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Abstract

Abstract: Better managers and managerial practices lead to better firm performance. Yet, little is known about what happens when managers move across firms. Does a firm hiring a good manager improve its performance? If yes is there some valuable knowledge the manager has acquired and successfully diffused to the new firm? In order to answer these questions we use information related to specific activities the manager was involved in when working for previous firms. More specifically, we use information on whether the manager has worked in the past for firms exporting to a specific destination country or a specific product. Our data is rich enough to allow controlling for both manager and firm unobservables and wash out any time-invariant ability of the manager as well as overall firm performance. We find that the export experience gained by managers in *previous* firms leads their *current* firm towards higher export performance, and commands a sizable wage premium for the manager. We use several strategies to deal with endogeneity including an exogenous event study: the sudden end of the Angolan civil war in 2002. We further refine our analysis by looking at different types of managers (general, production, financial and sales) and show how specific export experience interacts with the degree of product differentiation and/or the financial vulnerability of a firm's products as well as with rising import competition from China.

JEL Classification: M2; L2; F16; J31

Keywords: Managers, knowledge diffusion, firm performance, job mobility, export experience

1. Introduction

> *"Managers are conductors of an input orchestra [...] Just as a poor conductor can lead to a cacophony rather than a symphony, one might expect poor management to lead to discordant production operations."*
>
> – Chad Syverson, *What Determines Productivity (2011)*

The enormous variation in firm performance has become a focus of empirical and theoretical interest throughout the social sciences, including economics. Recent empirical studies have exploited the increasing availability of information on managerial practices and managers' characteristics to establish a strong connection with firm—as well as country—productivity and other dimensions of performance. More specifically, Bloom and Van-Reenen (2010), Bloom et al. (2013), Bloom et al. (2016b) and Guiso and Rustichini (2011) among others, have established that better managers and managerial practices lead to better firm performance. We believe the next question is what happens when managers move from one firm to another. Does a firm hiring a good manager improve its performance? If yes is it due to the manager simply being a good manager or is there some valuable knowledge the manager has acquired and successfully diffused to the new firm? The objective of this paper is to provide answers to these questions.

These questions have long since attracted substantial interest in the business and management literature. For example, Argote and Ingram (2000) argues that the creation and transfer of knowledge are a basis for competitive advantage in firms while Tsai (2001), and subsequent related literature, emphasises knowledge transfer within an organization and highlights the importance of network position and absorptive capacity. However, empirical evidence about knowledge transfer within the business and management literature has so far been primarily focused on within-organization flows by means of rather limited data (Chang et al., 2012, Richards and Duxbury, 2015). A noticeable exception is Song et al. (2003) where, in order to investigate the conditions under which learning-by-hiring (or the acquisition of knowledge through the hiring of experts from other firms) is more likely, they study the patenting activities of engineers who moved from U.S. firms to non-U.S. firms. In the same spirit there are, within the urban economics literature on spill-overs, some contributions showing how job hopping help sustain the competitiveness of local industry clusters like Silicon Valley[1] while recent contributions to the international trade literature also highlight knowledge diffusion: Artopoulos et al. (2013) explain how the diffusion of business practices from export pioneers to followers

[1]Fallick et al. (2006) argue that job hopping is important in computer clusters because it facilitates the reallocation of talent and resources toward firms with superior innovations. Using detailed data on labor mobility, they find higher rates of job-hopping for college-educated men in Silicon Valley's computer industry than in other computer clusters.

can lead to sustained export growth, while Atkin et al. (2016) document a knowledge flow between intermediaries and foreign buyers leading to improvement in product quality.

These questions are certainly fascinating to many fields and scholars but one fundamental issue is that answering them is rather difficult: First, it is challenging to separate a manager's intrinsic capabilities from the knowledge and abilities she has learned in previous firms. Second, it is empirically difficult to show that such acquired knowledge and abilities impact current firm performance. In order to overcome the first challenge we draw on information related to specific activities the manager was involved in when working for previous firms. More specifically, we build on employer-employee data and firm-level trade data spanning several years to recover information on whether the manager has worked in the past for firms exporting to a specific destination country or a specific product. Our data is rich enough to allow controlling for both manager and firm unobservables and wash out any time-invariant ability of the manager as well as overall firm performance.

To tackle the second challenge we then relate this destination-specific or product-specific measure of acquired knowledge to the current firm trade performance in these specific destinations or products. In doing so we deal with the endogeneity of hiring in two complementary ways. First, we explore the differential performance of firms with and without managers with specific export experience in the wake of an exogenous event: the sudden end of the Angolan civil war in 2002. Second, we draw on the panel nature of the data and use information on whether the firm had managers with destination-specific or product-specific export experience 3 years prior to evaluating firm-performance in those destinations or products. We further refine our analysis by looking at different types of managers (general, production, financial and sales) and show how specific export experience interacts with the degree of product differentiation and/or the financial vulnerability of a firm's products as well as with rising import competition from China.

We find that the export experience gained by managers in *previous* firms leads their *current* firm towards higher export performance, and commands a sizable wage premium for the manager. Moreover, export knowledge is decisive when it is *market-specific*: managers with experience related to markets (where by markets we mean destinations or products) served by their current firm receive an even higher wage premium; firms are more likely to enter markets where their managers have experience; exporters are more likely to stay in those markets, and their sales are on average higher. While it is reasonable to expect managers to learn valuable skills from their previous jobs and transfer them, the magnitudes we find are stark. Managers' export experience is a first-order feature in the data explaining more variation in firm export performance than size and productivity.

At the same time, we show that the experience premium accrued by different types of managers (general, production, financial and sales) aligns with a knowledge diffusion story. More specifically, we show that financial managers enjoy a basic export experience wage premium but no robust product- or destination-specific experience wage premium. General and production managers receive both a product- and a destination-specific experience premium but little or no basic experience premium. Sales managers benefit from a destination-specific experience premium while general managers get the largest premia in most cases. Furthermore, we find market-specific experience to be more valuable in terms of trade performance to firms selling products that are more differentiated and/or financially vulnerable while at the same time experience seems to help some firms coping with increasing import competition from China.

Our analysis stands on three solid pillars: reliable data on one country (Portugal) covering the universe of firms and their workers for several years, including rich information on the characteristics of both; the possibility of tracking workers—and in particular managers—as they move from firm to firm; a research design that accounts for unobserved heterogeneity, omitted variables, and, more broadly, endogeneity.

Our work relates to a number of strands in the literature. First, we contribute to the above cited empirical literature on management by showing how managers can diffuse knowledge and good practice across firms. Second, our work relates to the literature looking at the relationship between trade and tasks (Blinder, 2006, Grossman and Rossi-Hansberg, 2008). Such literature suggests that the complexity of the tasks involved in the different stages of production process (design, manufacturing of parts, assembly, R&D, marketing, commercialization, etc.) is key to understand recent trends in international trade. Managers are different from other workers and likely to be particularly important for trade activity because they are responsible for the most complex tasks within a firm. Third, the role played by managers' mobility across firms in our analysis contributes to the recent debate about the channels via which knowledge diffusion takes place (Balsvik, 2011, Parrotta and Pozzoli, 2012, Mion and Opromolla, 2014). Last, but not least, our wage analysis contributes to the literature devoted to explaining the determinants of managers' pay (Gabaix and Landier, 2008, Guadalupe and Wulf, 2008), and to the literature that studies the internal organization of the firm and how this relates to a firm's characteristics such as export status (Caliendo and Rossi-Hansberg, 2012, Caliendo et al., 2015).

With specific reference to Mion and Opromolla (2014) we expand upon own research in several ways. While Mion and Opromolla (2014) focuses on the destination-specific export experience of managers this paper offers a comprehensive treatment of knowledge diffusion: we consider different types of experience (product and destination), different types of managers, the role of financial vulnerability and product differentiation, as well

as rising import competition from China. We also provide here further evidence on the causal impact of knowledge diffusion by exploring the differential performance of firms with and without managers with specific export experience in the wake of an exogenous event: the sudden end of the Angolan civil war in 2002. Last but not least, we explore if knowledge remains in the firm once the experienced manager leaves.

The remainder of the paper is organized as follows. Section 2 describes the data. In Section 3, after defining some key variables, we show raw data evidence positively associating a manager's export experience with his/her wage and firm export performance. These descriptive results are confirmed by the econometric testing of Sections 4 and 5. Section 6 concludes and provides a number of policy implications. Additional details about the data are provided in the Appendix. The Tables Appendix provides complementary Tables.

2. Data

Our data combines information resulting from two panel datasets: international trade data at the firm-country-product level and matched employer-employee panel data. International trade data are collected by Statistics Portugal and—besides small adjustments—aggregate to the official total exports and imports of Portugal. For the purpose of this research, we use data on export transactions only, aggregated at the firm-destination-product-year level, for the period 1995-2005.

Employer-employee data come from *Quadros de Pessoal* (henceforth, QP), a dataset collected by the Ministry of Employment, drawing on a compulsory annual census of all firms in Portugal that employ at least one worker. Reported data cover the firm itself, as well as each of its workers. Each firm and each worker entering the database are assigned a unique, time-invariant identifying number which we use to follow firms and workers over time. Currently, the data set collects data on about 350,000 firms and 3 million employees. As for the trade data, we were able to gain access to information from 1995 to 2005. We describe the two datasets and their merging in more detail in the Appendix.

The dataset allows to follow workers—especially managers—as they move from firm to firm; moreover, knowing firms' trade status in each year, allows the identification of workers' export experience. This is possible thanks to an exhaustive coverage of firms, their workers, and their trade activity as well as a high degree of reliability. The richness of the data also makes it possible to control for a wealth of both worker and firm characteristics as well as for unobserved heterogeneity by means of various fixed effects.

Table 1: Selected Summary Statistics, Wage Sample, 2005

Variable	Mean	Std. Dev.	N
Worker-level			
Hourly Wage (log)	1.351	0.518	436,351
Age (Years)	38.206	10.695	436,351
Education (Years)	7.449	3.586	436,351
Tenure (Years)	10.043	9.277	436,351
Manager (0/1)	0.067	0.250	436,351
Manag. X Export Exp. (0/1)	0.015	0.122	436,351
Manag. X Matched Dest. Export Exp. (0/1)	0.012	0.109	436,351
Manag. X Matched Prod. Export Exp. (0/1)	0.011	0.104	436,351
Current firm-level			
Firm Size (log)	2.339	1.142	25,681
Firm Productivity (log)	10.480	0.908	25,681
Firm Age (log)	2.461	0.816	25,681
Foreign Ownership (0/1)	0.024	0.154	25,681
At Least One Manag. (0/1)	0.274	0.446	25,681
At Least One Manag. with Export Exp. (0/1)	0.083	0.276	25,681
At Least One Manag. with Matched Dest. Export Exp. (0/1)	0.050	0.218	25,681
At Least One Manag. with Matched Prod. Export Exp. (0/1)	0.046	0.209	25,681
Previous firm-level			
Firm Size (log)	2.125	1.164	4,583
Firm Productivity (log)	6.740	5.016	4,583

Notes: This Table shows summary statistics, relative to 2005, for a subset of worker-level and firm-level variables used in the regressions of Section 4 and 5. Statistics refer to observations for which all covariates in the wage regression sample of Section 4 are jointly available. Firm-level variables subdivide into those relative to the worker's current firm and to those relative to the previous firm. Variable names followed by "(0/1)" refer to dummy variables. In the last column, "N" refers to the number of workers for worker-level variables, and to the number of (current or previous) firms for firm-level variables.

