Dream Jobs in a Globalized Economy: Wage Dynamics and International Experience

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27 November 2023

Abstract: We study how jobs in internationally active firms differ from those in domestic firms in terms of their impact on employees' experience-wage profiles through wage jumps occurring upon changing job ('static effects') or increases in the wage growth rate ('dynamic effects'). By estimating a series of Mincerian wage equations and carefully dealing with issues associated with unobservables, selection and endogeneity, we find that in internationally active firms experience-wage profiles are much steeper than in domestic firms, especially for managers as opposed to blue-collar workers for whom static effects are more important. We argue that the steeper wage profiles of managers (and to a lesser extent of blue-collar workers) in internationally active firms come from the stronger accumulation of human capital through learning from co-workers that these firms allow for, and from the (almost) perfect portability of the accumulated wage gains across all firms.

Keywords: Good Jobs; International Experience; Managers; Sorting; Wage Growth; Wage Premium.

JEL classification: J30, M12, J62, F16.

[*]This paper has previously circulated under the title "Dream Jobs". We are grateful to the editor and three reviewers, to Mostafa Beshkar, Kerstin Holzheu, Giovanni Pica, Diego Puga, Veronica Rappoport, participants of the 13th Joint ECB/CEPR Labour Market Workshop as well as participants of various seminars and conferences for helpful comments. We also thank Lucena Vieira for computational assistance. The authors acknowledge financial support from FCT Fundação para a Ciência e a Tecnologia (Portugal), national funding through research grant UIDB/05069/2020, as well as from the Labex MME-DII (France). This project has also received funding from the European Research Council (ERC) under the European Union's Horizon 2020 research and innovation programme (grant agreement number 789049-MIMAT-ERC-2017-ADG). Luca David Opromolla thanks the hospitality of the Department of Economics at the University of Maryland and at Indiana University, where part of this research was conducted. The opinions expressed are those of the authors and not necessarily those of Banco de Portugal or the Eurosystem.

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1. Introduction

Across a wide range of countries and industries, internationally active firms have been shown to be an exclusive club of superstars (Bernard et al., 2007, Mayer and Ottaviano, 2008, Bernard et al., 2012). They are "few" and their distribution is highly skewed, as a handful of firms accounts for most aggregate international activity. They are also "happy", as they are bigger, generate higher value added, employ more skilled workers, have higher productivity, and pay higher wages than purely domestic firms. Moreover, they are also more vibrant places to work at thanks to better management practices, managers with more diversified experience, and richer relationships, as buyer or sellers, with a larger and more diversified number of counterparts (Mion and Opromolla, 2014, Bloom et al., 2016, 2021).

Research on firm heterogeneity and trade has explained these patterns through the lens of firm selection (Melitz and Redding, 2014). Internationally active firms are bigger, more productive and generate higher added value because only firms that are efficient enough can afford the additional costs of internationalization. It is then argued that superior efficiency maps into higher wages for two main reasons. If labor markets are competitive so that all workers with the same characteristics receive the same salary, internationally active firms may pay higher wages because of a more skilled workforce composition (Yeaple, 2005, Verhoogen, 2008, Bustos, 2011, Sampson, 2014). Moreover, if jobs are themselves heterogeneous across firms, internationally active firms might also offer higher wages to compensate workers for disamenities associated with undesirable job attributes (Alfaro-Urena et al., 2022). With labor market imperfections, workers with the same characteristics can receive different salaries by different firms due to search and matching frictions that make wages vary with firm value added as a bargaining outcome over the surplus from production (Davidson and Matusz, 2009, Helpman et al., 2010, Coşar et al., 2016). Similar variation may be engendered by efficiency or fair wages as long as the wage promotes effort or is perceived to be fair when it varies with firm value added (Egger and Kreickemeier, 2009, Davis and Harrigan, 2011, Amiti and Davis, 2012). Overall, international active firms have been consistently found to pay a wage premium due to both rent-sharing and the skill composition of their workforce, with a larger premium for workers with more international experience (Mion and Opromolla, 2014, Macis and Schivardi, 2016).

While the trade literature has studied the implications of firms' heterogeneous participation in international activities for wages and employment, it has typically neglected the possible effects on workers' job-to-job transitions and experience-wage profiles. These are central outcomes in the labor literature, which has combined rich statistical models with detailed employer-employee data to analyze the dynamics of workers' wages within and across job spells (Postel-Vinay and Robin, 2002, 2004). These models emphasize the role of workers' experience and the history of their mobility across jobs in determining the evolution of wages

through time. However, while such models have been extensively used, their implications have not been explored for the comparison of wage dynamics between internationally active and purely domestic firms. An exception is Ma et al. (2023), who develop a structural model à la Cahuc et al. (2006) with wage bargaining and human capital accumulation to interpret their finding that workers' experience-wage profiles are steeper at Brazilian manufacturing exporters than at non-exporters and, among the former, steeper at exporters shipping to high-income destinations.

The aim of this paper is to shed further light on the specific impacts of firms' internationalization on workers' job-to-job transitions and experience-wage profiles while distinguishing between managers, i.e., those workers in charge of the most complex and knowledge-intensive tasks within and firm, and blue-collar workers. In particular, by considering both the static and the dynamic dimensions of the wage premium obtained from working for internationally active firms, we want to establish whether this wage premium is mainly due to a static effect (i.e. a 'wage jump' upon taking a job at an internationally active firm) or to a dynamic effect (i.e. faster 'wage growth' after taking the job), and whether the benefits of working for an internationally active firm, be they static or dynamic, are 'portable' or are lost when moving to a different employer. To this end, we consider lifetime wage trajectories, and study whether and how employment spells at internationally active firms affect not only current but also future salary. In doing so, we place emphasis on a number of features including causality and mechanism as well as on heterogeneity in occupations, internationalization modes and organizational forms.

The analysis relies on Portuguese matched employer-employee data (*Quadros de Pessoal*) over the period 1991-2006, along with firm-level trade and ownership data. These data allow us to retrieve a comprehensive measure of remuneration, which we simply label 'wage', including basic remuneration, overtime remuneration, regular bonuses and allowances, and irregular bonuses and allowances. To account for the fact that experience may be more relevant for some tasks than for others, we distinguish between managers (widely defined) and blue-collar workers, focusing on the former while using the latter for comparison. In particular, we study 'young' managers who are at most 18 years old at the beginning of our sample period and whom we can thus follow during their entire career. For employers, as a baseline, we classify exporting, importing and foreign-owned firms as 'internationally active' and all other firms as 'domestic'. We then leverage information on employment history to construct measures of managers' overall experience (years spent in internationally active or domestic firms), international experience (years spent in internationally active firms) and domestic experience (years spent in domestic firms).

By estimating a series of Mincerian wage equations and carefully dealing with issues associated with unobservables, selection and endogeneity, we find that wage growth in internationally active firms is higher than in domestic firms, especially for managers. For our

baseline results we employ a large set of covariates along with different combinations of fixed effects. We further report very similar results based on a more exogenous source of variation in the data, namely firm closure and job displacement, while establishing that our findings are robust to a large number of robustness checks, including alternative partitions of firms based on size, productivity and hierarchical complexity.

Our analysis consistently points towards the following results: (i) the wage premium associated with internationally active firms is driven by a higher return on international experience, as compared to domestic experience, rather than by wage jumps or worker selection; (ii) the higher return on international experience with respect to domestic experience is substantial, stacking up to a 12-21 percent wage gap over 10 years (i.e. the bulk of the wage gap observed in the raw data); (iii) both domestic and international experience are fully portable across firms; (iv) one more year of domestic or international experience is more valuable to better managers in both internationally active and domestic firms.[1] These are all novel results.

The analysis is guided by a simple model with differential human capital accumulation between the two types of firms, which we use as a conceptual framework to explore the mechanisms underlying our findings. In the model, internationally active firms provide a more lively work environment where all workers, and especially managers, can accumulate more knowledge through on-the-job experience, which in turn allows those firms to achieve higher performance. We provide several pieces of evidence consistently suggesting that this might be indeed the case.

First, we look at job-to-job transition matrices for managers as well as blue-collar workers within and across firms. We find that high-ability managers move more frequently to other jobs than low-ability managers, and are more likely to end up in internationally active firms. Moreover, managers in internationally active firms are more likely to move to a different plant within their firm as compared with managers in domestic firms. These patterns suggest that internationally active firms provide a more lively work environment than domestic firms, especially for high-ability managers.

Second, we use the approach heralded by Jarosch et al. (2021) to provide evidence of stronger learning from co-workers in internationally active than domestic firms. We initially confirm their results that the future wage of a worker is positively related to the wage of current co-workers after controlling for a number of factors (including the worker's current wage), especially if these co-workers are higher earners. We then obtain new results showing that learning from co-workers is stronger in internationally active firms for both managers and blue-collar workers, but especially for the former. We interpret these features as supporting

[1] In this respect, our analysis expands on Dustmann and Meghir (2005) by, among other aspects, distinguishing between experience acquired when working for different types of firms, while at the same time quantifying the heterogeneity of the returns to both types of experience with respect to ability. As for the latter, Dustmann and Meghir (2005) allow for heterogeneous returns to experience by means of random coefficients and thus they ultimately provide estimates of average (across workers) returns to experience.

the idea that managers can accumulate more human capital in internationally active firms by learning from their peers.

Third, we show that firms grow more if they employ managers with more experience and, in particular, more international experience. This is consistent with managers' experience, and in particular international experience, giving managers something more than a stronger bargaining position with respect to their employer. As hiring workers with such experience allows firms to improve their performance, more human capital must be embodied in more experienced managers.

Fourth, we find that our results apply also to the restricted sample of displaced-and-unemployed young managers and blue-collar workers with very similar magnitudes. In particular, one more year of international experience is associated with a higher return than one more year of domestic experience. As those employees have fallen off the job ladder and are thus left with a poor bargaining position, in their case the possible confounding effect of bargaining when it comes to identifying the role of human capital accumulation in wage growth should be minimised. This is yet another piece of evidence in favor of the importance of differential learning by employees across firms above and beyond the evolution of their bargaining power.

The rest of the paper is organized as follows. Section 2 presents the data sources, samples and summary statistics. Section 3 explores the raw data looking at job-to-job transitions and experience-wage profiles. Section 4 sets the subsequent analysis into the context of the existing literature, and introduces its conceptual framework. Sections 5 reports the baseline results on the experience-wage profiles, together with several robustness checks. Section 6 deals with endogeneity and causality. Section 7 discusses the relevance of differential human capital accumulation as a mechanism behind the observed experience-wage profiles. Section 8 concludes. Additional details about the data and the model, as well as a number of complementary Tables and Figures, are reported in the Appendix.

2. Data Description

In this section we introduce the dataset we use, which merges Portuguese matched employer-employee data with detailed information on the employers' involvement in international activities. We also report a number of summary statistics.

2.1 Sources and Samples

Our dataset is built from two data sources: a matched employer-employee data set, and an international trade transaction-level data set. Overall, our data provides information on firms' characteristics—including their export and import activities and the degree of foreign-ownership—and workers' characteristics for the Portuguese economy—excluding public ad-

ministration and defence, extra-territorial organizations and bodies, and some business and professional associations—for the years 1991-2006.[2] Employer-employee data come from Quadros de Pessoal (henceforth, QP), a dataset made available by the Ministry of Employment of Portugal, drawing on a compulsory annual census of all firms in Portugal that employ at least one worker.[3] Currently, the dataset collects data on about 350,000 firms and 3 million employees in each year. Reported data cover the firm itself, each of its plants, and each of its workers. Each firm and each worker entering the database are assigned a unique time-invariant identifying number, which we use to follow firms and workers over time.[4] Variables available in the dataset include the firm's location, industry, date of creation, total employment, share capital, share of foreign-owned share capital, and sales. The worker-level data cover information on all personnel working for the reporting firms in a reference week in October of each year. Data include information on date of birth, date of hiring, education, occupation, earnings, and hours worked (normal and overtime). The information on earnings includes the basic remuneration, overtime remuneration, regular bonuses and allowances, and irregular bonuses and allowances. It does not include employers' contributions to social security.

The second dataset includes all export and import transactions by firms that are located in Portugal, collected by Statistics Portugal on a monthly basis. These data include the value and quantity of internationally traded goods (i) between Portugal and other Member States of the EU (intra-EU trade) and (ii) by Portugal with non-EU countries (extra-EU trade). Data on extra-EU trade are collected from customs declarations, while data on intra-EU trade are collected through the Intrastat system, which, in 1993, replaced customs declarations as the source of trade statistics within the EU. The same information is used for official statistics and, besides small adjustments, the merchandise trade transactions in our dataset aggregate to the official total exports and imports of Portugal. Each transaction record includes, among other information, the firm's tax identifier, an eight-digit Combined Nomenclature product code, the destination/origin country, the value of the transaction in euros, the quantity of transacted goods, and the relevant international commercial term. We use data on export and import transactions, aggregated at the firm-year level. These data, together with information on ownership, allows us to identify whether a firm exports and/or imports and/or is foreign owned in a given year, in which case we say that the firm is 'internationally active'. Otherwise,

[2]We could have further considered data after 2006 at the cost of including the financial crisis period into the analysis. Ultimately, we decided to focus on a shorter but cleaner sample period.

[3]Public administration and non-market services are excluded. Quadros de Pessoal has been used by, amongst others, Blanchard and Portugal (2001) to compare the U.S. and Portuguese labor markets in terms of unemployment duration and worker flows, Cabral and Mata (2003) to study the evolution of the firm size distribution, and Mion and Opromolla (2014) to show that the export experience acquired by managers in previous firms leads their current firm towards higher export performance and commands a sizeable wage premium for the manager.

[4]The Ministry of Employment implements several checks to ensure that a firm that has already reported to the database is not assigned a different identification number. Similarly, each worker also has a unique identifier, based on the worker's social security number. The administrative nature of the data and their public availability at the workplace—as required by the law—imply a high degree of coverage and reliability.

we say that the firm is 'domestic'[5]

In Appendix A we describe in detail how we construct the sample that combines the matched employer-employee and international trade data as well as the definition and measurement of the variables we use. We consider in the analysis only single-job, full-time workers between 16 and 65 years old, working between 25 and 80 hours (base plus overtime) per week, and based in continental Portugal. Our measure of the hourly wage corresponds to the (log of the) sum of the basic remuneration, overtime remuneration, regular bonuses and allowances, and irregular bonuses and allowances, divided by the sum of the monthly normal and overtime hours of work.

The workers and firms sample so constructed, to which we refer to as the 'large sample', covers the bulk of the Portuguese economy (92% of overall revenue and 91% of overall employment in 2006). We will use it to derive Fact 1 below as well as some other specific results. Within this sample, internationally active firms account for about 38% of overall employment. In most of our analysis we instead focus on a restricted sample, to which we refer to as the 'young managers sample', comprising managers born in 1973 or later (i.e. those who were at most 18 in our starting data year 1991) and their employing firms. The reason for this restriction is twofold. First, Fact 1 suggests that managers may have a special place in the relationship between firm growth and wage growth. On a broader basis, managers differ from other workers in that they are in charge of the most knowledge-intensive tasks involved in the various stages of the production process (design, R&D, marketing, setting up distribution channels, building a network of suppliers and clients, etc.). Second, focusing on young managers allows us to observe their full employment history and thus reconstruct a comprehensive measure of past employment experience. Moreover, as in Dustmann and Meghir (2005), we focus on an age group where most of job mobility and lifecycle wage growth takes place.

In our analysis we employ a broad definition of managers and, in order to identify them, we follow Caliendo et al. (2015) and Caliendo et al. (2020) and consider 4 types of occupation categories, using the hierarchical variable 'qualificação' available in the QP, corresponding to top management (category 3), middle management and team supervisors (category 2), highly-skilled and skilled professionals (category 1), and semi-skilled professionals to apprentices (category 0). Table A-1 in Appendix A provides more details about the hierarchical variable 'qualificação', along with the skills and tasks associated with each occupation category. At any given time, we define a manager as a salary-receiving worker employed in occupations 3 or 2. Therefore, a manager in our analysis does not just refer to the CEO of a firm but also to, for example, a sales manager or to an engineer supervising operations in a production line. In this respect, the variable 'qualificação' provides complementary information with respect to the standard ISCO classification of occupations in that it focuses on the hierarchical position

[5]The dimensions of international activity will be further explored in Section 5.3.2.

of the worker within the firm organization.[6] Finally, a manager at any given time might have been employed in the past in lower categories (1 or 0), although this is actually quite rare in the data given our broad definition of managers.

The young managers sample comprises 153,688 managers between 18 and 33 years old and 51,678 employing firms corresponding to 344,680 observations. In some regressions we will focus on a different restricted sample, to which we refer to as the 'young blue-collars sample', comprising salary-receiving workers employed in category 0 at any given time born in 1973 or later and their employing firms. The young blue-collars sample comprises 581,420 blue-collars between 18 and 33 years old and 137,960 employing firms corresponding to 1,299,463 observations. In both the young managers and young blue-collars samples internationally active firms roughly account for half of overall employment.

2.2 *Summary Statistics*

Table 1 provides some descriptive statistics of both key manager-level and firm-level variables, related to the young managers sample and referring to the year 2006. The top panel of Table 1 reports the mean, standard deviation, p5 and p95 of some key manager-level variables as well as the number of observations. Table 1 indicates, among other things, that the mean tenure for young managers is below 4 years while the number of job changes has a p5-p95 range of 2 job changes with an average of 0.63 job changes. At the same time, domestic experience and international experience have a p5-p95 range of 7 and 8 years respectively, with an average of 2.04 years for the former and 2.15 years for the latter.

The bottom panel of Table 1 reports the mean, standard deviation, p5 and p95 of some key firm-level variables as well as the number of observations. Table 1 indicates that 29% of firms are internationally active, and thus the remaining 71% are domestic. Internationally active firms are on average larger than domestic firms (not reported in the Table) and roughly employ 50% of the young managers. Appendix A provides more details on the construction of both manager-level and firm-level variables while Table C-3 in Appendix C provides the equivalent of Table 1 for the young blue-collars sample.

To gain insight into what type of firms young managers end up working for, Table 2 describes the distribution of firms in the large sample for the year 2006 between firms with no managers and firms with managers; where the latter is further split into firms employing no manager belonging to the young managers sample ('No Young Manager') and firms employing at least one manager belonging to the young managers sample ('Some Young Managers'). Table 2 shows that, as in Mion and Opromolla (2014), most firms do not employ a manager.

[6] In our analysis about 12% of workers are managers. At the same time, in terms of ISCO occupations, the four most frequent entries in the group of workers we categorize as managers are 'Science and engineering professionals' (code 21), 'Legal, social, cultural and related associate professionals' (code 34), 'Business and administration professionals' (code 24), and 'Administrative and commercial managers' (code 12).

Table 1: Descriptive Statistics for the Young Managers Sample, Year 2006

	Key Manager-level Variables				
	N. observ.	Mean	St.dev.	p5	p95
Log Hourly Wage	81,614	2.06	0.53	1.18	2.94
Tenure	81,614	3.71	3.34	0.00	10.00
Job Mobility	81,614	1.63	0.91	1.00	3.00
Domestic Experience	81,614	2.04	2.39	0.00	7.00
International Experience	81,614	2.15	2.77	0.00	8.00
	Key Firm-level Variables				
	N. observ.	Mean	St.dev.	p5	p95
Size	27,698	2.58	1.36	0.69	5.00
Productivity	27,698	10.93	1.22	8.96	12.85
Log Firm Age	27,698	2.38	0.93	0.69	3.74
Share Skilled	27,698	0.49	0.36	0.00	1.00
Internationally Active	27,698	0.29	0.46	0.00	1.00

Notes: Data refer to the young managers sample for the year 2006. Concerning manager-level variables, the (log) hourly wage is defined as the (log of the) sum of the monthly base wage (gross pay for normal hours of work), overtime, regularly and irregularly paid supplements, divided by the sum of the monthly normal and overtime hours of work. Tenure refers to the number of years the manager has been working for the current employer while job mobility indicates the number of times (plus one) the manager has changed employer up to year t. International experience is the number of years a manager has worked in the past for internationally active firms (including the current firm) while domestic experience is the number of years a manager has worked in the past for domestic firms (including the current firm). Moving to firm-level variables, size is firm log employment, productivity is log revenue per worker (apparent labour productivity), the share of skilled workers is the share of a firm's workers (managers and non-managers) with 12 or more years of education, log firm age is the log of the age of the firm and internationally active is a dummy taking value one if the firm is involved in exporting and/or importing and/or is foreign owned and zero otherwise. See Appendix A for more details.

Yet, firms employing at least one manager account for the bulk of aggregate employment and revenue (72% of employment and 85% of revenue in 2006). At the same time, firms belonging to the smaller sample of firms employing young managers (representing 53% of aggregate employment and 70% of aggregate revenue in 2006) are present in all sectors of the economy albeit in somewhat different shares with respect to firms not employing any young manager.

For the 39,003 firms belonging to manufacturing, where numbers are more comparable across firms, Table 3 further shows average sales, employment and age as well as the share of internationally active firms broken down by firms with no managers and firms with managers; where the latter is further split into firms employing no manager belonging to the young managers sample ('No Young Manager'), firms whose managers all belong to the young managers sample ('All Young Managers') and firms in between the two ('Some But Not All

Table 2: Firms, Managers and Young Managers, Year 2006

	Firms with Manager		No Manager	Overall Share	Overall Number
Industry	No Young Manager	Some Young Managers			
Agriculture	11.01	6.31	82.69	100.00	9,085
Fishing	29.09	12.73	58.18	100.00	110
Mining and Quarrying	27.26	15.20	57.54	100.00	763
Manufacturing	19.97	13.38	66.66	100.00	39,003
Electricity	19.75	54.78	25.48	100.00	157
Construction	18.08	10.81	71.12	100.00	35,423
Wholesale and Retail	16.53	9.84	73.63	100.00	75,855
Hotels and Restaurant	11.55	5.45	83.00	100.00	28,702
Transport and Communication	13.77	7.22	79.01	100.00	10,159
Financial Intermediation	19.73	19.99	60.28	100.00	1,901
Real Estate and Busin.	19.45	24.77	55.78	100.00	26,727
Public Adm., Education	13.44	24.92	61.64	100.00	14,660
Other	10.09	10.65	79.25	100.00	13,502
Total	16.26	12.37	71.37	100.00	256,047

Notes: Data refer to the large sample for the year 2006. The Table reports the distribution of firms between firms with no managers (more precisely firm with no salary-receiving managers) and firms with managers; where the latter is further split into firms employing no manager belonging to the young managers sample ('No Young Manager') and firms employing at least one manager belonging to the young managers sample ('Some Young Managers').

