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

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22 January 2022

Abstract: We provide both a theoretical framework and a number of empirical results highlighting how jobs in internationally active firms differ from those in domestic firms in terms of their impact on a worker's lifetime wage income profile through wage jumps occurring upon changing job ('static effects') or through increases in the wage growth rate ('dynamic effects'). First, in internationally active firms the experience-wage profile is much steeper than in other firms, especially for managers as opposed to blue-collar workers. Second, the higher lifetime wage income for managers in internationally active firms relies on the stronger accumulation of experience that these firms allow for and on the (almost) perfect portability of the accumulated dynamic wage gains to other firms. Static effects are instead much more important for blue-collar workers. Finally, the distinction between jobs in internationally active and domestic firms is relevant also at a more aggregate level to explain cross-sectional differences in wages among workers and spatial differences in average wages across regions within a country.

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 Mostafa Beshkar, 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. 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 other 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, 2018).

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-Ureña et al., 2021). 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).

The aim of this paper is to contribute, theoretically and empirically, to this line of research by investigating the distinction between the static and the dynamic dimensions of the wage premium obtained from working for internationally active firms. Specifically, 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 terms of theory, we design a simple competitive model as a conceptual framework for

our analysis. Though simple, the model is rich enough to offer useful guidance to the ensuing empirical analysis. In the model, as in De la Roca et al. (2020), a worker's career consists of two periods: a junior period, in which she gains experience, and a senior period, in which she takes advantage of previously gained experience. A job at an internationally active firms (henceforth called 'international' job for short) offers higher wage, more performance-enhancing experience and more opportunities to exploit such experience than a job at an internationally inactive firm (henceforth called 'domestic' job for short). It is, however, also associated with undesirable job attributes such as a more demanding and stressful environment. 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.[1] By allowing for workers' heterogeneous ability and idiosyncratic shocks to their life circumstances that affect the opportunity cost of pursuing career development as a priority, the model succeeds in generating several empirically relevant career paths. Specifically, it predicts that low ability workers work for internationally inactive firms both in the junior and senior periods of their career. By contrast, high ability workers work for internationally active firms both as junior and as senior, unless their opportunity cost of career development is also high, in which case they prefer an internationally inactive firm as senior employer. Intermediate ability workers work for internationally inactive (active) firms as junior and internationally active (inactive) firms as senior if the advantage of an international job is stronger in terms of opportunities as senior (experience as junior) than experience as junior (opportunities as senior). However, some of them end up in domestic jobs both as junior and as senior if their opportunity cost of career development turns out to be high.

The model 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 within 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. We thus need to distinguish between experience that is potentially useful in other firms and experience that is specific to a given

[1]Differently from the present model, in the model by De la Roca et al. (2020), 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.

firm ('tenure'). 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.

For the empirical analysis we exploit Portuguese matched employer-employee data (*Quadros the 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 and opportunities may be more relevant for some tasks than for others, we will 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. As for employers, we classify exporting, importing and foreign-owned firms as 'internationally active' and all other firms as 'internationally inactive'. We then leverage information on employment history to construct measures of managers' overall experience, international experience (years spent in internationally active firms) and domestic experience (complement to international experience).

Both the premise and the predictions of our theoretical model find strong support in the data. In particular, the premise is consistent with two robust patterns. First, sales growth in internationally active firms is higher than in internationally inactive firms while being positively related to the 'stock' of international experience embodied in firms' management.[2] Second, also wage growth in internationally active firms is higher than in internationally inactive firms, especially for managers, stacking up to almost a 20 percent wage gap in the space of just 10 years. As for the model's predictions, we estimate a series of Mincerian wage equations and carefully deal with the issues of unobservables and selection. For our baseline results we employ a large set of covariates along with different combinations of fixed effects, including a specification where we allow for both time-invariant and time-variant manager-specific correlated unobservables. 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.

Our empirical analysis consistently points towards the following results: (i) the wage

[2]In related work using matched employer-employee and trade transaction data for Portuguese firms, Mion and Opromolla (2014) show that having a manager with previous export experience is a key driver of export performance.

premium associated with internationally active firms, widely documented in the literature referenced above, 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 inactive firms.[3]

Finally, we show that the distinction between internationally active and inactive firms is relevant not only at the individual level, but also at a more aggregate level. When studying cross-sectional differences in wages among managers, the explanatory power of international experience is comparable to that of overall experience and to the combined explanatory power of firm-level controls including size, age, and productivity. When studying spatial differences in average wages across Portuguese regions, we find a high correlation with the average international experience of local managers. A counterfactual experiment that eliminates differences in the share of overall experience corresponding to international experience across regions reduces the coefficient of variation of wages by 14 percent. This confirms that investigating the role of work experience (in particular its differential value across employers) and the determinants of life-cycle wage growth can improve our understanding of both the cross-sectional and spatial distributions of wages within a country (Song et al., 2018), of cross-country wage and income differences (Lagakos et al., 2018), and of the effects of active labor market programs aimed at enhancing the opportunities and abilities of both unemployed and less skilled workers (Dustmann and Meghir, 2005).

The rest of the paper is organized as follows. Section 2 presents the theoretical model. Section 3 describes our dataset. Section 4 presents summary statistics and key data patterns. Sections 5 and 6 provide our baseline firm-level and manager-level empirical results, while Section 7 focuses on displaced managers to systematically discard a number of alternative explanations for our findings. Section 8 expands on the quantitative implications of our results for both the cross-sectional and spatial distributions of wages. Section 9 concludes. Additional details about the data and the model, as well as a number of complementary tables and figures, are reported in the Appendix.

[3]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.

2. A Simple Model of Imperfect Sorting with Firm-Specific Experience

This section presents 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. (2020). 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). More 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. Although our (complementary) explanation for higher wage growth prospects offered by certain firms is, to some extent, observationally equivalent to a wage bargaining story, we will provide evidence that the empirical results in support of our explanation are robust to controlling for theory-based measures of bargaining power as well as to focusing on the sub-sample of displaced workers (i.e., workers with relatively low and similar bargaining power over their next job).

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. 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. More 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.[4]

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

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

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 (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 (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. 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

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

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

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

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 ($e_I < e_A$).

[4]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.

Turning to 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. We fully develop these two cases in Appendix B while providing end results here.

The model is consistent with several career paths. More 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.

We will later show that both the premise and the predictions of the model find strong support in our data. In doing so, it will be crucial to account for the fact that experience and opportunities may be more relevant for some tasks than for others. We will therefore distinguish between managers (widely defined) and blue-collar workers.

3. Data Description

Our data set 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 administration and defence, extra-territorial organizations and bodies, and some business and professional associations—for the years 1991-2006.[5] Employer-employee data come from Quadros de Pessoal (henceforth, QP), a data set 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.[6] Currently, the data set 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

[5]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.

[6]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.

identifying number, which we use to follow firms and workers over time.[7] Variables available in the data set 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 data set 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 is internationally active in year t, i.e., whether the firm exports and/or imports and/or is foreign owned in a given year.

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. For each worker in each year, we construct two measures of the hourly wage. The baseline measure is defined as 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. A second measure abstracts from performance-pay components: overtime and irregular bonuses and allowances.

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 88% of overall

[7]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.

employment in 2006) and is the one we use to derive Facts 1 and 2 below as well as some other specific results. Within this sample, internationally active firms account for about 45% 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., that were at most 18 in our starting data year 1991, and their employing firms. The reason for this restriction is twofold. First, both the logic of our model and empirical analysis suggest that managers may have a special place in the relationship between firm growth and wage growth. Second, focusing on young managers allows us to observe their full employment history and so 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 occupations, 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. We define a manager as a salary-receiving worker employed in occupations 3 or 2 at time t. 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 of the worker within the firm organization.[8] Finally, a manager at time t could 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 77,174 managers in between 18 and 33 years old and 26,431 employing firms. 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 time t born in 1973 or later and their employing firms. The young blue-collars sample comprises 180,468 blue-collars in between 18 and 33 years old and 53,552 employing firms.

[8]For example, 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).

4. Data Features

4.1 Summary Statistics

Table C-1 in Appendix C 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 C-1 reports the mean, standard deviation, min and max of some key manager-level variables as well as the number of observations. Table C-1 indicates, among other things, that the mean tenure for young managers is below 4 years while the number of job changes (value of Job Mobility minus one) varies between 0 and 8 with an average of 0.6. At the same time, domestic experience and international experience vary between 0 and 15 years with an average of 6.37 years for the former and 2.51 years for the latter.

Table 1: Firms, Managers and Young Managers, Year 2006

	Firms with Manager		**No Manager**	**Overall Share**	**Overall Number**
Industry	No Young Manager	Some Young Managers			
Agriculture	11.23	6.51	82.26	100.00	8,416
Fishing	29.36	11.01	59.63	100.00	109
Mining and Quarrying	27.77	14.95	57.28	100.00	749
Manufacturing	20.18	13.22	66.60	100.00	38,276
Electricity	19.61	55.56	24.84	100.00	153
Construction	18.34	10.64	71.01	100.00	33,882
Wholesale and Retail	16.67	9.74	73.59	100.00	73,780
Hotels and Restaurant	11.77	5.44	82.79	100.00	27,230
Transport and Communication	13.87	7.04	79.09	100.00	9,873
Financial Intermediation	20.24	19.91	59.85	100.00	1,823
Real Estate and Busin.	19.62	24.96	55.42	100.00	25,008
Public Adm., Education	13.59	25.03	61.38	100.00	14,080
Other	7.88	5.96	86.16	100.00	10,016
Total	16.44	12.13	71.44	100.00	243,395

Notes: Data refer to the large sample for the year 2006. The Table reports the distribution of firms 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').

The bottom panel of Table C-1 reports the mean, standard deviation, min and max of some key firm-level variables as well as the number of observations. Table C-1 indicates that 30% of firms are internationally active and so the remaining 70% are internationally inactive. Appendix A provides more details on the construction of both manager-level and firm-level variables while Table C-2 in Appendix C provides the equivalent of Table C-1 for the young blue-collars sample.

In order to get insights into what type of firms young managers end up working for, Table 1 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

Table 2: 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	1,476,722	1,073,659	15,568,819	330,689
Mean Employment	22.38	16.47	93.48	6.90
Mean Age	18.46	12.47	23.00	13.77
Mean Int Act Status	0.38	0.35	0.76	0.11

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').

1 shows that, as in Mion and Opromolla (2014), most firms do not employ a manager. Yet, firms employing at least one manager account for the bulk of aggregate employment and revenue (70% of employment and 84% of revenue). At the same time, firms belonging to the smaller sample of firms employing young managers (representing 46% of aggregate employment and 69% of aggregate revenue) are present in all sectors of the economy albeit in somewhat different shares with respect to firms not employing any young manager.

Table 2 further shows for the 38,276 firms belonging to manufacturing, where numbers are more comparable across firms, 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 Young Managers'). Table 2 shows that young managers can be found in relatively small and young firms comprising young managers only (that 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.

Finally, Table 3 uses information on manager fixed effects estimated from wage regressions in Section 6 and shows that there is mobility of both low-ability (below average fixed effect) and high-ability (above average fixed effect) managers to and from internationally active and inactive firms.[9] Furthermore, in line with the model outlined in Section 2, imperfect sorting is at work with high-ability managers being more likely than low-ability managers to end up in

[9]The distribution of fixed effects is roughly symmetrical and so using the mean or the median delivers very similar results.

Table 3: Low-Ability and High-Ability Managers that Change Employing Firm, Specification Mobility & Firm FE.

	Low-ability Managers		
	Domestic in t	Internationally Active in t	Total
Domestic in t-1	61.15	38.85	100.00
Internationally active in t-1	34.20	65.80	100.00
Total	47.89	52.11	100.00
	High-ability Managers		
	Domestic in t	Internationally active in t	Total
Domestic in t-1	54.44	45.56	100.00
Internationally active in t-1	30.55	69.45	100.00
Total	41.01	58.99	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 four different categories depending on whether the employing firm in $t-1$ is domestic or internationally active and on whether the (different) employing firm in t is domestic or internationally active. For example, the top-left cell indicates that 61.15% of the low-ability managers that were employed in a domestic firm in $t-1$ and move to another firm in t actually move to a domestic firm while, for example, the first cell of the bottom row indicates that 41.01% of high-ability managers changing firm between $t-1$ and t end up in t in a domestic firm. 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 Mobility & Firm FE specification in column (5) of Table 6.

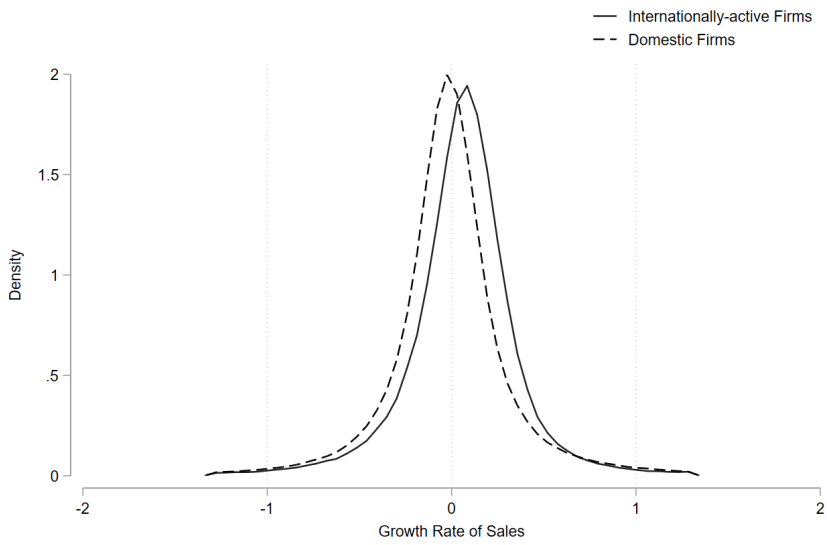
an internationally active firm when changing job.

4.2 Two Key Facts

We report here evidence of two strong patterns in the data, that we label Facts 1 and 2, that are in line with some premises of our model, namely that internationally active firms offer a more rewarding career development and more chances of exploiting performance-enhancing experience, materializing in the data as steeper experience-wage profiles for managers and higher rates of sales growth for firms. Facts 1 and 2 are new with respect to the stylized facts provided by the applied trade literature. More specifically, the empirical trade literature referenced in the Introduction provides very consistent evidence that firms involved in international trade are larger and pay higher wages. Facts 1 and 2 below instead draw a link between the internationally active status of a firm and the *growth* of sales and wages.

Figure 1 provides evidence obtained from the large sample of **Fact 1**: *Sales growth in internationally active firms is higher than in internationally inactive firms.* More specifically, Figure 1 shows the distribution of the growth rate of sales for internationally active and inactive firms in the large sample obtained while controlling for firm size, age, location, industry, and year

Figure 1: Growth Rate of Sales, Domestic vs. Internationally active Firms, Large Sample



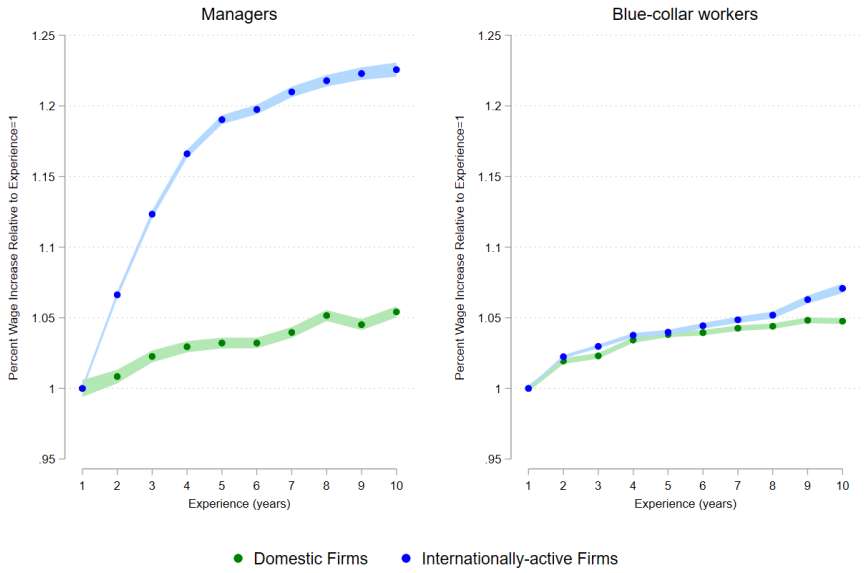
Notes: This figure shows the distribution of the growth rate of sales for internationally active and domestic firms in the large sample obtained while controlling for firm size, age, location, industry, and year effects. More specifically, we regress the growth rate of sales, computed as the difference in sales between t and $t+1$ divided by the average sales in t and $t+1$, on the log of firm size (sales) in t, the log of the age of the firm in t, a set of year, region (NUTS III) and industry (1-digit NACE) dummies. Then we take the residuals, drop observations below (above) the bottom (top) 1 percent, and use them to construct the densities plotted in the figure.

effects.[10] Figure 1 clearly highlights an overall higher growth performance of internationally active firms with the difference between mean growth rates standing at 6.9%. At the same time, Figure C-1 in Appendix C shows that also domestic sales growth is higher for internationally active firms (about 7% on average), so suggesting that overall exports patterns are not the only driver of Fact 1, while Figure C-2 in Appendix C indicates that internationally active firms outperform internationally inactive firms also in terms of employment growth (around 4.9% on average). Figure C-3 in Appendix C then provides additional evidence of Fact 1 related to the young managers sample.

