the current workplace. Tenure is reset to zero when the individual changes workplace.
Large (Dummy variable)	Takes the value one for workers employed at workplaces with more 50 employees. Zero otherwise. The dummy variable *Large* is then interacted with *Experience* and *Tenure*.
Experience from large plants (Count variable)	Total number of years of employment at workplaces with more 50 employees, measured from the beginning of the individual's career to the current date.

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Table 3.1: increase in parameter γ (determining r^m_t), producitivty of HP firm transiting to MP firms.

γ	0.940	0.950	0.960	0.970	0.980	0.990
r^m_t	1.190	1.200	1.200	1.200	1.200	1.200
WH1	0.900	0.900	0.900	0.900	0.900	0.900
WH2	1.200	1.200	1.200	1.200	1.200	1.200
average wage growth in an HP firm	0.333	0.333	0.333	0.333	0.333	0.333
average wage domestic firm	1.009	1.009	1.012	1.016	1.019	1.023
average wage foreign firm	1.050	1.050	1.038	1.026	1.015	1.004
total output of an MP firm	1.000	1.000	1.000	1.000	1.000	1.000
total outpout of an HP firm	4.630	4.630	4.630	4.630	4.630	4.630
share of first period HP workers who transit to MP firms			0.119	0.226	0.323	0.410

Table 3.2: increase in the probability of a favorable self-employment draw, α

α	0.000	0.020	0.040	0.060	0.080	0.100
WH1	0.900	0.894	0.889	0.884	0.879	0.875
WH2	1.200	1.192	1.185	1.179	1.172	1.167
average wage growth in an HP firm	0.333	0.333	0.333	0.333	0.333	0.333
average wage domestic firm	1.009	1.007	1.006	1.005	1.006	1.006
average wage foreign firm	1.050	1.042	1.034	1.025	1.011	0.998
total output of an MP firm	1.000	1.000	1.000	1.000	1.000	1.000
total outpout of an HP firm	4.630	4.720	4.805	4.887	4.964	5.038
share of first period HP workers who transit to MP firms				0.017	0.089	0.151

Table 3.3: increase in the minimum wage, which impacts only on wh1

w^h_1	0.9	0.92	0.94	0.96	0.98	1
WH1	0.900	0.920	0.940	0.960	0.980	1.000
WH2	1.200	1.227	1.253	1.280	1.307	1.333
average wage growth in an HP firm	0.333	0.333	0.333	0.333	0.333	0.333
take home wage growth in an HP fi	0.333	0.333	0.333	0.333	0.333	0.333
average wage domestic firm	1.010	1.014	1.018	1.020	1.023	1.025
average wage foreign firm	1.050	1.073	1.097	1.120	1.143	1.167
total output of an MP firm	1.000	1.000	1.000	1.000	1.000	1.000
total outpout of an HP firm	4.630	4.334	4.063	3.815	3.586	3.375
share of first period HP workers who transit to MP firms						

Table 3.4: progressive income tax (tax on earnings above w = 1)

tax rate	0	0.04	0.08	0.12	0.16	0.20
WH1	0.900	0.914	0.927	0.940	0.953	0.964
WH2	1.200	1.219	1.237	1.254	1.270	1.286
average wage growth in an HP firm	0.333	0.333	0.333	0.333	0.333	0.333
take home wage growth in an HP fi	0.333	0.282	0.235	0.190	0.149	0.111
average wage domestic firm	1.010	1.013	1.016	1.018	1.019	1.021
average wage foreign firm	1.050	1.066	1.082	1.097	1.111	1.125
total output of an MP firm	1.000	1.000	1.000	1.000	1.000	1.000
total outpout of an HP firm	4.630	4.419	4.230	4.060	3.905	3.764

Table 4.1: Firm Types and Employment

	Absolute numbers					
	2000		2001		2002	
	Domestic	Foreign	Domestic	Foreign	Domestic	Foreign
Firm Size (# employees)			Firms			
0-49	241,946	1,966	240,393	2,037	237,605	2,119
50-499	2,632	573	2,631	579	2,586	564
500+	195	58	194	52	186	55
Total	244,773	2,597	243,218	2,668	240,377	2,738
			Employment			
0-49	551,159	23,245	543,985	23,738	537,882	24,250
50-499	302,658	84,765	304,132	88,435	299,516	86,621
500+	322,316	74,561	321,540	75,598	298,222	84,360
Total	1,176,133	182,571	1,169,657	187,771	1,135,620	195,231

Note: The table includes all full-time workers in the private sector. The division of firms into size classes is based on the average number of employees over the year.