Table 3: Firms, Managers and Young Managers, Year 2006, Manufacturing

		Firms with Manag.		No Manag.
	No Young Manager	All Young Managers	Some But Not All Young Managers	
Mean Sales	1,268,686	872,552	13,367,781	320,884
Mean Employment	12.9	9.16	70.8	4.58
Mean Age	16.2	11.2	19.4	13.2
Mean Int Act Status	0.19	0.14	0.38	0.07

Notes: Data refer to manufacturing firms in the large sample for the year 2006. The Table reports average sales (in euros), employment (number of workers) and age as well as the share of internationally active firms broken down by firms with no managers and firms with managers; where the latter is further split into firms employing no manager belonging to the young managers sample ('No Young Manager'), firms whose managers all belong to the young managers sample ('All Young Manager') and firms in between the two ('Some But Not All Young Managers').

Young Managers'). Table 3 shows that young managers can be found in relatively small and young firms comprising young managers only (which are overall comparable to firms with managers but no young managers), as well as in larger, older and more internationally active firms comprising both young managers and older managers.

3. Mobility and Wage Growth

In this section we start the exploration of our dataset by looking at job-to-job transition matrices documenting the patterns of mobility of young managers, as well as young blue-collar workers, across domestic and internationally active firms. We then turn to the experience-wage profiles for both managers and blue-collar workers and highlight a novel fact: wage growth for both types of workers, and for managers in particular, is higher in internationally active than in domestic firms. Probing and explaining this fact will be the aim of the following sections.

3.1 Job-To-Job Transitions

Table 4 provides a job-transition matrix constructed using observed job changes between subsequent years $t-1$ and t in the young managers sample over the period 1991-2006. Table 4 indicates that young managers in domestic and internationally active firms are roughly equally mobile in terms of jobs outside the firm. Specifically, 7.53% ($= 4.55\% + 2.98\%$) of managers working in a domestic firm in $t-1$ end up moving to a different firm in t with the equivalent figure for managers in internationally active firms being 7.14%. At the same time, there is a good amount of 'homophily' in job changes with the majority of moving managers initially employed by a domestic (internationally active) firm ending up in another domestic (internationally active) employer. However, domestic and internationally active firms are not two worlds apart in that there is mobility across the two categories with roughly 40% (32%) of moving managers initially employed by a domestic (internationally active) firm ending up in an internationally active (domestic) firm.

Table 4: Job-Transition Matrix for Young Managers.

	Same Firm in t	Other Domestic Firm in t	Other Internationally Active firm in t	Total
Domestic in t-1	92.47	4.55	2.98	100.00
Internationally active in t-1	92.86	2.26	4.88	100.00

Notes: The above Table provides a transition matrix constructed using observed job changes between $t-1$ and t in the young managers sample over the period 1991-2006. Job changes are split into six different categories depending on whether the employing firm in $t-1$ is domestic or internationally active and on whether the manager is employed by the same firm in t or by a different firm, where the latter could then be domestic or internationally active. For example, the top-left cell indicates that 92.47% of the managers that were employed in a domestic firm in $t-1$ remain in the same firm in t while, for example, the second cell of the second row indicates that 2.26% of managers that were employed in an internationally active firm in $t-1$ move to a different domestic firm in t.

To further characterize those patterns of mobility outside the firm, Table 5 provides the same information for the two sub-samples of low-ability (below average) and high-ability (above

average) managers, where ability is measured by manager fixed effects.[7] Table 5 confirms the presence of some degree 'homophily' in job changes for both low-ability and high-ability managers as well as a good amount of job transition between the two groups of firms. At the same time, Table 5 indicates that high-ability managers move more frequently to other jobs than low-ability managers and are more likely to end up in internationally active firms.[8] In particular, while about 67% (37%) of the low ability moving managers initially employed by an internationally active (domestic) firm end up in an internationally active firms, the corresponding figure for high ability moving managers is 69% (41%).

Table 5: Job-Transition Matrix for Low-Ability and High-Ability Young Managers.

	Low-ability Managers			
	Same Firm in t	Other Domestic Firm in t	Other Internationally Active firm in t	Total
Domestic in t-1	94.14	3.71	2.15	100.00
Internationally active in t-1	94.54	1.80	3.66	100.00
	High-ability Managers			
	Same Firm in t	Other Domestic Firm in t	Other Internationally Active firm in t	Total
Domestic in t-1	90.78	5.40	3.82	100.00
Internationally active in t-1	91.60	2.61	5.79	100.00

Notes: The above Table provides a transition matrix constructed using observed job changes between $t-1$ and t in the young managers sample over the period 1991-2006. Job changes are split into six different categories depending on whether the employing firm in $t-1$ is domestic or internationally active and on whether the manager is employed by the same firm in t or by a different firm, where the latter could then be domestic or internationally active. The top (bottom) part of the Table refers to low-ability (high-ability) managers, i.e, managers with fixed effects below (above) the average. Fixed effects refer to the Portability & Firm FE specification in column (4) of Table 6.

Lastly, in terms of mobility within the firm, managers in internationally active firms are characterised by higher numbers. Specifically, out of the 92.86% of managers in internationally active firm who stay in the same firm between $t-1$ and t reported in Table 4, 9.26% move to a different plant within the firm between $t-1$ and t with the corresponding figure for managers in domestic firms being 5.92%. At the same time, managers in internationally active firms are somewhat more likely to experience a significant job promotion within the firm. In particular, 1.16% of those managers move to a higher managerial position while experiencing a wage increase of 10% or more between $t-1$ and t. The equivalent number for managers in domestic firms is 1.00%.

[7]Manager fixed effects are estimated from wage regressions in Section 5 and in particular from the Portability & Firm FE specification in column (4) of Table 6.

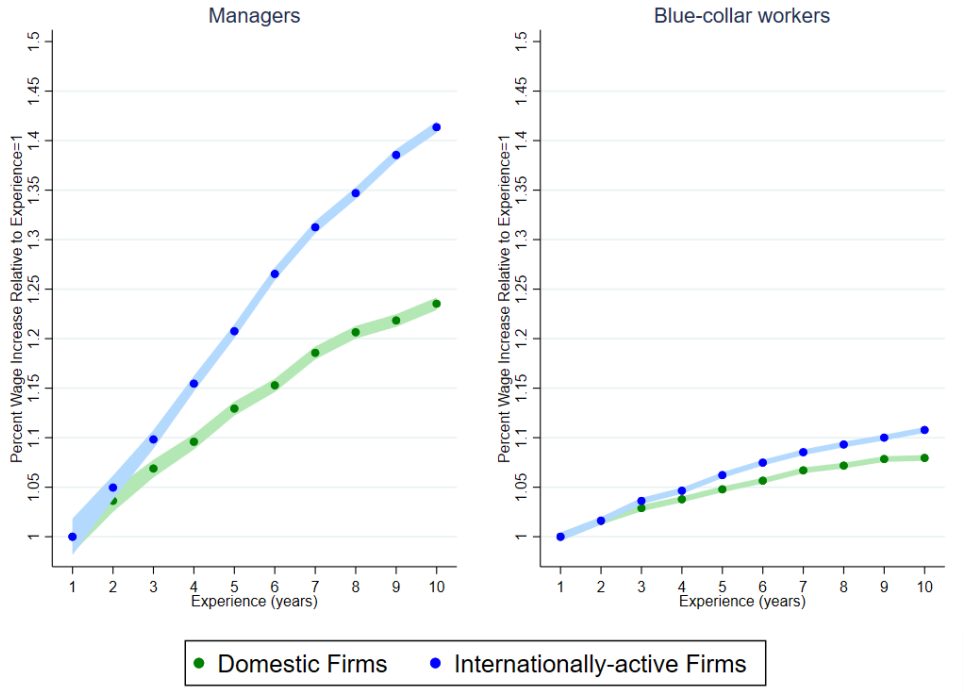
[8]Between 90.78% and 91.6% of high-ability managers stay in the same firm against between 94.14% and 94.54% of low-ability managers.

Tables C-1 and C-2 in Appendix C provide the equivalent of Tables 4 and 5 for the sample of young blue-collar workers. Inspection of those tables reveals very similar patterns to those emerging for young managers. At the same time, mobility outside the firm is – somewhat surprisingly – higher for blue-collar workers than for managers. In this respect, it is useful to consider that workers, whether managers or blue-collars, might move to other firms out of opportunity as well as necessity; something to keep in mind when looking at figures about job transitions.

3.2 *Experience-Wage Profiles*

Turning to the experience-wage profiles, Figure 1 shows them for managers (left panel) and blue-collar workers (right panel) of domestic and internationally active firms in the large sample. These profiles are computed as the average residual hourly wage by number of years of experience (up to 10). They are obtained after controlling for year-industry effects, and are expressed as a percentage increase relative to the case of one year of experience. The figure shows that the difference in wage growth between the two types of firms is substantial for managers, stacking up to almost a 20 percentage points wage gap over just 10 years.

Figure 1: Experience-Wage Profiles in Domestic vs. Internationally active Firms, Managers and Blue-collar Workers, Large Sample



Notes: This Figure shows experience-wage profiles for managers (left panel) and blue-collar workers (right panel) in domestic and internationally active firms in the large sample. To compute the experience-wage profiles, we first regress hourly wages against a full set of year, region (NUTS II) and industry (1-digit NACE) dummies. We then compute, for each type of firm, the average residual hourly wage by number of years of experience (up to 10). Finally, we compute the percentage wage increase relative to the case of one year of experience. The blue and green bands represent confidence intervals at the 95% level.

Figure 1 also indicates that, in general, wage growth is much stronger for managers than for blue-collar workers.[9]

To the best of our knowledge, these findings are new to the literature and we highlight them as:

Fact 1: *For all workers, but especially for managers, wage growth is higher in internationally active than in domestic firms.*

4. Bargaining and Learning

Fact 1 lies at the intersection of the labor and the trade literatures. On the one hand, the labor literature has combined rich statistical models with detailed employer-employee data to analyze the dynamics of workers' wages within and across job spells. These statistical models exploit heterogeneity in the cross-section of workers, as driven by employees' and firms' characteristics, as well as the within dynamics of wages attributable to employees' experience and the history of their job-to-job mobility. Whereas such models have been extensively used, they have not been applied to the systematic comparison of wage dynamics between internationally active and domestic firms. On the other hand, the trade literature has explored the implications of firms' heterogeneous participation in international activities for workers' wage and employment, but not for job-to-job transitions and experience-wage profiles. It is therefore useful at this stage of the analysis to describe a conceptual framework within which to conduct a deeper scrutiny of Fact 1.

As a starting point, let us briefly describe the main features of a canonical dynamic model with on-the-job search and two-sided heterogeneity à la Postel-Vinay and Robin (2002) and Cahuc et al. (2006). In this model, workers are heterogeneous in terms of skill level and firms are heterogeneous in terms of productivity level. When matched, high skill workers and high productivity firms generate more joint surplus than low skilled workers and low productivity firms due to a supermodular production function. Workers and firms are randomly matched and wages are contractualized as a bargaining outcome over match surplus. Wage contracts are long-term and can be renegotiated only with mutual consent, which rules out wage cuts.

[9]It could be argued that the period we consider (1991-2006) has been strongly characterised, at least in the first part, by the expansion of trade between Portugal and the recently joined European market so making internationally active firms mechanically more likely to grow and pay higher wages. Besides accounting for the above issue in a variety of ways in the empirical analysis to follow, we provide with Figure C-1 in Appendix C the same information delivered by Figure 1 for the time frame 2002-2014. This more recent period has been characterised by other shocks, often negative also for internationally active firms, such as the financial crisis, the rise of China in global trade and the proliferation of offshoring in low-income countries. Interestingly, Figure C-1 delivers the exact same messages as Figure 1 and in particular shows a growing divide between the wages for managers in domestic and internationally active firms stacking up to a gap between 15 and 20 percentage points over a decade. As stated in Footnote 4, we could have further considered data after 2006 in our analysis at the cost of including the financial crisis period. Ultimately, we decided to focus on a shorter but cleaner sample period.

There is no endogenous firing motive as an existent contract must be profitable and nothing can happen that may turn a profitable contract into an unprofitable one. Matches are destroyed involuntarily by exogenous random shocks that push workers into unemployment, or voluntarily when workers receive appealing outside offers. Workers and firms have complete information. In particular, while matching is random, they know each other's skill and productivity levels.

The model predicts that the cross-sectional distribution of wages is determined by the joint distribution of worker characteristics, firm characteristics, and their correlation across firm-worker matches. It also predicts firm-to-firm worker mobility and residual wage dispersion due to the randomness in the outcome of matching and thus in wage negotiation. Wage growth results from this churning as wage changes and firm-to-firm worker mobility are intertwined. Consider, for example, a worker who starts as unemployed and at some point in time is randomly matched with a firm. This initial match has two characteristics. First, being random, it is typically not the best match for the worker (and the firm). Second, as the unemployed worker has no bargaining power, the worker is paid the lowest acceptable wage (which, for simplicity, is usually set equal to the wage offered by the least productive firm). For both reasons, once employed, the worker starts searching for another job and randomly receives outside job offers from other potential employers.

While unemployed workers negotiate with a single employer in a conventional way, when an employed worker receives an outside offer, a three-player bargaining process starts between the worker, his current employer and the potential employer that has made the outside offer. The bargaining process follows an infinite-horizon alternating-offers bargaining game, which links the share of the match surplus a worker obtains from negotiation to other search friction parameters. Firms offer the worker a wage that depends on the latter's skill level and can respond to the offers made by the other firm through take-it-or-leave-it counteroffers. If the worker's negotiation fails with both firms, he continues in his job at the preexisting terms. If the negotiation succeeds with his current employer, the worker stays with this employer but extracts a higher wage. If it succeeds with the potential employer, the worker moves to the new employer and earns a higher discounted value (a higher wage or the expectation of higher wages in the future).However, being random, also the new match will not necessarily be the best match for the worker, who thus starts searching again for another job and other offers. This way the worker's on-the-job experience and job-to-job mobility history determine his wage dynamics. The canonical model, however, has not been used to distinguish between experience in internationally active and domestic firms.

There are at least two promising directions in which the canonical model could be fruitfully extended to explain Fact 1. First, workers' human capital accumulation could be introduced as in Bagger et al. (2014). In their model the surplus of the match between a worker of given skill and a firm of given productivity increases with the former's human capital, whose accumulation evolves around a positive deterministic time trend capturing on-the-job experience

gained through time spent in employment. As the time trend is transmitted to the wage equation, wage growth is driven not only by re-bargaining and job-to-job mobility, but also by rising on-the-job experience that is portable across jobs. This set-up could generate Fact 1, if human capital accumulation were assumed to happen faster when on-the-job experience is gained in international active rather than domestic firms, especially for managers.[10] Second, if experience in internationally active firms were assumed to increase the meeting rate (i.e. the likelihood that a worker receives a job offer conditional on the firm searching for a new hire), then an employment spell in an internationally active firm could lead to steeper wage growth through re-bargaining and job-to-job mobility. For example, in Postel-Vinay and Robin (2004) employees looking for an alternative job face an increasing convex cost in their search effort. Supermodularity in production then implies that higher skill workers choose higher search intensity than lower skill workers, which results in the former having a higher endogenous meeting rate. If international experience increased a worker's contribution to match surplus more than domestic experience, workers with international experience would choose higher search intensity, have a higher meeting rate, and enjoy faster wage growth.

To better articulate these ideas without the ambition of designing an encompassing model for structural estimation, in Appendix B we abstract from search frictions and show that a simple dynamic competitive model with differential human capital accumulation between the two types of firms predicts patterns of wage growth that are consistent with Fact 1 through workers' sorting across firms in line with the job-to-job transitions reported in Table 4. While search frictions are clearly important, abstracting from them is nonetheless a useful conceptual exercise as it allows us to highlight a possible novel mechanism through which on-the-job experience in internationally active firms can lead to faster human capital accumulation. In this respect, though simple, our model is rich enough to offer useful guidance to the ensuing empirical analysis, which we will undertake in Sections 5 and 6 while discussing the mechanism's actual relevance in Section 7.

The simple model assumes full portability of the human capital acquired by managers through on-the-job experience and supermodularity between managers' heterogeneous ability and firms' heterogeneous productivity. It predicts imperfect positive assortative matching and a return on experience that is higher for more able managers in both domestic and internationally active firms. Specifically, as in De la Roca et al. (2023), a worker's career consists of two periods: an earlier period when the worker gains on-the-job experience, and a later period when the worker takes advantage of previously gained experience. A job at an internationally active firms offers higher wage, more performance-enhancing experience and more opportunities to exploit such experience than a job at an internationally inactive firm.

[10] In the same vein, Ma et al. (2023) assume that the rate of human capital accumulation by employees increases with employers' productivity (with more productive employers selecting into exporting) as well as with the knowledge stocks of the market where employers sell.

It is, however, also associated with undesirable job attributes, such as a more demanding and stressful environment that affects work-life balance. The tradeoff between these pros and cons depends on workers' characteristics in terms of ability and life circumstances, which cannot be foreseen with certainty and affect the relevance of career development as a priority with respect to other goals. The result is an imperfect sorting model where uncertainty operates based on the premise that the return to experience is higher for more able workers irrespective of the type of firm and disproportionately so in firms offering better career development.[11]

The model succeeds in generating several empirically relevant career paths that speak to the experience-wage profiles of Fact 1 and the associated job-to-job transitions. In particular, it predicts that early experience in internationally active firms leads to higher wage growth. It also predicts job transitions between the internationally active and domestic firms as seen in Table 4 and a higher likelihood for high-ability managers to end up in internationally active firms. In addition, it highlights three fundamental issues for the empirical analysis. The first issue concerns the distinction between 'wage jump' and 'wage growth'. Wage jumps occur when workers move between domestic and international jobs, while changes in wage growth occur when workers start accumulating more or less valuable experience in international or domestic jobs. The second issue concerns the 'portability' of experience. In the model higher wage growth enjoyed by workers with international jobs stays with them when they move to domestic jobs due to more valuable experience. One thus needs to distinguish between experience that is potentially useful in other firms and experience that is specific to a given firm ('tenure').[12] The third issue concerns the complementarities among ability, experience and opportunities. In the model wage growth effects are stronger for more able workers so that workers sort across jobs. Yet, sorting on ability is imperfect because of the presence of other factors (such as life circumstances in our model) that are unobservable to the econometrician. This implies that equally able workers may take different career paths, which allows us to separately identify the role played by differences in experience and opportunities across firms on the one side and differences in ability across workers on the other side.

In spite of its simplicity, the model exhibits features that cannot be found in the trade

[11]Differently from the present model, in the model by De la Roca et al. (2023), there is imperfect sorting across cities of workers with heterogeneous ability and an imperfect assessment of such ability. Larger cities are associated with higher urban costs for all workers, but also disproportionately higher remuneration for more able workers. These features promote the sorting of more and less able workers into smaller and larger cities respectively. However, this sorting pattern is blurred by the fact that at an early career stage workers may be fooled by a very imperfect assessment of their own ability and, by the time they learn enough about their ability, early decisions have had a lasting impact and reduce their incentives to move.

[12]Mion and Opromolla (2014) show that managers' export experience acquired in previous jobs, and specific to certain destination markets, increases firm export performance in those destinations and commands a wage premium for the managers. Compared with Mion and Opromolla (2014), we focus on a broader set of skills and knowledge acquired through experience on the job that is potentially valuable to all firms and that is therefore portable across different employers. In this respect, Mion and Opromolla (2014) show that managers' broad export experience, even if not matched to the export destinations of a firm, also corresponds to a wage premium.

literature referenced in the Introduction. In particular, whereas in that literature workers and firms are heterogeneous with respect to 'static' characteristics (such as ability and productivity), the model allows firms to be heterogeneous with respect to both 'static' characteristics (opportunities) generating wage jumps and 'dynamic' characteristics (experience) generating differential wage growth. Such feature is also uncommon in the aforemention matching models used in the labor literature. This applies not only to standard models (Burdett and Mortensen, 1998), but also to richer models such as the one developed à la Postel-Vinay and Robin (2002).

In the next sections, without neglecting the role of different meeting rates and bargaining positions associated with different jobs in the presence of search frictions, we will provide evidence that different human capital accumulation due to different on-the-job experience is an important part of the big picture behind Fact 1.[13] In particular, we will show that experience matured in internationally active firms is more valuable than experience matured in domestic firms, in that it commands a higher wage for a variety of managers' samples, including displaced managers going through a period of unemployment (i.e., managers who 'fell' from the job ladder and were thus left with a weak bargaining position). Furthermore, we will present the results of a number of regressions à la Jarosch et al. (2021) revealing that managers 'learn from co-workers' (especially from those with higher wages) and this happens disproportionately in internationally active firms.

5. On-The-Job Experience and Wage Growth

We are now ready to subject Fact 1 to closer econometric scrutiny, paying due attention to several issues related to identification and robustness.