We provide in the Appendix more information about the way we have constructed some of the covariates.

We perform two complementary analyses. Because of our definitions of export experience, the analyses have been performed over the period 1996-2005. In Section 4, we estimate a wage equation to identify the existence of a wage premium for workers'—and in particular for managers'—export experience and its refinements: product and destination export experience. We subsequently show how premia are accrued by different types of managers (general, production, etc.) to further corroborate our story. In Section 5, we quantify the impact of the presence of managers with either destination or product export experience on a firm's trade performance. At the end of that section, we strengthen the causal interpretation of our results by exploiting a natural experiment—the end of the civil war in Angola. We also show how export experience interacts with the degree of

product differentiation and/or the financial vulnerability of a firm's products[2] as well as with rising competition due to Chinese imports.[3] In doing so we restrict the sample to firms with at least one employed manager.[4] Section 3 provides some raw data evidence that is consistent with the results of both analyses.

Table 1 reports summary statistics, for 2005, of the main worker-level and firm-level—both for the worker's current and previous firm—variables used in our wage estimations and referring to observations for which all covariates are jointly available. The top panel of Table 1 indicates that, in 2005, our sample includes 436,351 workers, with an average (log) hourly wage of 1.35 euros, an average age of 38.2 years, an average education of 7.45 years, and an average firm tenure of 10 years.[5] The middle panel of Table 1 shows that these workers are employed by 25,681 firms, and reports the average firm (log) size, (log) productivity, (log) age, and the share of foreign-owned firms (2.4 percent). Finally, the bottom panel provides the average (log) size and productivity of the 4,583 firms *previously* employing the workers in our sample.

Tables 2 and 3 report selected summary statistics—for 2005—referring to the trade performance sample. In Section 5 we model a firm's entry and continuation into a specific destination, or into a specific product market, m, and analyze both the probability to start and continue exporting as well as the value of exports conditional on entry/continuation. When considering destinations, we partition countries into seven groups: Spain (the most frequent destination), other top 5 export destination countries (Italy, UK, France, and Germany), other EU countries, OECD countries not belonging to the EU, countries

[2]The data on product differentiation comes from Rauch (1999) while data on financial vulnerability is taken from Manova et al. (2015). More specifically, we use for the former information on whether products are neither sold on an organized exchanged nor reference priced (liberal version) while for the latter we use the external financial dependence measure.

[3]We construct a measure of increase in Chinese import penetration that is both product and market specific along the lines of Autor et al. (2014). More specifically we consider the ratio between: (i) the change in the value of imports from China between 1995 and year $t \in [1996, 2005]$ for a given Isic product in a given market; (ii) the value of apparent consumption (imports plus production minus exports) for a given Isic product in a given market and year t. We use the CEPII (Centre d'Etude Prospectives et d'Informations Internationales) trade and production dataset to compute such a measure. In our analysis a market is sometimes a group of countries and, when constructing apparent consumption for a given market, we do not consider imports and exports among countries belonging to the same market.

[4]The sample of firms is thus different in the two analyses; below we refer to the two sample as "wage sample" and "trade performance sample". The majority of firms in the wage sample lacks a (employed) manager. To identify managers in the data we need the person(s) running the firm to receive a wage: this can be a self-employed owner or a third person employed by the owner(s). Our trade performance analysis is thus representative of larger and more organizationally structured firms. Firms with at least one manager represent (in 2005) 53.6 percent of exporting firms, account for 91.8 percent of exports, and 61.5 percent of employment of the Portuguese manufacturing industry.

[5]Carneiro et al. (2012) find that average (log) hourly earnings (in real Euros) are 1.34 for men and 1.13 for women, in the 1986-2005 period. Workers' tenure and wage are described in the Appendix.

Table 2: Number of Exporters and Average Exports, by Country-group, Trade Sample, 2005

	Markets						
Variable	Spain	IT-UK FR-DE	Other EU	Other OECD	CPLP	China	ROW
# of Exporting firms	1,696	1,711	1,285	1,401	1,097	204	1,227
—with Export Exp.	838	833	644	711	558	127	651
—with Matched Dest. Export Exp.	717	736	524	624	455	57	547
Avg. Exports	2,322	4,046	1,454	1,244	301	596	950

Notes: This Table shows the number of firms exporting to each of the seven markets we consider and their average exports (in thousands euros) for the 2005 sample year. The number of exporters further subdivides into those having at least one manager with export experience and those having at least one manager with matched (destination) export experience. Statistics refers to observations for which all covariates in the trade performance analysis sample of Section 5 are jointly available. CPLP is the Portuguese acronym for the Community of Portuguese Language Countries.

Table 3: Number of Exporters and Average Exports, Seven largest product groups, Trade Sample, 2005

	Markets						
Variable	Textiles	Wearing apparel	Paper products	Industrial chemicals	Machinery exc. electrical	Electrical machinery	Transport equipment
# of Exporting firms	515	508	316	368	739	324	228
—with Export Exp.	272	205	195	225	393	187	143
—with Matched Prod. Export Exp.	194	149	122	152	327	135	92
Avg. Exports	1,940	2,125	2,813	2,593	2,389	5,779	10,940

Notes: This Table shows the number of firms exporting to each of the seven largest, in terms of total exports, product groups in our sample, and their average exports (in thousands euros) for the 2005 sample year. The number of exporters further subdivides into those having at least one manager with export experience and those having at least one manager with matched (product) export experience. Statistics refers to observations for which all covariates in the trade performance analysis sample of Section 5 are jointly available. The number and full titles of the product groups are 384 "Transport equipment", 383 "Electrical machinery apparatus, appliances and supplies" 382 "Machinery except electrical" 322 "Wearing apparel, except footwear" 321 "Textiles" 351 "Industrial chemicals", and 341 "Paper and paper products". See the Appendix for details on the product definition.

belonging to the Community of Portuguese Language Countries (CPLP in Portuguese), China, and the rest of the World. Table 2 shows, for each of the seven destinations, the number of exporting firms and average exports (in thousand euros). When considering products, we partition markets into 29 Isic rev.2 groups. The largest groups, in terms of total exports, are 384 "Transport equipment", 383 "Electrical machinery apparatus, appliances and supplies" 382 "Machinery except electrical" 322 "Wearing apparel, except footwear" 321 "Textiles" 351 "Industrial chemicals", and 341 "Paper and paper products" Table 3 shows, for each of the seven largest product groups, the number of exporting firms and average exports (in thousand euros).

3. Main definitions and evidence from raw data

In this Section we draw the distinction between managers and non-managers, we define export experience as well as its two refinements: experience in a destination and experience in a product. We also show raw data evidence on the existence of an export experience wage premium for managers, and on the impact of managers with export experience on a firm's trade performance.

3.1 Managers

In our analysis, we partion workers into managers and non-managers. As it is effectively captured by the quote of Syverson (2011) at the beginning of the paper, managers are responsible for strategic decisions taken within the firm including the organization of the firm, planning, and the shaping of technical, scientific and administrative methods or processes.[6]

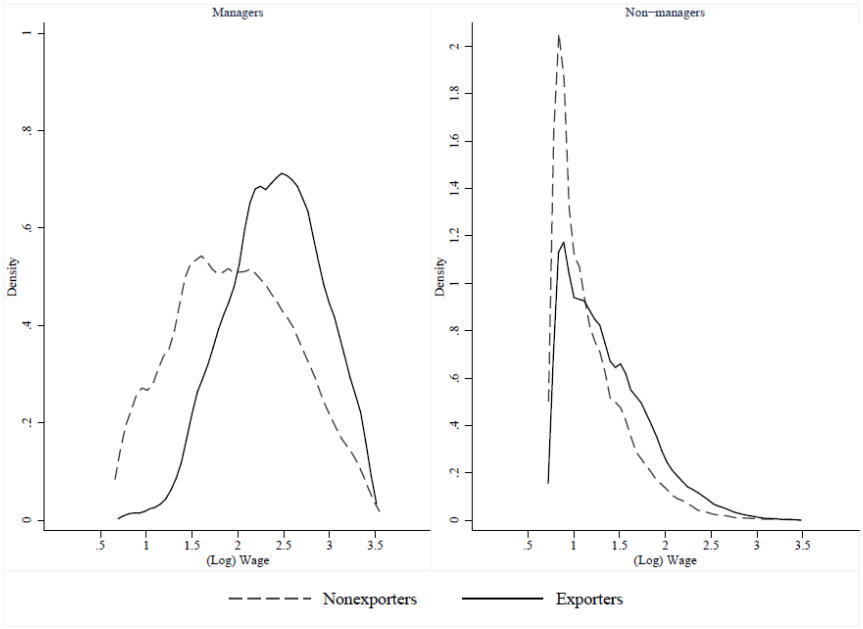
In practice, we identify managers using a (compulsory) classification of workers, according to eight hierarchical levels, defined by the Portuguese law (Decreto Lei 121/78 of July 2^{nd} 1978). Classification is based on the tasks performed and skill requirements, and each level can be considered as a layer in a hierarchy defined in terms of increasing responsibility and task complexity. Managers are defined as the workers belonging to one of the top two hierarchical levels: "Top management" and "Middle management"; non-manager are workers belonging to lower hierarchical levels. Table 1 shows that, in the wage sample in 2005, 6.7 percent of the workers are managers and 27.4 percent of the firms have at least one manager.

We then take a deeper look into the professional status of the manager by analysing the exact occupation within a firm. Using the four digit ISCO classification in *Quadros de Pessoal*, we look at the professional status of the managers specifically focusing on directors, the category to which the vast majority of managers belong to. We end up with 4 groups: general managers, production managers, financial managers and sales

[6]The distinction between managers and non-managers is relevant in light of recent developments in the international trade literature: Antràs et al. (2006) and Caliendo and Rossi-Hansberg (2012) explicitly focus on the formation of teams of workers in a globalized economy, and emphasize that the key distinction between managers and non-managers is that the former are in charge of complex tasks. Managers are different from other workers because they are responsible for the most complex tasks—those that are crucial for international trade performance—within a firm. Second, managers are "special" when it comes to doing business in foreign markets because they are in charge of marketing and commercialization activities (which are not necessarily more complex) such as, for example, setting-up distribution channels, finding and establishing relationships with foreign suppliers, setting up marketing activities directed at finding and informing new buyers, and building a customer base. Arkolakis (2010) and Eaton et al. (2015) stress the key role of search and marketing costs in international trade and provide evidence of the importance of the continuous "search and learning about foreign demand" problem that firms face when selling abroad. At the same time, Araujo et al. (2016) show the importance of trust-building in repeated interactions between sellers and buyers in an international market.

managers. We lump managers covering other occupations into a fifth group (other managers).

Figure 1: Wage density for managers and non-managers, by firm export status, 2005



Notes: This Figure shows the kernel density of the (log) hourly wage distribution in 2005 for managers (left panel) and non-managers (right panel), broken down by firm export status (exporters and non-exporters). Statistics refers to observations for which all covariates in the wage regression sample of Section 4 are jointly available. The kernel is Epanechnikov and the kernel width is the Stata default one.