Figure 2 provides evidence obtained from the large sample of **Fact 2**: *Wage growth in internationally active firms is, particularly for managers, higher than in internationally inactive firms.* More specifically, Figure 2 shows experience-wage profiles for managers (left panel) and blue-collar

[10]The growth rate of sales is computed as the difference in sales between t and $t+1$ divided by the average sales in t and $t+1$, This growth rate measure is routinely used in the 'gross job creation-gross job destruction' literature to measure establishment-level employment changes (Davis and Haltiwanger, 1992). It is also sometimes used in the international trade literature to decompose aggregate exports growth into the contribution of continuing firms, entrants, and exiters (Eaton et al., 2008). The growth rate measure is (i) symmetric around zero; (ii) it lies in the interval $[-2,2]$; (iii) it is monotonically related to the conventional growth rate measure; (iv) it is approximately equal to the conventional growth rate measure for small growth rates. The benefit of computing the growth rate in this way is that (i) an x percent growth followed by a $-x$ percent growth brings back to the same level; (ii) sales values close to zero in the first year have a less extreme effect on the growth rate.

Figure 2: 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) of 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 III) 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.

workers (right panel) of internationally inactive and active firms in the large sample. Such wage profiles are computed as the average residual hourly wage by number of years of experience (up to 10) obtained after controlling for year, industry and region effects, and are expressed as a percentage increase relative to the case of one year of experience. As can be appreciated from Figure 2, the difference in wage growth is substantial for managers stacking up to almost a 20% wage gap in the space of just 10 years. Figures C-4 and C-5 in Appendix C further confirm this finding while providing a breakdown into manufacturing and services firms. At the same time, Figure C-6 in Appendix C provides additional evidence of Fact 2 related to the young managers sample.

5. Firm Growth and Managers' International Experience

While it is well established that firms involved in international activities are larger and more productive than other firms, *Fact 1* reported in Section 4 provides new evidence that growth is also higher in internationally active firms. In this section, we further show that firms grow more if employing managers with more experience and, in particular, more international experience. This is consistent with internationally active firms being characterized by stronger growth opportunities that are best realized by more able/experienced managers, especially if their

experience is international, which is the premise of the simple model described in Section 2. It also suggests that the higher wage level and growth associated with internationally active firms do not only correspond to a stronger bargaining position (as it would be the case within a framework à la Postel-Vinay and Robin (2002)), but it is also related to valuable competence.

Table 4: Growth Regressions, Large Sample

VARIABLES	(1) Baseline	(2) Inter. Active
Firm Sales (log)	-0.0400^a	-0.0232^a
	(0.0003)	(0.0002)
Firm Age (log)	-0.0541^a	-0.0598^a
	(0.0004)	(0.0004)
Int. Act. (0/1)		0.0458^a
		(0.0010)
Observations	1,449,544	1,449,544
R-squared	0.0517	0.0548
Year Region Industry Dummies	X	X
Estimation Method	OLS	OLS

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) introduces a dummy variable equal to 1 when the firm is internationally active. All specifications include year, industry (1-digit NACE), and region (NUTS III) dummies. Standard errors (in parenthesis) clustered at the firm level. ^{a} p<0.01, ^{b} p<0.05, ^{c} p<0.1

Table 4 provides results for the large 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 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 4.[11] More specifically, coefficients are such that doubling size (age) decreases growth by around 4 (5.4) percentage points. In column (2) we then add a dummy for internationally active firms and find these firms to grow substantially more (about 4.6%) than internationally inactive firms.

In Table 5 we instead focus on firms belonging to the young managers sample. Columns (1) to (3) provide OLS estimation results including year, industry and region dummies while

[11]This regression is the one used to construct Figure 1.

Table 5: Growth Regressions, Young Managers Sample

VARIABLES	(1) Baseline	(2) Int. Active	(3) Int. Experience	(4) Int. Experience FE
Firm Sales (log)	-0.0352^a	-0.0190^a	-0.0227^a	-0.3754^a
	(0.0013)	(0.0010)	(0.0011)	(0.0163)
Firm Age (log)	-0.0448^a	-0.0558^a	-0.0546^a	-0.0458^a
	(0.0021)	(0.0018)	(0.0018)	(0.0113)
Int. Act. (0/1)		0.0329^a	0.0257^a	0.0063
		(0.0035)	(0.0046)	(0.0084)
Total Experience (log)			0.0161^a	0.0217^a
			(0.0016)	(0.0038)
Ratio Int. Exp. (ratio)			0.0142^c	0.0322^b
			(0.0075)	(0.0160)
Observations	61,675	61,675	61,675	61,675
R-squared	0.0506	0.0526	0.0535	0.2471
Year Region Industry Dummies	X	X	X	
Firm FE				X
Year Dummies				X
Estimation Method	OLS	OLS	OLS	Within

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. Column (4) further adds firm fixed effects. All specifications, except column (4) where we consider only year dummies, include year, industry (1-digit NACE), and region (NUTS III) dummies. Standard errors (in parenthesis) clustered at the firm level. ^{a} p<0.01, ^{b} p<0.05, ^{c} p<0.1

column (4) provides within estimation results including year dummies and firm fixed effects. Standard errors are clustered at the firm-level. Column (1) confirms for this sample that firm size and age are negatively related to firm growth, while column (2) confirms that internationally active firms grow more than internationally inactive firms.[12] Columns (3) and (4) 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 2.2 percentage points while the growth rate is about 3.2 percentage points higher if the share of total experience corresponding to international experience is one as opposed to zero.

6. Experience-Wage Profiles of Managers and Blue-Collars Workers

The trade literature has shown not only that firms involved in international activities pay higher wages, but also that such a wage premium is robust to controlling for sorting of better workers into them (Mion and Opromolla, 2014). According to our model, there are

[12]The regression behind Column (1) is the one used to construct Figure C-3 in Appendix C.

two concurrent reasons for this. First, internationally active firms allow workers of any given ability to accumulate more valuable experience. Hence, any given worker is predicted to enjoy higher wage growth if she is employed by an internationally active firm rather than by an internationally inactive one. Second, internationally active firms also offer workers of any given ability and experience better opportunities to exploit their potential. Hence, any worker is predicted to enjoy a wage jump when moving from an internationally inactive firm to an internationally active one. *Fact 2*, reported in Section 4, points to the importance of the first channel by providing strong evidence that wage growth is higher in internationally active firms.

In this Section, we tackle the issues of ability, opportunities, experience and its portability more directly by estimating a number of manager-level wage regressions. In particular, we consider two-way manager-firm fixed effects models employing several controls and including a specification where we allow for both time-invariant and time-variant manager-specific correlated unobservables as in Gregory (2020). In the next Section, we will push the analysis forward by explicitly considering the identification assumptions we use here, while providing complementary evidence based on the sample of displaced managers and systematically discarding alternative explanations including wage bargaining stories à la Postel-Vinay and Robin (2002).

It is important to highlight at this stage that, differently from some existing studies (see, e.g., Card et al. (2016) and Gregory (2020)), we only use firm fixed effects as controls and do not use them to identify different types of jobs/employers as those studies do.[13] Our research question is in fact complementary to those studies in that, while we allow for different firms to pay different level premia as captured by firm fixed effects (which are often interpreted by the literature in the light of wage bargaining models), we are particularly interested in the differential value of experience acquired in different jobs and how this affects wage profiles.

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.[14] 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 intentionally active firms (including

[13] Although firm fixed effects are used in a number of two-way fixed effects studies to measure unobserved firm heterogeneity and level premia, the literature has also highlighted a number of shortcoming related to measurement error of firm fixed effects due to low mobility across firms (Andrews et al., 2008, Postel-Vinay and Robin, 2006), contributing to, for example, the controversial result of a negative correlation between worker and firm fixed effects.

[14] We believe that in our analysis the right job/employer unit is the firm. In unreported results, available upon request, we have considered plants instead of firms obtaining virtually identical results.

the current firm). We also use overall experience ($Over. : EXP_{it}$), constructed in the usual way by combining information on age and education, and measure domestic experience ($Dom. : EXP_{it}$) as the difference between overall experience and international experience ($Dom. : EXP_{it}$=$Over. : EXP_{it}$-$Int. : EXP_{it}$).[15] Full details about how we constructed these variables are provided in Appendix A.[16] 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 7.2 below, we then report very similar results obtained using square terms.

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

$$w_{it} = \beta_0 + \beta_1 Int. : Act._{ft} + \beta_2 Over. : EXP_{it} + \mathbf{I_{it}'\Gamma_I} + \mathbf{C_{ft}'\Gamma_C} + \eta_r + \varepsilon_{it}, \quad (2)$$

where w_{it} is the de-trended (log) hourly wage of manager i in year t, $Int. : Act_{ft}$ is the dummy indicating whether the employing firm f is internationally active in t or not, $Over. : EXP_{it}$ is a manager's overall experience (domestic and international), 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.[17] The vector $\mathbf{C_{ft}}$ refers to the current employing firm's observables: size (log employment), productivity (log apparent labor productivity), 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 (NUTS3 regions).

Equation (2) 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).

[15] In Section 7.2 we show that our results are robust to using a definition of domestic experience that is more symmetric with respect to international experience: number of years a manager has worked in the past for domestic firms (including the current firm).

[16] All results in this Section but those related to equation (2) 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.

[17] 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.

6.1 Fixed Effects Specifications Set 1

Ability, International and Domestic Experience, Portability, and Job Mobility. We enrich (2) by adding manager fixed effects η_i (i.e., heterogeneity in ability across managers as in the model described in Section 2) 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 an internationally inactive or active firm), while also assessing whether these two types of experience are fully portable across firms as assumed in our model. We do this progressively by means of equations (3) to (5):

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

$$w_{it} = \beta_0 + \beta_1 Int.:Act_{ft} + \beta_2 Dom.:EXP_{it} + \beta_3 Int.:EXP_{it} + \mathbf{I'_{it}\Gamma_I} + \mathbf{C'_{ft}\Gamma_C} + \eta_i + \varepsilon_{it}, \quad (4)$$

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

where we drop location dummies, because their identification would rest on a small and noisy variation, and the reference category for interactions in equation (5) is represented by internationally inactive firms, i.e., β_2 (β_3) in (5) is the value of a manager's domestic (international) experience when working for an internationally inactive 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 (which is what we consistently find across a range of specifications), it means that both domestic and international experience represent a wage component that is fully portable across firms. Furthermore, β_1 is now identified by: (i) managers remaining in the same firm with the employing firm changing its international activity status; (ii) managers moving from internationally inactive to active firms and vice versa. Therefore, such parameter now better corresponds to those wage jumps related to differences in opportunities in our model. We refer to equation (3) as 'FE', to equation (4) as 'Type of experience' and to equation (5) as 'Portability'.

In order to better control for firm heterogeneity and single out wage patterns related to job mobility, we further consider the following enrichment of (5):

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

where η_f are firm fixed effects while $Job. : Mobil_{it}$ 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. More 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 and so it broadly captures wage jumps occurring when managers move from one firm to another.[18] The additional interaction of $Job. : Mobil_{it}$ with $Int. : Act_{ft}$ further controls for differential wage jumps occurring whenever the new employing firm is internationally active. We label equation (6) 'Mobility & Firm FE'.

Finally, a common feature of equations (3) to (6) 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.[20]

Results Table 6 reports estimations referring to the main covariates of equations (2) to (6), while additional details on control variables are reported in Table C-3 in Appendix C.[21] Column (1) of Table 6 refers to estimations of (2) and the key result stemming from this specification is that internationally active firms pay, conditional on our set of controls, about 11.5% 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). When considering manager fixed effects in column (2) of Table 6, the coefficient of $Int. : Act_{ft}$ is still strongly significant, but drops considerably to about 3%, while the experience coefficient

[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 (6) 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 (6) below 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.

[20]Our model suggests that firm growth and managers' wage growth are related to each other through opportunities and experience, with differences across firms and managers in opportunities and experience being accounted for by the distinction between internationally active and inactive firms. However, there are many other channels linking firm growth to managers' wage growth like, for example, general bonus payments related to firm performance and growth that we control for by means of overall within-firm growth in size and productivity.

[21]As far as control variables are concerned, Table C-3 in Appendix C shows that coefficients are in line with expectations. In particular, we find positive but diminishing returns to tenure, a positive return to education and sizeable positive premia related to firm productivity and (especially) size as well as to firm share of skilled workers. Finally, columns (1) to (4) of Table C-5 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 manager fixed effects specifications.

Table 6: Wage Regressions, Simple Specifications, Main Covariates

VARIABLES	(1) OLS	(2) FE	(3) Type of Experience	(4) Portability	(5) Mobility & Firm FE
Int. Act. Firm (0/1)	0.1149^{a}	0.0314^{a}	0.0216^{a}	0.0409^{a}	0.0020
	(0.0027)	(0.0027)	(0.0028)	(0.0065)	(0.0058)
Experience (Yrs)	0.0198^{a}	0.0515^{a}			
	(0.0004)	(0.0009)			
Domestic Exp. (Yrs)			0.0428$^{a}_{**}$	0.0429$^{a}_{**}$	0.0326$^{a}_{**}$
			(0.0010)	(0.0010)	(0.0019)
International Exp. (Yrs)			0.0620$^{a}_{**}$	0.0663$^{a}_{**}$	0.0509$^{a}_{**}$
			(0.0011)	(0.0017)	(0.0021)
Dom. Exp. * Int. Act. Firm (Yrs)				-0.0024^{a}	-0.0007
				(0.0009)	(0.0008)
Int. Exp. * Int. Act. Firm (Yrs)				-0.0044^{a}	-0.0010
				(0.0015)	(0.0012)
Job Mobility (Dummy)					0.0603^{a}
					(0.0051)
Job Mobility * Int. Act. Firm (Dummy)					-0.0047
					(0.0030)
Observations	322,360	254,990	254,990	254,990	249,562
R-squared	0.3124	0.8767	0.8773	0.8774	0.9105
Adjusted R-squared	0.3124	0.8217	0.8227	0.8227	0.8464
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
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. Column (5) features firm fixed effects while introducing a control for job changes both alone and interacted with the international status of the employing firm in t. 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 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).

indicates a return of about 5%, which is in line with previous comparable studies.[22] In terms of the drop of the coefficient of $Int. : Act_{ft}$, column (1) of Table C-5 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

[22]For example, Topel (1991) (see Table 7, column 1), using data on white males from the PSID, estimates the coefficient of experience to be 0.0418 and the coefficient of the square of experience to be -0.0008. When we include both experience and its square in a similar specification and restrict the data to males we find the coefficient of experience to be 0.0586 and the coefficient of the square of experience to be -0.0023. More recently, 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 exactly half-way, at 32.7 percent, 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).

$Int. : Act_{ft}$ dummy.

Columns (3) to (5) of Table 6 report results of equations (4) to (6). 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 2%, i.e., one additional year of international experience increases the wage by about 2% more than one additional year of domestic experience.[23] 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. In particular, column (5) of Table 6 highlights how this result is robust to controlling for both firm fixed effects and job mobility patterns. Regarding the latter, our estimations do suggest that managers enjoy, on average, wage increases when moving from one job to another, raising their wage by about 6%. However, this has little impact on the differential return between domestic and international experience.