5.1 Identification

In what follows we use our matched employer-employee data for Portugal (QP) and consider the time span 1991-2006. Before any regressions, we de-trend (log) hourly wages using industry-year pair dummies on the full set of workers in order to avoid potential compositional effects when comparing the return on different types of experience. Each manager i is associated at time t with a unique current employing firm f. The key variables in our analysis are: (i) a dummy variable ($Int. : Act_{ft}$) indicating whether at time t a firm is internationally active (i.e. it exports, imports or is foreign owned) or not; (ii) the number of years ($Int. : EXP_{it}$) a manager has worked in the past for internationally active firms (including the current firm);

[13] Interestingly, as highlighted in Berger et al. (2022) and Gouin-Bonenfant (2022), within the context of wage bargaining, the process of globalisation might actually dampen differences in wages between firms. In particular, a more polarized labour market, characterized by a higher dispersion of the underlying firm productivity distribution, allows the top firms to pay lower wages than they would otherwise pay thanks to an effective reduction in competition between employers.

(iii) the number of years ($Dom. : EXP_{it}$) a manager has worked in the past for domestic firms (including the current firm). We define overall experience ($Over. : EXP_{it}$) as the sum of domestic and international experience: $Over. : EXP_{it}$=$Dom. : EXP_{it}$+$Int. : EXP_{it}$. Full details about how we constructed these variables are provided in Appendix A.[14] Furthermore, in order to ease the interpretation of coefficients, we do not consider in our baseline results square terms for experience (whether domestic, international or overall). In the robustness Section 5.3.1 below, we then report very similar results obtained using square terms.

The starting wage equation we estimate (that we label OLS) is:

$$w_{it} = \beta_0 + \beta_1 Int. : Act._{ft} + \beta_2 Over. : EXP_{it} + \mathbf{I_{it}'\Gamma_I} + \mathbf{C_{ft}'\Gamma_C} + \eta_r + \varepsilon_{it}, \quad (1)$$

where w_{it} is the de-trended (log) hourly wage of manager i in year t, and the vector $\mathbf{I_{it}}$ stands for other manager i observables: gender, number of years of education, tenure in the firm and its square.[15] The vector $\mathbf{C_{ft}}$ refers to the current employing firm's observables: size (log employment), apparent labour productivity (log revenue per worker), share of skilled workers (managers and non-managers with 12 or more years of education), and log firm age. Finally, η_r denotes firm location dummies (NUTS2 regions).

Equation (1) is our starting point and it serves the purpose of confirming whether the stylized fact that internationally active firms pay higher wages holds in our data. Specifically, the dummy $Int. : Act._{ft}$ captures any cross-sectional differences in the wages of internationally inactive and active firms, and corresponds to standard practice in the literature (Bernard et al., 1995, Frías et al., 2012).

We subsequently enrich (1) by adding manager fixed effects η_i and firm fixed effects η_f, as well as by introducing the distinction between domestic and international experience (i.e., variables capturing the differential impact on *wage growth* related to working one more year for a domestic or internationally active firm), while also assessing whether these two types of experience are 'portable' across firms. Last but not least, we are also interested in assessing whether and how returns on domestic and international experience are heterogeneous across

[14] All results in this Section but those related to equation (1) refer to Least Squares estimations obtained with the Stata user-written routine reghdfe implementing Guimarães and Portugal (2010) iterative methodology to deal with the various fixed effects we consider. We label this estimator GPLS. The reported number of observations refers to the actual number of observations used by the estimation procedure while standard errors are clustered at the manager-level.

[15] We code the gender dummy variable as one if female and zero if male, and drop this variable when we consider individual fixed effects. Concerning education, since changes over time in the number of years of schooling are likely to mainly pick up measurement error rather than a genuine change in the number of years of education, we consider the mode of the distribution of the number of years of education for each manager. Therefore, number of years of education is a time-invariant variable in our analysis and will not be identified any more when considering individual fixed effects. At the same time, we consider later on in our robustness analysis interaction variables between education and experience (both domestic and international) in order to control for the different wage profiles of more or less educated managers.

managers, as posited in our simple model (see Section 4 and Appendix B for details). We do this progressively by means of equations (2) to (5):

$$w_{it} = \beta_0 + \beta_1 Int.:Act_{ft} + \mathbf{I'_{it}\Gamma_I} + \mathbf{C'_{ft}\Gamma_C} + \eta_i + \varepsilon_{it}, \quad (2)$$

$$w_{it} = \beta_0 + \beta_1 Int.:Act_{ft} + \beta_2 Dom.:EXP_{it} + \beta_3 Int.:EXP_{it} + \mathbf{I'_{it}\Gamma_I} + \mathbf{C'_{ft}\Gamma_C} + \eta_i + \varepsilon_{it}, \quad (3)$$

$$\begin{aligned} w_{it} &= \beta_0 + \beta_1 Int.:Act_{ft} + \beta_2 Dom.:EXP_{it} + \beta_3 Int.:EXP_{it} + \beta_4 Dom.:EXP_{it} * Int.:Act_{ft} \\ &+ \beta_5 Int.:EXP_{it} * Int.:Act_{ft} + \beta_6 Job.:Mobil_{it} + \beta_7 Job.:Mobil_{it} * Int.:Act_{ft} + \mathbf{I'_{it}\Gamma_I} \\ &+ \mathbf{C'_{ft}\Gamma_C} + \eta_i + \eta_f + \varepsilon_{it}, \end{aligned} \quad (4)$$

$$\begin{aligned} w_{it} &= \beta_0 + \beta_1 Int.:Act_{ft} + \beta_2 Dom.:EXP_{it} + \beta_3 Int.:EXP_{it} + \beta_4 Dom.:EXP_{it} * Int.:Act_{ft} \\ &+ \beta_5 Int.:EXP_{it} * Int.:Act_{ft} + \beta_6 Job.:Mobil_{it} + \beta_7 Job.:Mobil_{it} * Int.:Act_{ft} \\ &+ \beta_8 Dom.:EXP_{it} * \eta_i + \beta_9 Int.:EXP_{it} * \eta_i + \mathbf{I'_{it}\Gamma_I} + \mathbf{C'_{ft}\Gamma_C} + \eta_i + \eta_f + \varepsilon_{it}. \end{aligned} \quad (5)$$

A few things are worth noting at this stage:

1. In equations (2) and (3) β_1 is identified by: (i) managers remaining in the same firm with the employing firm changing its international activity status; (ii) managers moving from internationally active to domestic firms and vice versa. In this light, β_1 now better corresponds to those wage jumps, occurring when a manager switches to/from an internationally active environment, we are also interested in. In equations (4) and (5), because of the additional presence of firm fixed effects η_f, β_1 is only identified by firms changing their international activity status, which is a much more restrictive variation for measuring wage jumps.[16]

2. The reference category for interactions in equations (4) and (5) is represented by domestic firms, i.e., β_2 (β_3) in equations (4) and (5) is the value of a manager's domestic (international) experience when working for a domestic firm while $\beta_2 + \beta_4$ ($\beta_3 + \beta_5$) is the value of a manager's domestic (international) experience when working for an internationally active firm. Crucially, if β_4 and β_5 are zero and/or small compared to β_2 and β_3 , it means that both domestic and international experience represent a wage component that is 'fully portable' across firms.

[16] A fair amount of the changes in firm international activity status corresponds to occasional/intermittent international activity. However, a large fraction of switches has a more stable nature. For example, among the firms switching from being domestic to internationally active in 2003, around a third remains internationally active also in 2004 and 2005 with such firms accounting for almost half of the employment of the switchers.

3. In equation (5) we interact manager fixed effects η_i with both domestic ($Dom.:EXP_{it} * \eta_i$) and international ($Int.:EXP_{it} * \eta_i$) experience.[17] The return on, for example, domestic experience in a domestic firm in equation (5) is thus manager-specific and equal to $\beta_2 Dom.:EXP_{it} + \beta_8 Dom.:EXP_{it} * \eta_i$ so varying across managers depending on their fixed effect η_i. Positive values of interaction coefficients β_8 and β_9 would indicate that one more year of domestic and/or international experience increases more the wage of more skilled/better managers as in our simple model (see Section 4 and Appendix B for details). Besides allowing us to investigate an interesting feature of our model, specification (5) also provides insights on how well fixed effects capture ability and skills. In particular, if fixed effects were to entirely reflect idiosyncratic shocks unrelated to ability and skills, one would expect the two interaction terms not to be significantly different from zero, i.e., the lack of any specific pattern related to the combined impact of experience and fixed effects.

4. $Job.:Mobil_{it}$ is a job mobility dummy that we consider both alone as well as interacted with the international activity status of the employing firm at time t. Specifically, the way we constructed $Job.:Mobil_{it}$ is such that each time a manager changes firm the dummy jumps up by an additional unit. $Job.:Mobil_{it}$ broadly captures wage jumps occurring when managers move from one firm to another while not necessarily moving between domestic and internationally active firms.[18]

5. A common feature of equations (2) to (5) is that, with manager fixed effects, the coefficients related to firm size and firm productivity included in the vector C_{ft} are essentially identified by within-firm size and productivity *growth*.[19] Accordingly, the value of, say, one additional year of domestic and international experience is net of the wage change that can be related to overall within-firm growth in size and productivity, including growth due to, for instance, increased firm exports.

6. In equations (2) to (5) we drop location dummies because their identification would rest on a small and noisy variation.

[17] In order to better separate manager and firm fixed effects, we focus in estimations of (5) on young managers belonging to the largest connected group (Abowd et al., 2002). For sample consistency across specifications, we report in Table C-5 in Appendix C estimation results referring to specifications (1) to (4) obtained with the sample used for (5). Results are qualitatively, and to a large extent also quantitatively, identical to those reported in Table 6. Finally, in order to estimate (5), and in particular interaction coefficients β_8 and β_9, we build on the iterative Least Squares procedure developed in De La Roca and Puga (2017), to which we refer the reader for further details, and adapt it to the Guimarães and Portugal (2010) methodology as implemented by Stata routine reghdfe.

[18] Given the presence of manager fixed effects, the dummy $Job.:Mobil_{it}$ is indeed identified only by managers changing firms. For example, when considering (4) in first differences, the left hand side variable would be the wage change $w_{it} - w_{it-1}$ with $Job.:Mobil_{it} - Job.:Mobil_{it-1}$ being zero if the manager is employed by the same firm in $t-1$ and t and one if the manager moves to a new employing firm in t.

[19] In specification (4) and (5) the coefficients related to firm size and productivity are, due to the additional presence of firm fixed effects, solely identified by within-firm size and productivity growth.

We refer to equation (2) as 'FE', to equation (3) as 'Type of experience', to equation (4) as 'Portability & Firm FE' and to equation (5) as 'Heterogeneous Returns on Experience'. In unreported results, available upon request, we have also considered two additional refinements of (4) to better deal with unobservables including the potential issues of more ambitious workers and/or better learners sorting into internationally active firms.[20]

5.2 *Results*

Table 6: Wage Regressions, Main Covariates

	(1)	(2)	(3)	(4)	(5)
VARIABLES	OLS	FE	Type of Experience	Portability & Firm FE	Heter. Returns on Exper.
Int. Act. Firm (0/1)	0.0946^{a}	0.0262^{a}	0.0195^{a}	0.0034	0.0048^{c}
	(0.0027)	(0.0028)	(0.0028)	(0.0038)	(0.0026)
Overall Exp. (Yrs)	0.0293^{a}	0.0546^{a}			
	(0.0006)	(0.0009)			
Domestic Exp. (Yrs)			0.0469$^{a}_{**}$	0.0119$^{a}_{**}$	0.0173$^{a}_{**}$
			(0.0011)	(0.0014)	(0.0005)
International Exp. (Yrs)			0.0609$^{a}_{**}$	0.0320$^{a}_{**}$	0.0324$^{a}_{**}$
			(0.0010)	(0.0018)	(0.0007)
Dom. Exp. * Int. Act. Firm (Yrs)				-0.0009	-0.0025^{a}
				(0.0012)	(0.0007)
Int. Exp. * Int. Act. Firm (Yrs)				-0.0036^{b}	-0.0017^{b}
				(0.0015)	(0.0007)
Domestic Exp. * Manager FE (Yrs)					0.0127$^{a}_{**}$
					(0.0006)
International Exp. * Manager FE (Yrs)					0.0199$^{a}_{**}$
					(0.0003)
Job Mobility (Dummy)				0.1063^{a}	0.1036^{a}
				(0.0042)	(0.0005)
Job Mobility * Int. Act. Firm (Dummy)				-0.0028	-0.0054^{a}
				(0.0027)	(0.0018)
Observations	344,680	275,100	275,100	269,320	161,736
R-squared	0.2672	0.8650	0.8658	0.9042	0.9990
Manager-Year Controls	X	X	X	X	X
Firm-Year Controls	X	X	X	X	X
Region FE	X				
Manager FE		X	X	X	X
Firm FE				X	X
Estimation Method	OLS	GPLS	GPLS	GPLS	GPLS

Notes: The dependent variable is the (log) hourly wage, detrended using a full set of year dummies interacted with 1-digit sector dummies. The hourly wage is defined as the sum of the monthly base wage (gross pay for normal hours of work), overtime, regularly and irregularly paid supplements, divided by the sum of the monthly normal and overtime hours of work. Regressions are run on the young managers sample. Manager-year controls include number of years of education as well as tenure in the firm and its square. Firm-year controls include firm size (log employment), productivity (log apparent labour productivity), share of skilled workers and log firm age. Column (1) reports the OLS specification. The FE specification in column (2) includes manager fixed effects. Column (3) distinguishes between experience in domestic and internationally active firms. Column (4) allows the return on domestic and international experience to be different according to the international status of the firm while featuring firm fixed effects and introducing a control for job changes both alone and interacted with the international status of the employing firm in t. Column (5) adds two interaction terms of manager FE with domestic and international experience. Standard errors (in parenthesis) are clustered at the manager level. ^{a} p<0.01, ^{b} p<0.05, ^{c} p<0.1. $_{**}$ indicates that the coefficients of domestic and international experience (or the coefficients of the interactions of domestic experience with the manager FE and international experience with the manager FE) are significantly different from each other at the 5% level. All results but those in column (1) refer to Least Squares estimations obtained with the Stata user-written routine reghdfe implementing Guimarães and Portugal (2010)'s methodology to deal with high-dimensional fixed effects (GPLS). The reported number of observations refers to the actual number of observations used by the estimation procedure. For example, in the case of manager fixed effects in column (2) the number of observations does not include managers for which only one observation is available. Such managers are instead included in the number of observations in column (1).

[20]In unreported results, available upon request, we have experimented with two additional refinements of (4). In the first one, we consider job-spell fixed effects instead of manager and firm fixed effects as a way to better control for correlated unobservables (Dustmann and Pereira, 2008). In the second one, we drop firm fixed effects and allow for two sets of manager fixed effects: one for the level of the wage and one for the growth of the wage. It is indeed possible that ability, skills and motivation also affect wages' *growth*, as for example analysed in Gregory (2020), and we model this in a parsimonious way by means of manager-specific linear trends in wages in additional to standard manager fixed effects. Both specifications above deliver results very similar to those reported in the paper.

Table 6 reports estimations referring to the main covariates of equations (1) to (5), while additional details on control variables are reported in Table C-4 in Appendix C.[21] Column (1) of Table 6 refers to estimations of (1) and the key result stemming from this specification is that internationally active firms pay, conditional on our set of controls, about 9.5% higher wages than internationally inactive firms so confirming previous evidence of a substantial wage premium related to firms involved in international activities (Bernard et al., 2012).[22] When considering manager fixed effects in column (2) of Table 6, the coefficient of $Int. : Act_{ft}$, which now better corresponds to those wage jumps we are interested in, is still strongly significant but drops considerably to about 2.5%, while the experience coefficient indicates a return of about 5.5%, which is in line with previous comparable studies.[23] In terms of the drop of the coefficient of $Int. : Act_{ft}$, column (1) of Table C-6 in Appendix C highlights how this is related to the presence of (imperfect) sorting of better managers into internationally active firms as measured by the positive correlation between manager fixed effects and the $Int. : Act_{ft}$ dummy.

Columns (3) to (5) of Table 6 report results of equations (3) to (5). The first thing to highlight is that there is evidence of a significant differential return on domestic and international experience in all those specification of about 1.5-2%, i.e., one additional year of international experience increases the wage by about 1.5-2% more than one additional year of domestic experience.[24] Columns (4) and (5) of Table 6 further indicate, given the small and not always significant coefficients of the interactions between domestic and international experience with the $Int. : Act_{ft}$ dummy, that the wage components related to both domestic and international experience are equally valued by internationally inactive and active firms, i.e., both types of experience are fully portable/valued across/by all firms. Considering job changes, our estimations do suggest that managers enjoy, on average, wage increases when moving from one job to another, raising their wage by about 10%. However, this has little impact on the differential return between domestic and international experience.

[21] As far as control variables are concerned, Table C-4 in Appendix C shows that coefficients are in line with expectations. In particular, we find lower wages for women, positive but diminishing returns to tenure, a positive return to education and sizeable positive premia related to firm productivity and (especially) size. Finally, columns (1) to (4) of Table C-6 in Appendix C indicate that imperfect sorting of better managers into internationally active firms (as measured by the positive correlation between manager fixed effects and the $Int. : Act_{ft}$ dummy) is present throughout our analysis.

[22] Throughout our analysis we follow standard practice of interpreting coefficients of log regressions as % changes. However, to be more precise, the wage premium corresponding to a coefficient of 9.5% would be exp(0.095)-1=9.97%.

[23] Lagakos et al. (2018) computes the average height of the experience-wage profile for different levels of experience across many countries. They find that average wages for workers with 5-9 years of potential experience are 23.9% higher than those for workers with 0-4 years of potential experience in low-GDP per capita countries, and 43.4% higher in high-GDP per capita countries. Using our data, we find that the value for Portugal lies about half-way, at 32.2%, which is consistent with the GDP per capita of Portugal being very close to the average GDP per capita of the set of countries considered in Lagakos et al. (2018).

[24] In Table 6 $_{**}$ indicates that the coefficients of domestic and international experience are significantly different from each other at the 5% level.

As far as the $Int. : Act_{ft}$ dummy is concerned, the coefficient stands at about 2% in column (3). The presence of both firm and manager fixed effects in columns (4) and (5) of Table 6 means that the related coefficient is only identified by firms changing their internationally active status, which is arguably a rather slim variation to exploit.[25] Indeed, the coefficient of $Int. : Act_{ft}$ is positive and small in both columns (4) and (5) and just about significant in column (5). However, the key point we want to highlight here is that wage jumps enjoyed by managers when moving from domestic to internationally active firms represent less than – coefficients of column (3) – two years of additional wage growth (2*1.4%=2.8%>2.0%) enjoyed when gaining experience in internationally active firms rather than in domestic firms. Therefore, in the space of a couple of years, the main reason why managers are paid higher wages in internationally active firms is a higher wage growth (which sticks with the manager when moving to other firms) rather than a wage jump.

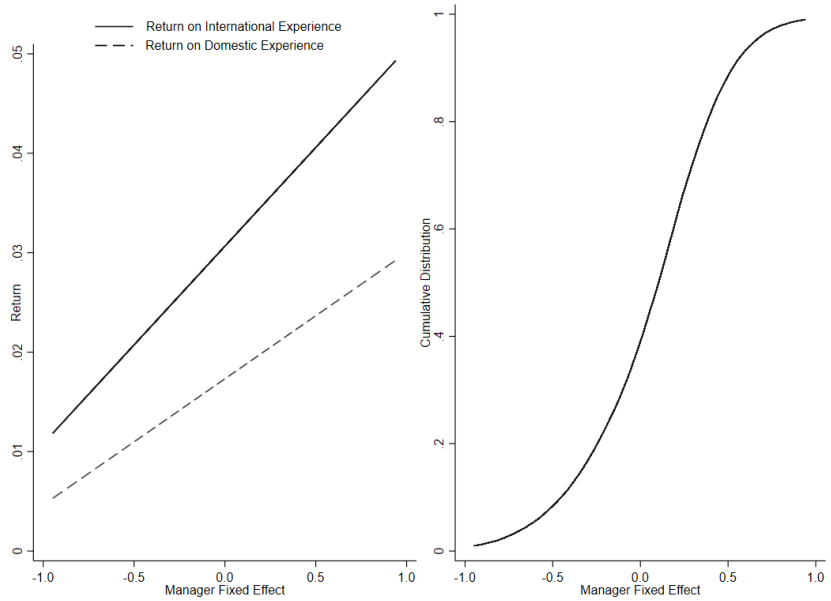
Last but not least, column (5) of Table 6 delivers estimates of the interaction term coefficients β_8 and β_9, which are both strongly significant, and so is their difference, and portray a quite interesting picture that is summarized by Figure 2.[26] The left panel of Figure 2 shows the return on international experience for a manager in an internationally active firm, and the return on domestic experience for a manager in a domestic firm, by manager fixed effect. The right panel shows the cumulative distribution of manager fixed effects. Figure 2 indicates that one more year of international experience is associated to a higher return than one more year of domestic experience across the whole distribution of manager fixed effects, something which is due to both a higher intercept and a steeper slope. Furthermore, in line with our model, one more year of domestic and/or international experience is more valuable to better/higher fixed effects managers. Lastly, the difference between the two returns grows with the manager fixed effects.

To better understand the quantitative implications of the estimated coefficients from (5), we report in the left panel of Figure 3 the wage premium corresponding to a manager who is always employed by an internationally active firm with respect to an identical manager who is always employed by an internationally inactive firm, by number of years of employment (up to 10 years). In particular, in order to capture heterogeneity of returns across ability/fixed effects, we compute the wage premium for managers corresponding to the 25th, 50th, and 75th

[25]There are two points related to this that are worth emphasizing at this stage. The first one is that, as highlighted by the trade literature (Bernard et al., 2012), firm size and productivity are key determinants of export/import/foreign-owned status and its change over time with causality running from better/worse firm performance to change in status. Therefore, given that we already control for firm size and productivity, shocks affecting firm performance and leading to a change of status are not part of our residual and so do not raise endogeneity concerns. The second point is that, when firms are involved in ownership changes, eventually leading to a change in foreign ownership status, variables like tenure in our data are not affected, because of both Portuguese law and the way this information is collected, even if the change in ownership is such that the firm receives a new firm identifier.