Figure 1 confirms that the distinction between managers and non-managers is relevant when considering a firm's trade activity. A large literature tries to identify and explain a wage premium paid by exporting firms (Frias et al., 2009, Munch and Skaksen, 2008, Schank et al., 2007). Martins and Opromolla (2012), show that Portugal is not an exception to this robust empirical finding. Figure 1 shows that the exporter wage premium seems to come essentially from managers. More specifically, Figure 1 shows the kernel density of the log hourly wage distribution in our 2005 wage sample, both for managers and non-managers, broken down by firm export status (exporters and non-exporters). The wage density referring to managers employed by exporting firms clearly lies to the right of the one for managers employed by non-exporters. The evidence for non-managers is instead much weaker.

3.2 *Export experience*

Managers are not all alike: their set of skills and knowledge can be tightly connected to the experience they faced along their careers. In particular, only some managers have the chance to be involved in export activities. To the extent that experience acquired in

exporting firms substantially improves the capacities and skills of a manager it should correspond to a wage premium. Furthermore, such experience is potentially valuable to all firms, but in particular to exporters, who might expect an improvement of their trade performance.

We exploit the matched employer-employee feature of our dataset to track workers over time: for each firm-year pair, we identify the subset of (currently employed) workers that have previously worked in a different firm. Moreover, we exploit the trade dataset to single-out those workers that were employed in the past *by an exporting firm*. We define such workers, and in particular managers, as having export experience.[7]

To gain further insights we consider in our framework two related refinements of export experience. The first refinement is market specific export experience, where a market indicates either a destination d or a product p. The former refers to one of the seven markets listed in Section 2 while the latter to one of the 29 product groups defined using the Isic rev2 classification (see the Appendix). We define a worker as having destination d-specific export experience if he/she has export experience *and* destination d was among the destinations served by one of the worker's previous employers during the period of time the worker was employed there. Symmetrically, we define a worker as having product p-specific export experience if he/she has export experience *and* product p was among the product exported by one of the worker's previous employers during the period of time the worker was employed there. The second refinement is matched export experience. We define a worker as having matched export experience in a destination if he/she has export experience *and* has market d-specific export experience in at least one of the markets to which the current employing firm is actually exporting. Moreover, a worker can have matched export experience in a product group when he/she has export experience *and* has product p-specific export experience in at least one of the products the current employing firm is actually exporting.

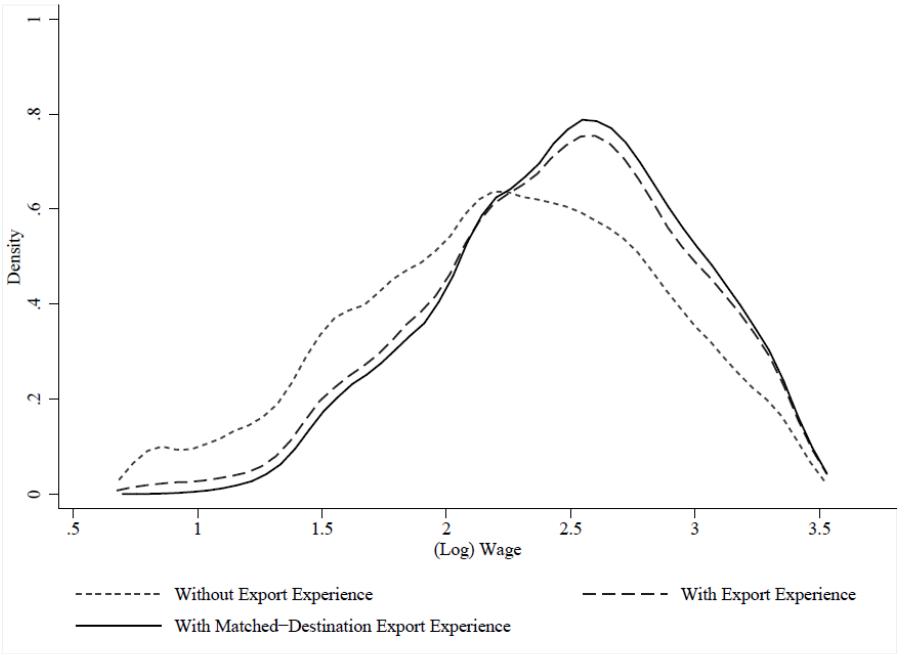
Figures 2 to 5 provide raw wage data evidence supporting the idea that the distinction between managers with and without export experience is relevant when considering a firm's international activity. Furthermore they also highlight the importance of destination and product experience. More specifically Figures 2 and 3 show the wage density for managers with export experience dominates the one corresponding to managers without experience. At the same time, Figure 2 (3) suggests the presence of an additional wage premium for destination-specific (product-specific) matched export experience over basic experience. Furthermore, Figures 4 and 5 indicate the above holds for all of the five categories of managers we consider.

[7] Table 1 indicates that about 23 percent of the managers (0.015/0.067) have export experience, while 8.3 percent of firms—i.e. 30% of the firms with at least one manager—have at least one manager with export experience.

3.3 *Export experience and trade performance*

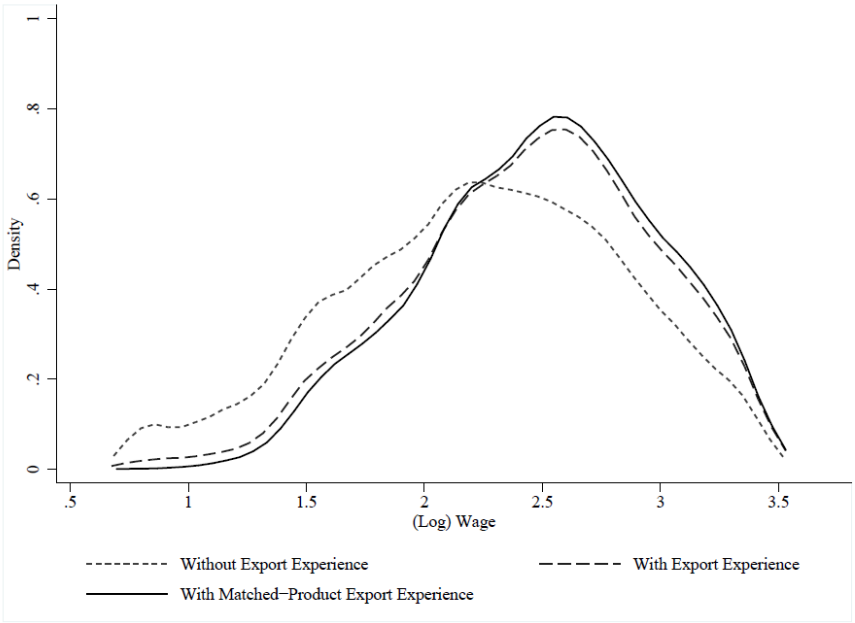
Figures 6 to 9 analyze more directly the correlation between the presence of managers with experience in a firm and that firm's export performance. More specifically they focus on two export performance margins, namely the probability to start and probability to continue exporting in a given destination d (Figures 6 and 7) or a given product p (Figures 8 and 9). We consider three categories of firms: those without managers with export experience, those with at least one manager with export experience, and those with at least one manager with specific (destination or product) export experience. It can be readily appreciated that in all instances the presence of managers with export experience within a firm is associated to a higher probability to start/continue exporting while at the same time having at least one manager with specific export experience is associated with an even higher probability. This is by no means a proof of causality but certainly a strong feature of the data one needs to address.

Figure 2: Wage density for managers by export experience in a destination, 2005



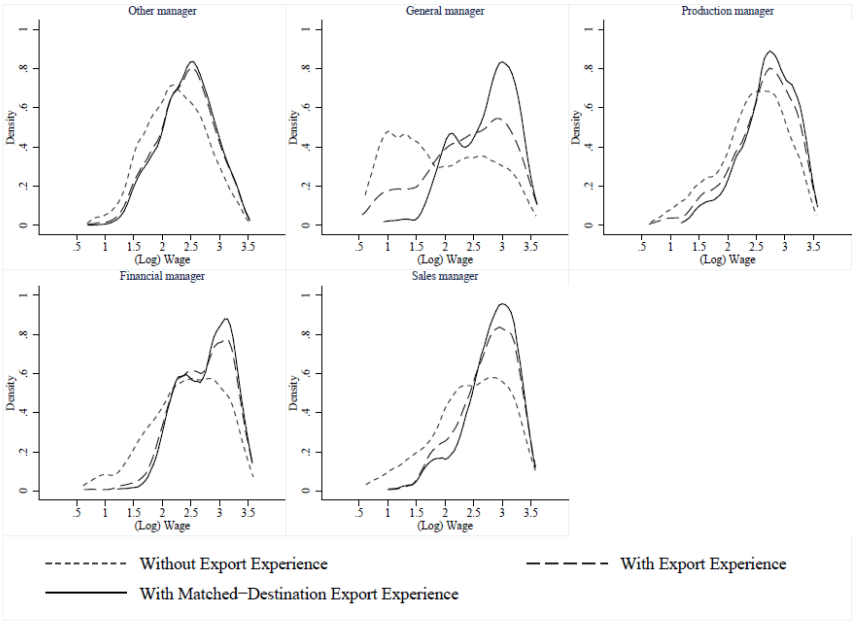
Notes: This Figure shows the kernel density of the (log) hourly wage distribution in 2005 for managers, broken down by degree of export experience (in a destination). Statistics refers to observations for which all covariates in the wage regression sample of Section 4 are jointly available. The kernel is Epanechnikov and the kernel width is the Stata default one.

Figure 3: Wage density for managers by export experience in a product, 2005



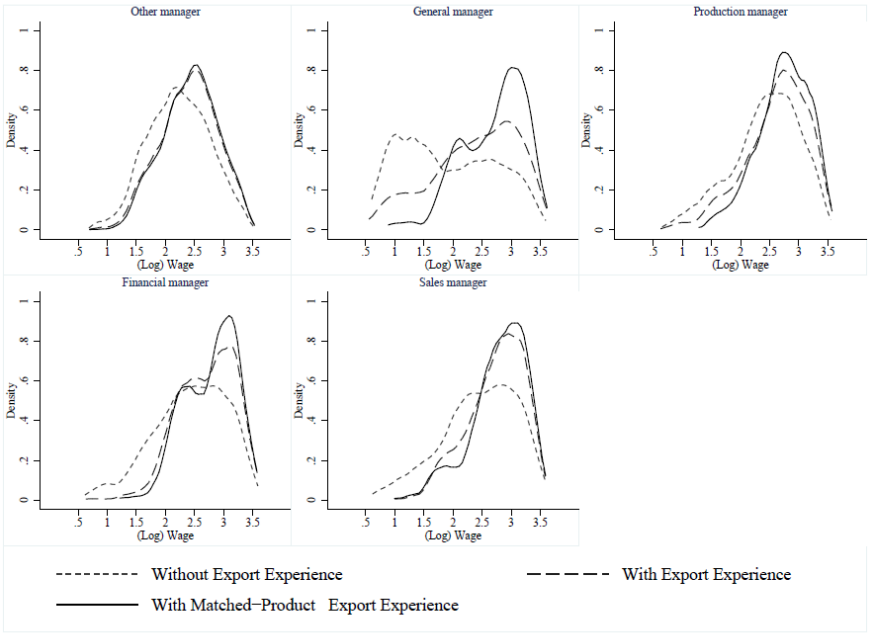
Notes: This Figure shows the kernel density of the (log) hourly wage distribution in 2005 for managers, broken down by degree of export experience (in a product). Statistics refers to observations for which all covariates in the wage regression sample of Section 4 are jointly available. The kernel is Epanechnikov and the kernel width is the Stata default one.