As far as the $Int. : Act_{ft}$ dummy is concerned, the presence of both firm and manager fixed effects in column (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.[24] Indeed, the coefficient of $Int. : Act_{ft}$ is positive, small and not significant in column (5) of Table 6, while being positive, significant and in between 2% to 4% in columns (2) to (4) where identification also comes from managers moving between internationally inactive and active firms. However, the key point we want to highlight here is that wage jumps enjoyed by managers when moving from internationally inactive to internationally active firms represent at best two years (4%) of additional wage growth (2*2%) enjoyed when gaining experience in internationally active firms rather than in internationally inactive 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.

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

[24] 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.

6.2 Fixed Effects Specifications Set 2

Selection on Unobservables and Heterogeneous Returns on Experience. We consider here more complex specifications aiming at better controlling for endogeneity, which includes allowing for time-variant manager-specific correlated unobservables, as well as understanding whether and how returns on domestic and international experience are heterogeneous across managers. The first specification we consider, that we label 'Job-Spell FE', is:

$$\begin{aligned} w_{it} &= \beta_0 + \beta_1 Int.:Act_{ft} + \beta_2 Dom.:EXP_{it} + \beta_3 Int.:EXP_{it} + \beta_4 Dom.:EXP_{it} * Int.:Act_{ft} \\ &+ \beta_5 Int.:EXP_{it} * Int.:Act_{ft} + \beta_6 Job.:Mobil_{it} + \beta_7 Job.:Mobil_{it} * Int.:Act_{ft} + \mathbf{I'_{it}\Gamma_I} \\ &+ \mathbf{C'_{ft}\Gamma_C} + \eta_{if} + \varepsilon_{it}, \end{aligned} \tag{7}$$

where, rather than having separate firm and manager fixed effects as in (6), we allow for job-spell fixed effects η_{if}. Such specification thus allows us to control for a wide range of potentially correlated unobservables (such as distance) by having a match-specific fixed effect (Dustmann and Pereira, 2008).[25] However, it also reduces the amount of variation and observations used for identification while not allowing to disentangle manager from firm FE.

The most comprehensive specification we implement, that we label 'Individual Linear Trends', allows for *both time-invariant and time-variant manager-specific correlated unobservables*. We enrich (6) with manager-specific linear trends $\eta_{2i} * t$ that are estimated along with standard manager fixed effects η_{1i}. Indeed, it is reasonable to expect that idiosyncratic ability, skills and motivation affect wages, while being reasonably invariant over time for a given manager. This is customary translated into manager fixed effects η_{1i} affecting the *level* of wages by acting as wage jumps. However, it is 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 $\eta_{2i} * t$. Specifically, we consider the following model:

$$\begin{aligned} w_{it} &= \beta_0 + \beta_1 Int.:Act_{ft} + \beta_2 Dom.:EXP_{it} + \beta_3 Int.:EXP_{it} + \beta_4 Dom.:EXP_{it} * Int.:Act_{ft} \\ &+ \beta_5 Int.:EXP_{it} * Int.:Act_{ft} + \beta_6 Job.:Mobil_{it} + \beta_7 Job.:Mobil_{it} * Int.:Act_{ft} + \mathbf{I'_{it}\Gamma_I} \\ &+ \mathbf{C'_{ft}\Gamma_C} + \eta_{1i} + \eta_{2i} * t + \varepsilon_{it}, \end{aligned} \tag{8}$$

[25] Bias could arise if distance between the manager and the firm were systematically correlated with observables and, in particular, with whether the firm is internationally active or not and with how much domestic and international experience the manager has. The use of job-spell fixed effects η_{if} should minimize this issue.

where, with respect to (6), we drop firm fixed effects because of identification issues.[26] Clearly, both η_{1i} and $\eta_{2i} * t$ are allowed to be correlated with regressors, and in particular with domestic and international experience, without affecting estimation consistency.

Finally, in order to assess whether and how returns on domestic and international experience are heterogeneous across managers, as posited in our simple model, we consider a further enrichment of (6) that we label 'Heterogeneous Returns on Experience':

$$\begin{aligned} w_{it} &= \beta_0 + \beta_1 Int.:Act_{ft} + \beta_2 Dom.:EXP_{it} + \beta_3 Int.:EXP_{it} + \beta_4 Dom.:EXP_{it} * Int.:Act_{ft} \\ &+ \beta_5 Int.:EXP_{it} * Int.:Act_{ft} + \beta_6 Job.:Mobil_{it} + \beta_7 Job.:Mobil_{it} * Int.:Act_{ft} \\ &+ \beta_8 Dom.:EXP_{it} * \eta_i + \beta_9 Int.:EXP_{it} * \eta_i + \mathbf{I'_{it}\Gamma_I} + \mathbf{C'_{ft}\Gamma_C} + \eta_i + \eta_f + \varepsilon_{it}, \end{aligned} \tag{9}$$

where we interact manager fixed effects η_i with both domestic ($Dom. : EXP_{it} * \eta_i$) and international ($Int. : EXP_{it} * \eta_i$) experience.[27] 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 manager as in our model. Besides allowing us to investigate an interesting feature of our model, specification (9) 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.

Results Columns (1) to (3) of Table 7 report estimation results for the main covariates of specifications (7) to (9), while additional details on control variables are reported in Table C-3 in Appendix C. Looking at columns (1) and (2) reveals that estimates are quite similar to those of specification (6). In particular, the difference between the returns on domestic and international experience remains around 2% and strongly significant. At the same time, when considering

[26] Operationally, we apply time first-differences to (8) to get rid of standard fixed effects η_{1i} and estimate the time-differenced model, in which the manager-specific linear trend$\eta_{2i} * t$ becomes a simple fixed effect η_{2i} as in Gregory (2020), via GPLS with the he Stata user-written routine reghdfe. Once estimated parameters and fixed effects η_{2i}, we then come back to the original model (8) and compute fixed effects η_{1i}. In order to get more reliable estimates of both η_{1i} and η_{2i}, we further restrict the sample to managers with at least four observations.

[27] In order to better separate manager and firm fixed effects, we focus in estimations of (9) on young managers belonging to the largest connected group (Abowd et al., 2002). For sample consistency across specifications, we report in Table C-4 in Appendix C estimation results referring to specifications (2) to (6) obtained with the sample used for (9). Despite the obvious fall in the number of observations, the largest connected group still accounts for the lion share of the observations while results are qualitatively, and to a large extent also quantitatively, identical to those reported in Table 6. Finally, in order to estimate (9), 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.

columns (1) to (3), the $Int. : Act_{ft}$ dummy for wage jump remains small, while both domestic and international experience appear to be largely portable across internationally inactive and active firms. This suggests that our results are not particularly sensitive to the presence of richer forms of correlated unobserved heterogeneity.

Table 7: Wage Regressions, More Complex Specifications, Main Covariates

	(1)	(2)	(3)
VARIABLES	Job-Spell FE	Ind. Linear Trends	Heter. Returns on Exper.
Int. Act. Firm (0/1)	0.0082	0.0415^{a}	0.0025
	(0.0058)	(0.0090)	(0.0033)
Domestic Exp. (Yrs)	0.0170$^{a}_{**}$	0.0353$^{a}_{**}$	0.0382$^{a}_{**}$
	(0.0054)	(0.0031)	(0.0003)
International Exp. (Yrs)	0.0363$^{a}_{**}$	0.0551$^{a}_{**}$	0.0507$^{a}_{**}$
	(0.0055)	(0.0040)	(0.0006)
Dom. Exp. * Int. Act. Firm (Yrs)	-0.0013	-0.0035^{a}	-0.0013^{a}
	(0.0008)	(0.0012)	(0.0004)
Int. Exp. * Int. Act. Firm (Yrs)	-0.0023^{c}	-0.0052^{a}	0.0000
	(0.0012)	(0.0016)	(0.0007)
Job Mobility (Dummy)	0.0590^{a}	0.0685^{a}	0.0555^{a}
	(0.0117)	(0.0067)	(0.0004)
Job Mobility * Int. Act. Firm (Dummy)	-0.0025	0.0081^{c}	-0.0051^{a}
	(0.0030)	(0.0044)	(0.0018)
Domestic Exp. * Manager FE (Yrs)			0.0106$^{a}_{**}$
			(0.0002)
International Exp. * Manager FE (Yrs)			0.0273$^{a}_{**}$
			(0.0004)
Observations	233,629	104,921	147,367
R-squared	0.9143	0.8719	0.9986
Adjusted R-squared	0.8721	0.7367	0.9980
Manager-Year Controls	X	X	X
Firm-Year Controls	X	X	X
Manager FE		X	X
Firm FE			X
Individual Linear Trends		X	
Job-Spell FE	X		
Estimation Method	GPLS	GPLS	GPLS

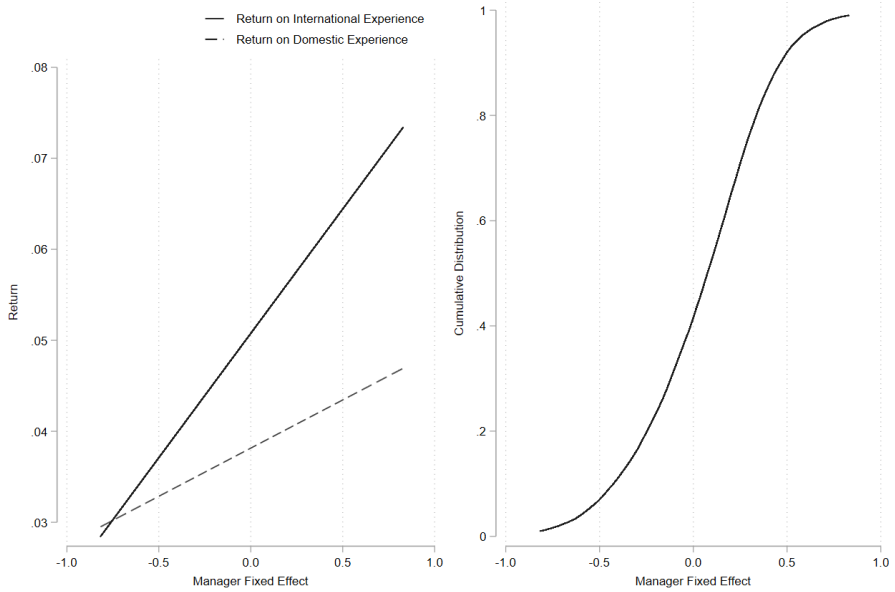
Notes: The dependent variable is the (log) hourly wage, detrended using a full set of year dummies interacted with 1-digit sector dummies. The hourly wage is defined as the sum of the monthly base wage (gross pay for normal hours of work), overtime, regularly and irregularly paid supplements, divided 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 Job-Spell FE specification using firm-manager FE instead of separate manager and firm FE. The Individual Linear Trends specification in column (2) includes both standard manager fixed effects as well as the interactions between separate manager fixed effects and a linear trend. The Heterogeneous Returns on Experience specification in column (3) instead uses manager and firm FE while adding 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 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.

Column (3) of Table 7 reports estimation results of our preferred specification, i.e., (9). The reasons why we consider (9) to be our preferred specification are twofold. First, the fact that results are very stable across specifications (6) to (8) reassures about potential bias coming from richer forms of correlated unobserved heterogeneity. Second, we see specification (9) as a substantial improvement over (6) because interaction term coefficients β_8 and β_9 are both strongly significant, and so is their difference, and portrait a quite interesting pattern.[28]

[28] $_{**}$ 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.

Returns on domestic and international experience are in fact manager-specific in (9) and Figure 3 shows how such returns are related to manager fixed effects. 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 an internationally inactive firm, by manager fixed effect. The right panel shows the cumulative distribution of manager fixed effects. Figure 3 indicates that one more year of international experience is associated to a higher return than one more year of domestic experience across basically the whole distribution of manager fixed effects. 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, i.e., it is zero for managers with very low fixed effects and becomes positive and sizeable for higher fixed effects managers.

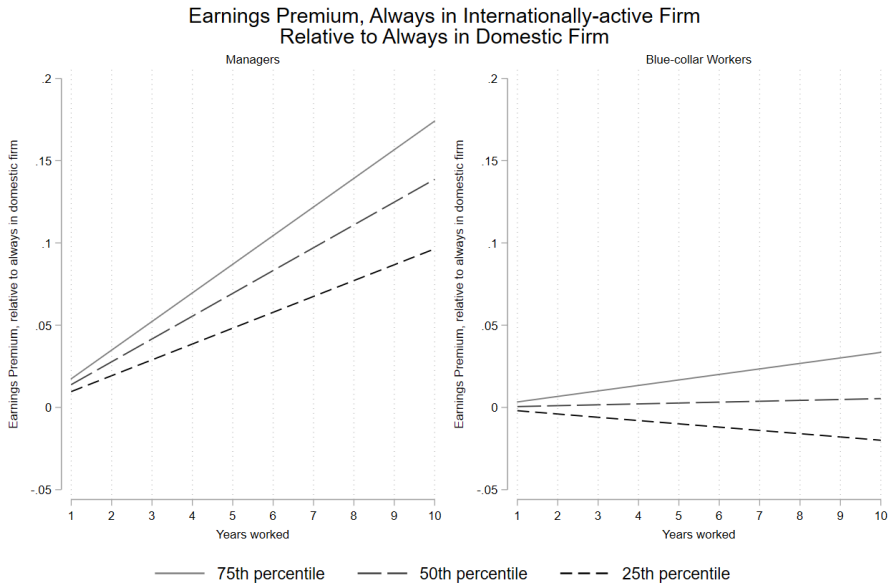
Figure 3: Returns on International and Domestic Experience by Manager Fixed Effect



Notes: This figure is based on specification (3) in Table 7. 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.

To better understand the quantitative implications of the estimated coefficients from (9), we report in the left panel of Figure 4 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 percentiles of the managers fixed effect distribution. As shown by the left panel of Figure 4, the premium increases with the ability of the manager stacking up over a 10 years horizon to

Figure 4: Wage Premium in Internationally active Firms vs. Domestic Firms, Managers and Blue-collar Workers



Notes: This figure is based on specification (3) in Table 7 (for managers) and specification (8) in Table C-6 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 (3) in Table 7. The right panel of the figure is constructed in the same way but for blue-collar workers.

a wage difference of about 9% to 17%, which is quite substantial and corresponds to the lion share of wage gap observed in the raw data for Fact 2.

The right panel of Figure 4, 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 (9) using the young blue-collar workers sample and, based on the estimated coefficients reported in column (8) of Table C-6 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 an internationally inactive 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 4 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 (1) to (8) of Table C-6 in Appendix C show evidence across specifications (2) to (9) of a consistently positive and significant wage jump (in between 2% and 5%) associated with moving from internationally inactive to active firms for blue-collar workers.

7. Job Displacement, Robustness and Alternatives

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):

$$\mathbb{E}\left[(\varepsilon_{it} - \overline{\varepsilon}_i)(\mathbf{D}_{it}^f - \overline{\mathbf{D}}_i^f)\right] = 0 \quad \forall f \in \{1,...,F\}, \tag{10}$$

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 (10).[29]

In what follows we provide complementary evidence supporting our findings by using firm closure and the related job displacement as well as by systematically discarding alternative explanations including wage bargaining stories à la Postel-Vinay and Robin (2002). At the same time, we provide some evidence suggesting that the distinction between internationally active and inactive firms is more powerful in capturing the dynamics of managers' wages across different firms than the distinction between large and small firms or the distinction between firms with many or few layers of management.