[26]In Table 6 $_{**}$ indicates that the coefficients of the interactions of domestic experience with the manager FE and international experience with the manager FE are significantly different from each other at the 5% level.

Figure 2: Returns on International and Domestic Experience by Manager Fixed Effect

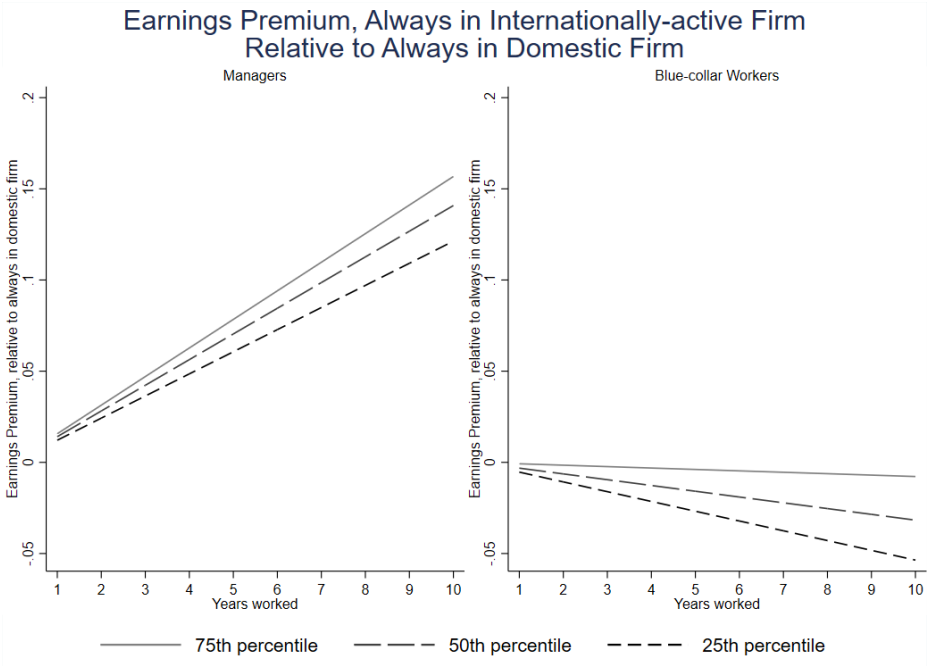


Notes: This Figure is based on specification (5) in Table 6. The left panel shows the return on international experience for a manager in an internationally active firm, and the return on domestic experience for a manager in a domestic firm, by manager fixed effect, between the 1st and 99th percentiles. The returns do not include the static wage premium of working in an internationally active firm ($Int.\,Act_{ft}$ dummy). The right panel shows the cumulative distribution of manager fixed effects, between the 1st and 99th percentiles.

percentiles of the managers fixed effect distribution. As shown by the left panel of Figure 3, the premium increases with the ability of the manager stacking up over a 10 years horizon to a wage difference of about 12% to 16%, which is quite substantial and corresponds to the lion share of wage gap (almost 20%) observed in the raw data for Fact 1.

The right panel of Figure 3, which is constructed in the same way as the left panel but refers to blue-collar workers, delivers a very different message. We estimate specification (5) using the young blue-collar workers sample and, based on the estimated coefficients reported in column (5) of Table C-7 in Appendix C, we compute the wage premium corresponding to a blue-collar worker who is always employed by an internationally active firm with respect to an identical blue-collar worker that is always employed by a domestic firm, by number of years of employment (up to 10 years). In particular, we compute the wage premium for a blue-collar worker corresponding to the 25th, 50th, and 75th percentiles of the blue-collar worker fixed effect distribution. In doing so, the right panel of Figure 3 reveals that there is basically no wage premium for blue-collar workers related to a differential value of domestic and international experience. At the same time, columns (2) to (5) of Table C-7 in Appendix C show evidence across specifications (2) to (5) of a consistently positive and significant wage jump (between 1% and 3%) associated with moving from domestic to internationally active firms for blue-collar workers.

Figure 3: Wage Premium in Internationally active Firms vs. Domestic Firms, Managers and Blue-collar Workers



Notes: This Figure is based on specification (5) in Table 6 (for managers) and specification (5) in Table C-7 in Appendix C (for blue-collar workers). The left panel shows the wage premium corresponding to a manager that is always employed by an internationally active firm with respect to an identical manager that is always employed by a domestic firm, by number of years of employment (up to 10 years). The premium does not include the static wage premium of working in an internationally active firm ($Int.\,Act_{ft}$ dummy). The panel shows the wage premium for three types of managers, corresponding to the 25th, 50th, and 75th percentiles of the manager fixed effect distribution of specification (5) in Table 6. The right panel of the Figure is constructed in the same way but for blue-collar workers.

5.3 Discussion

We now discuss whether our findings are robust to richer specifications of the estimating equations, and the extent to which the distinction between internationally active and domestic firms is more or less salient with respect to on-the-job experience than other distinctions between firm types.

5.3.1 Robustness

We provide here complementary evidence supporting our findings by systematically discarding alternative explanations. Specifically, we consider several additional enriched versions of equation (5).

1. **Bargaining power.** We consider a number of variables that proxy for the bargaining position of a manager and the related wage patterns driven by on-the-job-search and outside offers. Indeed the labour economics literature, and in particular on-the-job search models like Postel-Vinay and Robin (2002), highlight the importance of the characteristics of both the current and prospective employers (productivity), along with the skills of the

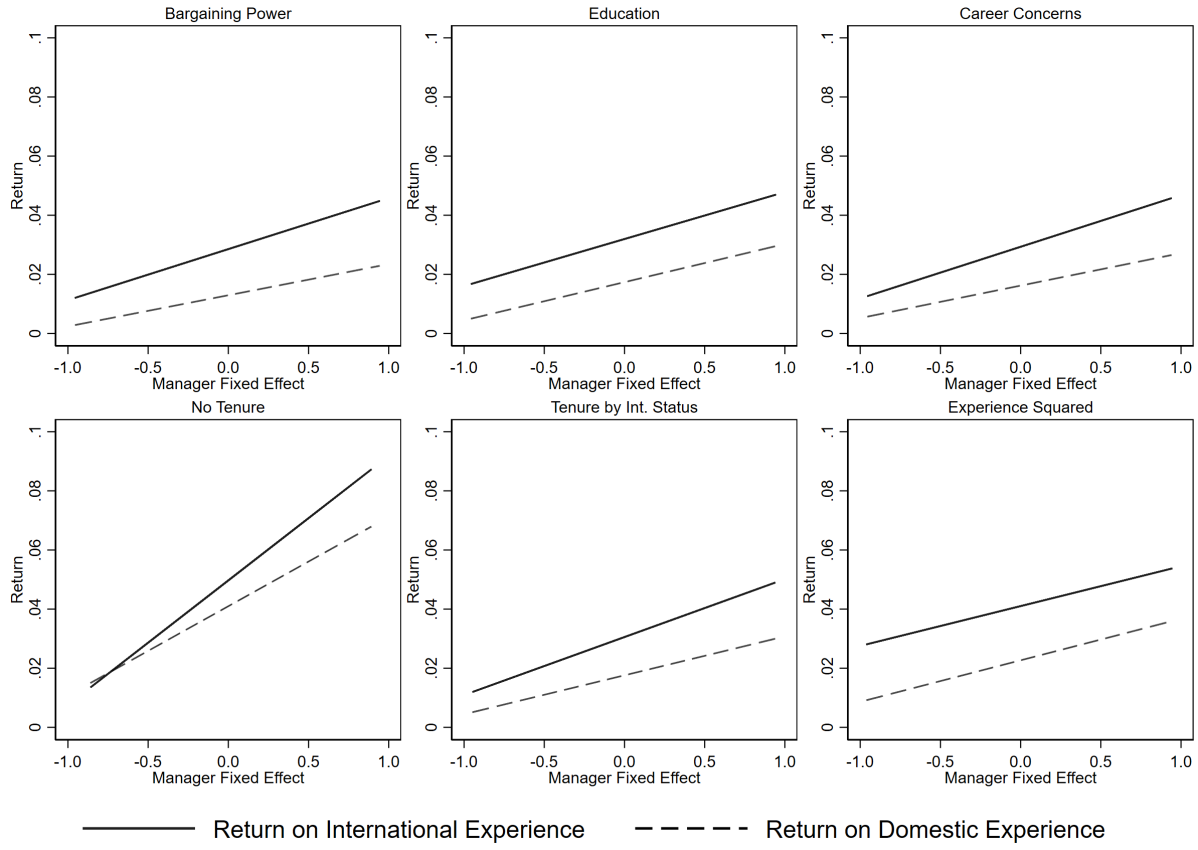
individual, to determine whether a worker will actually change employer as well as the wage in the new job. In particular, the more productive the initial firm is the higher is the expected wage growth for a worker whether he moves to another firm or not. Controlling for the characteristics of the firm the manager was working for in $t-1$ (as well as for the characteristics of the firm the manager works in t that are already in our regressions) should thus help capturing wage patterns dictated by job search and outside offers.[27] Furthermore, as suggested in Bonhomme et al. (2019), the wage in $t-1$ should also be considered to capture more complex wage bargaining frameworks. In particular Bonhomme et al. (2019) suggest that, everything else equal, the lower the wage in t-1 (as an indicator of a bad match-specific realisation) the higher is the likelihood the manager will move to a better paying job/firm. We thus add to our regressions log employment and productivity of the firm the manager was working for in $t-1$ as well as log wage in $t-1$. We construct those variables in such a way that, once time-differencing our wage equation, they enter in levels: the *level* of log employment and productivity of the firm the manager was working for in $t-1$ as well as the *level* of log wage in $t-1$ affect the wage *change* between $t-1$ and t: $w_{it} - w_{it-1}$.

2. **Interaction with education.** We add to the regressions interaction variables between education and experience (both domestic and international) in order to control for the different wage profiles of more or less educated managers. For example, this allows for managers going through university education, and so starting their career later, to have higher returns to experience (both domestic and international).
3. **Career concerns.** We control for career concerns and, in particular, for the fact that young managers could be initially paid less in internationally active firms in the prospect of a faster career (Gibbons and Murphy, 1992). To this end, we construct a dummy variable indicating whether a manager is 25 years old or younger and consider both this dummy alone as well as interacted with the international active status of the employing firm.
4. **Tenure.** We show that our results are robust to dropping tenure in the firm and its square as well as to interacting those tenure variables with the internationally active firm dummy.
5. **Experience square.** We show that our results are robust to introducing both domestic and international experience squared.

Figure 4 provides key highlights of our findings while Table C-8 in Appendix C provides detailed regression results. In particular, Figure 4 displays the returns on international and domestic experience, by manager fixed effect, obtained from the above described enrichments of equation (5). As can be appreciated from Figure 4, the return on international experience is

[27] Di Addario et al. (2023) use data for Italy to look at the characteristics of both the origin and the destination firm to understand their impact on the hiring wage, i.e., the first wage of a worker at a new job.

Figure 4: Returns on International and Domestic Experience by Manager Fixed Effect, Additional Specifications with Heterogeneous Returns on Experience



Notes: This Figure is based on enriched heterogeneous returns on experience specifications reported in columns (1) through (6) in Table C-8 in Appendix C. Each panel shows the return on international experience for a manager in an internationally active firm, and the return on domestic experience for a manager in a domestic firm, by manager fixed effect, between the 1st and 99th percentiles. The returns do not include the static wage premium of working in an internationally active firm ($Int.\,Act_{ft}$ dummy).

indeed higher than the return on domestic experience, across basically the whole fixed effects range, in all six cases. At the same time, Table C-8 in Appendix C does indicate that most of the issues leading us to consider more elaborated versions of equation (5) find some support in the data. For example, it is indeed the case that the wage profiles of more or less educated managers are quite different and that the bargaining position of a manager, and the related wage patterns driven by on-the-job-search and outside offers, are important determinants of wage changes. Specifically, the larger/more productive the firm the manager was working for in $t-1$, and the lower the wage of the manager in $t-1$, the higher is the increase in the wage between $t-1$ and t.

5.3.2 Alternative Firms' Partitions

Internationally active firms are notoriously larger and more productive than domestic firms, and may also exhibit longer chains of command. A possible source of concern with respect to

the interpretation of our findings is that the higher wage premium for international experience may be due to international firms' size, productivity or hierarchical complexity rather than to internationalization per se. For instance, one may argue that larger hierarchical firms are more stressful workplaces, and thus have to compensate their employees with higher wages. On the other hand, they may exhibit more scope for promotion, and thus for faster wage growth. To tackle this type of concerns, we proceed in two steps.

The first step is to replicate some of our results distinguishing the firms in our sample in terms of number of layers of management ('high-layer' and 'low-layer' firms), size ('big' and 'small' firms), and productivity ('productive' and 'unproductive' firms) rather than by internationalization status.[28] This is accomplished by Figure C-2 in Appendix C for the number of management layers, as well as by Figure C-3 for firm size and Figure C-4 for firm productivity. Figures C-2 to C-4 are the counterparts of Figure 3 and display, overall, similar patterns to Figure 3 although with somewhat different magnitudes. These results do suggest that the other dimensions of firm heterogeneity we consider here are potentially relevant for the wage profiles of managers.

The second step consists in comparing more systematically these alternative partitions and related experiences. We accomplish this by using a simplified version of specification (4). Specification (4) is more parsimonious than specification (5) and so more amenable to introducing, as we do, more than one partition of firms in the same estimation along with the related experience variables. At the same time, we simplify equation (4) by dropping the interaction coefficients between domestic/international experience and the international firm status as well as the interaction coefficient between the job mobility dummy and the international firm status. At this stage we then add, for example in the case of the number of management layers, a dummy indicating the high-layer status of firm f ($High. : Layer_{ft}$) as well as the number of years of experience manager i has matured in both high-layer ($High. : EXP_{it}$) and low-layer ($Low. : EXP_{it}$) firms:

$$\begin{aligned} w_{it} &= \beta_0 + \beta_1 Int. : Act_{ft} + \beta_2 Dom. : EXP_{it} + \beta_3 Int. : EXP_{it} \\ &+ \beta_4 High. : Layer_{ft} + \beta_5 Low. : EXP_{it} + \beta_6 High. : EXP_{it} \\ &+ \beta_7 Job. : Mobil_{it} + \mathbf{I'_{it}\Gamma_I} + \mathbf{C'_{ft}\Gamma_C} + \eta_i + \eta_f + \varepsilon_{it}. \end{aligned} \tag{6}$$

[28] A firm is considered big if it employs 50 or more workers. This nicely splits the number of workers employed by small and big firms into roughly equally sized groups as does the partition between domestic and internationally active firms. A firm is considered a high-layer firm, in a given year, if the firm has 3 layers of management, i.e., the maximum number of layers the firm could have given the way we measure them. Layers are defined as in Caliendo et al. (2020). Again, this nicely splits the number of workers employed by high-layer firm and low-layer firms into roughly equally sized groups. The same applies to the partition between productive and unproductive firms. More specifically, a firm is considered productive if it has an apparent labour productivity (the only productivity measure available to us for all firms) above the industry-year average. See Appendix A for more details.

Table 7: Wage Regressions, Main Covariates, Alternative Ways of Distinguishing Firms and Experience

VARIABLES	(1) Layers	(2) Size	(3) Productivity	(4) Strong Int. Exp.
Domestic Exp. (Yrs)	-0.0009$_{**}$	-0.0020$_{**}$	0.0017$_{**}$	0.0121$^{a}_{**}$
	(0.0019)	(0.0020)	(0.0017)	(0.0014)
International Exp. (Yrs)	0.0166$^{a}_{**}$	0.0168$^{a}_{**}$	0.0199$^{a}_{**}$	0.0257$^{a}_{**}$
	(0.0015)	(0.0015)	(0.0014)	(0.0017)
Int. Act. Firm (0/1)	-0.0043^{c}	-0.0047^{c}	-0.0043^{c}	-0.0008
	(0.0025)	(0.0025)	(0.0025)	(0.0026)
High-layer Exp. (Yrs)	0.0189^{a}			
	(0.0013)			
Low-layer Exp. (Yrs)	0.0106^{a}			
	(0.0016)			
High-layer Firm (0/1)	-0.0157^{a}			
	(0.0023)			
Big Exp. (Yrs)		0.0174^{a}		
		(0.0013)		
Small Exp. (Yrs)		0.0143^{a}		
		(0.0017)		
Big Firm (0/1)		0.0198^{a}		
		(0.0045)		
Prod Exp. (Yrs)			0.0175^{a}	
			(0.0012)	
Unprod Exp. (Yrs)			0.0066^{a}	
			(0.0014)	
Productive Firm (0/1)			-0.0010	
			(0.0026)	
Strong International Exp. (Yrs)				0.0039^{b}
				(0.0016)
Job Mobility (Dummy)	0.1016^{a}	0.1016^{a}	0.0996^{a}	0.1067^{a}
	(0.0042)	(0.0042)	(0.0042)	(0.0042)
Observations	269,320	269,320	269,320	269,320
R-squared	0.9045	0.9045	0.9045	0.9042
Manager-Year Controls	X	X	X	X
Firm-Year Controls	X	X	X	X
Manager FE	X	X	X	X
Firm FE	X	X	X	X
Estimation Method	GPLS	GPLS	GPLS	GPLS

Notes: The dependent variable is the (log) hourly wage, detrended using a full set of year dummies interacted with 1-digit sector dummies. The hourly wage is defined as the sum of the monthly base wage (gross pay for normal hours of work), overtime, regularly and irregularly paid supplements, divided by the sum of the monthly normal and overtime hours of work. Regressions are run on the young managers sample. Manager-year controls include number of years of education as well as tenure in the firm and its square. Firm-year controls include firm size (log employment), productivity (log apparent labour productivity), share of skilled workers and log firm age. Columns (1) to (3) report estimations of specification (6) for the partitions of high-layer vs. low-layer firms, big vs. small firms, and productive vs. unproductive firms, respectively. Column (4) does not consider an additional, to the international vs. domestic firms, partition but rather an additional international experience variable (Strong International Exp.) constructed using the value of exports and imports (both needing to be larger than 1 million euros) of employing firms in previous jobs. Standard errors (in parenthesis) are clustered at the manager level. ^{a} p<0.01, ^{b} p<0.05, ^{c} p<0.1. $_{**}$ indicates that the coefficients of domestic and international experience are significantly different from each other at the 5% level. All results refer to Least Squares estimations obtained with the Stata user-written routine reghdfe implementing Guimarães and Portugal (2010)'s methodology to deal with high-dimensional fixed effects (GPLS). The reported number of observations refers to the actual number of observations used by the estimation procedure.

Specification (6) allows us to test the robustness of the key result about the international experience premium over domestic experience while considering at the same time other types of experience as well as a rich set of controls and fixed effects. Columns (1) to (3) of Table 7 report estimates of the key covariates of equation (6) for the partitions of high-layer vs. low-layer firms, big vs. small firms, and productive vs. unproductive firms, respectively. Crucially, in all those columns the coefficient of international experience is larger than the coefficient of domestic experience by about 1.5% or more (like in the estimations provided in

Table 6) and significantly so.[29] At the same time, the coefficients of the other types of experience are also significant portraying a picture similar to the one characterizing the distinction between domestic and international experience. However, the premium related to the 'better' experience is highest for international vs. domestic experience in all cases. For example, in Column (1) of Table 7 the premium for international experience over domestic experience is 1.75% while the premium of high-layer experience over low-layer experience is 0.83%. Overall this suggests that, while many firm features may contribute to shape the value of a job experience, the distinction between domestic and internationally active firms is key quantitatively.

Last but least, we perform a final exercise in column (4) of Table 7 providing further insights on the value of international experience. Specifically, the simple partition between domestic and internationally active firms is arguably a bit crude and perhaps could be improved by using, whenever possible, a continuous measure of the degree of international involvement of a firm. However, it would be difficult to come up with a clear rule based on observables because there are many dimensions of international activity (importing, exporting, being foreign owned) each featuring a rich set of relevant attributes (number of countries and products, value of imports and exports, nationality of the foreign ownership, etc.).

Far from proposing a solution to this problem, what we accomplish in column (4) of Table 7 is a simple check of whether the more intense is the international activity of the firms the manager has matured his experience with, the higher is the value of the experience. In order to do so we construct a measure of 'strong international experience' by focusing on firms that are foreign owned and/or import more than 1 million euros and/or export more than 1 million euros. These firms account for about 1/3 (2/3) of the number (employment) of internationally active firms leaving aside those firms who import and/or exports less than 1 million euros, i.e., firms with a relatively low international involvement. Operationally, we consider specification (6) and, rather than, for example, having the layer-related variables $High. : Layer_{ft}$, $High. : EXP_{it}$ and $Low. : EXP_{it}$, we simply add the variable strong international experience measuring how many years the manager has so far worked in firms that are foreign owned and/or import more than 1 million euros and/or export more than 1 million euros. Interestingly, the additional premium for this strong experience is positive and significant corresponding to a 0.4% higher return on experience. Yet, the bulk of the premium with respect to domestic experience (1.36%) is still accounted for by the variable international experience, which represents the experience premium related to jobs in firms who import and/or exports less than 1 million euros. In light of our framework this suggests that, while a stronger involvement in international activity is likely to generate more valuable experience, jobs in relatively small importers and exporters already seem to be characterized by an important knowledge wedge with respect to jobs in domestic firms.

[29] $_{**}$ in Table 7 indicates that the coefficients of domestic and international experience are significantly different from each other at the 5% level.