Figure 4: Wage density of managers distinguishing by: manager type and export experience (in a destination), 2005



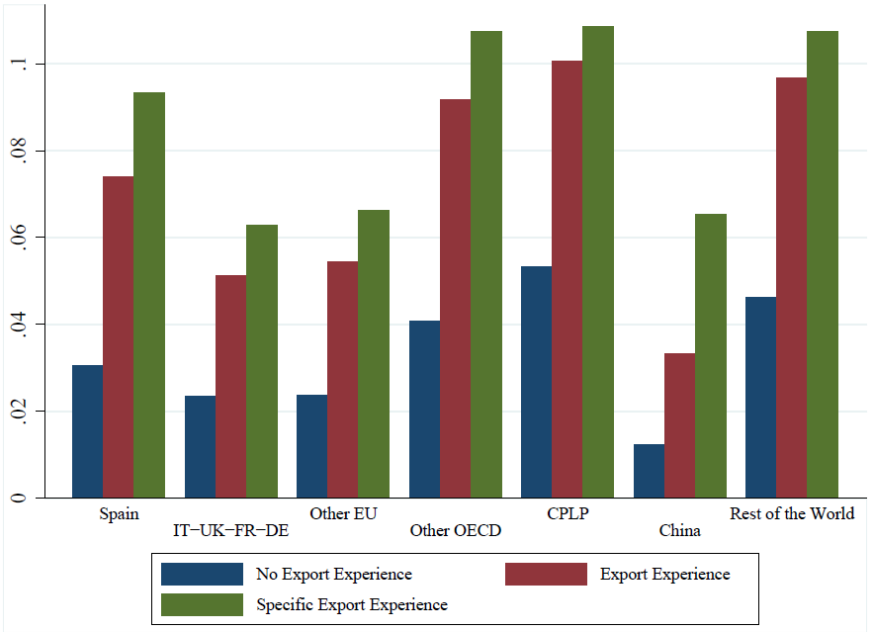
Notes: This Figure shows the kernel density of the (log) hourly wage distribution in 2005 for managers, broken down by manager type and degree of export experience (in a destination). Statistics refers to observations for which all covariates in the wage regression sample of Section 4 are jointly available. The kernel is Epanechnikov and the kernel width is the Stata default one.

Figure 5: Wage density of managers distinguishing by: manager type and export experience (in a product), 2005



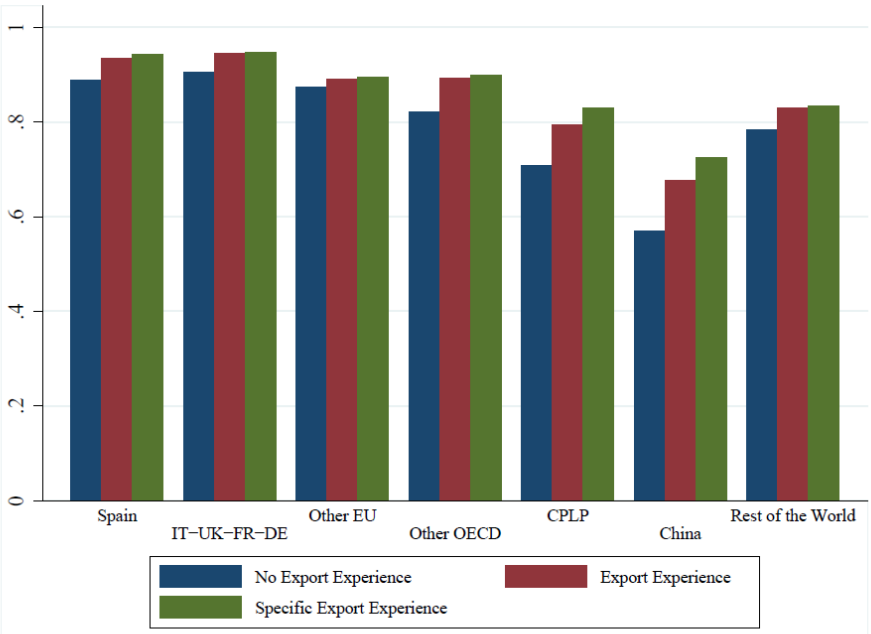
Notes: This Figure shows the kernel density of the (log) hourly wage distribution in 2005 for managers, broken down by manager type and degree of export experience (in a product). Statistics refers to observations for which all covariates in the wage regression sample of Section 4 are jointly available. The kernel is Epanechnikov and the kernel width is the Stata default one.

Figure 6: Export entry rate, experience in a destination, 2005



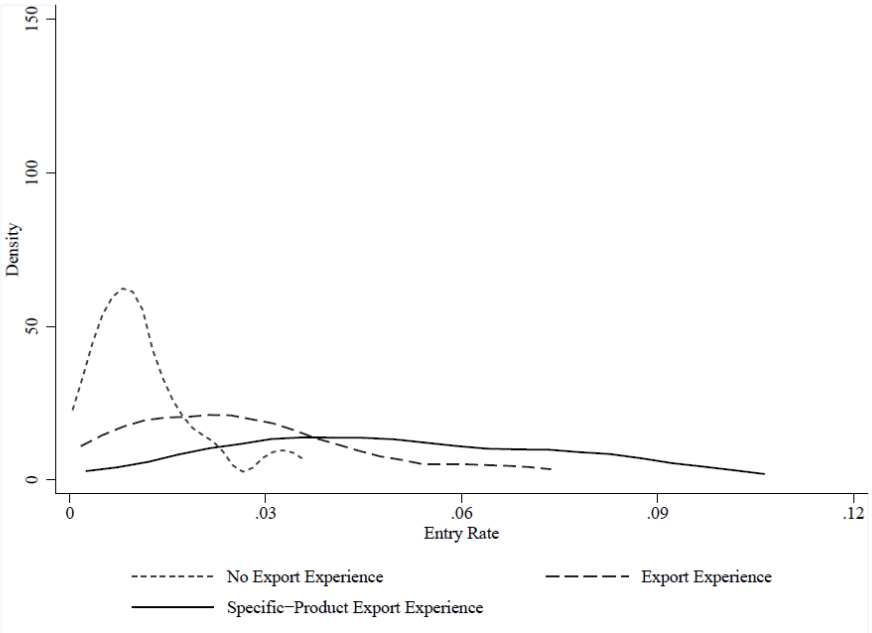
Notes: This Figure shows entry rates, defined as the ratio between the number of firms starting to export in destination d at time t and the number of firms not exporting to destination d at time t-1, for each destination in 2005, for three groups of firms: those that have no managers with export experience at time t, those that have at least one manager with export experience at time t, and those that have at least one manager with specific export experience at time t. CPLP is the Portuguese acronym for the Community of Portuguese Language Countries.

Figure 7: Export continuation rate, experience in a destination, 2005



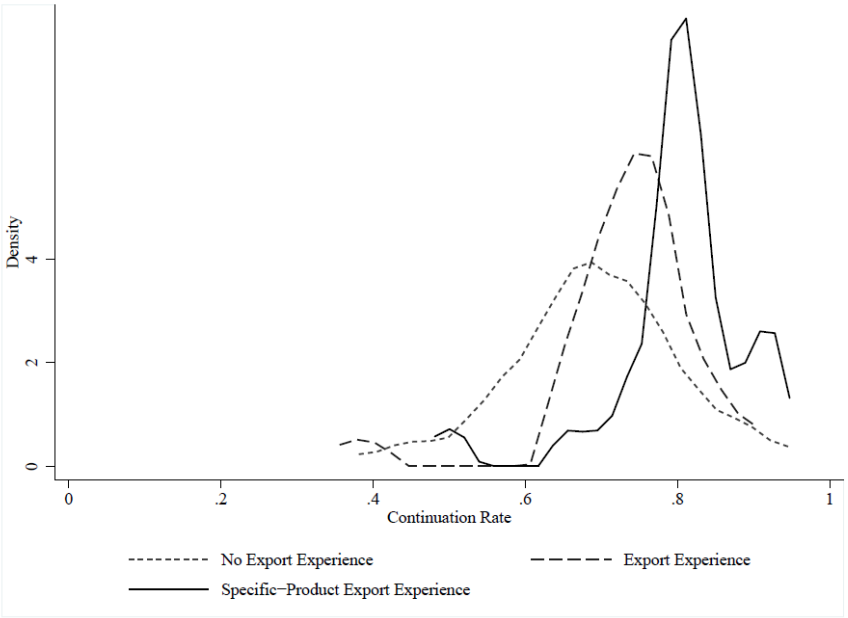
Notes: This Figure shows continuation rates, defined as the share of firms continuing to export to destination d at time t among those firms that were already exporting to destination d at time t, for each destination in 2005, for three groups of firms: those that have no managers with export experience at time t, those that have at least one manager with export experience at time t, and those that have at least one manager with specific export experience at time t. CPLP is the Portuguese acronym for the Community of Portuguese Language Countries.

Figure 8: Export entry rate density, experience in a product, 2005



Notes: This Figure shows kernel densities for entry rates, defined as the ratio between the number of firms starting to export product p at time t and the number of firms not exporting product p at time t-1, for each product in 2005, for three groups of firms: those that have no managers with export experience at time t, those that have at least one manager with export experience at time t, and those that have at least one manager with specific export experience at time t. The kernel is Epanechnikov and the kernel width is the Stata default one.

Figure 9: Export continuation rate density, experience in a product, 2005



Notes: This Figure shows kernel densities for continuation rates, defined as the share of firms continuing to export product p at time t among those firms that were already exporting product p at time t, for each product in 2005, for three groups of firms: those that have no managers with export experience at time t, those that have at least one manager with export experience at time t, and those that have at least one manager with specific export experience at time t. The kernel is Epanechnikov and the kernel width is the Stata default one.

4. Wage analysis

The first step towards establishing a relationship between the export experience brought by managers into a firm and the firm's trade performance consists in assessing whether export experience corresponds to a wage premium. In this Section, we estimate a Mincerian wage equation to show that managers with export experience (as defined in Section 3) enjoy a sizeable wage premium. The premium is robust to controlling for worker and firm fixed effects, previous firm observables, job-change patterns, as well as a large set of worker and current firm time-varying observables. Moreover, managers with experience in one (or more) of the current destinations reached or products exported by their firm—i.e. *matched* destination- or product-specific export experience—enjoy an even higher wage premium.[8] These results confirm previous evidence in Mion and Opromolla (2014) for destination-specific experience and paint a new but similar portrait for product-specific experience.

[8]See Section 3 for the definition of specific export experience.