Table 4.2: Firm Types, Average Wages and Wage Growth

	Average wages			Wage growth	
	2000	2001	2002	2000-1	2001-2
Domestic	174.89	183.02	186.93	5.00%	3.23%
Foreign	203.77	212.33	218.32	5.01%	3.34%
Small (0-49)	167.68	175.62	178.75	4.79%	2.70%
Medium (50-499)	186.13	194.70	199.68	5.02%	3.46%
Large (500+)	185.41	193.98	199.93	5.24%	3.66%

Note: The table includes all full-time workers in the private sector, aged 20-65 years. The division of firms into size classes is based on the average number of employees over the year. Average wages are hourly wages in DKK.

Table 4.3: Worker Flows, by Ownership of the Firm

Workers employed in foreign-owned firms

Status the following year	2000		2001	
Same firm, foreign owned	107,615	63.2%	119,121	67.5%
Same firm, domestically owned	18,387	10.8%	7,191	4.1%
New firm, foreign owned	11,409	6.7%	13,779	7.8%
New firm, domestically owned	18,398	10.8%	20,293	11.5%
Self-employment	1,003	0.6%	840	0.5%
Unemployment/non-employment	9,677	5.7%	11,695	6.6%
Public sector	3,676	2.2%	3,593	2.0%
Total	170,165	100.0%	176,512	100.0%

Workers employed in domestically-owned firms

Status the following year				
Same firm, domestically owned	805,641	67.8%	820,971	69.5%
Same firm, foreign owned	21,507	1.8%	17,463	1.5%
New firm, domestically owned	205,376	17.3%	182,443	15.4%
New firm, foreign owned	31,920	2.7%	29,605	2.5%
Self-employment	11,556	1.0%	10,758	0.9%
Unemployment/non-employment	79,812	6.7%	89,129	7.5%
Public sector	32,936	2.8%	30,787	2.6%
Total	1,188,748	100.0%	1,181,156	100.0%

Note: The table includes all full-time workers in the private sector, aged 20-65. A firm is considered foreign owned if foreigners ultimately own more than 50% of the firm, and FDI amounts to more than DKK 10 million.

Table 4.4: Worker Flows, by Firm Size

Workers employed in large firms

Status the following year	2000		2001	
Same firm, large	301,653	64.6%	312,685	67.6%
Same firm, small	14,129	3.0%	9,457	2.0%
New firm, large	66,526	14.2%	52,905	11.4%
New firm, small	37,796	8.1%	37,030	8.0%
Self-employment	2,623	0.6%	2,292	0.5%
Unemployment/non-employment	29,577	6.3%	33,589	7.3%
Public sector	14,968	3.2%	14,512	3.1%
Total	467,272	100.0%	462,470	100.0%

Workers employed in small firms

Status the following year				
Same firm, small	661,659	69.4%	668,127	69.8%
Same firm, large	9,547	1.0%	7,268	0.8%
New firm, small	139,910	14.7%	134,660	14.1%
New firm, large	37,152	3.9%	35,623	3.7%
Self-employment	10,682	1.1%	9,968	1.0%
Unemployment/non-employment	67,485	7.1%	76,385	8.0%
Public sector	26,734	2.8%	25,215	2.6%
Total	953,169	100.0%	957,246	100.0%

Note: The table includes all full-time workers in the private sector, aged 20-65. A firm is considered larger if the average number of employees over the year is lager than 500.

Table 5.1: Effects of Current Firm Type on Wage Levels (short panel)

	Dependent variable: log(hourly wage)								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	OLS	OLS	OLS	OLS	Indv. FE	Indv. FE	Indv. FE	Indv. FE	Firm FE
Foreign	0.134	0.110	0.101	0.070	0.020	0.013	0.011	0.012	-0.006
	(216.47)**	(173.98)**	(154.12)**	(133.02)**	(36.53)**	(24.82)**	(17.84)**	(19.69)**	(3.95)**
Log(firm size)		0.019	0.014	0.011		0.012	0.012	0.011	-0.021
		(235.16)**	(146.48)**	(124.55)**		(99.38)**	(91.09)**	(81.74)**	(22.31)**
Exporter			0.052	0.048			0.010	0.011	0.001
			(109.51)**	(107.57)**			(24.40)**	(26.26)**	(0.54)
Age				0.041					0.036
				(218.69)**					(231.62)**
Age^2				-0.0005					-0.0004
				(211.37)**					(216.38)**
Experience				0.016				0.051	0.015
				(147.45)**				(61.19)**	(163.55)**
$Experience^2$				-0.0002				-0.0011	-0.0002
				(89.00)**				(185.28)**	(102.39)**
Years of education				0.049					0.045
				(557.64)**					(565.46)**
Female				-0.198					-0.187
				(515.89)**					(474.04)**
Time effects	yes	yes	yes	yes	yes	yes	yes	yes	yes
Individual effects					yes	yes	yes	yes	
Firm effects									yes
Industry effects				yes				yes	
Regional effects				yes				yes	
Observations	3,584,768	3,565,987	3,259,986	3,215,543	3,584,768	3,565,987	3,259,986	3,259,986	3,215,543
Number of firms									111,232
Number of individuals					1,449,600	1,445,909	1,341,082	1,341,082	
R-squared	0.02	0.03	0.03	0.35	0.09	0.09	0.09	0.10	0.26