6. Endogeneity and Causality

The interpretation of the findings from the previous Section as causal is conditional on the various sets of fixed effects and controls dealing with endogeneity and, in particular, with the potential endogeneity of job matches. More formally, the following orthogonality conditions must hold (Card et al., 2016):

$$\mathbb{E}\left[(\varepsilon_{it} - \overline{\varepsilon}_i)(\mathbf{D}_{it}^f - \overline{\mathbf{D}}_i^f)\right] = 0 \quad \forall f \in \{1,...,F\}, \tag{7}$$

where $\mathbf{D}_{it}^f$ is an indicator for employment at firm f in time t and bars over variables represent time averages. In this respect, Card et al. (2013) for Germany, Macis and Schivardi (2016) for Italy and Card et al. (2016) for the country we study (Portugal), provide evidence that two-way worker-firm fixed effects models of the type we use approximately satisfy conditions (7).[30]

In what follows we provide complementary evidence supporting our findings by using firm closure, and the related job displacement, as well as by additionally imposing that displaced managers go through a period of unemployment. The latter, which has been used in a similar context by Jarosch et al. (2021), serves the purpose of minimizing the confounding effects of wage bargaining and job ladder dynamics.

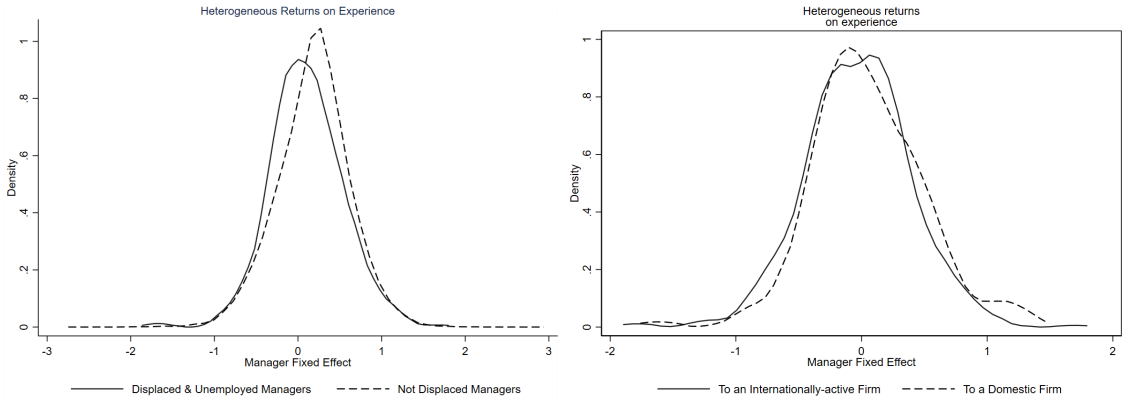
Specifically, to strengthen the causality interpretation of our findings we consider here a more exogenous source of variation in the data: firm closures and related job displacement. Displaced workers have been used in many previous studies to control for selection due to endogenous job mobility, i.e., violations of conditions (7). Examples include Kletzer (1989), Gibbons and Katz (1992), Dustmann and Meghir (2005) and Eliason et al. (2023). At the same time, as highlighted in Dustmann and Meghir (2005), the use of displaced workers (i.e., a group of workers with a relatively low and similar bargaining power over their next job) is particularly useful to distinguish wage growth due to accumulation of knowledge through experience from wage growth due to endogenous job mobility and improved job matches/bargaining power. In this respect, we go one step further and focus on displaced managers going through a period of unemployment, i.e., those who completely fell from the job ladder and are left with a poor bargaining position.

We first identify firm closures and the related group of displaced young managers and, in order to further corroborate the exogeneity assumption, we follow such displaced young managers only in the first job after displacement.[31] We then further impose that such job is

[30] Card et al. (2016) differentiate between male and female workers, which is a key element in their analysis of the gender wage gap. In our analysis, we are not directly interested in the gender wage gap, while we consider richer fixed effects models than those used in Card et al. (2016). This should increase the odds that conditions (7) are satisfied.

[31] We consider a firm as closing in year t when the firm appears for the last time in *Quadros de Pessoal* in t and $t \leq 2006$. Given that we use data up to 2009, this implies that we use at least 3 years of data to verify that the firm has actually shut down and does not appear anymore in the matched employer-employee data set.

Figure 5: Fixed Effects of Displaced & Unemployed and non-Displaced Managers and Fixed Effects of Displaced & Unemployed Managers Ending up in a Domestic or an Internationally Active Firm, Specification with Heterogeneous Returns on Experience



Notes: The left panel of this Figure shows the density of the fixed effects for managers belonging to the young managers sample that are displaced and go through a period of unemployment at least once ('Displaced & Unemployed Managers') and for managers that are never displaced ('Non-Displaced Managers'). The right panel instead shows the density of the fixed effects for displaced managers going through a period of unemployment belonging to the young managers sample ending up in a domestic ('To a Domestic Firm') or an internationally active firm ('To an Internationally-active Firm'). The sample considered is the one referring to the heterogeneous returns on experience specification in column (5) of Table 6.

observed no earlier than two years after the firm closure in year t and label this group of young managers as 'displaced & unemployed' young managers.[32] The first job after displacement will be in either an internationally inactive or active firm and, using data on the employment spell corresponding to the first job after displacement, we estimate specifications (4) and (5) while borrowing the corresponding manager and firm fixed effects from estimations of (4) and (5) on the whole sample of young managers.[33]

The left panel of Figure 5 displays the distributions of the fixed effects of displaced & unemployed and non-displaced young managers corresponding to estimations of specification (5), while the right panel of Figure 5 focuses on the group of displaced & unemployed young managers and provides the distribution of the fixed effects of those ending up, after displacement, in an internationally active or domestic firm. The left panel of Figure 5 shows that the two distributions are quite similar with differences going in the direction one expects, i.e., displaced & unemployed young managers are characterized by an overall lower fixed effects average. At the same time, the right panel of Figure 5 shows an extremely similar shape

[32] In the QP data workers (and firms) are observed once a year in a reference week in October. Therefore, if we observe a worker having a job the year after his/her firm's closure it is entirely possible that the worker did not experienced any unemployment spell. To be sure about the presence of an unemployment spell, we thus require that the new job is observed no earlier than two years after the firm closure.

[33] We use estimated fixed effects η_i and η_f obtained from estimations of (4) and (5) on the sample of young managers as simple covariates, instead of treating them as fixed effects, in the estimations of (4) and (5) on the sample of displaced & unemployed young managers.

Table 8: Wage Regressions, Key Covariates, Displaced & Unemployed Managers Sample

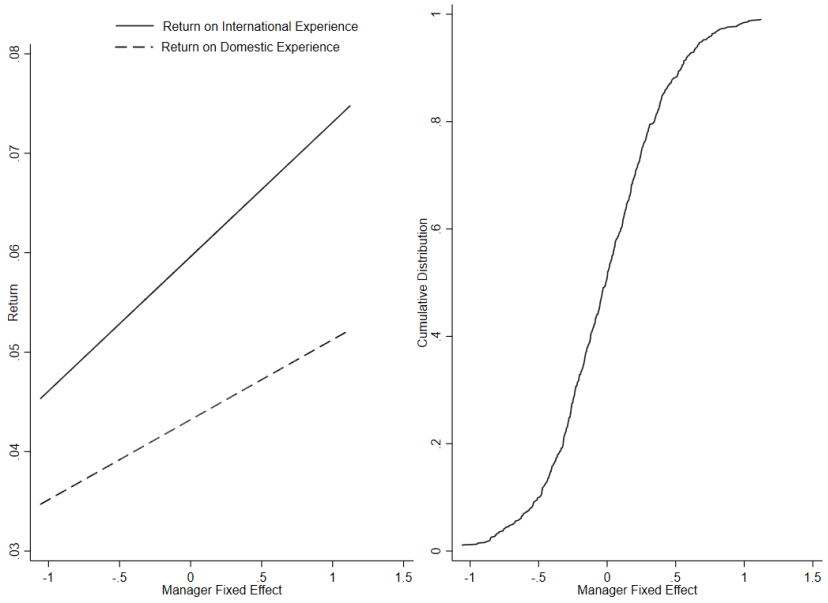
VARIABLES	(1) Portability & Firm FE	(2) Heter. Returns on Exper.
Int. Act. Firm (0/1)	-0.0034	-0.0042
	(0.0183)	(0.0140)
Domestic Exp. (Yrs)	0.0099^{a}_{**}	0.0432^{a}_{**}
	(0.0020)	(0.0037)
International Exp. (Yrs)	0.0315^{a}_{**}	0.0591^{a}_{**}
	(0.0022)	(0.0049)
Dom. Exp. * Int. Act. Firm (Yrs)	0.0042	-0.0010
	(0.0047)	(0.0049)
Int. Exp. * Int. Act. Firm (Yrs)	-0.0041	0.0005
	(0.0034)	(0.0050)
International Exp. * Manager FE (Yrs)		0.0080^{a}
		(0.0030)
Domestic Exp. * Manager FE (Yrs)		0.0135^{a}
		(0.0035)
Observations	1,810	877
R-squared	0.9225	0.9735
Manager-Year Controls	X	X
Firm-Year Controls	X	X
Manager FE	X	X
Firm FE	X	X
Estimation Method	OLS	OLS

Notes: The dependent variable is the (log) hourly wage, detrended using a full set of year dummies interacted with 1-digit sector dummies. The hourly wage is defined as the sum of the monthly base wage (gross pay for normal hours of work), overtime, regularly and irregularly paid supplements, divided by the sum of the monthly normal and overtime hours of work. Regressions are run on the displaced & unemployed young managers sample. Manager-year controls include number of years of education as well as tenure in the firm and its square. Firm-year controls include firm size (log employment), productivity (log apparent labour productivity), share of skilled workers and log firm age. Column (1) provides key covariates of the Portability & Firm FE specification while column (2) provides key covariates of the Heterogeneous Returns on Experience specification. Standard errors (in parenthesis) are clustered at the manager level. ^{a} p<0.01, ^{b} p<0.05, ^{c} p<0.1. $_{**}$ indicates that the coefficients of domestic and international experience (or the coefficients of the interactions of domestic experience with the manager FE and international experience with the manager FE) are significantly different from each other at the 5% level. Displaced & unemployed young managers are followed only in the first job after displacement and so the job mobility dummy and its interaction with the internationally active status dummy are not relevant. All results refer to OLS estimations while firm and manager fixed effects are borrowed from the estimations of the corresponding specifications on the sample of young managers. The reported number of observations refers to the actual number of observations used in the estimation.

and support when comparing the distributions of fixed effects of displaced managers ending up in an internationally active or domestic firm suggesting that displaced & unemployed young managers ending up in internationally active or domestic firms are virtually indistinguishable in terms of time-invariant unobservables.

Table 8 provides estimation results for key covariates of specifications (4) and (5) on the sample of displaced & unemployed young managers. At the same time Figure 6, which is the equivalent of Figure 2 for displaced & unemployed young managers, displays the returns on domestic and international experience by manager fixed effect (left panel) as well as the cumulative distribution of manager fixed effects (right panel). Finally, Figure 7, which is the equivalent of Figure 3 for displaced & unemployed young managers and displaced & unemployed young blue-collar workers, shows in the left (right) panel the wage premium corresponding to a manager (blue-collar worker) who is always employed by an internationally

Figure 6: Returns on International and Domestic Experience by Manager Fixed Effect, Displaced & Unemployed Managers Sample

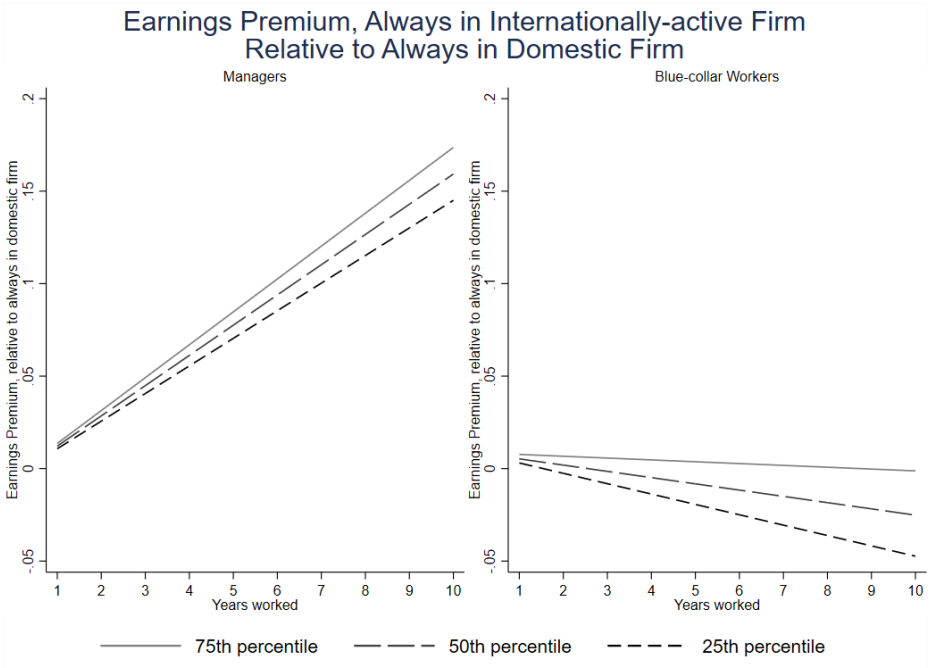


Notes: This Figure is based on specification (2) in Table 8. The left panel shows the return on international experience for a manager in an internationally active firm, and the return on domestic experience for a manager in a domestic firm, by manager fixed effect, between the 1st and 99th percentiles. The returns do not include the static wage premium of working in an internationally active firm ($Int.\ Act_{ft}$ dummy). The right panel shows the cumulative distribution of fixed effects, between the 1st and 99th percentiles.

active firm with respect to an identical manager (blue-collar worker) who is always employed by a domestic firm, by number of years of employment (up to 10 years). In particular, we consider managers (blue-collar workers) corresponding to the 25th, 50th, and 75th percentiles of the managers (blue-collar workers) fixed effect distribution.

Inspection of Table 8 and Figures 6 and 7 reveals that the key findings and patterns related to the sample of young managers and blue-collar workers apply also to the sample of displaced & unemployed young managers and blue-collar workers with very similar magnitudes. In particular, one more year of international experience is associated to a higher return than one more year of domestic experience across the whole distribution of manager fixed effects. Furthermore, one more year of domestic and/or international experience is more valuable to better/higher fixed effects managers. At the same time, the difference between the two returns grows with the manager fixed effects stacking up, over a 10 years horizon, to a sizable wage difference of about 14% to 17%, which is very close to the 12% to 16% range we found in the previous Section and still represents the lion share of the wage gap observed in the raw data for Fact 1. Finally, there is no significant wage jump related to moving between internationally active and domestic firms, indicating that the bulk of managers' wage differences between internationally active and domestic firms is related to the differential value of domestic and international experience. As for blue-collar workers, there is very little support for a higher return of international vs. domestic experience , as well as solid evidence of wage jumps of

Figure 7: Wage Premium in Internationally active Firms vs. Domestic Firms, Managers and Blue-collar Workers, Displaced & Unemployed Managers and Displaced & Unemployed Blue-collar Workers Samples



Notes: This Figure is based on specification (2) in Table 8 and the equivalent specification estimated on the displaced & unemployed young blue-collar workers sample. The left panel shows the wage premium for a manager that is always employed by an internationally active firm with respect to an identical manager that is always employed by a domestic firm, by number of years of employment (up to 10 years). The premium does not include the static wage premium of working in an internationally active firm ($Int.\,Act_{ft}$ dummy). The panel shows the wage premium for three types of managers, corresponding to the 25th, 50th, and 75th percentiles of the manager fixed effect distribution of specification (2) in Table 8. The right panel is constructed in the same way but for blue-collar workers.

about 1%.

7. Human Capital Accumulation

In order to clarify and qualify the scope and meaning of our results we provide in this section some complementary analyses, at both the manager-level and the firm-level, about the possible mechanisms underpinning the differential return of international vs. domestic experience for managers. In the manager-level analysis we use the framework developed in Jarosch et al. (2021) and provide evidence of a stronger learning from co-workers in internationally active firms as compared to domestic firm. In the firm-level analysis we consider firm performance, and in particular firm growth, and provide evidence that the presence of more international experience within the firm increases growth.

7.1 Learning from Co-Workers

In their seminal paper Jarosch et al. (2021) provide evidence of learning from co-workers, and especially from the best ones, being at work in German firms. Specifically, they look at whether and how the future wage of a worker is related to the wages of current co-workers in the same firm at different levels. In this respect, their evidence suggests that the future wage of a worker is positively related to the wage of current co-workers, with the wage of current co-workers being a measure of the knowledge and brain power to which the worker is exposed to, after controlling for a number of factors including the current wage of the worker. Furthermore, the impact is stronger when considering co-workers that are likely to interact more with the worker (similar occupations) and/or when one splits co-workers into those receiving a higher and a lower wage than the worker, with the former group ending up being a stronger predictor of the future wage of the worker, which is in line with the idea that workers learn more from those co-workers that have more knowledge to share, i.e., from the best.

Table 9 replicates some of the findings of Jarosch et al. (2021) for our sample of Portuguese young managers while further providing evidence of the importance of the distinction between internationally active and domestic firms in terms of the strength of the learning from co-workers. The dependent variable in the OLS regressions displayed in Table 9 is the log hourly wage of young manager i at time $t+s$ where s={1, 2, 4, 6, 8}. Such future wage is regressed against a set of time dummies and manager-year controls at time t including overall experience and its square, gender, number of years of education as well as tenure in the firm and its square. In the first set of estimations reported in the top panel of Table 9, which we label 'Future Wage: Baseline', the key covariates are manager i log hourly wage in t (own wage) and the log of the average hourly wage of other managers working in the same firm employing manager i at time t (co-workers wage). The 5 regressions at different time horizons show how the variable co-workers wage increasingly impacts the future wage of manager i at time $t+s$, while the variable own wage becomes less and less relevant over time.

Furthermore, the estimates reported in the middle panel of Table 9, which we label 'Future Wage: Learning from the Best', suggest that the relationship between co-workers wage and future manager wage displays features akin to learning. Specifically, when splitting co-workers into those receiving a higher and a lower wage, it is the log of the average hourly wage of the former group (co-workers wage higher) that best predicts manager's i future wage.[34] This in line with the idea that young managers learn from other managers and in particular from those who have more to offer in terms of knowledge, i.e., from the best. This corresponds to the coefficient of the variable co-workers wage higher being both more significant and of a higher value than the coefficient of the variable co-workers wage lower, with the difference

[34]The two covariates co-workers wage higher and co-workers wage lower are set to zero if the corresponding set of co-workers is empty.

Table 9: Wage at Time $t+s$, Learning from Co-Workers

	Future Wage: Baseline				
VARIABLES	s=1	s=2	s=4	s=6	s=8
Own Wage in t	0.7981^{a}	0.7171^{a}	0.5583^{a}	0.4652^{a}	0.3865^{a}
	(0.0027)	(0.0041)	(0.0077)	(0.0119)	(0.0242)
Co-Workers Wage in t	0.0968^{a}	0.1252^{a}	0.1687^{a}	0.1846^{a}	0.1555^{a}
	(0.0023)	(0.0037)	(0.0074)	(0.0118)	(0.0229)
Observations	136,532	84,705	32,713	17,793	4,807
R-squared	0.7634	0.6597	0.4838	0.3920	0.3165
Manager-Year Controls	X	X	X	X	X
Time Dummies	X	X	X	X	X
	Future Wage: Learning from the Best				
VARIABLES	s=1	s=2	s=4	s=6	s=8
Own Wage in t	0.7901^{a}	0.6992^{a}	0.5172^{a}	0.4152^{a}	0.3456^{a}
	(0.0040)	(0.0061)	(0.0118)	(0.0176)	(0.0356)
Co-Workers Wage Higher in t	0.0698^{a}_{**}	0.0890^{a}_{**}	0.1430^{a}_{**}	0.1693^{a}_{**}	0.1797^{a}_{**}
	(0.0021)	(0.0033)	(0.0065)	(0.0106)	(0.0210)
Co-Workers Wage Lower in t	0.0291^{a}_{**}	0.0485^{a}_{**}	0.0600^{a}_{**}	0.0619^{a}_{**}	0.0203_{**}
	(0.0041)	(0.0063)	(0.0125)	(0.0191)	(0.0418)
Observations	136,532	84,705	32,713	17,793	4,807
R-squared	0.7626	0.6585	0.4847	0.3942	0.3225
Manager-Year Controls	X	X	X	X	X
Time Dummies	X	X	X	X	X
	Future Wage: Learning More in Int. Active Firms				
VARIABLES	s=1	s=2	s=4	s=6	s=8
Own Wage in t	0.7982^{a}	0.7178^{a}	0.5595^{a}	0.4634^{a}	0.3855^{a}
	(0.0027)	(0.0041)	(0.0077)	(0.0119)	(0.0240)
Co-Workers Wage Int. Active in t	0.1014^{a}_{**}	0.1329^{a}_{**}	0.1797^{a}_{**}	0.1966^{a}_{**}	0.1709^{a}_{**}
	(0.0023)	(0.0037)	(0.0074)	(0.0117)	(0.0229)
Co-Workers Wage Domestic in t	0.0822^{a}_{**}	0.0969^{a}_{**}	0.1130^{a}_{**}	0.1150^{a}_{**}	0.0767^{a}_{**}
	(0.0027)	(0.0043)	(0.0088)	(0.0146)	(0.0293)
Observations	136,532	84,705	32,713	17,793	4,807
R-squared	0.7636	0.6605	0.4865	0.3953	0.3203
Manager-Year Controls	X	X	X	X	X
Time Dummies	X	X	X	X	X

Notes: The dependent variable is the log hourly wage, detrended using a full set of year dummies interacted with 1-digit sector dummies, at time $t+s$ where s={1, 2, 4, 6, 8}. The hourly wage is defined as the sum of the monthly base wage (gross pay for normal hours of work), overtime, regularly and irregularly paid supplements, divided by the sum of the monthly normal and overtime hours of work. Covariates refer to various wage measure at time t. Own wage is the young manager's own log hourly wage in t. Co-workers wage is the log of the average hourly wage of the other managers in the firm (both young managers and not) in t. Co-workers wage higher is the log of the average hourly wage of the other managers in the firm that earn a wage higher than the young manager in t. Symmetrically, co-workers wage lower is the log of the average hourly wage of the other managers in the firm that earn a wage lower than the young manager in t. These two covariates are set to zero if the corresponding other managers set is empty. Co-workers wage int. active is the log of the average hourly wage of the other managers in the firm at time t when the firm is internationally active and zero otherwise. Likewise, co-workers wage domestic is the log of the average hourly wage of the other managers in the firm at time t when the firm is domestic and zero otherwise. Manager-year controls include overall experience and its square, gender, number of years of education as well as tenure in the firm and its square at time t. Regressions are estimated via OLS on the young managers sample and include time dummies. Standard errors (in parenthesis) are clustered at the manager level. ^{a} p<0.01, ^{b} p<0.05, ^{c} p<0.1. $_{**}$ indicates that the coefficients of co-workers wage int. active and co-workers wage domestic (or co-workers wage higher and co-workers wage lower) are significantly different from each other at the 5% level.

between the two coefficients being significantly different from zero at the 5% level for all s={1, 2, 4, 6, 8}.[35]

The above results confirms those of Jarosch et al. (2021) for our sample of young Portuguese managers. Furthermore, regressions reported in the bottom panel of Table 9, which we label

[35] $_{**}$ in Table 9 indicates that the coefficients of co-workers wage higher and co-workers wage lower (or co-workers wage int. active and co-workers wage domestic) are significantly different from each other at the 5% level.