We further enrich the analysis by looking at the experience premia accrued by different types of managers (general, production, financial and sales) and find results in line with a knowledge diffusion story. More specifically, we show that financial managers enjoy a basic export experience premium but no robust product- or destination-specific experience premium. General and production managers receive both a product- and a destination-specific experience premium but little or no basic experience premium. Sales managers benefit from a destination-specific experience premium while general managers get the largest premia in most cases. Crucially, we find little evidence of a wage premium for non-managers, which is the reason why in the trade performance analysis of Section 5 we focus on managers only. These results add the evidence coming from raw wage data shown in the previous Section.

There are caveats in our analysis as well as alternative explanations for the existence of a premium that do not involve the diffusion of valuable export-specific knowledge by managers. Though, such alternative explanations are at odds with the existence of an additional wage premium for specific export experience and, as we will show later on, potentially imply our premia are actually under-estimated. We discuss these issues in more detail in Section 4.3.

4.1 Econometric model

Workers are indexed by i, *current* employing firms by f, *previous* employing firms by p, and time by t. Each worker i is associated at time t to a unique current employing firm f and a unique previous employing firm p. The baseline wage equation we estimate is:

$$\begin{aligned} w_{it} = {} & \beta_0 + \beta_1 Manager_{it} + \mathbf{Mobility'_{it}\Gamma_M} + (\mathbf{Mobility_{it}} \times Manager_{it})' \mathbf{\Gamma_{Mm}} + \\ & + \beta_2 Experience_{it} + \beta_3 \left(Experience_{it} \times Manager_{it}\right) + \\ & + \beta_4 Matched\_Experience_{it} + \beta_5 \left(Matched\_Experience_{it} \times Manager_{it}\right) + \\ & + \mathbf{I'_{it}\Gamma_I} + \mathbf{P'_{pt}\Gamma_P} + \mathbf{C'_{ft}\Gamma_C} + \eta_i + \eta_f + \eta_t + \varepsilon_{it}, \end{aligned} \tag{1}$$

where w_{it} is the (log) hourly wage of worker i in year t, $Manager_{it}$ is a dummy indicating whether worker i is a manager at time t, the vector $\mathbf{Mobility_{it}}$ contains a set of dummies taking value one from the year t a worker changes employer for the 1^{st}, 2^{nd},..time, $Experience_{it}$ and $Matched\_Experience_{it}$ are dummies indicating whether worker i has, respectively, export experience and matched (destination or product; we estimate two separate regressions) export experience at time t, the vector $\mathbf{I_{it}}$ stands for worker i

time-varying observables,[9] the vectors $\mathbf{P_{pt}}$ and $\mathbf{C_{ft}}$ refer to, respectively, the previous and current employing firm observables,[10] η_i (η_f) are individual (firm) fixed effects and η_t are time dummies.

The key parameters in our analysis are $\beta_2 + \beta_3$, i.e., the wage premium corresponding to export experience for a manager, and $\beta_4 + \beta_5$, i.e., the extra premium corresponding to matched export experience for a manager. β_2 and β_4 indicate, respectively, the premium related to export experience and matched export experience for a non-manager. Mobility of workers across firms is needed, according to our definition, to acquire export experience: $Experience_{it}$=1 if worker i has, among his/her previous employers, an exporting firm while $Matched\_Experience_{it}$=1 further requires the current employing firm to be exporting: (i) one or more of the products previous employers were exporting (experience in a product regressions); (ii) in at least one of the markets to which previous employers were exporting (experience in a destination regressions). In other words, identification of export experience premia comes from workers moving across firms. To disentangle wage variations due to mobility from those related to export experience we consider the set of dummies $\mathbf{Mobility_{it}}$. We further interact $\mathbf{Mobility_{it}}$ with manager status $Manager_{it}$ to allow mobility to have a differential impact on managers and non-managers.

$\mathbf{Mobility_{it}}$, $Experience_{it}$, and $Matched\_Experience_{it}$, as well as their interaction with manager status, thus define a difference-in-difference setting with two treatments (acquiring export experience and eventually also matched export experience) and a control group of workers (managers and non-managers) changing employer *without acquiring export experience.*[11]

Equation (1) is first estimated without worker and firm fixed effects, then with firm fixed effects and finally with both sets of fixed effects. In all three cases we consider two specifications: with export experience only and with both export experience and

[9] A worker's age, age squared, education, and tenure. See Section 2 and the Appendix for further details.

[10] Previous firm observables are size, productivity, and a dummy indicating whether the current and previous firms belong to the same industry or not. Current firm observables are size, productivity, share of skilled workers, export status, age, foreign ownership, mean and standard deviation of both age and education of managers, and industry-level exports. For previous firm variables, as well as for current firm variables requiring knowledge of managers' age and education, we add a set of dummies equal to one whenever the data are missing, while recoding missing values to zero. Previous employing firm information is not available for workers who enter the labor market in our time frame or workers who always stay in the same firm. We do this to maximize exploitable information. When we then turn to the trade performance analysis which is, as detailed above, representative of larger and more organizationally structured firms we simply discard missing observations. We consider both manufacturing and non-manufacturing firms in constructing previous employing firm variables. In specifications without fixed effects we add NUTS3 location and Nace rev.1 2-digit dummies as further controls. See Section 2 and the Appendix for further details.

[11] Our regression design is likely to actually underestimate the value of export experience. For example, mobility dummies would absorb some of the effect of the export-related learning to the extent greater knowledge leads managers to receive more job offers and hence move around more.

matched export experience. As already indicated we present separate regressions Tables for experience in a destination and experience in a product. Last but least when focusing on the different types of managers we break down the $Manager_{it}$ dummy (and its interactions with experience) into 5 categories (general, production, financial, sales and other). All our specifications are estimated with OLS and we deal high-dimensional fixed effects building on the full Gauss-Seidel algorithm proposed by Guimarães and Portugal (2010). See the Appendix for further details.

4.2 Results

Table 4 and 5 report the estimated export experience premia obtained from the different variants of (1) both for manager and non-managers. More specifically in Table 4 we consider wage regressions with basic experience and experience in a destination while in Table 5 we consider wage regressions with basic experience and experience in a product. The two Tables also show the significance levels of the premia, along with values of the F-statistics for managers' premia and T-statistics for non-managers' premia.[12] Tables B-15 to B-20 in the Tables Appendix provide information on all the other covariates. Such Tables show that coefficient signs and magnitudes are in line with previous research based on Mincerian wage regressions, i.e., wages are: higher for managers, increasing and concave in age, increasing in education and tenure, higher in larger, more productive, foreign-owned and older firms, higher in firms with a larger share of skilled workers.

The overall picture coming out from Tables 4 and 5 can be summarized as follows:

Export experience does pay for a manager. Columns (1) to (3) in the two Tables[13] point to a premium in between 11.5% (no fixed effects) and 2.7% (worker and firm fixed effects). The latter figure should be considered as extremely conservative because, due to the presence of worker fixed effects, we are identifying that coefficient from workers who are currently managers but were not managers in the past. Yet the 2.7% is economically big representing about half of the premium (5.8%) for being a manager in the estimation corresponding to column 3. At the same time the difference in the premium across specifications do suggest that managers with export experience are "better managers" and work for better paying firms. However, a premium remains when controlling for both firm and worker time-invariant heterogeneity indicating that export experience

[12]Managers' premia are obtained from sums of covariates' coefficients in equation (1). Therefore, their significance is tested with an F-statistic. Non-managers' premia correspond instead to individual coefficients in equation (1) and so the T-statistic is used.

[13]Note results are identical between the two Tables and rightly so.

Table 4: Wage regression with basic experience and experience in a destination

Controls	(1)	(2)	(3)	(4)	(5)	(6)
			Export Experience Premia for Managers			
Export Experience	0.115^a	0.110^a	0.027^a	0.064^a	0.042^a	0.013^c
	(870.8)	(859.3)	(27.4)	(103.4)	(50.3)	(3.5)
Destination-Specific Exp. Experience				0.061^a	0.089^a	0.017^a
				(100.3)	(230.1)	(9.7)
			Export Experience Premia for non-Managers			
Export Experience	0.006^a	0.014^a	-0.003^c	0.022^a	0.010^a	-0.003
	(7.6)	(17.0)	(-1.7)	(21.8)	(10.6)	(-1.1)
Destination-Specific Exp. Experience				-0.028^a	0.007^a	-0.003
				(-25.4)	(6.5)	(-1.0)
Observations	4,006,826	4,006,826	4,006,826	4,006,826	4,006,826	4,006,826
R^2	0.598	0.697	0.925	0.598	0.697	0.925
Worker controls	X	X	X	X	X	X
Firm (current and past) controls	X	X	X	X	X	X
Firm FE		X	X		X	X
Worker FE			X			X

Notes: This Table reports export experience premia from the OLS estimation of several variants of the mincerian wage equation (1). The dependent variable is a worker's (log) hourly wage in euros. Export experience and matched (destination) export experience are dummies. See Section 3 for the definition of a manager and the export experience (and its refinements). Estimations include a number of covariates whose coefficients and standard errors are reported in the Tables Appendix. Worker-year covariates include a worker's age, age square, education, and tenure. Current firm-time covariates include firm size, productivity, share of skilled workers, export status, age, foreign ownership, mean and standard deviation of both age and education of managers, and industry-level exports. Previous firm-time covariates include firm size, productivity, and a dummy indicating whether current and previous employing firms industry affiliations coincide or not. See the Appendix for details on covariates. All specifications include year dummies, and those not including fixed effects also contain region (NUTS-3) and industry (NACE 2-digits) dummies. Robust F-statistics (t-statistics) for managers (non-managers) premia in parentheses: $^a p < 0.01$, $^b p < 0.05$, $^c p < 0.1$.

is not simply a proxy for managers' unobserved ability and/or selection into higher paying firms. Export experience is neither a trivial proxy for, as an example, a stronger bargaining position of a manager moving out of a successful/productive firm. We do control, in all specifications, for the size, productivity, and industry affiliation of the manager's previous firm. As shown in Tables B-15 to B-20 in the Tables Appendix managers that come from more productive firms *do* earn a higher wage, but export experience *continues* to be positively and significantly associated to a wage premium for managers.