Note: The table is based on a panel from 2000-2002, which includes all full-time workers in the private sector aged 20-65. Foreign=1 for workers employed in firms where foreigners ultimately own more than 50% of the firm, and FDI amounts to more than DKK 10 million. Firm size refers to the average number of full-time employees in the firm within a year. Exporter=1 for workers employed in firms with exports. Robust t statistics are in parentheses. * significant at 5%; ** significant at 1%.

Table 5.2: Effects of Current Firm Type on Wage Growth

	Dependent variable: dlog(hourly wages)			
	(1)	(2)	(3)	(4)
	OLS	OLS	OLS	Firm FE
Foreign	0.07	-0.19	-0.17	-1.80
	(2.05)*	(5.69)**	(4.94)**	(10.66)**
Log(firm size)		0.21	0.26	-1.80
		(42.62)**	(47.51)**	(15.61)**
Age			-0.76	-0.77
			(54.21)**	(62.87)**
Age^2			0.0072	0.0075
			(45.12)**	(52.69)**
Experience			-0.10	-0.10
			(12.29)**	(14.41)**
$Experience^2$			0.0022	0.0019
			(12.28)**	(11.28)**
Years of education			0.07	0.04
			(12.92)**	(6.73)**
Female			0.38	0.15
			(14.70)**	(5.44)**
Time effects	yes	yes	yes	yes
Firm Effects				yes
Industry effects			yes	
Regional Effects			yes	
Observations	1,728,255	1,723,877	1,704,278	1,704,278
Number of firms				86,794
R-squared	0.00	0.00	0.02	0.02

Note: All coefficients are multiplied by 100. The table is based on a panel from 2000-2002, which includes all full-time workers in the private sector aged 20-65. Foreign=1 for workers employed in firms where foreigners ultimately own more than 50% of the firm and FDI amounts to more than DKK 10 million. Firm size refers to the average number of full-time employees in the firm within a year. Robust t statistics are in parentheses. * significant at 5%; ** significant at 1%.

Table 5.3: Effects of Previous Plant Size on Wage Levels (long panel)

	Dependent variable: log(hourly wage)						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	OLS	OLS	OLS	OLS	Indv. FE	Indv. FE	Plant FE
Log(plant size)	0.041	0.022	0.022	0.022	0.020	0.019	0.002
	(294.59)**	(167.70)**	(110.71)**	(111.03)**	(117.46)**	(108.87)**	(2.62)**
Age		0.059	0.059	0.059		0.070	0.050
		(246.29)**	(245.27)**	(244.98)**		(78.96)**	(256.76)**
Age^2		-0.0007	-0.0007	-0.0007		-0.0008	-0.0006
		(205.42)**	(204.37)**	(203.70)**		(238.31)**	(215.08)**
Experience		0.035	0.037	0.033		0.025	0.028
		(246.55)**	(211.82)**	(173.76)**		(120.83)**	(165.70)**
$Experience^2$		-0.0010	-0.0011	-0.0010		-0.0007	-0.0008
		(205.40)**	(167.10)**	(141.56)**		(116.88)**	(127.89)**
Tenure		0.0114	0.0043	-0.0030		0.0021	0.0058
		(61.46)**	(15.81)**	(10.64)**		(11.48)**	(20.57)**
$Tenure^2$		-0.0007	-0.0002	0.0001		-0.0004	-0.0002
		(57.00)**	(13.23)**	(3.53)**		(33.55)**	(9.22)**
Female		-0.175	-0.175	-0.176			-0.157
		(401.36)**	(400.98)**	(403.36)**			(343.82)**
Years of education		0.043	0.043	0.043			0.036
		(428.51)**	(428.36)**	(424.76)**			(348.20)**
Large x Experience			-0.006	-0.005			-0.006
			(30.25)**	(24.59)**			(32.04)**
Large x $Experience^2$			0.0002	0.0001			0.0002
			(20.17)**	(14.45)**			(22.32)**
Large x Tenure			0.014	0.015			0.008
			(40.64)**	(43.43)**			(24.04)**
Large x $Tenure^2$			-0.0009	-0.0010			-0.0007
			(39.08)**	(42.98)**			(28.81)**
Experience from large plants				0.014			0.012
				(67.33)**			(64.53)**
(Experience from large plants)^2				-0.0005			-0.0003
				(40.78)**			
Time effects	yes	yes	yes	yes	yes	yes	yes
Individual effects					yes	yes	
Firm effects							yes
Industry effects	yes	yes	yes	yes	yes	yes	yes
Regional effects	yes	yes	yes	yes	yes	yes	yes
Observations	3,553,239	3,553,239	3,553,239	3,553,239	3,553,239	3,553,239	3,553,239
Number of plants							175,413
Number of individuals					570,497	570,497	
R-squared	0.20	0.39	0.39	0.39	0.35	0.37	0.29