'Future Wage: Learning More in Int. Active Firms', provide a brand new finding suggesting that learning from co-workers is stronger in internationally active firms. Specifically, we split co-workers interaction related to domestic and internationally active firms by means of two suitable variables. The first one, co-workers wage int. active, corresponds to the log of the average hourly wage of the other managers in the firm at time t when the firm is internationally active and zero otherwise. Likewise, co-workers wage domestic corresponds to the log of the average hourly wage of the other managers in the firm at time t when the firm is domestic and zero otherwise. Therefore, these two variables allow the coefficient of the variable co-workers wage in the top panel of Table 9 to be different depending on whether the employing firm at time t is domestic or internationally active. In this respect, estimates clearly point to a stronger impact of the wage of co-workers when the manager is employed by an internationally active firm, with the difference between the two coefficients being significantly different from zero at the 5% level for all s, so suggesting that learning from other managers is stronger in such firms.

Finally, Table C-10 in Appendix C provides the equivalent information of Table 9 for the sample of young blue-collar workers. Inspection of Table C-10 suggests that learning from co-workers is at work for blue-collar workers as well, with in particular a stronger impact of the learning effect associated to the co-workers earning a higher wage than the young blue-collar worker. At the same time, coefficients' differences are smaller and less significant than in the case of young managers suggesting a more modest differential learning process. Interestingly, considering the differential value of co-workers' interaction in domestic and internationally active firms, the difference between the two coefficients is often limited to about 1% compared to the between 2% and 10% for young managers while being not always significant. Overall, this is in line with our previous findings in that learning from co-workers for blue-collar workers does not seem to have a strong international vs. domestic experience connotation.

7.2 International Experience and Firm Performance

In this Section, we show that firms grow more if employing managers with more experience and, in particular, more international experience. This is in line with managers' experience, and in particular international experience, corresponding to more than a stronger bargaining position and in particular to valuable knowledge allowing the current employing firm to obtain a better performance.[36]

Table 10 provides our OLS growth regressions results for the young managers sample. The dependent variable is the growth rate of sales while the two key controls are firm size (log sales) in t and (the log of) firm age in t. In all regressions we include year, industry and region

[36]In light of the simple model in Appendix B, internationally active firms are characterized by stronger growth opportunities that are best realized by more able/experienced managers, especially if their experience is international.

Table 10: Growth Regressions, Young Managers Sample

VARIABLES	(1) Baseline	(2) Int. Active	(3) Int. Experience
Firm Sales (log)	-0.0180^a	-0.0232^a	-0.0269^a
	(0.0009)	(0.0011)	(0.0012)
Firm Age (log)	-0.0646^a	-0.0649^a	-0.0645^a
	(0.0018)	(0.0018)	(0.0018)
Int. Act. (0/1)		0.0468^a	0.0151^a
		(0.0036)	(0.0066)
Total Experience (log)			0.0115^a
			(0.0014)
Ratio Int. Exp. (ratio)			0.0430^a
			(0.0076)
Observations	62,831	62,831	62,831
R-squared	0.0629	0.0656	0.0672
Year Region Industry Dummies	X	X	X

Notes: The dependent variable is the growth rate of sales, computed as the difference in sales between t and $t+1$ divided by the average sales in t and $t+1$. Column (1) is the baseline specification controlling for firm (log) sales and age in t. Column (2) adds a dummy variable equal to 1 when the firm is internationally active. Column (3) further introduces the (log) total number of years of experience of the young managers employed by the firm as well as the share of this total experience gained in internationally active firms. All specifications include year, industry (1-digit NACE), and region (NUTS II) dummies and are estimated via OLS. Standard errors (in parenthesis) clustered at the firm level. ^{a} p<0.01, ^{b} p<0.05, ^{c} p<0.1

dummies while clustering standard errors at the firm-level. In this respect, the literature on firm's growth and the firm size distribution (Luttmer, 2007) highlights the importance of firm age and size suggesting a negative sign in both cases. We confirm this for our data in column (1) of Table 10. Specifically, coefficients are such that doubling size (age) decreases growth by around 1.8 (6.5) percentage points.[37] In column (2) we then add a dummy for internationally active firms and find these firms to grow substantially more (about 4.7 percentage points) than domestic firms.

Column (3) further indicate that growth is increasing in (the log of) the total number of years of experience of the young managers employed by the firm (Total Experience) as well as in the share of this total experience gained in internationally active firms (Ratio International Experience). In particular, coefficients indicate that doubling total experience increases the growth rate by about 1.2 percentage points while the growth rate is about 4.3 percentage points higher if the share of total experience corresponding to international experience is one as opposed to zero.

[37]While being common practice in interpreting coefficients of log covariates, the doubling scenario is an approximation. For example, doubling size means increasing log size by about 0.7≈log(2) and so the implied decrease in growth would be 1.8*0.7=1.26 percentage points.

8. Conclusions

The trade literature offers very consistent evidence that firms involved in international activities pay higher wages than other firms, but has so far largely neglected the possibility that on-the-job experience in those firms may also lead to differential wage growth.

Exploiting Portuguese matched employer-employee data, we have provided a number of new empirical results that help distinguish 'international' from 'domestic' jobs in terms of their impact on a worker's experience-wage profile not only through wage jumps occurring upon changing job ('static effects'), but also through increases in the wage growth rate while working for the same employer ('dynamic effects'). In particular, we have shown that in internationally active firms experience-wage profiles are much steeper than in domestic firms, especially for managers as opposed to blue-collar workers. Static effects are instead much more important for blue-collar workers.

We have then argued that the steeper experience-wage profile of managers in internationally active firms may come from the faster human capital accumulation through on-the-job experience that these firms allow for, and the (almost) perfect portability of the accumulated wage gains when employees move across firms.

A natural explanation of how better on-the-job experience materializes in internationally active firms is that workers learn from co-workers, some co-workers are more important than others for learning, and these co-workers are more easily found in internationally active firms. While we have shown several pieces of evidence supporting this explanation, future research should dig deeper into what makes jobs at internationally active firms so special.

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Appendix A: Additional Details about the Data

The analysis relies on two major datasets: an international trade dataset at the transaction-level, and a matched employer-employee dataset, both for Portugal covering the period 1991-2006. We describe each of the two datasets in the main text. Here we provide more details on how we construct the combined sample used in the analysis, and we provide the definitions of the key variables employed in the analysis.

A-1. Combined dataset, data processing, and regression sample

In order to combine the trade and matched employer-employee data we start from the workers' module of the latter. Each worker in *Quadros de Pessoal* (QP) has a unique, time-invariant, identifier based on her social security number. We drop from the sample a minority of workers with an invalid social security number and with multiple jobs. If a worker is employed in a particular year, we observe the corresponding firm identifier for that year. Since worker-level variables are missing in 2001, we assign a firm to workers in 2001 in the following way: if a worker is employed by firm A in 2002 and the year in which the worker had been hired (by firm A) is before 2001 or is 2001, then we assign the worker to firm A in 2001 as well; for all other workers, we repeat the procedure using 2003. In case neither 2002 nor 2003 allow us to assign a firm to a worker in 2001, we leave the information as missing.
We exploit a quasi-exhaustive mapping between the trade data firm id and the matched employer-employee dataset firm id, based on firm's observable characteristics, in order to merge the firm-level module of QP and firm-year trade information computed via the international trade dataset. In the trade dataset, we restrict the sample to transactions registered as sales as opposed to returns, transfers of goods without transfer of ownership, and work done. We then compute total exports and imports aggregating the data at the firm-year level. We then select observations according to both firm-level and worker-level characteristics. First, as in Cardoso and Portugal (2005), we account for sectoral and geographical specificities of Portugal by restricting the sample to include only firms based in continental Portugal while excluding 'Badly defined activities', 'Extra-territorial organizations and bodies', 'Public administration and defense', 'Business and professional associations', and 'Other social and related community services'. The location of the firm is measured according to the NUTS II regional disaggregation. We also drop from the sample all firms that were founded before 1600. Concerning workers, we consider only single-job, full-time workers between 16 and 65 years old, and working between 25 and 80 hours (base plus overtime) per week. In the analysis we further restrict the sample to workers between 18 and 33 years old, in order to observe their full working history. Our measure of the hourly wage is

defined as the sum of the monthly base wage (gross pay for normal hours of work), overtime, regularly and irregularly paid supplements, divided by the sum of the monthly normal and overtime hours of work. To control for outliers, we apply a trimming based on the baseline hourly wage and eliminate 0.5 percent of the observations on both extremes of the distribution.

Largest Connected Group Sample We replicate a number of regressions of our analysis using a more restricted sample that is common to all specifications. We build such a sample by taking the sample of the specification 'Mobility & Firm FE' and including only the largest connected group (Abowd et al., 2002) using the stata ado file *group2hdfe*.

A-2. Key variables and definitions

Some concepts are recurring in the explanation of a majority of the Tables and Figures. We describe them here.

Tenure
QP includes a variable that records the year in which the worker started working in a given firm (admission year). In order to avoid measurement error we first construct a robust version of the year of admission by computing the mode for each worker-firm pair. Ties are broken by picking the minimum year of admission. Then tenure is computed as the difference between the current year and the constructed year of admission.

Age and Education
QP includes a variable that records the year in which the worker was born. In order to avoid measurement error we first construct a robust version of the birth year by computing the mode for each worker. Ties are broken by picking the minimum birth year. Then age is computed as the difference between the current year and the birth year. QP also include information on the degrees (or partial degrees) obtained by each worker in a given year. We thank Anabela Carneiro for providing us with the conversion table between education categories and number of years of schooling. In our analysis we consider the mode of the distribution of the number of years of education for each manager. Indeed, there is likely to be a fair amount of measurement error related to this variable and so changes over time are likely to mainly pick up such measurement error rather than a genuine change in the number of years of education.

Internationally Active Firm Status and International (vs. Domestic) Experience
A firm is considered internationally active in a given year if either exports are strictly positive, or imports are strictly positive, or the firm is foreign owned. A firm is considered

foreign-owned in a given year if the share of equity that is foreign-owned is higher than 50 percent. We compute a worker international experience in a given year as the number of years the worker has been employed by internationally active firms. Symmetrically, domestic experience in a given year is the number of years the worker has been employed by domestic firms.

High-Layer Firm Status and High-Layer (vs. Low-Layer) Firms Experience

A firm is considered a high-layer firm (low-layer), in a given year, if the firm has 3 layers (less than 3 layers) of management. Layers of management are defined as in Caliendo et al. (2020). In the matched employer-employee data set, each worker has to be assigned to a category following a (compulsory) classification of workers defined by the Portuguese law (see Table A-1 in Appendix A and Mion and Opromolla (2014)). Such classification is based on the tasks performed and skill requirements, and each category can be considered as a level in a hierarchy defined in terms of increasing responsibility and task complexity. On the basis of the hierarchical classification, and taking into consideration the actual wage distribution, we partition the available categories into occupations. We assign 'Top executives (top management)' to occupation 3; 'Intermediary executives (middle management)' and 'Supervisors, team leaders' to occupation 2; 'Higher-skilled professionals' and some 'Skilled professionals' to occupation 1; and the remaining employees, including 'Skilled professionals', 'Semi-skilled professional', 'Non-skilled professionals', and 'Apprenticeship' to occupation 0. A firm reporting c occupational categories will be said to have $L = c - 1$ layers of management: hence, in our data we will have firms spanning from 0 to 3 layers of management (Caliendo et al., 2020). In terms of layers within a firm we do not keep track of the specific occupational categories but simply rank them. Hence a firm with occupational categories 2 and 0 will have 1 layer of management, and its organization will consist of a layer 0 corresponding to some skilled and non-skilled professionals, and a layer 1 corresponding to intermediary executives and supervisors. We compute a worker high-layer experience in a given year as the number of years the worker has been employed by a high-layer firm (including the current employer). Symmetrically, low-layer experience in a given year is the number of years the worker has been employed by a low-layer firm (including the current employer).

Big Firm Status and Big (vs. Small) Firms Experience

A firm is considered big if it employs 50 or more workers. We compute a worker big firm experience in a given year as the number of years the worker has been employed by a big firm (including the current employer). Symmetrically, we measure a worker small firm experience in a given year as the number of years the worker has been employed by a small firm (including the current employer).

Productive Firm Status and Productive (vs. Unproductive) Firms Experience
A firm is considered productive if it has an apparent labour productivity (revenue over employment) above the two digit industry-year average. We compute a worker productive firm experience in a given year as the number of years the worker has been employed by a productive firm (including the current employer). Symmetrically, we measure a worker unproductive firm experience in a given year as the number of years the worker has been employed by an unproductive firm (including the current employer).

Managers and Blue-collar Workers
We identify managers and blue-collar workers using the same classification used to construct occupations and layers (see above and Table A-1 below). This classification is based on the tasks performed and skill requirements, and each category can be considered as a level in a hierarchy defined in terms of increasing responsibility and task complexity. We identify managers as those workers belonging to one of the top three 1-digit categories: 'Top executives (top management)', 'Intermediary executives (middle management)' and 'Supervisors, team leaders'. We identify blue-collar workers as those workers belonging to either, 'Semi-skilled professionals', or 'Non-skilled professionals'.

Normal Working Hours
Number of paid hours in October corresponding to the normal working period. Paid absences from work are included (e.g. holidays, illness, accident).

Overtime Hours
Overtime is time worked in October in addition to hours worked during the normal working period, both during working days and during holidays.

Basic Remuneration
The gross amount, before deduction of taxes and social security contributions, in cash or in kind, paid regularly in October and corresponding to the normal working period.

Overtime Remuneration
The gross amount, before deduction of taxes and social security contributions, in cash or in kind, paid in October and corresponding to the overtime hours.

Regular Bonuses and Allowances
Gross amount paid regularly, on a monthly basis, to employees for a particular time period, as is the case with food, job, housing or transport allowance, bounty or seniority payments, performance-related pay, diligence bonus, compensation for arduous, dangerous or dirty

work, night or shift differential. It does not include retroactive payments, compensations, Christmas or other vacation bonuses that were paid in October.

Irregular Bonuses and Allowances
Gross amount paid on an irregular basis, that is not on a monthly basis, to employees for a particular time period, such as profit sharing, stock options or other incentive bonuses and other non-periodical payments. It includes retroactive payments, compensations, Christmas or other vacation bonuses that were paid in October.

A-3. High-dimensional fixed effects

With large data sets, estimation of a linear regression model with two or more high-dimensional fixed effects poses some computational challenges (Abowd et al., 1999). However, the exact least-square solution to this problem can be found using an algorithm, based on the 'zigzag' or full Gauss-Seidel algorithm, proposed by Guimarães and Portugal (2010). We use, for our estimations, the Stata user-written routine reghdfe implementing Guimarães and Portugal (2010)'s algorithm. We label this estimator GPLS. The main advantage of this routine is the ability to fit linear regression models with two or more high-dimensional fixed effects under minimal memory requirements. Moreover, the routine provides standard errors correctly adjusted for the presence of the fixed effects. We apply the reghdfe routine setting the convergence criterion for the iteration method to 0.001.

Table A-1: Classification of Workers According to Tasks and Skills

Level	Tasks	Skills
1. Top executives (top management)	Definition of the firm general policy or consulting on the organization of the firm; strategic planning; creation or adaptation of technical, scientific and administrative methods or processes	Knowledge of management and coordination of firm's fundamental activities; knowledge of management and coordination of the fundamental activities in the field to which the individual is assigned and that requires the study and research of high responsibility and technical level problems
2. Intermediary executives (middle management)	Organization and adaptation of the guidelines established by the superiors and directly linked with the executive work	Technical and professional qualifications directed to executive, research, and management work
3. Supervisors, team leaders	Orientation of teams, as directed by the superiors, but requiring the knowledge of action processes	Complete professional qualification with a specialization
4. Higher-skilled professionals	Tasks requiring a high technical value and defined in general terms by the superiors	Complete professional qualification with a specialization adding to theoretical and applied knowledge
5. Skilled professionals	Complex or delicate tasks, usually not repetitive, and defined by the superiors	Complete professional qualification implying theoretical and applied knowledge
6. Semi-skilled professionals	Well defined tasks, mainly manual or mechanical (no intellectual work) with low complexity, usually routine and sometimes repetitive	Professional qualification in a limited field or practical and elementary professional knowledge
7. Non-skilled professionals	Simple tasks and totally determined	Practical knowledge and easily acquired in a short time
8. Apprentices, interns, trainees	Apprenticeship	

Notes: Decreto Lei 121/78 of July 2nd (Lima and Pereira, 2003)

Appendix B: A Simple Model of Wage Growth through On-The-Job Experience

We present here a simple dynamic competitive model of worker sorting across firms building on the model of worker sorting across cities by De la Roca et al. (2023). While for simplicity the model will associate better career development with international jobs and worse career development with domestic jobs, we will account for the fact that workers' career paths also depend on their observable ability and their unobservable life circumstances, with the latter blurring the sorting patterns dictated by the former.

To understand the importance of the model in setting the stage for the empirical analysis, two preliminary remarks are in order. First, what we develop is the simplest possible model we could come up with that has all the key ingredients (wage, experience, opportunities) needed to investigate sorting of different ability workers across international and domestic jobs. The model could be generalized in many dimensions, for example explicitly including experience only valuable to the employing firm or a job search process with matching frictions. However, our goal here is not to structurally estimate a rich and complex model but rather to lay out a simple model that can guide our empirical investigations. Second, despite being simple and stylized, the model still exhibits features that cannot be found in the trade literature referenced in the introduction. In particular, whereas in that literature firms are heterogeneous with respect to 'static' characteristics (such as ability and productivity), we allow firms to be heterogeneous with respect to both 'static' characteristics (opportunities) and 'dynamic' characteristics (experience). This feature is also uncommon in the matching models used in the labor literature. This applies not only to standard models (Burdett and Mortensen, 1998), but also to richer models such as the one developed by Postel-Vinay and Robin (2002). Specifically, in Postel-Vinay and Robin (2002) firms are only heterogeneous in terms of their productivity and while the model does have dynamic wage implications, as more productive firms offer better wage growth prospects, those implications are entirely driven by a better bargaining position of workers employed by those firms with no differential learning across different types of firms. In contrast, our model features differential learning between internationally active and inactive firms by allowing the return to experience to differ between the two types of employers.

Set-Up

The model considers a continuum of risk-neutral workers with heterogeneous ability denoted by $\theta \in (0,1)$. Their career spans two periods, a junior period 1 and a senior period 2. While in the former a worker gains on-the-job experience, in the later the worker exploits such experience. In each period a worker chooses whether to work for one of two types of firms, labeled I ('internationally inactive') and A ('internationally active'). Working for

either type of firm has pros and cons. I-firms offer a less demanding ('stressful') environment, but also less rewarding career development due to fewer chances of gaining and exploiting performance-enhancing experience. A-firms offer more rewarding career development, but also a more stressful environment.

In the junior period, a worker faces a continuum of tasks. She succeeds in completing some of them and fails in completing others. The share of completed tasks is determined by her ability denoted by $\theta \in (0,1)$. Each completed tasks gives her a remuneration $w_1 > 0$ in the junior period as well as valuable experience that she can use to enhance her performance in the senior period. How much valuable experience the worker gains depends on the type of junior period employer. Using e_I and e_A to denote experience gained at an I-firm and an A-firm respectively, we capture the fact that the former offers fewer chances of gaining valuable experience by assuming $0 < e_I < e_A < 1$. In her senior period, the worker has opportunities to exploit her previous experience to tackle more complex additional tasks based on the tasks she previously completed in the junior period. The probability that such opportunities arise depend on the type of senior period employer. Using o_I and o_A to denote the probability that opportunities arise in an I-firm and an A-firm respectively, we capture the fact that the former firm offers fewer chances of exploiting performance-enhancing experience by assuming $0 < o_I < o_A < 1$. When faced with a more complex task in the senior period, the probability of completing it is determined by experience, e_I or e_A, acquired by completing the corresponding simple task in the junior period. For each complex task completed the worker earns an additional remuneration $w_2 > 0$ as senior. In both periods, the worker faces a stress cost that depends on the type of employer. Using s_I and s_A to denote the cost associated with an I-firm and an A-firm respectively, we capture the fact that the former offers a less stressful environment by assuming $0 < s_I < s_A$. Hence, A-firms have an 'absolute advantage' in terms of offering and exploiting experience while I-firm have an 'absolute advantage' in terms of offering a less stressful environment.