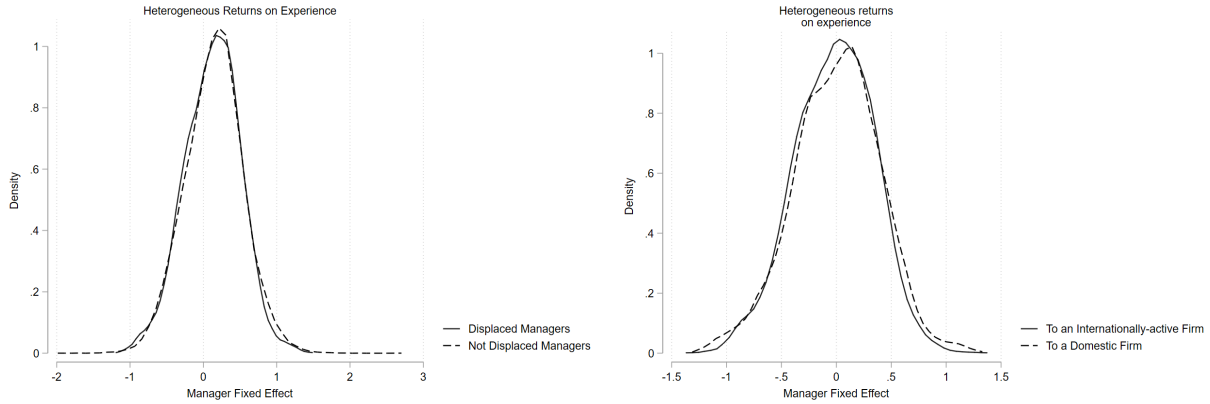
7.1 Firm Closure and Job Displacement

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 (10). Examples include Kletzer (1989), Gibbons and Katz (1992), Dustmann and Meghir (2005) and Eliason et al. (2019). 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.

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, i.e., the job in which they face the lowest

[29]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 (10) are satisfied.

Figure 5: Fixed Effects of Displaced and non-Displaced Managers and Fixed Effects of Displaced 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 at least once ('Displaced 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 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 (3) of Table 7.

bargaining power position.[30] Such job 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 (6) and (9) while borrowing the corresponding manager and firm fixed effects from estimations of (6) and (9) on the whole sample of young managers.[31]

The left panel of Figure 5 displays the distributions of the fixed effects of displaced and non-displaced young managers corresponding to estimations of (9), while the right panel of Figure 5 focuses on the group of displaced young managers and provides the distribution of the fixed effects of those ending up, after displacement, in an internationally inactive or active firm. The left panel of Figure 5 shows that the two distributions are extremely similar. In fact, there is only a small average difference in fixed effects of 2.2% in favour of non-displaced managers. At the same time, the right panel of Figure 5 shows a very similar pattern when comparing displaced managers ending up in an internationally inactive or active firm; with the former actually being characterized by a small (and not significant) higher average fixed effect of 2.1%. In our displaced managers regressions, we focus on displaced managers only and compare the wage trajectories, in the first job after displacement, of those ending up in internationally inactive vs active firms. In this respect, Figure 5 does suggest that displaced managers ending up in internationally inactive or active firms are virtually indistinguishable

[30] 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.

[31] We use estimated fixed effects η_i and η_f obtained from estimations of (6) and (9) on the sample of young managers as simple covariates, instead of treating them as fixed effects, in the estimations of (6) and (9) on the sample of displaced young managers.

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

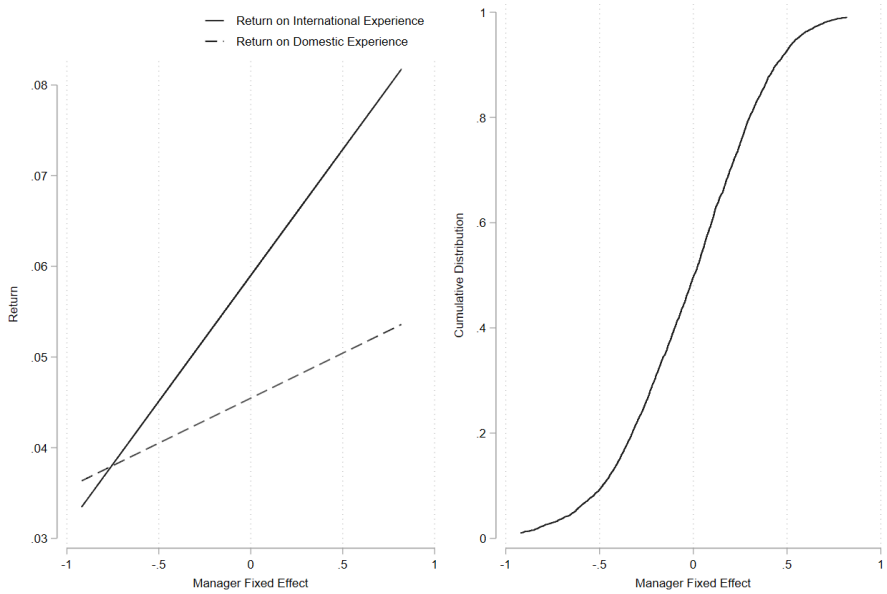
VARIABLES	(1) Mobility & Firm FE	(2) Heter. Returns on Exper.
Int. Act. Firm (0/1)	0.0126	0.0228^{a}
	(0.0093)	(0.0064)
Domestic Exp. (Yrs)	0.0321^{a}_{**}	0.0455^{a}_{**}
	(0.0006)	(0.0009)
International Exp. (Yrs)	0.0512^{a}_{**}	0.0650^{a}_{**}
	(0.0012)	(0.0014)
Dom. Exp. * Int. Act. Firm (Yrs)	-0.0014	-0.0053^{a}
	(0.0011)	(0.0009)
Int. Exp. * Int. Act. Firm (Yrs)	-0.0041^{a}	-0.0060^{a}
	(0.0015)	(0.0014)
Domestic Exp. * Manager FE (Yrs)		0.0099^{a}_{**}
		(0.0006)
International Exp. * Manager FE (Yrs)		0.0278^{a}_{**}
		(0.0008)
Observations	7,572	4,410
R-squared	0.9266	0.9857
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 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 Mobility & 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 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.

in terms of time-invariant unobservables.

Table 8 provides estimation results for key covariates of specifications (6) and (9) on the sample of displaced young managers. Information on additional controls is reported in Table C-7 in Appendix C. At the same time Figure 6, which is the equivalent of Figure 3 for displaced 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 4 for displaced young managers and displaced 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 active firm with respect to an identical manager (blue-collar worker) who is always employed by an internationally inactive firm, by number of years of employment (up to 10 years). In

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

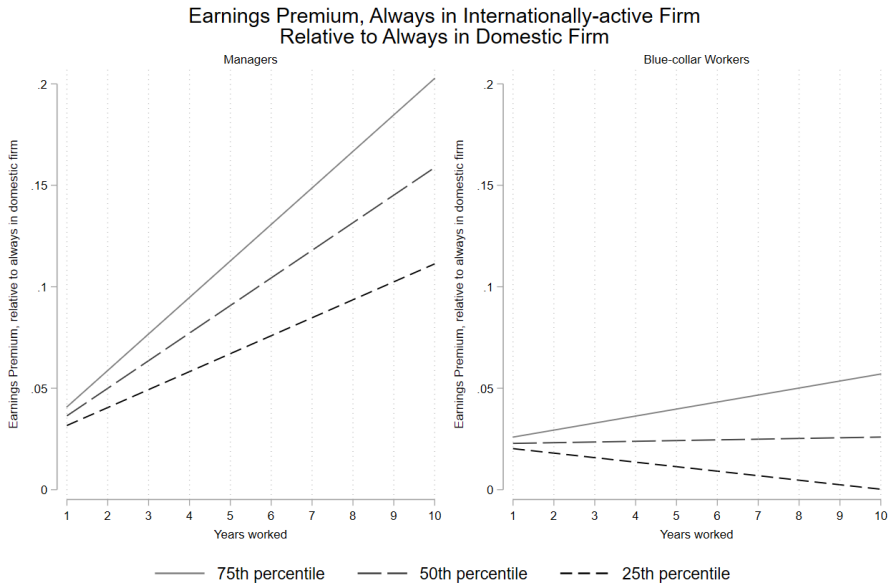


Notes: This figure is based on specification (2) in Table 8. The left panel shows the return on international experience for a manager in an internationally active firm, and the return on domestic experience for a manager in a domestic firm, by manager fixed effect, between the 1st and 99th percentiles. 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.

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 carry through the sample of displaced young managers and blue-collar workers with quite similar magnitudes. In particular, one more year of international experience is associated to a higher return than one more year of domestic experience basically 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 12% to 21%, representing the lion share of the wage gap observed in the raw data for Fact 2. Finally, there seems to be a rather small, and sometimes not significant, wage jump related to moving between internationally inactive and active firms, indicating that the bulk of managers' wage differences between internationally inactive and active firms is related to the differential value of domestic and international experience. As for blue-collar workers, there is instead evidence of a modest difference in the returns of domestic and international experience for the most able workers only, as well as solid evidence of wage jumps of about 2 to 3%.

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



Notes: This figure is based on specification (2) in Table 8 and the equivalent specification estimated on the displaced 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.

7.2 Robustness

We now provide complementary evidence supporting our findings by systematically discarding alternative explanations including wage bargaining stories à la Postel-Vinay and Robin (2002). More specifically, we consider several additional enriched versions of equation (9).

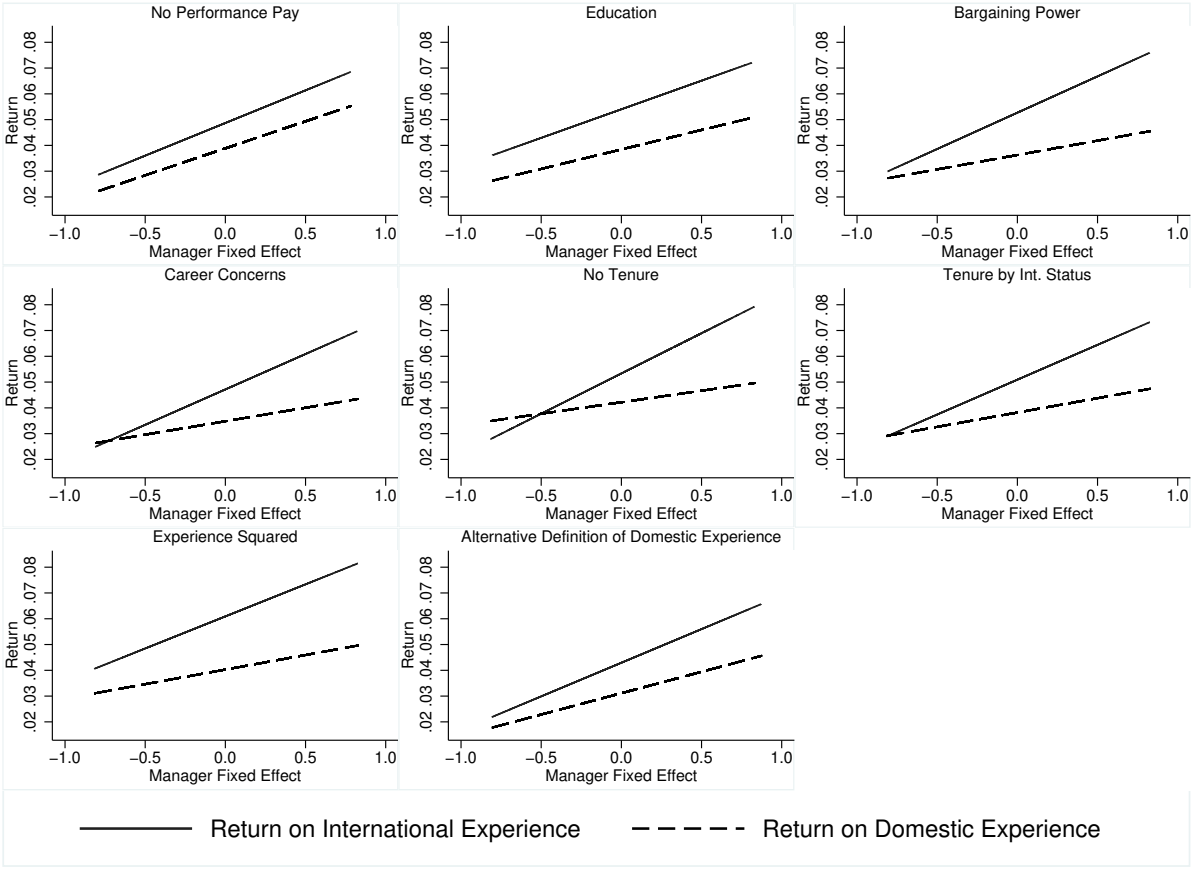
1. **No performance pay.** We drop those components of the salary that are linked to performance pay. This is because internationally active firms might be using those components more prominently than internationally inactive firms while in our conceptual framework described in Section 2 we have made the assumption that internationally inactive and active firms use such components equally.
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. **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 perspective 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. 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: $w_{it} - w_{it-1}$.

4. **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.
5. **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.
6. **Experience square and alternative experience.** We show that our results are robust to introducing both domestic and international experience squared as well as to using an alternative definition for domestic experience that is more 'symmetric' with respect to the definition of international experience: number of years a manager has worked in the past for internationally inactive firms (including the current firm).

Figure 8 provides key highlights of our findings while Table C-9 in Appendix C provides detailed regression results. In particular, Figure 8 displays the returns on international and domestic experience, by manager fixed effect, obtained from the above described enrichments of equation (9). As can be appreciated from Figure 8, the return on international experience is indeed higher than the return on domestic experience, across basically the whole fixed effects range, in all eight cases. At the same time, Table C-9 in Appendix C does indicate that most of the issues leading us to consider enriched versions of equation (9) find some support in

Figure 8: 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 (7) in Table C-9 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).

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. More specifically, the 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.

7.3 Firm Size and Hierarchy

Internationally active firms are larger than internationally inactive firms, and may thus also exhibit longer chains of command. A possible source of concern with respect to the interpretation of our findings is that the wage premium of internationally active firms may be due to their size or hierarchical complexity rather than to internationalization per se, and that partitioning firms in terms of size or hierarchical complexity rather than international activity may reveal

more salient wage premia. 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 size ('big' and 'small' firms) or in terms of the number of layers of management ('high-layer' and 'low-layer' firms) rather than in terms of international activity.[32] This is accomplished by Figure C-7 and related Tables C-10 and C-11 in Appendix C, for the number of management layers,[33] as well as by Figure C-8 and related Tables C-12 and C-13 in Appendix C, for firm size. The comparison of these sets of results with those based on the distinction between internationally inactive and active firms reveals that, overall, results are very similar although less stark. In particular, it is still the case that, for managers, the returns to experience in large or high-layer firms are higher than the returns to experience in small or low-layer firms, leading to an increasing earning premium over time, reaching about 0-12% (5-12%) over a period of 10 years. At the same time, static wage jump gains for managers are overall absent or small compared to returns on experience, while they are important for blue-collar workers who do not seem to face sizeable differential returns to high-layer vs low-layer firms experience or to big vs small firms experience.

The second step consists in comparing more systematically the three alternative partitions. This is achieved by Figure C-9 in Appendix C for the comparison between partitions based on international activity and the number of management layers,[34] as well as by Figure C-10 in Appendix C for the comparison between partitions based on internationally activity and size.[35] The goal of our exercise is to check whether and to what extent a particular definition of experience is robust to splitting the sample into two groups based on another definition

[32]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. See Appendix A for more details.

[33]The number of observations is a bit smaller than in the case of domestic and international experience because, in a few cases, we do not have enough information to reconstruct the number of management layers of a firm.

[34]Figure C-9 is obtained by estimating the heterogeneous returns specification (9) for the two categories of experience (International vs Domestic experience and High-layer vs Low-layer experience) on different sub-samples. In particular, we run 4 regressions to: 1) compare the returns to domestic and international experience in the sub-sample of young managers employed by low-layer firms; 2) compare the returns to domestic and international experience in the sub-sample of young managers employed by high-layer firms; 3) compare the returns to low-layer and high-layer firms experience in the sub-sample of young managers employed by domestic firms; 4) compare the returns to low-layer and high-layer firms experience in the sub-sample of young managers employed by internationally active firms.

[35]Figure C-10 is obtained by estimating the heterogeneous returns specification (9) for the two categories of experience (International vs Domestic experience and Big vs Small experience) on different sub-samples. As in the case of Figure C-9, we run 4 regressions to cover all the combinations.

of experience. For example, in Figure C-9 the top left (top right) panel shows the returns on low-layer firms and high-layer firms experience, for a manager in an internationally inactive (active) firm, by manager fixed effect. The bottom left (bottom right) panel instead shows the returns on domestic and international experience, for a manager in a low-layer (high-layer) firm, by manager fixed effect.

Figures C-9 and C-10 suggest that the distinction between domestic and international experience, and the higher return associated to the latter, are not much affected by whether the current employing firm is small or big or by whether the current employing firm has a low or a high number of management layers. In particular, the line corresponding to the return on international experience is located above the line corresponding to the return on domestic experience *irrespective* of whether the current employing firm is small/big or has a low/high number of management layers. By contrast, the distinction between small or low-layer firms experience and high-layer or big firms experience, and the higher return associated to the latter, is quite fragile in that, depending on whether the current employing firm is internationally inactive or active, patterns might be much weaker or reversed (lines crossing each other or being in the reverse order).