Note: The table is based on a panel from 1981-2003. The panel includes a 50% sample of all full-time workers in the private sector aged 20-65 who entered the Danish labor market in 1981 or later. Plant size is the total number of employees in the last week of November. Large =1 for workers employed in firms where plant size > 50. Robust t statistics are in parentheses. * significant at 5%; ** significant at 1%.

Table 5.4: Effects of Previous Firm Type on Earnings of New Self-Employed

	Dependent variable: log(gross annual earnings)				
	(1)	(2)	(3)	(4)	(5)
	OLS	OLS	OLS	OLS	OLS
$Foreign_{t-1}$	0.135	0.073	-0.044	0.067	-0.031
	(6.11)**	(3.11)**	(1.07)	(2.85)**	(0.72)
Log(firm $size_{t-1}$)		0.022	0.022	0.016	0.018
		(7.44)**	(7.44)**	(4.16)**	(4.51)**
Age	0.003	0.008	0.008	0.008	0.008
	(0.62)	(1.48)	(1.48)	(1.45)	(1.45)
Age^2	0.00001	-0.00004	-0.00004	-0.00004	-0.00004
	(0.17)	(0.60)	(0.60)	(0.57)	(0.58)
Experience	0.047	0.046	0.046	0.046	0.046
	(14.90)**	(13.98)**	(13.84)**	(13.85)**	(13.79)**
$Experience^2$	-0.001	-0.001	-0.001	-0.001	-0.001
	(11.09)**	(10.52)**	(10.49)**	(10.51)**	(10.49)**
Years of schooling	0.047	0.046	0.046	0.046	0.046
	(15.41)**	(14.39)**	(14.37)**	(14.38)**	(14.36)**
Female	-0.272	-0.267	-0.268	-0.268	-0.268
	(15.39)**	(14.35)**	(14.38)**	(14.37)**	(14.39)**
$Foreign_{t-1}$ x $Tenure_{t-1}$			0.047		0.043
			(3.05)**		(2.59)**
$(Foreignt\text{-}1 \times Tenuret\text{-}1)^2$			-0.002		-0.002
			(2.15)*		(2.04)*
$Large_{t-1}$ x $Tenure_{t-1}$				0.012	0.006
				(1.79)	(0.88)
$(Larget\text{-}1 \times Tenuret\text{-}1)^2$				-0.0002	0.0000
				(0.67)	(0.001)
Time dummies	yes	yes	yes	yes	yes
Industry dummies	yes	yes	yes	yes	yes
Regional dummies	yes	yes	yes	yes	yes
Observations	23,125	20,183	20,183	20,183	20,183
R-squared	0.08	0.09	0.09	0.09	0.09

Note: The table is based on a panel from 2000-2002 which includes all new self-employed (in their first year as self-employed) who were employed as wage-workers in the period prior to self-employment. Only individuals aged between 20 and 65 that operate in the private sector are included. $Foreign_{t-1}$=1 for individuals previously employed in foreign firms (the period prior to business start-up). Firm $size_{t-1}$ refers to size of the firm in the previous job. $Large_{t-1}$=1 for individuals previously employed in firms with more than 500 employees. $Tenure_{t-1}$ is tenure in previous job. Robust t statistics are in parentheses. * significant at 5%; ** significant at 1%.