The tradeoff between stress and career development depends on the worker's ability, but also on her life circumstances. While higher ability workers clearly have an incentive to privilege career over stress, they might face life circumstances (related, for example, to sickness, new family plans, large bequests, etc.) that change their priorities. Specifically, we model life circumstances as a uniform random variable $\lambda \in [0,1]$, realized at the end of the junior period, affecting the utility related to the additional remuneration obtained for solving more complex tasks when senior. In other words, we assume that workers weigh the additional remuneration differently depending on their life circumstances, which might ultimately change their career choice in the senior period. We further assume that λ is independent from ability. Therefore, the sorting of workers with different ability across alternative career paths can only be partial as workers of the same ability may end up choosing different paths as long as they turn out to

have different life circumstances.[38]

Based on these assumptions, the net career payoff that a junior worker of ability θ expects to obtain from working in an f-firm in her junior period and in an h-firm in her senior period is

$$U_{fh}(\theta) = -s_f + \theta w_1 - s_h + \theta w_1 + \lambda \left(e_f o_h \theta w_2\right). \tag{B-1}$$

By working for an f-firm with $f \in \{I,A\}$ as junior, the worker incurs a stress cost s_f and completes a share θ of tasks with remuneration w_1 for each task completed. By working for an h-firm with $h \in \{I,A\}$ as senior, she incurs a stress cost s_h and earns remuneration w_1 for each simple tasks she completes again. The worker further faces, with probability o_h, the opportunity to perform an additional complex task for each of the θ simple tasks she completes. She succeeds in each of these complex tasks with probability equal to experience e_f acquired as junior in the f-firm. Senior success in each complex task gives her an additional remuneration w_2. Finally, the expected additional remuneration $e_f o_h \theta w_2$ is discounted in the worker's utility by her specific life circumstances λ. An important feature of net payoff (B-1) is that, while the cons of working for an A-firm rather than an I-firm depend on neither ability nor life circumstances, the pros are amplified by ability in the senior period. Indeed, the return on experience $e_f o_h \theta w_2$ for $f \in \{I,A\}$ is higher for more able workers in both I- and A-firms, but disproportionately so in A-firms.

The career path of a worker of ability θ maximizing net payoff (B-1) can be characterized working backwards from the senior to the junior period. To avoid a useless proliferation of subcases, we focus on parameter configurations that allow the model to predict all career paths: II, IA, AI and AA.

Senior Period Choice

When the worker makes her senior decision, her life circumstances have already been realized. If life circumstances are particularly adverse towards the value of extra remuneration ($\lambda = 0$), the worker will always choose to work for an I-firm as both type of firms offer the same base remuneration θw_1 but I-firms are less stressful ($s_I < s_A$). Otherwise, if $\lambda > 0$ holds, she will work for a given firm type if and only if that type offers a higher return. This is determined not only by the worker's experience but also by its employer's type when junior. If the junior employer was an A-firm, the worker chooses an A-firm as senior employer for $\theta \geq \theta^S_{AA \succ AI}$ with

$$\theta^S_{AA \succ AI} \equiv \frac{s_A - s_I}{w_2 e_A \left(o_A - o_I\right)}.$$

[38]The assumption that λ is independent from ability is made for simplicity to avoid a pointless taxonomy of cases depending on the assumed patterns of correlation between ability and life circumstances.

If the junior employer was an I-firm, the worker chooses an A-firm as senior employer for $\theta \geq \theta^S_{IA \succ II}$ with

$$\theta^S_{IA \succ II} \equiv \frac{s_A - s_I}{w_2 e_I (o_A - o_I)},$$

where we have $\theta^S_{IA \succ II} > \theta^S_{AA \succ AI}$ as higher ability is needed to justify employment for an A-firm with less experience ($e_I < e_A$).

Junior Period Choice

Considering the worker's decision in the junior period, two cases arise depending on whether the advantage of working for A-firms is stronger in terms of opportunities as senior ($e_I o_A - e_A o_I > 0$) or experience as junior ($e_A o_I - e_I o_A > 0$), in other words whether A-firms have a 'comparative advantage' in opportunities or experience. In the former case, path AI can be ruled out as $U_{AI}(\theta)$ is always smaller than $U_{IA}(\theta)$, while path IA is selected whenever $U_{IA}(\theta) > U_{II}(\theta)$ and $U_{IA}(\theta) > U_{AA}(\theta)$ jointly hold. This happens for $\theta^J_{IA \succ II} \leq \theta < \theta^J_{AA \succ IA}$ with

$$\theta^J_{IA \succ II} \equiv \frac{s_A - s_I}{w_2 e_I (o_A - o_I)} \text{ and } \theta^J_{AA \succ IA} \equiv \frac{s_A - s_I}{\lambda w_2 o_A (e_A - e_I)} \tag{B-2}$$

as long as A-firms' comparative advantage in opportunities is large enough.[39] Otherwise, paths II and AA will be selected for $\theta < \theta^J_{IA \succ II}$ and $\theta \geq \theta^J_{IA \succ II}$ respectively. These junior choices based on θ are confirmed in the senior period if the worker turns out to have favorable life circumstances for more stressful work as we have $\theta^S_{AA \succ AI} < \theta^S_{IA \succ II} = \theta^J_{IA \succ II}$. If as junior she chose an A-firm (I-firm) for her senior period given $\theta \geq \theta^J_{IA \succ II}$ ($\theta < \theta^J_{IA \succ II}$), then she must still be happy with that as senior given $\theta^S_{IA \succ II} = \theta^J_{IA \succ II}$. However, if the worker turns out to face unfavorable life circumstances for more stressful work, in the senior period her junior choices IA and AA are overturned to II and AI respectively as the best senior employer is an I-firm irrespective of ability. By contrast, when A-firms have a comparative advantage in experience ($e_A o_I - e_I o_A > 0$), path AI cannot be ruled out as the comparison between $U_{AI}(\theta)$ and $U_{IA}(\theta)$ depends on the weighted attached to the additional remuneration in the senior period depending on life circumstances. In particular, $U_{AI}(\theta)$ is larger than $U_{IA}(\theta)$ whenever

$$\theta > \frac{1 - \lambda}{\lambda} \frac{s_A - s_I}{w_2 (e_A o_I - e_I o_A)}. \tag{B-3}$$

This condition must be met for the model to generate all career paths when A-firms have a comparative advantage in experience. If it were not met, the worker would prefer IA to AI, but IA would always be dominated by either II or AA: with a comparative advantage in experience

[39] The exact condition is $\left(\frac{o_A}{o_I} - 1\right) > \lambda \left(\frac{e_A}{e_I} - 1\right) \left[1 - \lambda \left(\frac{e_A}{e_I} - 1\right)\right]$. To allow the model to predict all career paths when A-firms have a comparative advantage in opportunities, we assume that this condition holds. If this were not the case, path IA would always be dominated by either II or AA.

rather than opportunities we cannot have $\theta^J_{IA\succ II} < \theta^J_{AA\succ IA}$. Differently, when (B-3) holds, the worker prefers AI to IA, and she prefers AI also to II and AA for $\theta^J_{AI\succ II} < \theta \leq \theta^J_{AA\succ AI}$ with

$$\theta^J_{AI\succ II} \equiv \frac{s_A - s_I}{\lambda w_2 o_I (e_A - e_I)} \text{ and } \theta^J_{AA\succ AI} \equiv \frac{s_A - s_I}{w_2 e_A (o_A - o_I)}$$

as long as A-firms' comparative advantage in experience is large enough.[40] Otherwise, paths II and AA will be selected for $\theta < \theta^J_{AI\succ II}$ and $\theta \geq \theta^J_{AA\succ AI}$ respectively. These junior choices based on θ are confirmed in the senior period if the worker turns out to have favorable life circumstances for more stressful work as we have $\theta^J_{AI\succ II} < \theta^J_{AA\succ AI} = \theta^S_{AA\succ AI}$. If as junior she chose an A-firm (I-firm) for her senior period given $\theta \geq \theta^J_{AA\succ AI}$ ($\theta < \theta^J_{AA\succ AI}$), then she must still be happy with that as senior given $\theta^S_{AA\succ AI} = \theta^J_{AA\succ AI}$. However, if the worker turns out to face unfavorable life circumstances for more stressful work, her junior choice AA is changed to AI in the senior period as the best senior employer is again an I-firm irrespective of ability.

Wage Growth and Job Transitions

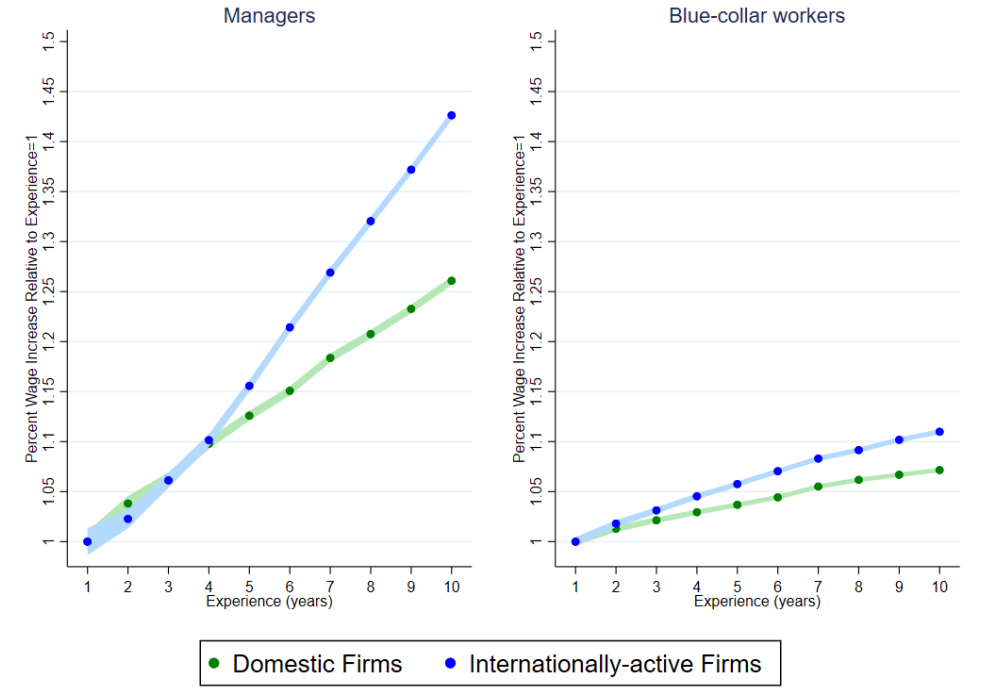
The model is consistent with several career paths. Specifically, it predicts that low ability workers work for I-firms both in their junior and senior periods. At the same time, high ability workers work for A-firms both in their junior and senior periods, unless they turn out to face unfavorable life circumstances, in which case they prefer an I-firm as senior employer. Intermediate ability workers work for I-firms in the junior period and A-firms in their senior period if the advantage of working for A-firms is stronger in terms of opportunities as senior than experience as junior. Yet, some of them end up in I-firms also as senior if they turn out to face unfavorable life circumstances. Alternatively, intermediate ability workers work for A-firms in the junior period and I-firms in their senior period if the advantage of working for A-firms is stronger in terms of experience as junior than opportunities as senior.

Working for A-firms fosters wage growth thanks to better experience in the junior period and better opportunities to exploit experience in the senior period. Though only high ability workers exploit both advantages, also intermediate ability workers can enjoy faster wage growth thanks to early experience in A-firms as long as the experience advantage of A-firms is strong enough relative to their opportunities advantage.

[40] The exact condition is $\left(\frac{e_A}{e_I} - 1\right) > \left(\frac{o_A}{o_I} - 1\right)\left[\lambda - \left(\frac{o_A}{o_I} - 1\right)\right]$. To allow the model to predict all career paths when A-firms have a comparative advantage in experience, we assume that this condition holds. If this were not the case, path AI would always be dominated by either II or AA.

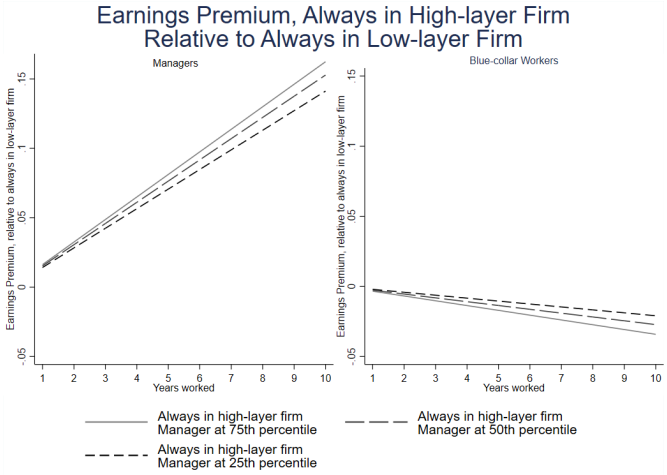
Appendix C: Additional Tables and Figures

Figure C-1: Experience-Wage Profiles in Domestic vs. Internationally active Firms, Managers and Blue-collar Workers, Large Sample, Period 2002-2014



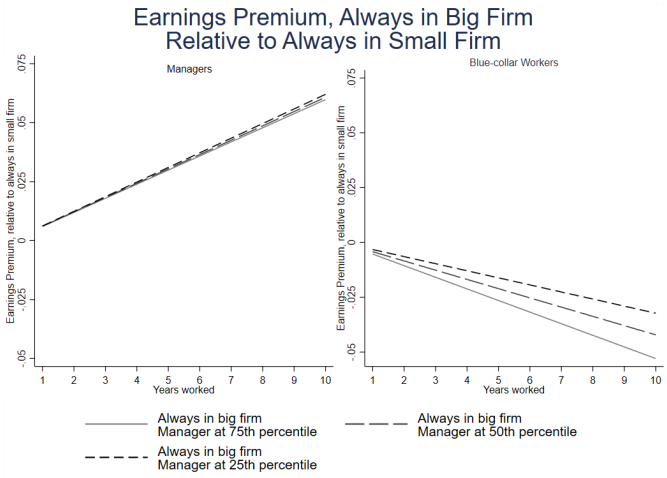
Notes: This Figure shows experience-wage profiles for managers (left panel) and blue-collar workers (right panel) in domestic and internationally active firms in the equivalent of the large sample for the period 2002-2014. To compute the experience-wage profiles, we first regress hourly wages against a full set of year, region (NUTS II) and industry (1-digit NACE) dummies. We then compute, for each type of firm, the average residual hourly wage by number of years of experience (up to 10). Finally, we compute the percentage wage increase relative to the case of one year of experience. The blue and green bands represent confidence intervals at the 95% level.

Figure C-2: Wage Premium in High-Layer Firms vs. Low-Layer Firms, Managers and Blue-collar Workers



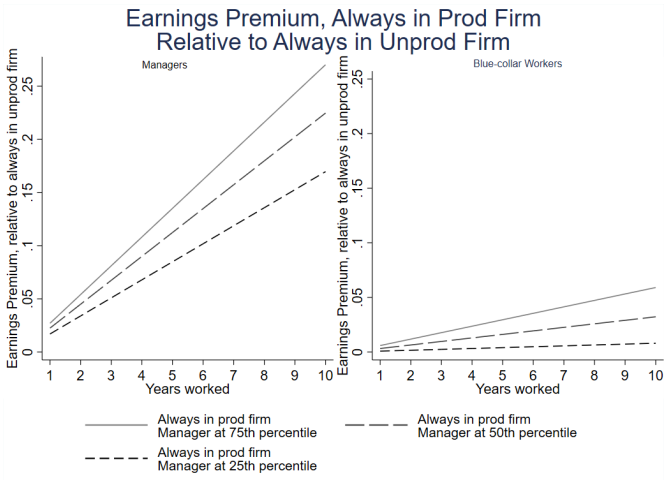
Notes: This Figure is based on specification (5), estimated for both managers and blue-collar workers, using the partition of high-layer vs. low-layer firms. The left panel shows the wage premium for a manager that is always employed by a high-layer firm with respect to an identical manager that is always employed by a low-layer firm, by number of years of employment (up to 10 years). The premium does not include the static wage premium of working in a high-layer firm (high-layer firm status dummy). The panel shows the wage premium for three types of managers, corresponding to the 25th, 50th, and 75th percentiles of the manager fixed effect distribution of specification (5). The right panel of the Figure is constructed in the same way but for blue-collar workers.

Figure C-3: Wage Premium in Big Firms vs. Small Firms, Managers and Blue-collar Workers



Notes: This Figure is based on specification (5), estimated for both managers and blue-collar workers, using the partition of large vs. small firms. The left panel shows the wage premium for a manager that is always employed by a big firm with respect to an identical manager that is always employed by a small firm, by number of years of employment (up to 10 years). The premium does not include the static wage premium of working in a big firm (big firm status dummy). The panel shows the wage premium for three types of managers, corresponding to the 25th, 50th, and 75th percentiles of the manager fixed effect distribution of specification (5). The right panel of the Figure is constructed in the same way but for blue-collar workers.

Figure C-4: Wage Premium in Productive Firms vs. Unproductive Firms, Managers and Blue-collar Workers



Notes: This Figure is based on specification (5), estimated for both managers and blue-collar workers, using the partition of productive vs. unproductive firms. The left panel shows the wage premium for a manager that is always employed by a productive firm with respect to an identical manager that is always employed by an unproductive firm, by number of years of employment (up to 10 years). The premium does not include the static wage premium of working in a productive firm (productive firm status dummy). The panel shows the wage premium for three types of managers, corresponding to the 25th, 50th, and 75th percentiles of the manager fixed effect distribution of specification (5). The right panel of the Figure is constructed in the same way but for blue-collar workers.

Table C-1: Job-Transition Matrix for Young Blue-Collar Workers.

	Same Firm in t	Other Domestic Firm in t	Other Internationally Active firm in t	Total
Domestic in t-1	87.38	8.05	4.57	100.00
Internationally active in t-1	91.15	3.62	5.23	100.00

Notes: The above Table provides a transition matrix constructed using observed job changes between $t-1$ and t in the young blue-collar workers sample over the period 1991-2006. Job changes are split into six different categories depending on whether the employing firm in $t-1$ is domestic or internationally active and on whether the blue-collar worker is employed by the same firm in t or by a different firm, where the latter could then be domestic or internationally active. For example, the top-left cell indicates that 87.38% of the blue-collar workers that were employed in a domestic firm in $t-1$ remain in the same firm in t while, for example, the third cell of the second row indicates that 5.23% of blue-collar workers that were employed in an internationally active firm in $t-1$ move to a different internationally active firm in t.

Table C-2: Job-Transition Matrix for Low-Ability and High-Ability Young Blue-Collar Workers.

		Low-ability Blue-Collar Workers		
	Same Firm in t	Other Domestic Firm in t	Other Internationally Active firm in t	Total
Domestic in t-1	88.03	7.72	4.26	100.00
Internationally active in t-1	91.50	3.51	4.99	100.00
		High-ability Blue-Collar Workers		
	Same Firm in t	Other Domestic Firm in t	Other Internationally Active firm in t	Total
Domestic in t-1	86.73	8.39	4.88	100.00
Internationally active in t-1	90.83	3.72	5.45	100.00

Notes: The above Table provides a transition matrix constructed using observed job changes between $t-1$ and t in the young blue-collar workers sample over the period 1991-2006. Job changes are split into six different categories depending on whether the employing firm in $t-1$ is domestic or internationally active and on whether the blue-collar worker is employed by the same firm in t or by a different firm, where the latter could then be domestic or internationally active. The top (bottom) part of the Table refers to low-ability (high-ability) blue-collar workers, i.e, blue-collar workers with fixed effects below (above) the average. Fixed effects refer to the Portability & Firm FE specification in column (4) of Table C-7.

Table C-3: Descriptive Statistics for the Young Blue-Collars Sample, Year 2006

	Key Worker-level Variables				
	N. observ.	Mean	St.dev.	p5	p95
Log Hourly Wage	187,596	1.28	0.34	0.83	1.92
Tenure	187,596	3.30	3.61	0.00	11.00
Job Mobility	187,596	1.69	0.96	1.00	4.00
Domestic Experience	187,596	2.15	2.44	0.00	7.00
International Experience	187,596	1.95	2.82	0.00	8.00

	Key Firm-level Variables				
	N. observ.	Mean	St.dev.	p5	p95
Size	54,908	2.20	1.26	0.00	4.47
Productivity	54,908	10.67	1.08	9.00	12.50
Log Firm Age	54,908	2.38	0.89	0.69	3.66
Share Skilled	54,908	0.24	0.31	0.00	1.00
Internationally Active	54,908	0.20	0.40	0.00	1.00

Notes: Data refer to the young blue-collars sample for the year 2006. Concerning blue-collar worker-level variables, the (log) hourly wage is defined as the (log of the) sum of the monthly base wage (gross pay for normal hours of work), overtime, regularly and irregularly paid supplements, divided by the sum of the monthly normal and overtime hours of work. Tenure refers to the number of years the blue-collar worker has been working for the current employer while job mobility indicates the number of times (plus one) the blue-collar worker has changed employer up to year t. International experience is the number of years a blue-collar worker has worked in the past for internationally active firms (including the current firm) while domestic experience is the number of years a blue-collar worker has worked in the past for domestic firms (including the current firm). Moving to firm-level variables, size is firm log employment, productivity is log apparent labour productivity, the share of skilled workers is the share of a firm's workers (managers and non-managers) with 12 or more years of education, log firm age is the log of the age of the firm and internationally active is a dummy taking value one if the firm is involved in exporting and/or importing and/or is foreign owned and zero otherwise. See Appendix A for more details.