8. Quantitative Implications: Cross-sectional and Spatial Distributions of Wages

We now provide evidence that the distinction between domestic and international experience has a number of far reaching quantitative implications at the aggregate level for both the cross-sectional and spatial distributions of wages.

8.1 A Simple Variance Decomposition

Showing that coefficients are significant and/or sizeable for certain groups of managers and workers does not necessarily mean that the patterns we uncover from the data are 'important' in that they explain a substantial portion of cross-sectional differences in wages. In order to show that the distinction between domestic and international experience is indeed 'important', we perform a variance decomposition analysis. We do so for the specification in equation (6), where we now consider in the regression overall experience and international experience, instead of domestic experience and international experience. We report estimation highlights in Table C-14 in Appendix C. In particular, we take the last year of the data (2006) and, while multiplying each covariate by the corresponding estimated coefficient, we compute the standard deviation of: 1) w_{it}: dependent variable; 2) Worker-level controls: overall experience, tenure and its square as well as the job mobility dummy and its interaction with the internationally active status of the firm; 3) Firm-level controls: firm size, productivity, age and share of skilled

workers; 4) Int. Exp. & IA dummies: international experience as well as the internationally active status dummy and its interactions with overall and international experience.; 5) $\hat{\eta}_i + \hat{\eta}_f$: manager and firm fixed effects; 6) $\hat{\varepsilon}_{it}$: residuals.

Table 9: Standard deviation of the various components of the estimated equation (6): overall experience vs international experience

Component		St. Dev.
w_{it}		0.504
Worker-level controls		0.125
of which	Overall Exper.	0.102
Firm-level contr.		0.087
Int. Exp. & IA dummies		0.054
of which	Internat. Exper.	0.057
$\hat{\eta}_i + \hat{\eta}_f$		0.462
$\hat{\varepsilon}_{it}$		0.141

Notes: This Table provides a variance decomposition analysis based on estimations of equation (6), where overall experience and international experience are used as covariates instead of domestic experience and international experience. For each covariate, we compute the product of the covariate and the corresponding estimated coefficient. We then group the product of covariates and coefficients into groups/components and provide the standard deviation of each component corresponding to the year 2006.

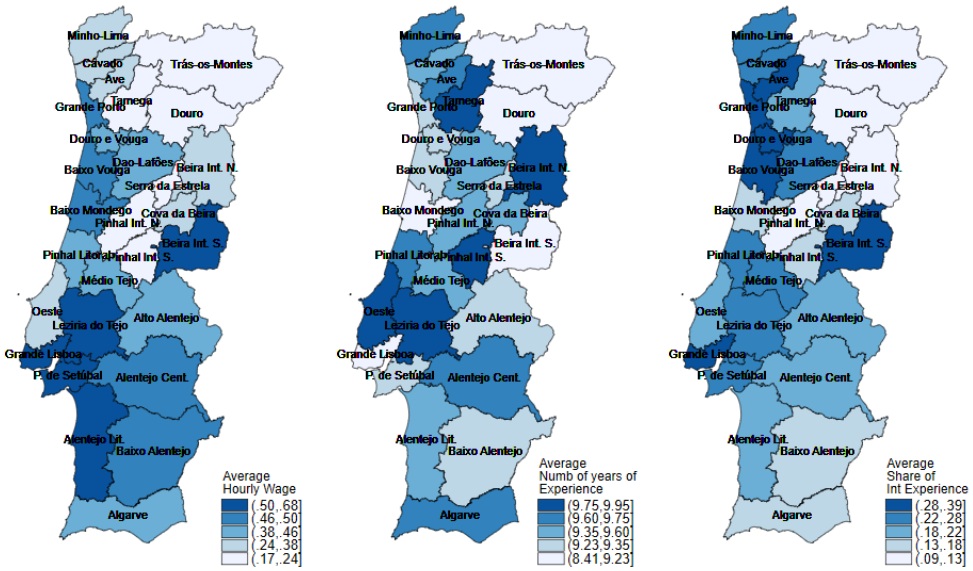
Results in Table 9 show that the standard deviation associated to the Int. Exp. & IA dummies component is sizeable (0.054), with the bulk of the effect coming from international experience (0.057), corresponding to about two thirds of the standard deviation in wages that can be attributed to firm-level controls and to 56% of the standard deviation in wages that can be attributed to overall experience. Furthermore, given our focus on young managers and the fact that young managers in our sample are at most 33 years old, we believe those numbers in the wider population would attribute more importance to international experience. Indeed, when focusing in Table C-15 in Appendix C on managers aged 30-33 we find that the gap between the standard deviation in wages that can be attributed to overall experience and international experience narrows substantially. The extent of the narrowing is such that it makes us conjecture that, at some age threshold, it actually becomes more important to know how many years of international experience managers have, as opposed to the number of years of overall experience, in order to understand the differences in their wages.

8.2 Spatial Wage Inequality

Portugal is characterized, like most countries, by strong regional differences in wages and incomes. For example, the left panel of Figure 9 shows the average regional hourly wage of

managers, belonging to our young managers sample, across NUTS III regions in Portugal for the year 2006. The ratio of the highest, corresponding to the 'Grande Lisboa' region, to the lowest, corresponding to the 'Douro' region, average regional wage is four while the overall coefficient of variation in the data is 0.329.

Figure 9: Hourly wage, number of years of overall experience and share of international experience across NUTS III regions



Notes: The left panel of this map shows the average regional hourly wage of managers across NUTS III regions in Portugal. Managers' hourly wages are detrended, using a full set of year dummies interacted with 1-digit sector dummies, before computing regional averages. The middle panel instead shows the average regional number of years of experience of managers while the right panel provides the region-level share of years of experience corresponding to international experience. The legend at the bottom of each panel provides a correspondence between colours and the class intervals (based on quintiles) corresponding to each variable. Observations refer to the year 2006 for the sample of young managers used in the specification in column (5) of Table 6: Mobility & Firm FE.

The middle panel of Figure 9 shows instead the average regional number of years of overall experience of managers in our sample, and clearly highlights how regional variation in overall experience is both quite limited, ranging from a minimum of 8.41 to a maximum of 9.95, and quite unrelated to differences in wages (the correlation is actually negative at -0.279). However, the regional share of years of overall experience corresponding to international experience, provided in the right panel of Figure 9, does vary considerably across space, ranging from a minimum of 9% to a maximum of 39%, and is correlated to differences in wages (a positive correlation of 0.644). In order to gain insight into the quantitative importance of international experience –and the higher return associated with it– for the spatial distribution of wages, we perform a counterfactual experiment, reallocating years of domestic and international experience across individual managers while keeping the overall sum constant, and at the same time equalizing the share of overall experience corresponding to international experience across Portuguese regions. We then compute counterfactual wages for managers in 2006 and compare

the regional coefficients of variation of the observed and counterfactual wages. In doing so, we find that, eliminating differences in the share of international experience across regions, would substantially reduce spatial wage inequalities reducing the coefficient of variation by 14.3%..

9. Conclusions

The empirical trade literature offers very consistent evidence that firms involved in international activities pay higher wages than other firms. We have provided both a theoretical framework and a number of new empirical results that help distinguish 'international' from 'domestic' jobs in terms of their impact not only on a worker's lifetime wage income profile 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').

Exploiting Portuguese matched employer-employee data, we have shown that in internationally active firms the experience-wage profile is much steeper than in internationally inactive firms, especially for managers as opposed to blue-collar workers. The higher lifetime wage income for managers in internationally active firms relies on faster accumulation of valuable experience that these firms allow for, and on the (almost) perfect portability of the accumulated dynamic wage gains to other firms. Static effects are instead much more important for blue-collar workers. In this respect it would be interesting, as a further research avenue, to better understand how experience accumulated within firms materialises and where exactly it comes from. A natural hypothesis is that workers learn from coworkers, with better coworkers being better learners, while some coworkers are more important than others for learning, and those coworkers are more frequently found in internationally active firms (Jarosch et al., 2021).

Our analysis also highlights that the distinction between internationally active and inactive firms is relevant at the aggregate level to explain cross-sectional differences in wages among workers and spatial differences in average wages across regions within Portugal. Another natural direction of future research would be to extend the analysis to countries other than Portugal. This could help shed new light on the sources of divergent firm dynamics across countries (especially between developed and developing ones) in process efficiency, quality and ability to penetrate home and foreign markets, which have been shown to drive a substantial part of cross-country differences in aggregate productivity (Hsieh and Klenow, 2014).

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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 firmâĂŹs 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 III regional disaggregation. This includes Alentejo Central, Alentejo Litoral, Algarve, Alto Alentejo, Ave, Baixo Alentejo, Baixo Mondego, Baixo Vouga, Beira Int. N., Beira Int. S., Cova da Beira, Cávaado, Dão-Lafões, Douro, Douro e Vouga, Grande Lisboa, Grande Porto, Leziria do Tejo, Minho-Lima, Médio Tejo, Oeste, P. de Setúbal, Pinhal Int. N., Pinhal Int. S., Pinhal Litoral, Serra da Estrela, Tamega, and Trás-os-Montes. 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. We construct two measures of the hourly wage. The baseline measure 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. A second measure abstracts from performance-pay components: overtime and irregularly paid supplements. 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.

Experience Experience is defined as age minus the number of years of education minus 6 for workers with 12 or more years of education, and as age minus 18 for workers with less than 12 years of education. We replace experience to missing for a few cases in which it is negative (e.g. when a person starts working before finishing to study).

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. To make the information on international experience and experience consistent we do the following: First, we replace international experience to missing whenever experience is missing. Second, we replace international experience to experience whenever the former is higher than the latter. Finally, we build domestic experience as the difference between experience and international experience.

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). To make the information on high-layer experience and experience consistent we do the following: First, we replace high-layer experience to missing whenever experience is missing. Second, we replace high-layer experience to experience whenever the former is higher than the latter. Finally, we build low-layer experience as the difference between experience and high-layer experience.

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). To make the information on big firm experience and experience consistent we do the following: First, we replace big firm experience to missing whenever experience is missing. Second, we replace big firm experience to experience whenever the former is higher than the latter. Finally, we build small firm experience as the difference between experience and big firm experience.

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 firmŠs 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: 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

$$\theta^J_{IA\succ II} \equiv \frac{s_A - s_I}{w_2 e_I (o_A - o_I)} \text{ and } \theta^J_{AA\succ IA} \equiv \frac{s_A - s_I}{\lambda w_2 o_A (e_A - e_I)} \tag{B-1}$$

as long as A-firms' comparative advantage in opportunities is large enough.[36] 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

$$\theta > \frac{1-\lambda}{\lambda} \frac{s_A - s_I}{w_2 (e_A o_I - e_I o_A)}. \tag{B-2}$$

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 rather than opportunities we cannot have $\theta^J_{IA\succ II} < \theta^J_{AA\succ IA}$. Differently, when (B-2) 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.[37] 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

[36] 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.

[37] 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.

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.

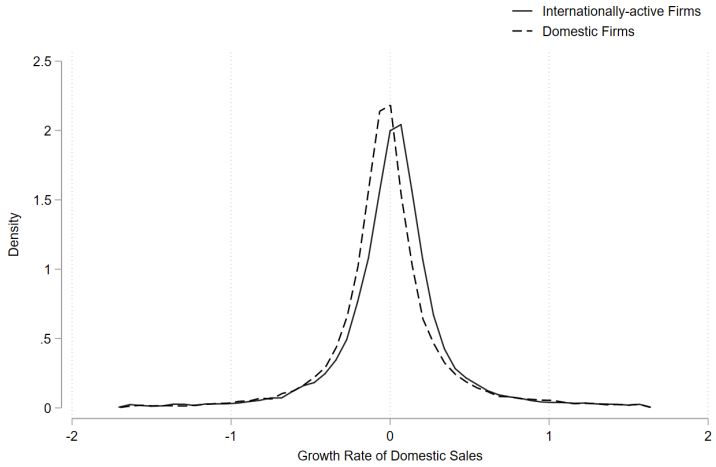
Appendix C: Additional Tables and Figures

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

	Key Manager-level Variables				
	N. observ.	Mean	St.dev.	Min	Max
Log Hourly Wage	77,174	2.06	0.53	0.80	3.59
Tenure	77,174	3.69	3.32	0.00	33.00
Job Mobility	77,174	1.60	0.88	1.00	9.00
Domestic Experience	77,174	6.37	3.67	0.00	15.00
International Experience	77,174	2.51	2.95	0.00	15.00
	Key Firm-level Variables				
	N. observ.	Mean	St.dev.	Min	Max
Size	26,431	2.59	1.37	0.00	9.64
Productivity	26,431	10.96	1.21	3.22	17.49
Log Firm Age	26,431	2.36	0.93	0.00	5.93
Share Skilled	26,431	0.22	0.28	0.00	1.00
Internationally Active	26,431	0.30	0.46	0.00	1.00

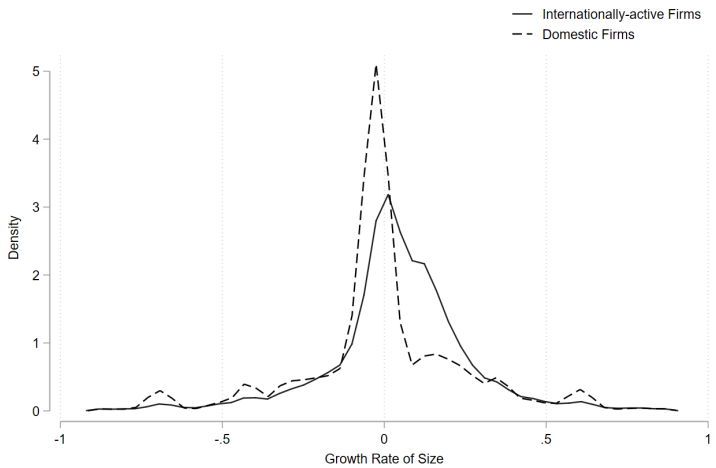
Notes: Data refer to the young managers sample for the year 2006. Concerning manager-level variables, the (log) hourly wage is defined as the (log of the) sum of the monthly base wage (gross pay for normal hours of work), overtime, regularly and irregularly paid supplements, divided by the sum of the 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 intentionally active firms (including the current firm) while domestic experience is the difference between overall experience and international experience. 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.

Figure C-1: Growth Rate of Domestic Sales, Domestic vs. Internationally active Firms, Large Sample



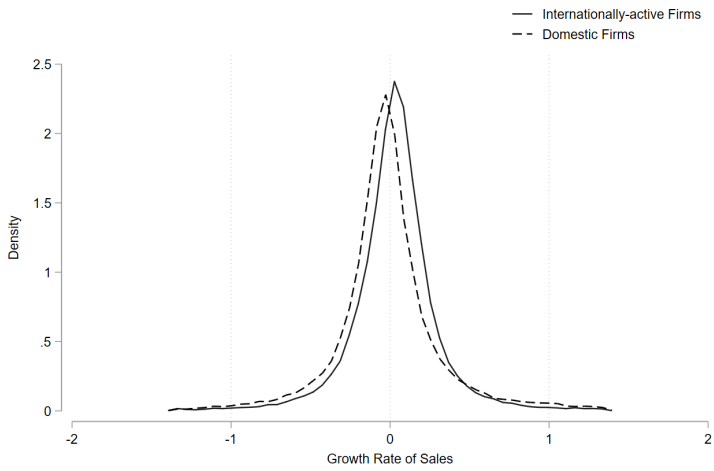
Notes: This figure shows the distribution of the growth rate of domestic sales (sales minus exports) for internationally active and domestic firms in the large sample obtained while controlling for firm size, age, location, industry, and year effects. More specifically, we regress the growth rate of domestic sales, computed as the difference in domestic sales between t and $t+1$ divided by the average domestic sales in t and $t+1$, on the log of firm size (sales) in t, the log of the age of the firm in t, a set of year, region (NUTS III) and industry (1-digit NACE) dummies. Then we take the residuals, drop observations below (above) the bottom (top) 1 percent, and use them to construct the densities plotted in the figure.