There is an additional premium for matched export experience for managers. Columns (4) to (6) in Table 4 point to an additional premium accrued upon having destination-specific experience, with respect to just having basic experience, in between 8.9% (firm fixed effects) and 1.7% (worker and firm fixed effects). The corresponding figures for the product-specific experience premium are 10% and 0.7% even though the latter fails to be significant. Overall our findings suggest specific experience is an important feature of a

Table 5: Wage regression with basic experience and experience in a product

Controls	(1)	(2)	(3)	(4)	(5)	(6)
			Export Experience Premia for Managers			
Export Experience	0.115[a]	0.110[a]	0.027[a]	0.072[a]	0.046[a]	0.022[a]
	(870.8)	(859.3)	(27.4)	(182.9)	(79.0)	(12.4)
Product-Specific Exp. Experience				0.061[a]	0.100[a]	0.007
				(127.1)	(360.9)	(1.7)
			Export Experience Premia for non-Managers			
Export Experience	0.006[a]	0.014[a]	-0.003[c]	0.013[a]	0.003[a]	-0.008[a]
	(7.6)	(17.0)	(-1.7)	(13.0)	(2.9)	(-3.5)
Product-Specific Exp. Experience				-0.012[a]	0.025[a]	0.006[a]
				(-11.4)	(22.7)	(4.8)
Observations	4,006,826	4,006,826	4,006,826	4,006,826	4,006,826	4,006,826
R^2	0.598	0.697	0.925	0.598	0.697	0.925
Worker controls	X	X	X	X	X	X
Firm (current and past) controls	X	X	X	X	X	X
Firm FE		X	X		X	X
Worker FE			X			X

Notes: This Table reports export experience premia from the OLS estimation of several variants of the mincerian wage equation (1). The dependent variable is a worker's (log) hourly wage in euros. Export experience and matched (product) export experience are dummies. See Section 3 for the definition of a manager and the export experience (and its refinements). Estimations include a number of covariates whose coefficients and standard errors are reported in the Tables Appendix. Worker-year covariates include a worker's age, age square, education, and tenure. Current firm-time covariates include firm size, productivity, share of skilled workers, export status, age, foreign ownership, mean and standard deviation of both age and education of managers, and industry-level exports. Previous firm-time covariates include firm size, productivity, and a dummy indicating whether current and previous employing firms industry affiliations coincide or not. See the Appendix for details on covariates. All specifications include year dummies, and those not including fixed effects also contain region (NUTS-3) and industry (NACE 2-digits) dummies. Robust F-statistics (t-statistics) for managers (non-managers) premia in parentheses: $^a p < 0.01$, $^b p < 0.05$, $^c p < 0.1$.

manager's wage and are consistent with the hypothesis that managers diffuse valuable export-related knowledge. While the existence of a premium for export experience is also consistent with the diffusion of knowledge not *uniquely* related to exporting (e.g. R&D skills, organizational practices, etc.) the additional premium for matched experience does reinforce the view that export-specific knowledge is an important component of the knowledge diffusion. Furthermore, our results suggest that such knowledge proves to be very valuable when it is *market-specific* (product or destination).

There is limited evidence that export experience pays for non-managers. Non-managers premia across Tables 4 and 5 are substantially smaller than those corresponding to managers and less often significant. Given the key role of managers for export-specific activities, the weaker evidence for premia among non-managers is consistent with export experience entailing some valuable export-specific knowledge. Managers are "special" because exporting requires successfully performing a number of complex tasks and managers are the employees that are responsible for the most sophisticated

tasks within a firm (e.g. Antràs et al., 2006, Caliendo and Rossi-Hansberg, 2012). Furthermore, managers are also different because they are in charge of marketing and commercialization activities. As suggested by Arkolakis (2010) and Eaton et al. (2015), searching for customers and suppliers and learning about their needs play a key role in determining the success of a firm on the international market.

Table 6: Wage regression with different types of managers and export experience

Controls	(1)	(2)	(3)	(4)	(5)	(6)
	Export Experience			**Export Experience**		
General manager	0.078^a	0.072^a	-0.001	0.116^a	0.110^a	0.020
	(13.1)	(12.9)	(0.0)	(29.1)	(30.5)	(1.2)
Production manager	0.053^a	0.049^a	0.018	0.041^a	0.047^a	0.025^b
	(11.2)	(10.9)	(1.5)	(8.3)	(12.1)	(4.1)
Financial manager	0.056^a	0.033^c	0.092^a	0.101^a	0.090^a	0.084^a
	(7.5)	(3.0)	(10.6)	(28.4)	(23.0)	(13.4)
Sales manager	-0.030	-0.024^a	0.012	0.021	0.031	0.042^c
	(1.4)	(1.1)	(0.2)	(1.0)	(2.4)	(3.3)
	Destination-Specific Exp. Experience			**Product-Specific Exp. Experience**		
General manager	0.482^a	0.428^a	0.091^a	0.432^a	0.385^a	0.058^a
	(298.1)	(262.8)	(15.4)	(231.7)	(208.7)	(6.8)
Production manager	0.132^a	0.158^a	0.036^b	0.169^a	0.184^a	0.026^c
	(56.1)	(86.4)	(5.4)	(105.1)	(132.7)	(3.5)
Financial manager	0.156^a	0.190^a	-0.015	0.110^a	0.134^a	-0.006
	(45.2)	(73.7)	(0.2)	(24.8)	(37.5)	(0.8)
Sales manager	0.212^a	0.221^a	0.039^c	0.164^a	0.173^a	0.000
	(59.6)	(76.6)	(3.0)	(44.0)	(55.7)	(0.0)
Observations	4,006,826	4,006,826	4,006,826	4,006,826	4,006,826	4,006,826
R^2	0.599	0.698	0.925	0.599	0.698	0.925
Worker controls	X	X	X	X	X	X
Firm (current and past) controls	X	X	X	X	X	X
Firm FE		X	X		X	X
Worker FE			X			X

Notes: This Table reports export experience premia from the OLS estimation of several variants of the mincerian wage equation (1). The dependent variable is a worker's (log) hourly wage in euros. In specifications (1) to (3) both export experience and destination-specific export experience are considered along with their interactions with dummies corresponding to different types of managers. In specifications (4) to (6) both export experience and product-specific export experience are considered along with their interactions with dummies corresponding to different types of managers. See Section 3 for the definition of a manager, manager types and for export experience (and its refinements). Estimations include a number of covariates whose coefficients and standard errors are reported in the Tables Appendix. Worker-year covariates include a worker's age, age square, education, and tenure. Current firm-time covariates include firm size, productivity, share of skilled workers, export status, age, foreign ownership, mean and standard deviation of both age and education of managers, and industry-level exports. Previous firm-time covariates include firm size, productivity, and a dummy indicating whether current and previous employing firms industry affiliations coincide or not. See the Appendix for details on covariates. All specifications include year dummies, and those not including fixed effects also contain region (NUTS-3) and industry (NACE 2-digits) dummies. Robust F-statistics in parentheses: $^a p < 0.01$, $^b p < 0.05$, $^c p < 0.1$.

Table 6 provides additional insights into the nature of export experience premia. More specifically, we now split managers into several categories depending on their specific

role within a firm and compute manager-type specific premia. In the left panel of Table6 we jointly consider experience and destination-specific experience and run estimations with no fixed effects, firm fixed effects and both worker and firm fixed effects. In the right panel of Table 6 we do the same for experience and product-specific experience. It is important to note that the use of worker fixed effects is particularly conservative within this context because, for example, premia referring to financial managers are identified across workers who are currently financial managers but were either not a manager or a different manager-type in the past.

Focusing on the most restrictive specifications – columns (3) and (6) – we find that financial managers enjoy a basic export experience premium but no robust product- or destination-specific experience premium. General and production managers receive both a product- and a destination-specific experience premium but little or no basic experience premium. Sales managers benefit from a destination-specific experience premium while general managers get the largest premia in most cases. We believe these results aligns with a knowledge diffusion story. More specifically, we believe that knowledge acquired in ares like sales and production is more prone to be destination- or product-specific while experience in financing activities should instead be of a more generic nature. As for general managers they need to have expertise in all such areas and so they are likely to hold overall more valuable knowledge to be diffused.

4.3 Endogeneity

Selection. For the estimated premia to have a causal interpretation we need, as is typically the case for Mincerian analyses, matching between firms and workers to be random *conditional* on covariates in (1). If we consider wages w_{ift} for all the possible firm-worker pairs this means we impose $\mathbb{E}\left[\varepsilon_{ift}|\mathbf{X}_{ift},d_{ift}=1\right]=\mathbb{E}\left[\varepsilon_{ift}|\mathbf{X}_{ift}\right]$ where $\mathbf{X}_{ift}$ is our set of covariates and fixed effects and d_{ift} is a dummy taking value one if worker i is employed by firm f at time t. Though admittedly restrictive, this hypothesis is made less strong by the fact that we use a large battery of controls for worker, past employer, and current employer characteristics while accounting for unobserved time-invariant heterogeneity by means of both firm and worker fixed effects. Furthermore, it is actually quite plausible that selection induces a downward bias of our premia which are thus to be considered as conservative. For example, suppose wages w_{ift} reflect workers' productivity and that firm f hires the most productive worker from a set I. We would then have $d_{ift}=\mathbb{1}\left(\mathbf{X}'_{ift}\beta+\varepsilon_{ift}\geq \max_{i^*\in I}\mathbf{X}'_{i^*ft}\beta+\varepsilon_{i^*ft}\right)$, where $\mathbb{1}(.)$ is an indicator function. Under this assumption d_{ift} depends on both $\mathbf{X}'_{ift}$ and ε_{ift} while $\mathbb{E}\left[\varepsilon_{ift}|\mathbf{X}_{ift},d_{ift}=1\right]$ *decreases* in those components of the covariates vector $\mathbf{X}'_{ift}$ corresponding to a positive coefficient

(like export experience) so inducing a downward bias.[14]

Omitted Variables. One caveat potentially applying to our analysis is that export experience might be a proxy for some omitted variables. For example, having being employed by an exporter could signal the unobserved ability of a manager if exporters screen workers more effectively (e.g. Helpman et al., 2010, 2016). Another possibility is that workers (previously) employed by exporters could be expected to enjoy stronger wage rises over the course of their career—as would occur, given the (widely documented) productivity advantage of exporters, in the context of strategic wage bargaining and on-the-job search (e.g. Cahuc et al., 2006).[15] We account for these issues in three ways. First, we use worker fixed effects to capture any time-invariant unobserved characteristic of the worker (including ability); second, we use key previous firm characteristics (size, productivity, and industry) suggested by the strategic wage bargaining and on-the-job search literature as well as by the literature on inter-industry wage differentials (Gibbons and Katz, 1992) to control for the fact that features of previous jobs are expected to have an impact on the current salary; third, we use a refined definition of export experience that is more directly linked to the actual exporting activities undertaken by the worker's previous firms as well as being a feature that, unlike general ability, is more valuable to some firms than others —i.e. matched destination or product export experience. We find it considerably more difficult to argue that matched export experience does not correspond to valuable trade-specific knowledge acquired when working for an exporting firm.

Censoring. Export experience and matched export experience depend on the whole professional history of a worker. For some observations, this history is not entirely observed in our data, which exclusively covers the years 1995 to 2005. For those workers that we consider not having experience based on the observed data, it is possible that they acquired export experience before 1995. This is a problem of missing data due to censoring. To deal with this issue we use a different definition of export experience and matched export experience and explore its quantitative implications. More specifically, we impose experience to be acquired either in $t-1$ or $t-2$ and get rid of both 1995 and 1996 data. Results (available upon request) are qualitatively and quantitatively similar to our core findings.

[14] Intuitively, given that the firm f has chosen worker i ($d_{ift}=1$), an increase in $\mathbf{X}'_{ift}\beta$ (think of this as the firm considering a manager with export experience with respect to one that has no experience) means that the unobserved component ε_{ift} needs not to be that large for worker i to be chosen: negative correlation between ε_{ift} and $\mathbf{X}'_{ift}\beta$ conditional on $d_{ift}=1$.

[15] In these models workers employed by more productive/larger firms will, on average, receive better on-the-job offers from other firms.

5. Trade performance analysis

The second step of our analysis is to assess whether export experience brought by managers has an impact on a firm's trade performance. We model a firm's likelihood to start/continue exporting a specific product or to a specific destination and the value of exports conditional on entry/continuation. We control for endogeneity in a variety of ways, including firm-year fixed effects and market-year dummies to account for unobservables.