Table C-4: Wage Regressions, Controls

VARIABLES	(1) OLS	(2) FE	(3) Type of Experience	(4) Portability & Firm FE	(5) Heter. Returns on Exper.
Gender (1=female)	-0.0806^a				
	(0.0024)				
Education (Yrs)	0.0553^a				
	(0.0004)				
Tenure (Yrs)	0.0092^a	0.0077^a	0.0068^a	0.0358^a	0.0347^a
	(0.0012)	(0.0011)	(0.0011)	(0.0013)	(0.0005)
Tenure Sq. (Yrs)	-0.0005^a	-0.0009^a	-0.0009^a	-0.0013^a	-0.0013^a
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0000)
Firm Size (log)	0.0353^a	0.0275^a	0.0273^a	0.0410^a	0.0306^a
	(0.0007)	(0.0017)	(0.0017)	(0.0031)	(0.0020)
App. Labor Productivity (log)	0.0258^a	0.0135^a	0.0129^a	0.0078^a	0.0058^a
	(0.0009)	(0.0011)	(0.0011)	(0.0010)	(0.0009)
Firm Age (log)	0.0059^a	-0.0034	-0.0031	-0.0109^b	-0.0125^a
	(0.0013)	(0.0023)	(0.0023)	(0.0045)	(0.0023)
Share of Skilled Workers	-0.0763^a	-0.0326^a	-0.0357^a	0.0281^a	0.0712^a
	(0.0041)	(0.0072)	(0.0072)	(0.0071)	(0.0082)
Observations	344,680	275,100	275,100	269,320	161,736
R-squared	0.2672	0.8650	0.8658	0.9042	0.9990
Manager-Year Controls	X	X	X	X	X
Firm-Year Controls	X	X	X	X	X
Region FE	X				
Manager FE		X	X	X	X
Firm FE				X	X
Estimation Method	OLS	GPLS	GPLS	GPLS	GPLS

Notes: Additional controls to the regressions of Table 6. Standard errors (in parenthesis) are clustered at the manager level. ^{a} p<0.01, ^{b} p<0.05, ^{c} p<0.1.

Table C-5: Wage Regressions, Main Covariates, Common Sample

VARIABLES	(1) OLS	(2) FE	(3) Type of Experience	(4) Portability & Firm FE
Int. Act. Firm (0/1)	0.1294^{a}	0.0293^{a}	0.0267^{a}	0.0041
	(0.0039)	(0.0033)	(0.0034)	(0.0043)
Overall Exp. (Yrs)	0.0378^{a}	0.0622^{a}		
	(0.0010)	(0.0011)		
Domestic Exp. (Yrs)			0.0587$^{a}_{**}$	0.0220$^{a}_{**}$
			(0.0016)	(0.0019)
International Exp. (Yrs)			0.0648$^{a}_{**}$	0.0351$^{a}_{**}$
			(0.0012)	(0.0020)
Dom. Exp. * Int. Act. Firm (Yrs)				-0.0017
				(0.0015)
Int. Exp. * Int. Act. Firm (Yrs)				-0.0017
				(0.0016)
Job Mobility (Dummy)				0.0999^{a}
				(0.0042)
Job Mobility * Int. Act. Firm (Dummy)				-0.0045
				(0.0030)
Observations	161,736	161,736	161,736	161,736
R-squared	0.1619	0.8331	0.8339	0.8861
Manager-Year Controls	X	X	X	X
Firm-Year Controls	X	X	X	X
Region FE	X			
Manager FE		X	X	X
Firm FE				X
Estimation Method	OLS	GPLS	GPLS	GPLS

Notes: This Table replicates specifications (1) to (4) of Table 6 using the same sample of specification (5) in Table 6. Standard errors (in parenthesis) are clustered at the manager level. ^{a} p<0.01, ^{b} p<0.05, ^{c} p<0.1. $_{**}$ indicates that the coefficients of domestic and international experience are significantly different from each other at the 5% level. All results but those of column (1) refer to GPLS estimations obtained with the Stata user-written routine reghdfe implementing Guimarães and Portugal (2010)'s methodology to deal with high-dimensional fixed effects.

Table C-6: Manager Fixed Effects Regressions

VARIABLES	(1) FE	(2) Type of Experience	(3) Portability & Firm FE	(4) Heter. Returns on Exper.
Int. Act. Firm (0/1)	0.1303^{a}	0.0985^{a}	0.0767^{a}	0.0085^{b}
	(0.0029)	(0.0029)	(0.0030)	(0.0037)
Constant	-0.0706^{a}	-0.0534^{a}	-0.0420^{a}	0.0738^{a}
	(0.0022)	(0.0021)	(0.0023)	(0.0032)
Observations	275,100	275,100	269,320	161,736
R-squared	0.0217	0.0126	0.0076	0.0001
Estimation Method	OLS	OLS	OLS	OLS

Notes: The dependent variable is the estimated manager fixed effect from the corresponding specifications of Table 6. Standard errors (in parenthesis) are clustered at the manager level. ^{a} p<0.01, ^{b} p<0.05, ^{c} p<0.1.

Table C-7: Wage Regressions, Main Covariates, Blue-Collar Workers

VARIABLES	(1) OLS	(2) FE	(3) Type of Experience	(4) Portability & Firm FE	(5) Heter. Returns on Exper.
Int. Act. Firm (0/1)	0.0621^{a}	0.0314^{a}	0.0332^{a}	0.0080^{a}	0.0103^{a}
	(0.0009)	(0.0014)	(0.0014)	(0.0021)	(0.0012)
Overall Exp. (Yrs)	0.0081^{a}	0.0058^{a}			
	(0.0002)	(0.0003)			
Domestic Exp. (Yrs)			0.0079$^{a}_{**}$	0.0066$^{a}_{**}$	0.0072$^{a}_{**}$
			(0.0003)	(0.0005)	(0.0002)
International Exp. (Yrs)			0.0046$^{a}_{**}$	0.0038$^{a}_{**}$	0.0037$^{a}_{**}$
			(0.0004)	(0.0007)	(0.0002)
Dom. Exp. * Int. Act. Firm (Yrs)				0.0005	-0.0002
				(0.0006)	(0.0003)
Int. Exp. * Int. Act. Firm (Yrs)				0.0006	0.0005^{b}
				(0.0006)	(0.0002)
Job Mobility (Dummy)				0.0043^{a}	0.0042^{a}
				(0.0012)	(0.0002)
Job Mobility * Int. Act. Firm (Dummy)				-0.0020^{c}	-0.0020^{a}
				(0.0011)	(0.0007)
Domestic Exp. * Worker FE (Yrs)					0.0156$^{a}_{**}$
					(0.0005)
International Exp. * Worker FE (Yrs)					0.0371$^{a}_{**}$
					(0.0005)
Observations	1,299,463	1,015,893	1,015,893	988,796	784,880
R-squared	0.1107	0.7041	0.7042	0.7816	0.9980
Worker-Year Controls	X	X	X	X	X
Firm-Year Controls	X	X	X	X	X
Region FE	X				
Worker FE		X	X	X	X
Firm FE				X	X
Estimation Method	OLS	GPLS	GPLS	GPLS	GPLS

Notes: The dependent variable is the (log) hourly wage, detrended using a full set of year dummies interacted with 1-digit sector dummies. The hourly wage is defined as the sum of the monthly base wage (gross pay for normal hours of work), overtime, regularly and irregularly paid supplements, divided by the sum of the monthly normal and overtime hours of work. Regressions are run on the young blue-collars sample. Worker-year controls include number of years of education as well as tenure in the firm and its square. Firm-year controls include firm size (log employment), productivity (log apparent labour productivity), share of skilled workers and log firm age. Column (1) reports the OLS specification. The FE specification in column (2) includes worker fixed effects. Column (3) distinguishes between experience in domestic and internationally active firms. Column (4) allows the return on domestic and international experience to be different according to the international status of the firm while featuring firm fixed effects and introducing a control for job changes both alone and interacted with the international status of the employing firm in t. Column (5) adds two interaction terms of worker FE with domestic and international experience. Standard errors (in parenthesis) are clustered at the worker level. ^{a} p<0.01, ^{b} p<0.05, ^{c} p<0.1. $_{**}$ indicates that the coefficients of domestic and international experience (or the coefficients of the interactions of domestic experience with worker FE and international experience with worker FE) are significantly different from each other at the 5% level. All results but those of column (1) refer to GPLS estimations obtained with the Stata user-written routine reghdfe implementing Guimarães and Portugal (2010)'s methodology to deal with high-dimensional fixed effects. The reported number of observations refers to the actual number of observations used by the estimation procedure. For example, in the case of worker fixed effects in column (2) the number of observations does not include workers for which only one observation is available. Such workers are instead included in the number of observations in column (1).

Table C-8: Wage Regressions, Main Covariates, Additional Specifications with Heterogeneous Returns

VARIABLES	(1) Bargaining Power	(2) Education	(3) Career Concerns	(4) No Tenure	(5) Tenure by Firm Status	(6) Experience Squared
Int. Act. Firm (0/1)	-0.0004	0.0042	0.0058^{b}	0.0098^{a}	0.0021	-0.0055^{c}
	(0.0026)	(0.0026)	(0.0026)	(0.0026)	(0.0029)	(0.0030)
Domestic Exp. (Yrs)	0.0129$^{a}_{**}$	0.0174$^{a}_{**}$	0.0162$^{a}_{**}$	0.0410$^{a}_{**}$	0.0176$^{a}_{**}$	0.0227$^{a}_{**}$
	(0.0006)	(0.0009)	(0.0005)	(0.0005)	(0.0005)	(0.0014)
International Exp. (Yrs)	0.0301$^{a}_{**}$	0.0268$^{a}_{**}$	0.0311$^{a}_{**}$	0.0482$^{a}_{**}$	0.0323$^{a}_{**}$	0.0400$^{a}_{**}$
	(0.0007)	(0.0009)	(0.0007)	(0.0007)	(0.0007)	(0.0014)
Dom. Exp. * Int. Act. Firm (Yrs)	-0.0004	-0.0023^{a}	-0.0024^{a}	-0.0065^{a}	-0.0027^{a}	-0.0051^{a}
	(0.0007)	(0.0007)	(0.0007)	(0.0007)	(0.0007)	(0.0016)
Int. Exp. * Int. Act. Firm (Yrs)	-0.0016^{b}	-0.0016^{b}	-0.0017^{b}	0.0015^{b}	-0.0018^{b}	0.0079^{a}
	(0.0007)	(0.0007)	(0.0007)	(0.0007)	(0.0007)	(0.0015)
Job Mobility (Dummy)	0.1009^{a}	0.1036^{a}	0.1017^{a}	0.0666^{a}	0.1036^{a}	0.1000^{a}
	(0.0005)	(0.0005)	(0.0005)	(0.0004)	(0.0005)	(0.0005)
Change of firm and international status (0/1)	-0.0055^{a}	-0.0052^{a}	-0.0056^{a}	-0.0102^{a}	-0.0052^{a}	-0.0032^{c}
	(0.0018)	(0.0018)	(0.0018)	(0.0018)	(0.0018)	(0.0018)
Domestic Exp. * Manager FE (Yrs)	0.0105$^{a}_{**}$	0.0129$^{a}_{**}$	0.0110$^{a}_{**}$	0.0302$^{a}_{**}$	0.0132$^{a}_{**}$	0.0140^{a}
	(0.0005)	(0.0006)	(0.0005)	(0.0006)	(0.0006)	(0.0006)
International Exp. * Manager FE (Yrs)	0.0173$^{a}_{**}$	0.0159$^{a}_{**}$	0.0175$^{a}_{**}$	0.0421$^{a}_{**}$	0.0196$^{a}_{**}$	0.0135^{a}
	(0.0003)	(0.0003)	(0.0003)	(0.0004)	(0.0003)	(0.0003)
Firm Size t-1 (log)	0.0045^{a}					
	(0.0014)					
App. Labor Productivity t-1 (log)	0.0103^{a}					
	(0.0012)					
Hourly Wage t-1 (log)	-0.0345^{a}					
	(0.0026)					
Domestic Exp. * Education (Yrs)		-0.0000				
		(0.0001)				
International Exp. * Education (Yrs)		0.0004^{a}				
		(0.0000)				
Age up to 25 (0/1)			-0.0316^{a}			
			(0.0020)			
Age up to 25 * Int. Act. Firm (0/1)			-0.0038			
			(0.0025)			
Tenure * Int. Act. Firm (Yrs)					0.0022^{b}	
					(0.0010)	
Ten. Sq. * Int. Act. Firm (Yrs)					-0.0002^{b}	
					(0.0001)	
Domestic Exp. Squared						-0.0005^{a}
						(0.0002)
International Exp. Squared						-0.0009^{a}
						(0.0003)
Dom. Exp. Sq. * Int. Act. Firm (Yrs)						-0.0000
						(0.0002)
Int.Exp. Sq. * Int. Act. Firm (Yrs)						-0.0008^{a}
						(0.0003)
Observations	161,736	161,736	161,736	161,736	161,736	161,736
R-squared	0.8676	0.8671	0.8675	0.8575	0.8666	0.8676
Manager-Year Controls	X	X	X	X	X	X
Firm-Year Controls	X	X	X	X	X	X
Manager FE	X	X	X	X	X	X
Firm FE	X	X	X	X	X	X
Estimation Method	GPLS	GPLS	GPLS	GPLS	GPLS	GPLS

Notes: This Table proposes a number of extensions of the heterogeneous returns specification of column (5) of Table 6. The dependent variable is the (log) hourly wage, detrended using a full set of year dummies interacted with 1-digit sector dummies. The hourly wage is defined as the sum of the monthly base wage (gross pay for normal hours of work), overtime, regularly and irregularly paid supplements, divided by the sum of the monthly normal and overtime hours of work. Regressions are run on the young managers sample. Manager-year controls include number of years of education as well as tenure in the firm and its square. Firm-year controls include firm size (log employment), productivity (log apparent labour productivity), share of skilled workers and log firm age. Column (1) controls for measures of bargaining power indicated by wage bargaining models (Postel-Vinay and Robin, 2002) and in particular for the size and productivity of the employing firm in $t-1$ as well as for the wage in $t-1$. All these variables are introduced in such a way that their level affects wage growth between $t-1$ and t. The specification in column (2) allows for the return on domestic and international experience to be heterogeneous according to the education level of the worker. Column (3) addresses the possibility that internationally active firms might offer lower initial wages in the prospect of a faster career (Gibbons and Murphy, 1992) by including a dummy for managers younger than 25 years old, as well as its interaction with the international status of the firm. Column (4) does not include the tenure controls. Column (5) allows the return on tenure to be different in domestic and internationally active firms. Column (6) includes a quadratic in domestic and international experience. Standard errors (in parenthesis) are clustered at the manager level. ^{a} p<0.01, ^{b} p<0.05, ^{c} p<0.1. $_{**}$ indicates that the coefficients of domestic and international experience (or the coefficients of the interactions of domestic experience with manager FE and international experience with manager FE) are significantly different from each other at the 5% level. All results refer to GPLS estimations obtained with the Stata user-written routine reghdfe implementing Guimarães and Portugal (2010)'s methodology to deal with high-dimensional fixed effects. The reported number of observations refers to the actual number of observations used by the estimation procedure.

Table C-9: Wage Regressions, Key Covariates, Displaced & Unemployed Blue-Collar Workers Sample

VARIABLES	(1) Portability & Firm FE	(2) Heter. Returns on Exper.
Int. Act. Firm (0/1)	0.0081^{c}	0.0087^{a}
	(0.0046)	(0.0005)
Domestic Exp. (Yrs)	0.0051^{a}_{**}	0.0076^{a}_{**}
	(0.0006)	(0.0001)
International Exp. (Yrs)	0.0033^{a}_{**}	0.0041^{a}_{**}
	(0.0006)	(0.0001)
Dom. Exp. * Int. Act. Firm (Yrs)	0.0007	-0.0001
	(0.0010)	(0.0001)
Int. Exp. * Int. Act. Firm (Yrs)	0.0002	0.0006^{a}
	(0.0009)	(0.0002)
International Exp. * Blue-collar FE (Yrs)		0.0335^{a}_{**}
		(0.0005)
Domestic Exp. * Blue-collar FE (Yrs)		0.0141^{a}_{**}
		(0.0003)
Observations	12,835	9,971
R-squared	0.8062	0.9990
Worker-Year Controls	X	X
Firm-Year Controls	X	X
Worker FE	X	X
Firm FE	X	X
Estimation Method	OLS	OLS

Notes: The dependent variable is the (log) hourly wage, detrended using a full set of year dummies interacted with 1-digit sector dummies. The hourly wage is defined as the sum of the monthly base wage (gross pay for normal hours of work), overtime, regularly and irregularly paid supplements, divided by the sum of the monthly normal and overtime hours of work. Regressions are run on the displaced & unemployed blue-collar workers sample. Worker-year controls include number of years of education as well as tenure in the firm and its square. Firm-year controls include firm size (log employment), productivity (log apparent labour productivity), share of skilled workers and log firm age. Column (1) provides key covariates of the Portability & Firm FE specification while column (2) provides key covariates of the Heterogeneous Returns on Experience specification. Standard errors (in parenthesis) are clustered at the worker level. ^{a} p<0.01, ^{b} p<0.05, ^{c} p<0.1. $_{**}$ indicates that the coefficients of domestic and international experience (or the coefficients of the interactions of domestic experience with the worker FE and international experience with the worker FE) are significantly different from each other at the 5% level. Displaced & unemployed blue-collar workers are followed only in the first job after displacement and so the job mobility dummy and its interaction with the internationally active status dummy are not relevant. All results refer to OLS estimations while firm and worker fixed effects are borrowed from the estimations of the corresponding specifications on the sample of young blue-collar workers. The reported number of observations refers to the actual number of observations used in the estimation.

Table C-10: Wage at Time $t+s$, Learning from Co-Workers, Blue-Collar Workers

	Future Wage: Baseline				
VARIABLES	s=1	s=2	s=4	s=6	s=8
Own Wage in t	0.5079^{a}	0.4116^{a}	0.2806^{a}	0.2100^{a}	0.1578^{a}
	(0.0035)	(0.0042)	(0.0054)	(0.0061)	(0.0073)
Co-Workers Wage in t	0.2829^{a}	0.2899^{a}	0.2763^{a}	0.2602^{a}	0.2420^{a}
	(0.0031)	(0.0039)	(0.0053)	(0.0065)	(0.0083)
Observations	490,414	316,340	160,477	112,118	60,105
R-squared	0.5193	0.4186	0.2805	0.2194	0.1865
Worker-Year Controls	X	X	X	X	X
Time Dummies	X	X	X	X	X
	Future Wage: Learning from the Best				
VARIABLES	s=1	s=2	s=4	s=6	s=8
Own Wage in t	0.5985^{a}	0.5030^{a}	0.3671^{a}	0.2835^{a}	0.2176^{a}
	(0.0038)	(0.0047)	(0.0063)	(0.0070)	(0.0085)
Co-Workers Wage Higher in t	0.1014^{a}_{**}	0.1056^{a}_{**}	0.0958^{a}_{**}	0.0906^{a}_{**}	0.0798^{a}
	(0.0030)	(0.0038)	(0.0052)	(0.0060)	(0.0074)
Co-Workers Wage Lower in t	0.0566^{a}_{**}	0.0518^{a}_{**}	0.0451^{a}_{**}	0.0516^{a}_{**}	0.0729^{a}
	(0.0019)	(0.0026)	(0.0041)	(0.0053)	(0.0071)
Observations	490,414	316,340	160,477	112,118	60,105
R-squared	0.4979	0.3953	0.2579	0.2004	0.1711
Worker-Year Controls	X	X	X	X	X
Time Dummies	X	X	X	X	X
	Future Wage: Learning More in Int. Active Firms				
VARIABLES	s=1	s=2	s=4	s=6	s=8
Own Wage in t	0.5076^{a}	0.4114^{a}	0.2806^{a}	0.2097^{a}	0.1568^{a}
	(0.0035)	(0.0042)	(0.0054)	(0.0061)	(0.0073)
Co-Workers Wage Int. Active in t	0.2908^{a}_{**}	0.2945^{a}_{**}	0.2768^{a}	0.2651^{a}	0.2606^{a}_{**}
	(0.0035)	(0.0045)	(0.0063)	(0.0077)	(0.0102)
Co-Workers Wage Domestic in t	0.2781^{a}_{**}	0.2872^{a}_{**}	0.2759^{a}	0.2566^{a}	0.2277^{a}_{**}
	(0.0032)	(0.0041)	(0.0058)	(0.0072)	(0.0093)
Observations	490,414	316,340	160,477	112,118	60,105
R-squared	0.5194	0.4187	0.2805	0.2194	0.1868
Worker-Year Controls	X	X	X	X	X
Time Dummies	X	X	X	X	X

Notes: The dependent variable is the log hourly wage, detrended using a full set of year dummies interacted with 1-digit sector dummies, at time $t+s$ where s={1, 2, 4, 6, 8}. The hourly wage is defined as the sum of the monthly base wage (gross pay for normal hours of work), overtime, regularly and irregularly paid supplements, divided by the sum of the monthly normal and overtime hours of work. Covariates refer to various wage measure at time t. Own wage is the young blue collar worker's own log hourly wage in t. Co-workers wage is the log of the average hourly wage of the other blue collar workers in the firm (both young blue collar workers and not) in t. Co-workers wage higher is the log of the average hourly wage of the other blue collar workers in the firm that earn a wage higher than the young blue collar worker in t. Symmetrically, co-workers wage lower is the log of the average hourly wage of the other blue collar workers in the firm that earn a wage lower than the young blue collar worker in t. These two covariates are set to zero if the corresponding other blue collar workers set is empty. Co-workers wage int. active is the log of the average hourly wage of the other blue collar workers in the firm at time t when the firm is internationally active and zero otherwise. Likewise, co-workers wage domestic is the log of the average hourly wage of the other blue collar workers in the firm at time t when the firm is domestic and zero otherwise. Blue collar worker-year controls include overall experience and its square, gender, number of years of education as well as tenure in the firm and its square at time t. Regressions are estimated via OLS on the young blue collar workers sample and include time dummies. Standard errors (in parenthesis) are clustered at the blue collar worker level. ^{a} p<0.01, ^{b} p<0.05, ^{c} p<0.1. $_{**}$ indicates that the coefficients of co-workers wage int. active and co-workers wage domestic (or co-workers wage higher and co-workers wage lower) are significantly different from each other at the 5% level.