Figure C-2: Growth Rate of Employment, Domestic vs. Internationally active Firms, Large Sample



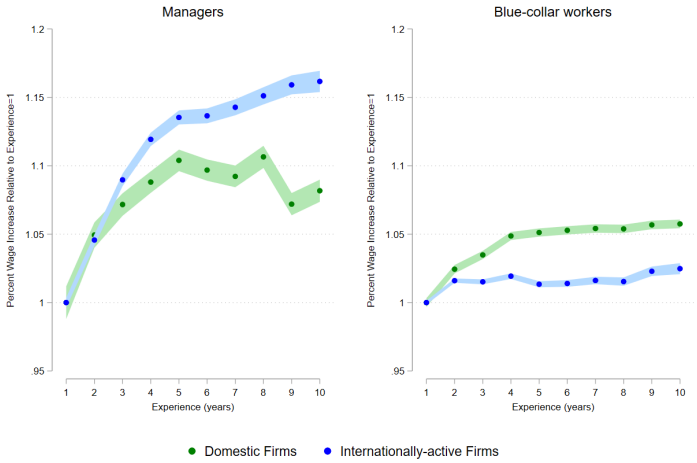
Notes: This figure shows the distribution of the growth rate of employment for internationally active and domestic firms in the large sample obtained while controlling for firm size, age, location, industry, and year effects. More specifically, we regress the growth rate of employment, computed as the difference in employment between t and $t+1$ divided by the average employment in t and $t+1$, on the log of firm size (employment) in t, the log of the age of the firm in t, a set of year, region (NUTS III) and industry (1-digit NACE) dummies. Then we take the residuals, drop observations below (above) the bottom (top) 1 percent, and use them to construct the densities plotted in the figure.

Figure C-3: Growth Rate of Sales, Domestic vs. Internationally active Firms, Young Managers Sample



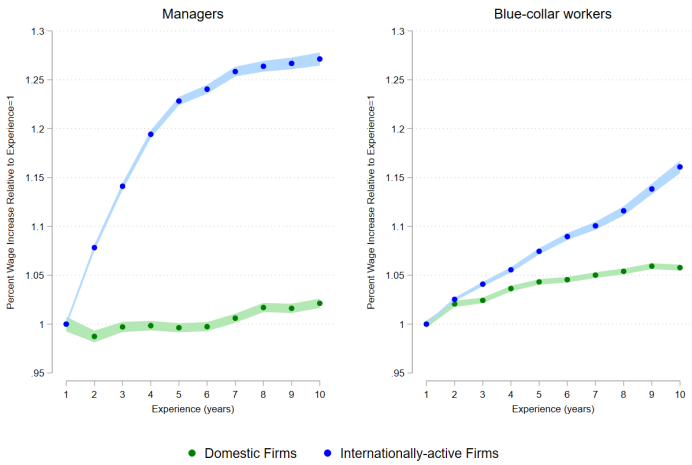
Notes: This figure shows the distribution of the growth rates of sales for internationally active and domestic firms in the young managers sample obtained while controlling for firm size, age, location, industry, and year effects. More specifically, we regress the growth rate of sales, computed as the difference in sales between t and $t+1$ divided by the average sales in t and $t+1$, on the log of firm size (sales) in t, the log of the age of the firm in t, a set of year, region (NUTS III) and industry (1-digit NACE) dummies. Then we take the residuals, drop observations below (above) the bottom (top) 1 percent, and use them to construct the densities plotted in the figure.

Figure C-4: Experience-wage Profiles in the Manufacturing Sector, Domestic vs. Internationally active Firms, Managers and Blue-collars Workers, Large Sample



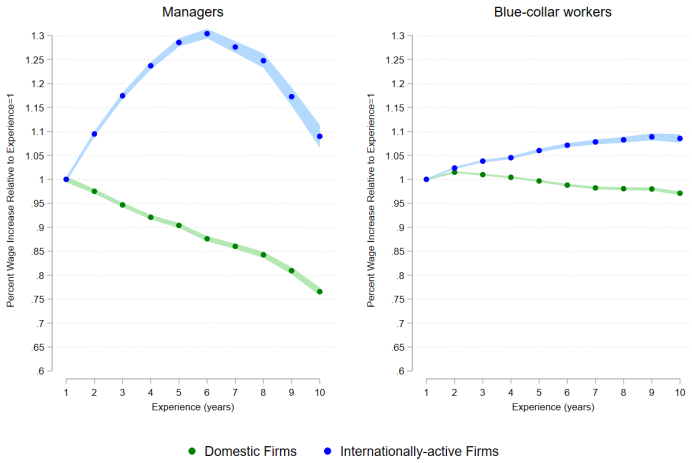
Notes: This figure shows experience-wage profiles for managers (left panel) and blue-collar workers (right panel) of domestic and internationally active firms in the manufacturing sector. To compute the experience-wage profiles, we first regress hourly wages against a full set of year, region (NUTS III), and 1-digit NACE industry 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-5: Experience-wage Profiles in the Services Sector, Domestic vs. Internationally active Firms, Managers and Blue-collars Workers, Large Sample



Notes: This figure shows experience-wage profiles for managers (left panel) and blue-collar workers (right panel) of domestic and internationally active firms in the services sector. To compute the experience-wage profiles, we first regress hourly wages against a full set of year, region (NUTS III), and 1-digit NACE industry 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-6: Experience-Wage Profiles in Domestic vs. Internationally active Firms, Managers and Blue-collar Workers, Young Managers Sample



Notes: This figure shows experience-wage profiles for managers (left panel) and blue-collar workers (right panel) of domestic and internationally active firms in the young managers sample. To compute the experience-wage profiles, we first regress hourly wages against a full set of year, region (NUTS III) 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.

Table C-2: Descriptive Statistics for the Young Blue-Collars Sample, Year 2006

	Key Worker-level Variables				
	N. observ.	Mean	St.dev.	Min	Max
Log Hourly Wage	180,468	1.28	0.34	0.80	3.53
Tenure	180,468	3.29	3.59	0.00	32.00
Job Mobility	180,468	1.65	0.93	1.00	10.00
Domestic Experience	180,468	6.58	4.12	0.00	15.00
International Experience	180,468	2.17	2.95	0.00	15.00

	Key Firm-level Variables				
	N. observ.	Mean	St.dev.	Min	Max
Size	53,552	2.20	1.26	0.00	9.64
Productivity	53,552	10.68	1.07	3.22	17.49
Log Firm Age	53,552	2.37	0.89	0.00	5.94
Share Skilled	53,552	0.05	0.13	0.00	1.00
Internationally Active	53,552	0.21	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 intentionally active firms (including the current firm) while domestic experience is the difference between overall experience and international experience. 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-3: Wage Regressions, Controls

VARIABLES	(1) OLS	(2) FE	(3) Type of Experience	(4) Portability	(5) Mobility & Firm FE	(6) Job-Spell FE	(7) Ind. Linear Trends	(8) Heter. Returns on Exper.
Education (Yrs)	0.0535^a							
	(0.0004)							
Gender (1=female)	-0.0865^a							
	(0.0024)							
Tenure (Yrs)	0.0120^a	0.0052^a	0.0045^a	0.0045^a	0.0173^a	0.0319^a	0.0168^a	0.0173^a
	(0.0013)	(0.0011)	(0.0011)	(0.0011)	(0.0018)	(0.0054)	(0.0025)	(0.0005)
Tenure Sq. (Yrs)	-0.0005^a	-0.0015^a	-0.0016^a	-0.0016^a	-0.0017^a	-0.0017^a	-0.0016^a	-0.0015^a
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0003)	(0.0001)
Firm Size (log)	0.0453^a	0.0339^a	0.0342^a	0.0340^a	0.0427^a	0.0531^a	0.0329^a	0.0287^a
	(0.0007)	(0.0017)	(0.0017)	(0.0017)	(0.0031)	(0.0031)	(0.0025)	(0.0020)
App. Labor Productivity (log)	0.0339^a	0.0132^a	0.0125^a	0.0125^a	0.0071^a	0.0075^a	0.0071^a	0.0042^a
	(0.0010)	(0.0011)	(0.0011)	(0.0011)	(0.0010)	(0.0010)	(0.0013)	(0.0009)
Firm Age (log)	0.0142^a	-0.0020	-0.0018	-0.0019	-0.0188^a	-0.0154^a	0.0114^a	-0.0271^a
	(0.0013)	(0.0021)	(0.0021)	(0.0021)	(0.0031)	(0.0030)	(0.0030)	(0.0020)
Share of Skilled Workers	-0.0018	0.0079^b	0.0078^b	0.0080^b	0.0292^a	0.0274^a	-0.0033	0.0516^a
	(0.0039)	(0.0038)	(0.0038)	(0.0038)	(0.0034)	(0.0032)	(0.0061)	(0.0038)
Observations	322,360	254,990	254,990	254,990	249,562	233,629	104,921	147,367
R-squared	0.3124	0.8767	0.8773	0.8774	0.9105	0.9143	0.8719	0.9986
Adjusted R-squared	0.3124	0.8217	0.8227	0.8227	0.8464	0.8721	0.7367	0.9980
Manager-Year Controls	X	X	X	X	X	X	X	X
Firm-Year Controls	X	X	X	X	X	X	X	X
Region FE	X							
Manager FE		X	X	X	X		X	X
Firm FE					X			X
Individual Linear Trends							X	
Job-Spell FE						X		
Estimation Method	OLS	GPLS	GPLS	GPLS	GPLS	GPLS	GPLS	GPLS

Notes: Additional controls to the regressions of Tables 6 and 7. Standard errors (in parenthesis) are clustered at the manager level. ^{a} p<0.01, ^{b} p<0.05, ^{c} p<0.1.

Table C-4: Wage Regressions, Simple Specifications, Main Covariates, Largest Connected Group

VARIABLES	(1) OLS	(2) FE	(3) Type of Experience	(4) Portability	(5) Mobility & Firm FE
Int. Act. Firm (0/1)	0.1726^{a}	0.0367^{a}	0.0290^{a}	0.0566^{a}	0.0002
	(0.0041)	(0.0034)	(0.0035)	(0.0081)	(0.0066)
Experience (Yrs)	0.0266^{a}	0.0580^{a}			
	(0.0007)	(0.0011)			
Domestic Exp. (Yrs)			0.0497$^{a}_{**}$	0.0510$^{a}_{**}$	0.0409$^{a}_{**}$
			(0.0013)	(0.0014)	(0.0020)
International Exp. (Yrs)			0.0654$^{a}_{**}$	0.0691$^{a}_{**}$	0.0540$^{a}_{**}$
			(0.0013)	(0.0021)	(0.0022)
Dom. Exp. * Int. Act. Firm (Yrs)				-0.0046^{a}	-0.0009
				(0.0012)	(0.0010)
Int. Exp. * Int. Act. Firm (Yrs)				-0.0034^{c}	0.0004
				(0.0018)	(0.0013)
Job Mobility (Dummy)					0.0540^{a}
					(0.0050)
Job Mobility * Int. Act. Firm (Dummy)					-0.0035
					(0.0034)
Observations	147,367	147,367	147,367	147,367	147,367
R-squared	0.1863	0.8414	0.8418	0.8419	0.8901
Adjusted R-squared	0.1863	0.7756	0.7762	0.7763	0.8351
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
Estimation Method	OLS	GPLS	GPLS	GPLS	GPLS

Notes: This table replicates the specifications of Table 6 using a more restricted sample obtained as the intersection of the sample of specification (5) in Table 6 and the largest connected group (using the Stata ado-file *group2hdfe*). 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-5: Manager Fixed Effects Regressions

VARIABLES	(1) FE	(2) Type of Experience	(3) Portability	(4) Mobility & Firm FE	(5) Ind. Linear Trends	(6) Heter. Returns on Exper.
Int. Act. Firm (0/1)	0.1876^{a}	0.1359^{a}	0.1286^{a}	0.1126^{a}	0.0792^{a}	0.0116^{a}
	(0.0031)	(0.0031)	(0.0031)	(0.0030)	(0.0054)	(0.0035)
Constant	-0.1023^{a}	-0.0741^{a}	-0.0701^{a}	-0.0620^{a}	-0.2130^{a}	0.0392^{a}
	(0.0024)	(0.0023)	(0.0023)	(0.0024)	(0.0045)	(0.0031)
Observations	254,990	254,990	254,990	249,562	131,857	147,367
R-squared	0.0412	0.0227	0.0204	0.0169	0.0059	0.0002
Estimation Method	OLS	OLS	OLS	OLS	OLS	OLS

Notes: The dependent variable is the estimated manager fixed effect from the corresponding specifications of Tables 6 and 7. Standard errors (in parenthesis) are clustered at the manager level. ^{a} p<0.01, ^{b} p<0.05, ^{c} p<0.1.

Table C-6: Wage Regressions, Main Covariates, Blue-collar Workers

VARIABLES	(1) OLS	(2) FE	(3) Type of Experience	(4) Portability	(5) Mobility & Firm FE	(6) Job-Spell FE	(7) Ind. Linear Trends	(8) Heter. Returns on Exper.
Int. Act. Firm (0/1)	0.0456^{a}	0.0344^{a}	0.0335^{a}	0.0551^{a}	0.0230^{a}	0.0248^{a}	0.0447^{a}	0.0235^{a}
	(0.0009)	(0.0013)	(0.0013)	(0.0025)	(0.0025)	(0.0028)	(0.0040)	(0.0013)
Experience (Yrs)	0.0039^{a}	0.0044^{a}						
	(0.0001)	(0.0002)						
Domestic Exp. (Yrs)			0.0036$^{a}_{**}$	0.0045$^{a}_{**}$	0.0012^{b}	0.0066^{a}	-0.0014^{c}**	0.0009$^{a}_{**}$
			(0.0002)	(0.0002)	(0.0006)	(0.0016)	(0.0008)	(0.0001)
International Exp. (Yrs)			0.0057$^{a}_{**}$	0.0087$^{a}_{**}$	0.0019^{b}	0.0077^{a}	0.0041$^{a}_{**}$	0.0019$^{a}_{**}$
			(0.0004)	(0.0006)	(0.0008)	(0.0018)	(0.0013)	(0.0002)
Dom. Exp. * Int. Act. Firm (Yrs)				-0.0040^{a}	-0.0031^{a}	-0.0033^{a}	-0.0039^{a}	-0.0035^{a}
				(0.0003)	(0.0003)	(0.0004)	(0.0005)	(0.0001)
Int. Exp. * Int. Act. Firm (Yrs)				-0.0023^{a}	-0.0004	-0.0006	-0.0011	-0.0001
				(0.0006)	(0.0006)	(0.0007)	(0.0008)	(0.0002)
Job Mobility (Dummy)					0.0077^{a}	0.0020	0.0209^{a}	0.0079^{a}
					(0.0017)	(0.0041)	(0.0027)	(0.0002)
Job Mobility * Int. Act. Firm (Dummy)					-0.0023^{c}	-0.0040^{a}	0.0093^{a}	-0.0015^{b}
					(0.0012)	(0.0013)	(0.0018)	(0.0007)
Domestic Exp. * Worker FE (Yrs)								0.0031$^{a}_{**}$
								(0.0002)
International Exp. * Worker FE (Yrs)								0.0262$^{a}_{**}$
								(0.0004)
Observations	1,241,198	963,851	963,851	963,851	937,485	840,396	425,150	735,542
R-squared	0.1795	0.7173	0.7173	0.7174	0.7865	0.7923	0.6655	0.9988
Adjusted R-squared	0.1795	0.5986	0.5987	0.5988	0.6570	0.6956	0.3846	0.9983
Worker-Year Controls	X	X	X	X	X	X		
Firm-Year Controls	X	X	X	X	X	X	X	X
Region FE	X							
Worker FE		X	X	X	X		X	
Firm FE					X			X
Individual Linear Trends							X	
Job-Spell FE						X		
Estimation Method	OLS	GPLS	GPLS	GPLS	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. Column (5) features firm fixed effects while introducing a control for job changes both alone and interacted with the international status of the employing firm in t. Column (6) reports the Job-Spell FE specification using firm-worker FE instead of separate worker and firm FE. The Individual Linear Trends specification in column (7) includes both standard worker fixed effects as well as the interactions between separate worker fixed effects and a linear trend. The Heterogeneous Returns on Experience specification in column (8) instead uses worker and firm FE while adding 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-7: Wage Regressions, Controls, Displaced Managers Sample

VARIABLES	(1) Mobility & Firm FE	(2) Heter. Returns on Exper.
Tenure (Yrs)	0.0143^{a}	0.0109^{a}
	(0.0019)	(0.0009)
Tenure Sq. (Yrs)	-0.0016^{a}	-0.0015^{a}
	(0.0002)	(0.0001)
Firm Size (log)	0.0446^{a}	0.0277^{a}
	(0.0006)	(0.0006)
App. Labor Productivity (log)	0.0076^{a}	0.0025^{a}
	(0.0011)	(0.0010)
Firm Age (log)	-0.0208^{a}	-0.0291^{a}
	(0.0013)	(0.0011)
Share of Skilled Workers	0.0306^{a}	0.0523^{a}
	(0.0035)	(0.0035)
Observations	7,572	4,410
R-squared	0.9266	0.9857
Manager-Year Controls	X	X
Firm-Year Controls	X	X
Manager FE	X	X
Firm FE	X	X
Estimation Method	OLS	OLS

Notes: Additional controls to the regressions of Table 8. Standard errors (in parenthesis) are clustered at the manager level. ^{a} p<0.01, ^{b} p<0.05, ^{c} p<0.1.