In order to deal with the endogeneity of hiring we use two complementary approaches. First, we draw on the panel nature of the data and use information on whether the firm had managers with destination-specific or product-specific export experience 3 years prior to evaluating firm-performance in those destinations or products. This instrumental variable approach is inspired by Roberts and Tybout (1997) who show that 3 years can be considered a sufficiently long time span for the past not to matter for export activity. Second, we focus our analysis on a specific country and explore the differential performance of firms with and without managers with specific export experience in the wake of an exogenous event: the sudden end of the Angolan civil war in 2002. The shock was unanticipated and right after the shock exporting firms did not have the time to prepare themselves to take advantage of the opportunities offered by the new politically stable setting by, for example, hiring managers with export experience.

In our analysis we show that basic export experience does not significantly affect trade performance in any of the margins we consider. What does impact trade performance is specific export experience and the evidence is quite rich and consistent. The presence of (at least) one manager with specific (destination or product) export experience positively affects both the probability to start and continue exporting, with the magnitude being particularly sizeable for the former. Destination- and product-specific export experience substantially increase the value of exports conditional on continuation while product-specific experience also seems to have an impact on export values conditional on entry. Furthermore, we find experience to be more valuable to firms selling products that are more differentiated and/or financially vulnerable while at the same time export experience seems to help some firms coping with increasing import competition from China.

These results add to the raw data evidence provided in Section 3 and, along with the existence of a wage premium for managers with matched export experience, are consistent with the hypothesis those managers carry valuable export-specific knowledge increasing their wage, and that such knowledge has a strong destination- and product-specific nature. Later on in Section 5.6, we discuss a number of caveats potentially applying to our analysis, including reverse causality.

5.1 Econometric model

We consider the sample of firms with at least one manager and index firms by f, time by t and export markets by m, where m could either indicate a destination d (experience in a destinations regressions) or a product p (experience in a product regressions).[16] At each point in time we observe whether firm f exports: (i) to one of our seven destination groups; (ii) one of our 29 Isic rev2 product groups. We model a firm's entry and continuation into market m and analyze both the probability to start and continue exporting as well as the value of exports conditional on entry/continuation. We now describe the entry model with the one for continuation being its mirror image.

For each firm f and time $t \in [1996, 2005]$, we consider all the markets m to which the firm was *not* exporting in $t-1$. We construct the binary dependent variable $Entry_{fmt}$ taking value one when firm f starts exporting to market m at time t (and zero otherwise). In each period, each firm decides whether or not to enter into one or more of the markets (destination or product groups) in which it was not present in the previous year. We then define the continuous dependent variable $Exports_{fmt}$ equal to (log) exports of firm f to market m at time t. $Exports_{fmt}$ is observed when $Entry_{fmt}$=1.

The following selection model is estimated:

$$\begin{aligned} Entry_{fmt} &= \mathbf{1}_{[Entry^*_{fmt}>0]}, \\ Entry^*_{fmt} &= \delta_1 + ManExp_{fmt}\beta_1 + \mathbf{Z'_{1ft}\Gamma_1} + \eta_{1mt} + \zeta_{1fmt}, \\ Exports_{fmt} &= \delta_2 + ManExp_{fmt}\beta_2 + \mathbf{Z'_{2ft}\Gamma_2} + \eta_{2mt} + \zeta_{2fmt}, \end{aligned} \tag{2}$$

where $ManExp_{fmt}$—our main variable of interest—is a dummy indicating the presence of (at least) one manager with export experience and/or specific export experience, $\mathbf{Z_{1ft}}$ and $\mathbf{Z_{2ft}}$ are two vectors of firm- and time-varying covariates affecting, respectively, entry and exports conditional on entry that are captured with either observables or firm-year fixed effects,[17] and η_{1mt} and η_{2mt} are market-year dummies.

We consider separately export experience and specific export experience and estimate one specification of equation (2) for the former—in which we allow for firm fixed effects—and three specifications for the latter—in which we allow for either firm or firm-year fixed

[16] Our trade performance analysis is representative of larger and more organizationally structured firms that account for the bulk of trade in Portugal. Firms with at least one manager represent (in 2005) 53.6 percent of exporting firms, account for 91.8 percent of exports, and 61.5 percent of manufacturing employment. See Section 2 for further details.

[17] Observables are firm size, productivity, share of skilled workers, age, foreign ownership, mean and standard deviation of both age and education of its managers, mean and standard deviation of the worker fixed effects corresponding to its managers and coming from the wage analysis, and industry-level exports. See Section 2 and the Appendix for further details.

effects and also consider IV. We use market-year dummies in all specifications. We run separate regressions for destination- and product-specific experience. At the same time we provide results obtained from more sophisticated specifications where: (i) we interact experience in a product with a measure of the degree of differentiation of product p as well as the degree of financial vulnerability of product p; (ii) we break down the data at the firm-time-product-destination level and interact experience in a destination with a Chinese import penetration measure – based on Autor et al. (2014) – for product p in destination d at time t.

Moving to the assumptions we make about (2), when considering basic export experience, $ManExp_{fmt}$ is only firm-time varying (i.e. $ManExp_{fmt}$=$ManExp_{ft}$) and equals one if firm f has at time t at least one manager with export experience (zero otherwise). In this case, we allow for firm fixed effects, i.e. ζ_{1fmt}=η_{1f} + υ_{1fmt} and ζ_{2fmt}=η_{2f} + υ_{2fmt}, and assume that υ_{1fmt} and υ_{2fmt} are uncorrelated with each other as well as with covariates. Under these conditions, we can separately estimate the selection and outcome equations using the OLS estimator while clustering standard errors at the firm-level.

When considering *specific* export experience, $ManExp_{fmt}$ is instead firm-*market*-time varying and equals one if firm f has at time t at least one manager with market m-specific export experience (zero otherwise). In this case, we can be more general and allow for firm-year fixed effects while getting rid of the redundant firm-time observables: we consider ζ_{1fmt}=η_{1ft} + υ_{1fmt} and ζ_{2fmt}=η_{2ft} + υ_{2fmt}, and assume υ_{1fmt} and υ_{2fmt} are uncorrelated with each other as well as with covariates. We use again the OLS estimator for both the selection and outcome equations and cluster standard errors at the firm-level.

Last but not least, we also provide IV estimations results while simultaneously dealing with endogeneity by means of firm-year fixed effects. More specifically, we allow υ_{1fmt} and υ_{2fmt} to be correlated with specific export experience $ManExp_{fmt}$ and consider as instrument specific export experience three years prior to t: $ManExp_{fmt-3}$. Indeed, Roberts and Tybout (1997) show that 3 years can be considered a sufficiently long time span for the past not to matter for export activity.[18] To ease comparability, we consider the same sample in the first three specifications. However, when using IV $ManExp_{fmt-3}$ is missing in quite a few cases and so the number of observations will be smaller.

Four comments are in order. First, the identifying variation for export experience is provided by its changes over time within a firm. In the case of specific export experience and firm fixed effects, identification also comes from variation in the market dimension, still within a firm. When considering specific experience and *firm-year* fixed

[18] More specifically Roberts and Tybout (1997) find that "...last year's exporting status $Y_{i,t-1}$ has a strong positive effect on the probability of exporting this year. But plants that last exported two or three years ago enjoy only small lingering effects from their previous investments in foreign-market access." and further add that "...we cannot reject the hypothesis that both coefficients are jointly equal to zero."

effects identification comes from the within-firm market variation only meaning that, for example, when analyzing the probability to start exporting we draw on firms entering in at least two markets in the same year (one market for which the firm has a manager with specific export experience and one for which it has not) to identify β_1.

Second, the selection equation corresponds to a liner probability model. Such a model has a number of advantages over non-linear alternatives but also a number of caveats when dealing with fixed effects (Wooldridge, 2002); estimations of a fixed effects Logit model (available upon request) qualitatively confirm linear probability model results.

Third, imposing that v_{1fmt} and v_{2fmt} are uncorrelated with each other amounts to assuming that, once firm-time and market-time covariates and/or fixed effects are controlled for, selection is no longer an issue. This is consistent with the literature on trade and firm heterogeneity (pioneered by Bernard and Jensen, 1999), which relies on either firm-time determinants (productivity, size, past export status, skill intensity, R&D intensity) or market-time determinants (distance and other proxies for trade costs, market size, other market characteristics like the quality of institutions) to model a firm's export behavior across time and markets. We distinguish ourselves from this literature by providing a full firm-market-time varying determinant of export behavior.

Finally, all key right-hand side variables (including $ManExp_{fmt}$) have been divided by their respective standard deviation to provide a comparable metric. For example, a coefficient of $0.0x$ for firm size in the selection equation indicates that a one standard deviation increase in firm size roughly increases the probability of entry by x percent. Coefficients are thus comparable, in terms of how much variation in the probability of entry (or continuation) or in the value of exports is induced, across covariates and specifications.

5.2 *Baseline results*

Tables 7 to 10 report key covariates estimates of our model of a firm's likelihood to start/continue exporting a specific product or to a specific destination and the value of exports conditional on entry/continuation. More specifically, Tables 7 for destinations and 8 for products refer to the probability to entry (left panel) and to continue (right panel) exporting to a specific market while in Tables 9 for destinations and 10 for products we consider the (log) value of exports conditional on entry (left panel) and continuation (right panel). All the other covariates are displayed in the Tables Appendix.

The overall picture stemming from Tables 7 to 10 can be summarized as follows:

Table 7: Probability to Start and Continue Exporting to a Specific Destination

	Prob. Start Exporting				Prob. Continue Exporting			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Unconditional Prob.	0.051	0.051	0.050	0.061	0.870	0.870	0.877	0.871
Manag. w/ Export Exp.	0.001				-0.000			
	(0.001)				(0.002)			
Manag. w/ Specific Export Exp.		0.013^a	0.018^a	0.040^a		0.005^a	0.014^a	0.046^a
		(0.001)	(0.001)	(0.005)		(0.002)	(0.003)	(0.013)
Firm-Year Controls	X	X			X	X		
Destination-Year Dummies	X	X	X	X	X	X	X	X
Firm FE	X	X			X	X		
Firm-Year FE			X	X			X	X
IV				X				X
Observations	166,860	166,860	166,860	62,392	52,124	52,124	52,124	24,859
R^2	0.175	0.176	0.338	—	0.256	0.257	0.420	—

Notes: This Table reports OLS and IV estimator coefficients and standard errors for the core covariates of our model of firm's entry and continuation into a foreign destination (2). Estimation results for all other covariates are provided in the Tables Appendix. The dependent variable takes value one when a firm f starts exporting to a new (left panel) or continues exporting to a current (right panel) destination d at time t. The key independent variable in columns (1) and (5) is a dummy indicating if the firm has at least one manager with export experience. In columns (2) to (4) and (6) to (8), the key variable is instead a dummy indicating if the firm has at least one manager with destination-specific export experience. See Section 3 for the definition of a manager and the export experience (and its refinements). Specifications in columns (1), (2), (5), and (6) include firm fixed effects while specifications (3), (4), (7) and (8) include firm-year fixed effects. Specifications in columns (4) and (8) employ an IV estimator while other specifications refer to an OLS estimator. The instrument is the value of the dummy indicating whether the firm has at least one manager with destination-specific export experience at time $t-3$. This information is sometimes missing so leading to a smaller estimation sample. Standard errors clustered at the firm-level in parentheses: $^a p < 0.01$, $^b p < 0.05$, $^c p < 0.1$.