Table C-8: Wage Regressions, Key Covariates, Displaced Blue-Collar Workers Sample

VARIABLES	(1) Mobility & Firm FE	(2) Heter. Returns on Exper.
Int. Act. Firm (0/1)	0.0269^{a}	0.0225^{a}
	(0.0035)	(0.0002)
Domestic Exp. (Yrs)	0.0008$^{a}_{**}$	0.0015$^{a}_{**}$
	(0.0002)	(0.0000)
International Exp. (Yrs)	0.0022$^{a}_{**}$	0.0032$^{a}_{**}$
	(0.0005)	(0.0001)
Dom. Exp. * Int. Act. Firm (Yrs)	-0.0030^{a}	-0.0035^{a}
	(0.0003)	(0.0000)
Int. Exp. * Int. Act. Firm (Yrs)	-0.0009	-0.0005^{a}
	(0.0006)	(0.0001)
Domestic Exp. * Worker FE (Yrs)		0.0026$^{a}_{**}$
		(0.0000)
International Exp. * Worker FE (Yrs)		0.0250$^{a}_{**}$
		(0.0001)
Observations	31,911	23,922
R-squared	0.8067	0.9995
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 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 Mobility & 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 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-9: Wage Regressions, Main Covariates, Additional Specifications with Heterogeneous Returns

VARIABLES	(1) No Performance Pay	(2) Education	(3) Bargaining Power	(4) Career Concerns	(5) No Tenure	(6) Tenure by Firm Status	(7) Experience Squared	(8) Alternative Experience
Int. Act. Firm (0/1)	-0.0057^{b}	-0.0002	-0.0038	0.0018	0.0102^{a}	-0.0020	-0.0023	0.0020
	(0.0027)	(0.0033)	(0.0033)	(0.0038)	(0.0033)	(0.0035)	(0.0045)	(0.0029)
Domestic Exp. (Yrs)	0.0389$^{a}_{**}$	0.0400$^{a}_{**}$	0.0363$^{a}_{**}$	0.0349$^{a}_{**}$	0.0422$^{a}_{**}$	0.0382$^{a}_{**}$	0.0499$^{a}_{**}$	0.0312$^{a}_{**}$
	(0.0002)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0011)	(0.0005)
International Exp. (Yrs)	0.0468$^{a}_{**}$	0.0312$^{a}_{**}$	0.0524a_{**}	0.0470$^{a}_{**}$	0.0538$^{a}_{**}$	0.0505$^{a}_{**}$	0.0668$^{a}_{**}$	0.0430$^{a}_{**}$
	(0.0005)	(0.0008)	(0.0006)	(0.0006)	(0.0006)	(0.0006)	(0.0013)	(0.0006)
Dom. Exp. * Int. Act. Firm (Yrs)	-0.0005^{c}	-0.0009^{a}	-0.0003	-0.0010^{b}	-0.0025^{a}	-0.0013^{a}	-0.0013	-0.0028^{a}
	(0.0003)	(0.0004)	(0.0003)	(0.0004)	(0.0004)	(0.0003)	(0.0012)	(0.0007)
Int. Exp. * Int. Act. Firm (Yrs)	0.0019^{a}	0.0005	0.0003	0.0001	-0.0004	0.0005	0.0017	-0.0001
	(0.0006)	(0.0007)	(0.0006)	(0.0007)	(0.0007)	(0.0007)	(0.0015)	(0.0007)
Job Mobility (Dummy)	0.0575^{a}	0.0526^{a}	0.0497^{a}	0.0529^{a}	0.0488^{a}	0.0552^{a}	0.0489^{a}	0.0829^{a}
	(0.0004)	(0.0004)	(0.0004)	(0.0004)	(0.0004)	(0.0004)	(0.0004)	(0.0005)
Job Mobility * Int. Act. Firm (Dummy)	-0.0025^{c}	-0.0058^{a}	-0.0046^{b}	-0.0051^{a}	-0.0068^{a}	-0.0048^{a}	-0.0031^{c}	-0.0066^{a}
	(0.0014)	(0.0018)	(0.0018)	(0.0018)	(0.0018)	(0.0018)	(0.0018)	(0.0019)
Domestic Exp. * Manager FE (Yrs)	0.0209$^{a}_{**}$	0.0151$^{a}_{**}$	0.0111$^{a}_{**}$	0.0104$^{a}_{**}$	0.0089$^{a}_{**}$	0.0111$^{a}_{**}$	0.0113$^{a}_{**}$	0.0166$^{a}_{**}$
	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0005)
International Exp. * Manager FE (Yrs)	0.0253$^{a}_{**}$	0.0222$^{a}_{**}$	0.0282$^{a}_{**}$	0.0275$^{a}_{**}$	0.0312$^{a}_{**}$	0.0270$^{a}_{**}$	0.0249$^{a}_{**}$	0.0261$^{a}_{**}$
	(0.0003)	(0.0004)	(0.0004)	(0.0004)	(0.0004)	(0.0004)	(0.0004)	(0.0003)
Domestic Exp. * Education (Yrs)		-0.0001^{a}						
		(0.0000)						
International Exp. * Education (Yrs)		0.0014^{a}						
		(0.0000)						
Firm Size t-1 (log)			0.0007					
			(0.0014)					
App. Labor Productivity t-1 (log)			0.0132^{a}					
			(0.0011)					
Hourly Wage t-1 (log)			-0.0313^{a}					
			(0.0023)					
Age up to 25 (0/1)				-0.0390^{a}				
				(0.0026)				
Age up to 25 * Int. Act. Firm (0/1)				-0.0030				
				(0.0031)				
Tenure * Int. Act. Firm (Yrs)						0.0036^{a}		
						(0.0012)		
Ten. Sq. * Int. Act. Firm (Yrs)						-0.0005^{a}		
						(0.0001)		
Domestic Exp. Squared							-0.0010^{a}	
							(0.0001)	
International Exp. Squared							-0.0022^{a}	
							(0.0002)	
Dom. Exp. Sq. * Int. Act. Firm (Yrs)							-0.0002^{a}	
							(0.0001)	
Int.Exp. Sq. * Int. Act. Firm (Yrs)							0.0003	
							(0.0002)	
Observations	147,367	147,367	147,367	147,367	147,367	147,367	147,367	147,367
R-squared	0.9989	0.9985	0.9985	0.9986	0.9984	0.9985	0.9987	0.9990
Adjusted R-squared	0.9984	0.9979	0.9979	0.9980	0.9978	0.9979	0.9981	0.9985
Manager-Year Controls	X	X	X	X	X	X	X	X
Firm-Year Controls	X	X	X	X	X	X	X	X
Manager FE	X	X	X	X	X	X	X	X
Firm FE	X	X	X	X	X	X	X	X
Estimation Method	GPLS	GPLS	GPLS	GPLS	GPLS	GPLS	GPLS	GPLS

Notes: This table proposes a number of extensions of the heterogeneous returns specification of column (3) of Table 7. 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, in all specification except that of column (1), 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. In column (1), the hourly wage does not include (both in the numerator and the denominator) those components that depends on performance: overtime and irregularly paid supplements. 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) excludes any performance-pay component from the hourly wage. 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) controls for measures of bargaining power indicated by wage bargaining models (Postel-Vinay and Robin, 2002). Column (4) 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 (5) does not include the tenure controls. Column (6) allows the return on tenure to be different in domestic and internationally active firms. Column (7) includes a quadratic in domestic and international experience. Column (8) uses an alternative definition of domestic 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-10: Wage Regressions, Main Covariates, Managers, High-Layer and Low-Layer Experience

VARIABLES	(1) First Model	(2) Worker FE	(3) Type of Experience	(4) Portability	(5) Firm FE Job Mobility	(6) Job-Spell FE	(7) Individual Linear Trends	(8) Heterogeneous returns on experience
High-layer Firm (0/1)	0.0780^{a}	0.0037	0.0011	0.0132^{a}	-0.0029	-0.0023	-0.0123^{c}	-0.0113^{a}
	(0.0027)	(0.0024)	(0.0024)	(0.0034)	(0.0045)	(0.0044)	(0.0069)	(0.0031)
Experience (Yrs)	0.0199^{a}	0.0515^{a}						
	(0.0004)	(0.0009)						
Low-layer Exp. (Yrs)			0.0362$^{a}_{**}$	0.0361$^{a}_{**}$	0.0197$^{a}_{**}$	0.0128$^{a}_{**}$	0.0283$^{a}_{**}$	0.0288$^{a}_{**}$
			(0.0009)	(0.0009)	(0.0014)	(0.0015)	(0.0041)	(0.0003)
High-layer Exp. (Yrs)			0.0450$^{a}_{**}$	0.0542$^{a}_{**}$	0.0269$^{a}_{**}$	0.0185$^{a}_{**}$	0.0425$^{a}_{**}$	0.0349$^{a}_{**}$
			(0.0011)	(0.0023)	(0.0025)	(0.0026)	(0.0067)	(0.0012)
Low-layer Exp. * High-layer Firm (Yrs)				-0.0021^{a}	-0.0035^{a}	-0.0038^{a}	0.0004	-0.0043^{a}
				(0.0007)	(0.0008)	(0.0008)	(0.0015)	(0.0003)
High-layer Exp. * High-layer Firm (Yrs)				-0.0092^{a}	0.0005	0.0011	0.0000	0.0005
				(0.0022)	(0.0021)	(0.0022)	(0.0036)	(0.0012)
Job Mobility (Dummy)					0.0994^{a}	0.0824^{a}	0.0687^{a}	
					(0.0051)	(0.0100)	(0.0095)	
Job Mobility * High-layer Firm (Dummy)					-0.0068^{b}	-0.0057^{c}	0.0038	
					(0.0034)	(0.0033)	(0.0058)	
Low-layer Exp. * Manager FE (Yrs)								-0.0036$^{a}_{**}$
								(0.0002)
High-layer Exp. * Manager FE (Yrs)								0.0072$^{a}_{**}$
								(0.0006)
Observations	322,360	254,990	254,990	254,990	194,542	180,277	54,856	114,522
R-squared	0.3076	0.8765	0.8745	0.8746	0.9154	0.9188	0.7675	1.0000
Adjusted R-squared	0.3076	0.8215	0.8186	0.8187	0.8389	0.8712	0.1747	1.0000
Manager-Year Controls	X	X	X	X	X	X	X	X
Firm-Year Controls	X	X	X	X	X	X	X	X
Region FE	X							
Manager FE		X	X	X	X		X	X
Firm FE					X			X
Individual Linear Trends							X	
Job-Spell FE						X		
Estimation Method	OLS	GPLS	GPLS	GPLS	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 low-layer and high-layer firms. Column (4) allows the return on low-layer and high-layer experience to be different according to the high-layer status of the firm. Column (5) features firm fixed effects while introducing a control for job changes both alone and interacted with the high-layer status of the employing firm in t. Column (6) reports the Job-Spell FE specification using firm-manager FE instead of separate manager and firm FE. The Individual Linear Trends specification in column (7) includes both standard manager fixed effects as well as the interactions between separate manager fixed effects and a linear trend. The Heterogeneous Returns on Experience specification in column (8) instead uses manager and firm FE while adding two interaction terms of manager FE with low-layer and high-layer 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 low-layer and high-layer experience (or the coefficients of the interactions of low-layer experience with manager FE and high-layer experience with manager 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 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).

Table C-11: Wage Regressions, Main Covariates, Blue-Collar Workers, High-Layer and Low-Layer Experience

VARIABLES	(1) First Model	(2) Worker FE	(3) Type of Experience	(4) Portability	(5) Firm FE Job Mobility	(6) Job-Spell FE	(7) Individual Linear Trends	(8) Heterogeneous returns on experience
High-layer Firm (0/1)	0.0475^{a}	0.0158^{a}	0.0152^{a}	0.0233^{a}	0.0119^{a}	0.0136^{a}	0.0146^{a}	0.0125^{a}
	(0.0009)	(0.0011)	(0.0011)	(0.0015)	(0.0019)	(0.0020)	(0.0032)	(0.0010)
Experience (Yrs)	0.0033^{a}	0.0039^{a}						
	(0.0001)	(0.0002)						
Low-layer Exp. (Yrs)			0.0031$^{a}_{**}$	0.0039$^{a}_{**}$	0.0018^{a}	0.0007	-0.0015	0.0018^{a}
			(0.0002)	(0.0002)	(0.0004)	(0.0005)	(0.0009)	(0.0001)
High-layer Exp. (Yrs)			0.0050$^{a}_{**}$	0.0057$^{a}_{**}$	0.0026^{a}	0.0020^{c}	-0.0025	0.0021^{a}
			(0.0004)	(0.0008)	(0.0009)	(0.0010)	(0.0020)	(0.0004)
Low-layer Exp. * High-layer Firm (Yrs)				-0.0030^{a}	-0.0033^{a}	-0.0035^{a}	-0.0025^{a}	-0.0037^{a}
				(0.0003)	(0.0003)	(0.0004)	(0.0006)	(0.0001)
High-layer Exp. * High-layer Firm (Yrs)				0.0005	-0.0019^{b}	-0.0030^{a}	0.0015	-0.0017^{a}
				(0.0008)	(0.0008)	(0.0009)	(0.0012)	(0.0004)
Job Mobility (Dummy)					0.0073^{a}	0.0184^{a}	0.0167^{a}	
					(0.0015)	(0.0030)	(0.0035)	
Job Mobility * High-layer Firm (Dummy)					0.0017	0.0022	0.0095^{a}	
					(0.0014)	(0.0014)	(0.0022)	
Low-layer Exp. * Worker FE (Yrs)								-0.0022$^{a}_{**}$
								(0.0002)
High-layer Exp. * Worker FE (Yrs)								0.0018$^{b}_{**}$
								(0.0007)
Observations	1,241,198	963,851	963,851	963,851	770,237	681,697	275,522	607,517
R-squared	0.1792	0.7169	0.7169	0.7170	0.7905	0.7951	0.5131	1.0000
Adjusted R-squared	0.1792	0.5981	0.5981	0.5982	0.6412	0.6860	-0.1320	1.0000
Worker-Year Controls	X	X	X	X	X	X		
Firm-Year Controls	X	X	X	X	X	X	X	X
Region FE	X							
Worker FE		X	X	X	X			
Manager FE							X	X
Manager-Year Controls							X	X
Firm FE					X			X
Individual Linear Trends							X	
Job-Spell FE						X		
Estimation Method	OLS	GPLS	GPLS	GPLS	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 low-layer and high-layer firms. Column (4) allows the return on low-layer and high-layer experience to be different according to the high-layer status of the firm. Column (5) features firm fixed effects while introducing a control for job changes both alone and interacted with the high-layer status of the employing firm in t. Column (6) reports the Job-Spell FE specification using firm-worker FE instead of separate worker and firm FE. The Individual Linear Trends specification in column (7) includes both standard worker fixed effects as well as the interactions between separate worker fixed effects and a linear trend. The Heterogeneous Returns on Experience specification in column (8) instead uses worker and firm FE while adding two interaction terms of worker FE with low-layer and high-layer 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 low-layer and high-layer experience (or the coefficients of the interactions of low-layer experience with worker FE and high-layer 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-12: Wage Regressions, Main Covariates, Managers, Big and Small Firm Experience

VARIABLES	(1) First Model	(2) Worker FE	(3) Type of Experience	(4) Portability	(5) Firm FE Job Mobility	(6) Job-Spell FE	(7) Individual Linear Trends	(8) Heterogeneous returns on experience
Big Firm (0/1)	0.1351^{a}	0.0264^{a}	0.0188^{a}	0.0197^{b}	0.0253^{a}	0.0247^{b}	0.0270^{b}	0.0745^{a}
	(0.0038)	(0.0046)	(0.0046)	(0.0098)	(0.0095)	(0.0101)	(0.0138)	(0.0048)
Experience (Yrs)	0.0199^{a}	0.0515^{a}						
	(0.0004)	(0.0009)						
Small Exp. (Yrs)			0.0447$^{a}_{**}$	0.0432$^{a}_{**}$	0.0353$^{a}_{**}$	0.0201$^{a}_{**}$	0.0333$^{a}_{**}$	0.0442$^{a}_{**}$
			(0.0010)	(0.0011)	(0.0019)	(0.0052)	(0.0032)	(0.0004)
Big Exp. (Yrs)			0.0592$^{a}_{**}$	0.0647$^{a}_{**}$	0.0511$^{a}_{**}$	0.0362$^{a}_{**}$	0.0526$^{a}_{**}$	0.0559$^{a}_{**}$
			(0.0010)	(0.0022)	(0.0026)	(0.0056)	(0.0045)	(0.0008)
Small Exp. * Big Firm (Yrs)				0.0021	-0.0017	-0.0016	0.0005	-0.0074^{a}
				(0.0013)	(0.0013)	(0.0014)	(0.0020)	(0.0004)
Big Exp. * Big Firm (Yrs)				-0.0069^{a}	-0.0035^{c}	-0.0040^{c}	-0.0058^{b}	-0.0079^{a}
				(0.0021)	(0.0020)	(0.0022)	(0.0027)	(0.0008)
Job Mobility (Dummy)					0.0583^{a}	0.0559^{a}	0.0689^{a}	
					(0.0051)	(0.0115)	(0.0067)	
Job Mobility * Big Firm (Dummy)					0.0007	0.0029	-0.0096^{b}	
					(0.0031)	(0.0031)	(0.0047)	
Small Exp. * Manager FE (Yrs)								0.0025$^{a}_{**}$
								(0.0002)
Big Exp. * Manager FE (Yrs)								0.0276$^{a}_{**}$
								(0.0003)
Observations	322,360	254,990	254,990	254,990	249,562	233,629	104,921	147,367
R-squared	0.3105	0.8765	0.8770	0.8770	0.9103	0.9141	0.8720	0.9989
Adjusted R-squared	0.3105	0.8216	0.8222	0.8222	0.8460	0.8718	0.7368	0.9985
Manager-Year Controls	X	X	X	X	X	X	X	X
Firm-Year Controls	X	X	X	X	X	X	X	X
Region FE	X							
Manager FE		X	X	X	X		X	X
Firm FE					X			X
Individual Linear Trends							X	
Job-Spell FE						X		
Estimation Method	OLS	GPLS	GPLS	GPLS	GPLS	GPLS	GPLS	GPLS

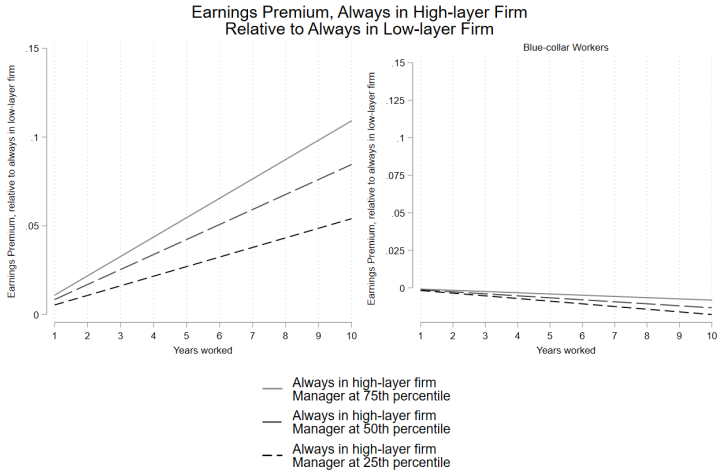
Notes: The dependent variable is the (log) hourly wage, detrended using a full set of year dummies interacted with 1-digit sector dummies. The hourly wage is defined as the sum of the monthly base wage (gross pay for normal hours of work), overtime, regularly and irregularly paid supplements, divided 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 small and big firms. Column (4) allows the return on small and big firm experience to be different according to the size status of the firm. Column (5) features firm fixed effects while introducing a control for job changes both alone and interacted with the size status of the employing firm in t. Column (6) reports the Job-Spell FE specification using firm-manager FE instead of separate manager and firm FE. The Individual Linear Trends specification in column (7) includes both standard manager fixed effects as well as the interactions between separate manager fixed effects and a linear trend. The Heterogeneous Returns on Experience specification in column (8) instead uses manager and firm FE while adding two interaction terms of manager FE with small and big 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 small and big firm experience (or the coefficients of the interactions of small firm experience with manager FE and big firm experience with manager 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 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).

Table C-13: Wage Regressions, Main Covariates, Blue-Collar Workers, Big and Small Firm Experience

VARIABLES	(1) First Model	(2) Worker FE	(3) Type of Experience	(4) Portability	(5) Firm FE Job Mobility	(6) Job-Spell FE	(7) Individual Linear Trends	(8) Heterogeneous returns on experience
Big Firm (0/1)	0.0394^{a}	0.0287^{a}	0.0291^{a}	0.0648^{a}	0.0446^{a}	0.0510^{a}	0.0475^{a}	0.0454^{a}
	(0.0012)	(0.0020)	(0.0020)	(0.0031)	(0.0035)	(0.0040)	(0.0055)	(0.0016)
Experience (Yrs)	0.0036^{a}	0.0042^{a}						
	(0.0001)	(0.0002)						
Small Exp. (Yrs)			0.0046$^{a}_{**}$	0.0061$^{a}_{**}$	0.0035^{a}	0.0085$^{a}_{**}$	-0.0003	0.0032$^{a}_{**}$
			(0.0002)	(0.0003)	(0.0006)	(0.0016)	(0.0008)	(0.0001)
Big Exp. (Yrs)			0.0035$^{a}_{**}$	0.0090$^{a}_{**}$	0.0045^{a}	0.0110$^{a}_{**}$	0.0026^{c}	0.0054$^{a}_{**}$
			(0.0003)	(0.0008)	(0.0010)	(0.0018)	(0.0015)	(0.0002)
Small Exp. * Big Firm (Yrs)				-0.0068^{a}	-0.0063^{a}	-0.0068^{a}	-0.0056^{a}	-0.0064^{a}
				(0.0004)	(0.0004)	(0.0005)	(0.0008)	(0.0001)
Big Exp. * Big Firm (Yrs)				-0.0042^{a}	-0.0038^{a}	-0.0053^{a}	-0.0025^{b}	-0.0045^{a}
				(0.0007)	(0.0007)	(0.0009)	(0.0011)	(0.0003)
Job Mobility (Dummy)					0.0085^{a}	0.0025	0.0227^{a}	
					(0.0017)	(0.0041)	(0.0027)	
Job Mobility * Big Firm (Dummy)					-0.0022^{c}	-0.0017	0.0001	
					(0.0013)	(0.0013)	(0.0020)	
Small Exp. * Worker FE (Yrs)								0.0054$^{a}_{**}$
								(0.0002)
Big Exp. * Worker FE (Yrs)								0.0254$^{a}_{**}$
								(0.0004)
Observations	1,241,198	963,851	963,851	963,851	937,485	840,396	425,150	735,542
R-squared	0.1777	0.7169	0.7170	0.7172	0.7867	0.7924	0.6652	0.9985
Adjusted R-squared	0.1777	0.5982	0.5982	0.5985	0.6572	0.6957	0.3840	0.9980
Worker-Year Controls	X	X	X	X	X	X		
Firm-Year Controls	X	X	X	X	X	X	X	X
Region FE	X							
Worker FE		X	X	X	X			
Manager FE							X	X
Manager-Year Controls							X	X
Firm FE					X			X
Individual Linear Trends							X	
Job-Spell FE						X		
Estimation Method	OLS	GPLS	GPLS	GPLS	GPLS	GPLS	GPLS	GPLS

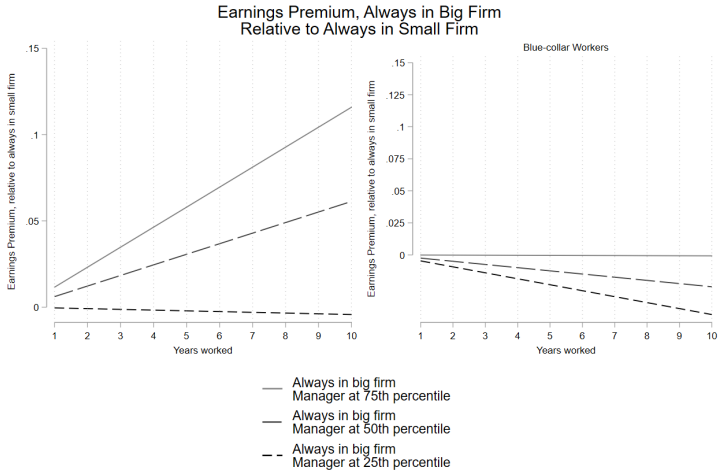
Notes: The dependent variable is the (log) hourly wage, detrended using a full set of year dummies interacted with 1-digit sector dummies. The hourly wage is defined as the sum of the monthly base wage (gross pay for normal hours of work), overtime, regularly and irregularly paid supplements, divided 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 small and big firms. Column (4) allows the return on small and big firm experience to be different according to the size status of the firm. Column (5) features firm fixed effects while introducing a control for job changes both alone and interacted with the size status of the employing firm in t. Column (6) reports the Job-Spell FE specification using firm-worker FE instead of separate worker and firm FE. The Individual Linear Trends specification in column (7) includes both standard worker fixed effects as well as the interactions between separate worker fixed effects and a linear trend. The Heterogeneous Returns on Experience specification in column (8) instead uses worker and firm FE while adding two interaction terms of worker FE with small and big 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 small and big firm experience (or the coefficients of the interactions of small firm experience with worker FE and big firm 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 worker for which only one observation is available. Such workers are instead included in the number of observations in column (1).

Figure C-7: Wage Premium in High-Layer Firms vs. Low-Layer Firms, Managers and Blue-collar Workers



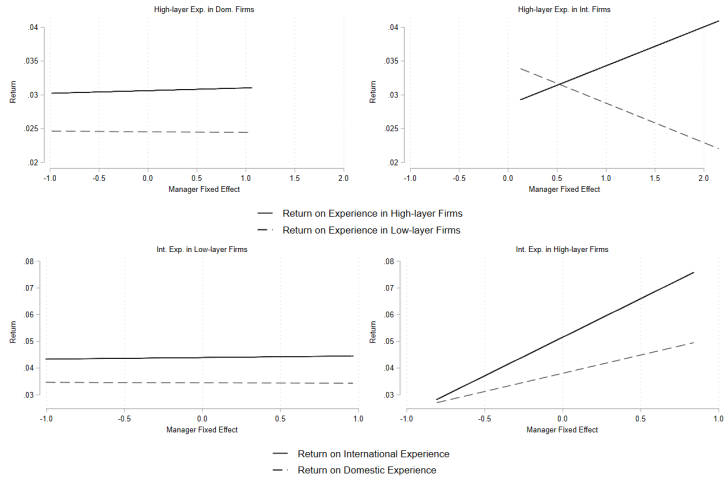
Notes: This figure is based on specification (8) in Table C-10 (for managers) and specification (8) in Table C-11 (for blue-collar workers). The left panel shows the wage premium for a manager that is always employed by a high-layer firm with respect to an identical manager that is always employed by 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 (8) in Table C-10. The right panel of the figure is constructed in the same way but for blue-collar workers.

Figure C-8: Wage Premium in Big Firms vs. Small Firms, Managers and Blue-collar Workers



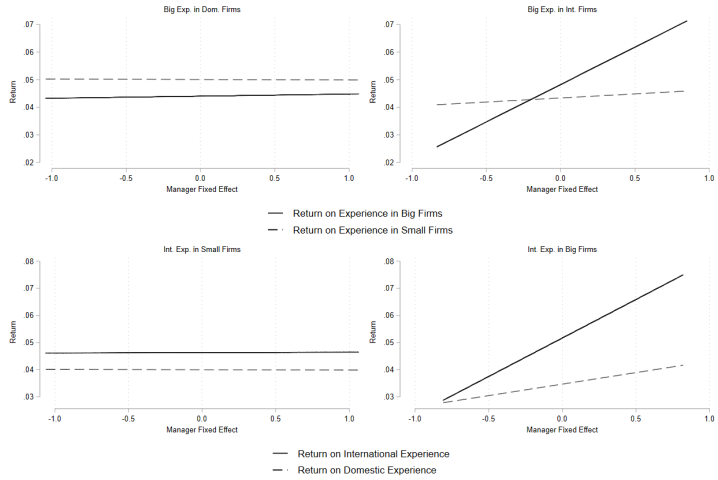
Notes: This figure is based on specification (8) in Table C-12 (for managers) and specification (8) in Table C-13 (for blue-collar workers). The left panel shows the wage premium for a manager that is always employed by a big firm with respect to an identical manager that is always employed by a small 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 (8) in Table C-12. The right panel of the figure is constructed in the same way but for blue-collar workers.

Figure C-9: Returns on International and Domestic Experience and Return on High-Layer Firms and Low-Layer Firms Experience



Notes: The top left (top right) panel shows the returns on low-layer firms and high-layer firms experience for a manager in a domestic (internationally active) firm, by manager fixed effect, between the 1st and 99th percentiles. The returns do not include the static wage premium of working in a high-layer firm (high-layer firm status dummy). The bottom left (bottom right) panel shows the returns on domestic and international experience for a manager in a low-layer (high-layer) 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).

Figure C-10: Returns on International and Domestic Experience and Return on Big Firms and Small Firms Experience



Notes: The top left (top right) panel shows the returns on small firms and big firms experience for a manager in a domestic (internationally active) firm, by manager fixed effect, between the 1st and 99th percentiles. The returns do not include the static wage premium of working in a big firm (big firm status dummy). The bottom left (bottom right) panel shows the returns on domestic and international experience for a manager in a small (big) 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).

Table C-14: Wage Regressions, Main Covariates, Overall Experience and International Experience

VARIABLES	(1) Mobility & Firm FE
Int. Act. Firm (0/1)	0.0018
	(0.0057)
Overall Exp. (Yrs)	0.0329^a
	(0.0019)
International Exp. (Yrs)	0.0184^a
	(0.0015)
Over. Exp. * Int. Act. Firm (Yrs)	-0.0006
	(0.0008)
Int. Exp. * Int. Act. Firm (Yrs)	-0.0004
	(0.0013)
Job Mobility (Dummy)	0.0599^a
	(0.0051)
Job Mobility * Int. Act. Firm (Dummy)	-0.0046
	(0.0030)
Observations	249,402
R-squared	0.9107
Adjusted R-squared	0.8466
Manager-Year Controls	X
Firm-Year Controls	X
Manager FE	X
Firm FE	X
Estimation Method	GPLS

Notes: Estimations refer to the same sample used in column (5) of Table 6 as well as to a very similar specification in which, rather than considering domestic and international experience, we consider overall experience 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. 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-15: Standard deviation of the various components of the estimated equation (6): overall experience vs international experience. Managers aged 30-33

Component		St. Dev.
w_{it}		0.514
Worker-level controls		0.100
of which	Overall Exper.	0.075
Firm-level contr.		0.088
Int. Exp. & IA dummies		0.059
of which	Internat. Exper.	0.062
$\hat{\eta}_i + \hat{\eta}_f$		0.484
$\hat{\varepsilon}_{it}$		0.146

Notes: This Table provides a variance decomposition analysis based on estimations of equation (6), where overall experience and international experience are used as covariates instead of domestic experience and international experience. For each covariate, we compute the product of the covariate and the corresponding estimated coefficient. We then group the product of covariates and coefficients into groups/components and provide the standard deviation of each component corresponding to the year 2006 and to managers aged 30-33.