Table 8: Probability to Start and Continue Exporting a Specific Product

	Prob. Start Exporting				Prob. Continue Exporting			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Unconditional Prob.	0.017	0.017	0.017	0.021	0.732	0.732	0.702	0.727
Manag. w/ Export Exp.	0.000				-0.002			
	(0.000)				(0.004)			
Manag. w/ Specific Export Exp.		0.008^a	0.009^a	0.018^a		0.031^a	0.048^a	0.120^a
		(0.000)	(0.000)	(0.001)		(0.002)	(0.003)	(0.011)
Firm-Year Controls	X	X			X	X		
Product-Year Dummies	X	X	X	X	X	X	X	X
Firm FE	X	X			X	X		
Firm-Year FE			X	X			X	X
IV				X				X
Observations	775,675	775,675	775,675	313,369	40,125	40,125	40,125	17,647
R^2	0.070	0.073	0.128	—	0.205	0.214	0.364	—

Notes: This Table reports OLS and IV estimator coefficients and standard errors for the core covariates of our model of firm's starting and continuing exporting a specific product (2). Estimation results for all other covariates are provided in the Tables Appendix. The dependent variable takes value one when a firm f starts exporting a new (left panel) or continues exporting a current (right panel) product p at time t. The key independent variable in columns (1) and (5) is a dummy indicating if the firm has at least one manager with export experience. In columns (2) to (4) and (6) to (8), the key variable is instead a dummy indicating if the firm has at least one manager with product-specific export experience. See Section 3 for the definition of a manager and the export experience (and its refinements). Specifications in columns (1), (2), (5), and (6) include firm fixed effects while specifications (3), (4), (7) and (8) include firm-year fixed effects. Specifications in columns (4) and (8) employ an IV estimator while other specifications refer to an OLS estimator. The instrument is the value of the dummy indicating whether the firm has at least one manager with product-specific export experience at time $t-3$. This information is sometimes missing so leading to a smaller estimation sample. Standard errors clustered at the firm-level in parentheses: $^a p < 0.01$, $^b p < 0.05$, $^c p < 0.1$.

Table 9: (Log) Value of Exports to a Specific Destination Conditional on Entry or Continuation

	Exports Condit. Entry				Exports Condit. Contin.			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Manag. w/ Export Exp.	0.025				0.017			
	(0.044)				(0.011)			
Manag. w/ Specific Export Exp.		0.043	-0.026	-0.043		0.059[a]	0.157[a]	0.452[a]
		(0.034)	(0.080)	(0.251)		(0.011)	(0.031)	(0.112)
Firm-Year Controls	X	X			X	X		
Destination-Year Dummies	X	X	X	X	X	X	X	X
Firm FE	X	X			X	X		
Firm-Year FE			X	X			X	X
IV				X				X
Observations	6,732	6,732	6,732	1,463	45,023	45,023	45,023	21,414
R^2	0.478	0.478	0.597	—	0.506	0.507	0.544	—

Notes: This Table reports OLS and IV estimator coefficients and standard errors for the core covariates of our model of firm's entry and continuation into a foreign destination (2). Estimation results for all other covariates are provided in the Tables Appendix. The dependent variable is equal to the (log) exports value of firm f to destination d at time t. This variable is observed only if firm f starts (continues) exporting to destination d at time t. The key independent variable in columns (1) and (5) is a dummy indicating if the firm has at least one manager with export experience. In columns (2) to (4) and (6) to (8), the key variable is instead a dummy indicating if the firm has at least one manager with destination-specific export experience. See Section 3 for the definition of a manager and the export experience (and its refinements). Specifications in columns (1), (2), (5), and (6) include firm fixed effects while specifications (3), (4), (7) and (8) include firm-year fixed effects. Specifications in columns (4) and (8) employ an IV estimator while other specifications refer to an OLS estimator. The instrument is the value of the dummy indicating whether the firm has at least one manager with destination-specific export experience at time $t-3$. This information is sometimes missing so leading to a smaller estimation sample. Standard errors clustered at the firm-level in parentheses: $^a p < 0.01$, $^b p < 0.05$, $^c p < 0.1$.

Table 10: (Log) Value of Exports of a Specific Product Conditional on Entry or Continuation

	Exports Condit. Entry				Exports Condit. Contin.			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Manag. w/ Export Exp.	0.077[c]				0.032			
	(0.040)				(0.023)			
Manag. w/ Specific Export Exp.		0.104[a]	0.107[a]	0.118		0.190[a]	0.379[a]	1.084[a]
		(0.018)	(0.024)	(0.082)		(0.016)	(0.031)	(0.119)
Firm-Year Controls	X	X			X	X		
Product-Year Dummies	X	X	X	X	X	X	X	X
Firm FE	X	X			X	X		
Firm-Year FE			X	X			X	X
IV				X				X
Observations	11,853	11,853	11,853	4,403	29,033	29,033	29,033	11,358
R^2	0.419	0.421	0.558	—	0.440	0.445	0.411	—

Notes: This Table reports OLS and IV estimator coefficients and standard errors for the core covariates of our model of firm's starting and continuing exporting a specific product (2). Estimation results for all other covariates are provided in the Tables Appendix. The dependent variable is equal to the (log) exports value of firm f of product p at time t. This variable is observed only if firm f starts (continues) exporting product p at time t. The key independent variable in columns (1) and (5) is a dummy indicating if the firm has at least one manager with export experience. In columns (2) to (4) and (6) to (8), the key variable is instead a dummy indicating if the firm has at least one manager with product-specific export experience. See Section 3 for the definition of a manager and the export experience (and its refinements). Specifications in columns (1), (2), (5), and (6) include firm fixed effects while specifications (3), (4), (7) and (8) include firm-year fixed effects. Specifications in columns (4) and (8) employ an IV estimator while other specifications refer to an OLS estimator. The instrument is the value of the dummy indicating whether the firm has at least one manager with product-specific export experience at time $t-3$. This information is sometimes missing so leading to a smaller estimation sample. Standard errors clustered at the firm-level in parentheses: $^a p < 0.01$, $^b p < 0.05$, $^c p < 0.1$.

The presence of basic export experience does not increase trade performance. Columns (1) and (5) in the four Tables strongly indicate that just having one or more managers with basic export experience neither increases the probability to start or continue exporting a specific product or in a specific market not implies higher export values.

The presence of specific export experience does increase trade performance. Columns (2) to (4) and (6) to (8) in the four Tables strongly indicate that having one or more managers with specific export experience increases the probability to start and continue exporting a specific product or in a specific market and goes along with higher export values. In terms of the latter the estimated IV impact in column (8) is 57% $(\exp(0.452) - 1)$ for export to a specific destination conditional on continuation and a stunning 195% for export of a specific product conditional on continuation. As far as the value of exports conditional on entry is concerned we do not find robust evidence of a boost effect. There is some evidence of a positive impact for product-specific experience but it does not survive in the IV specification. Moving to probabilities of entry and continuation we find strong evidence of a positive effect across the board. When compared to the raw probabilities reported in the top part of Tables 7 and 8, IV estimates in columns (4) imply that both destination-specific and product-specific experience almost double the probability to start exporting. When looking at the probability to continue exporting (column 8), the magnitudes relative to raw probabilities are instead in the range of 5-15%. There are many ways of rationalizing a smaller impact on continuation with respect to entry: A possible explanation is that firms that already export to a given market are likely to have managers without specific export experience who helped the firm to enter to that market in the past. Therefore, the impact of having a manager with specific export experience might well be positive for such firms (as suggested by our analysis) but not as important as for firms who wish to start exporting.

Furthermore, when confronting the coefficients corresponding to the presence of specific export experience with those (see Tables Appendix) of more established covariates used in the trade literature, like firm size and productivity, we find that specific (destination or product) experience always matters more than productivity while firm size explains more variation than specific experience only for the probability to continue exporting to a specific destination. In the remaining 3 cases destination-specific experience matters more than firm size while product-specific experience always explains more variation than firm size.

5.3 *An event study: the sudden end of the Angolan civil war*

In order to strengthen the causal interpretation of our findings we explore the differential performance of firms with and without managers with destination-specific export experience in the wake of an exogenous event: the sudden end of the Angolan civil war in 2002. As discussed in Guidolin and La Ferrara (2007), the Angolan civil war suddenly ended with the death of the rebels' leader, Jonas Savimbi, on February 22, 2002. The event was completely unexpected and represents an exogenous conflict-related event in which one party gained an unambiguous victory over the other and restored order. Furthermore, Angola is particularly relevant in our case because it is a former Portuguese colony still having strong ties with Portugal while being part of the Community of Portuguese Language Countries (CPLC). In this respect, it is a well known export destination for Portuguese firms and with a significant amount of trade occurring before, during and after the civil war.

Figure 10: Export entry rates in Angola

Notes: This Figure shows export entry rates in Angola, defined as the ratio between the number of firms starting to export in Angola at time t and the number of firms not exporting to Angola at time t-1, for two groups of firms: those that have no managers with export experience in Angola at time t and those that have at least one manager with export experience in Angola at time t.

The war started many years prior to our observational period (1997-2005) and ended suddenly in 2002. This means that, right after the shock, exporting firms did not have the time to prepare themselves to take advantage of the opportunities offered by the new politically stable setting by, for example, hiring managers with export experience. Yet, some firms in 2002 had managers with export experience in Angola while others had not.

In this respect, Figure 10 shows export entry rates for firms with at least one manager with specific export experience in Angola and firms without such managers. In line with Figure 6 in Section 3.3 entry rates for the former group are always larger than for the latter group. Crucially, there is a sudden spike in export entry rates for firms with at least one manager with export experience in Angola in 2002. The situation is then a bit mixed after 2002 which can be understood with other shocks taking place as well as firms having had the time to adjust to the new situation.

Table 11: Probability to Start Exporting in Angola

VARIABLES	(1) 1 pse	(2) 2 pse	(3) 3 pse	(4) 4 pse
Manag. w/ Spec. Exp. (0/1)	0.014^a	0.005	-0.004	-0.004
	(0.002)	(0.003)	(0.005)	(0.006)
Year>=2000 * Manag. w/ Spec. Exp. (0/1)				-0.001
				(0.007)
Year>=2002 * Manag. w/ Spec. Exp. (0/1)			0.013^b	0.021^b
			(0.005)	(0.009)
Year>=2003 * Manag. w/ Spec. Exp. (0/1)				-0.010
				(0.007)
Year>=2004 * Manag. w/ Spec. Exp. (0/1)				-0.001
				(0.006)
Year>=2005 * Manag. w/ Spec. Exp. (0/1)				0.004
				(0.005)
Firm-Year Controls	X	X	X	X
Year Dummies	X	X	X	X
Firm FE		X	X	X
Observations	28,420	28,420	28,420	28,420
R^2	0.024	0.383	0.384	0.384

Notes: This Table reports OLS estimator coefficients and standard errors for the core covariates of our model of firm's entry into a foreign destination (2). Estimation results for all other covariates are provided in the Tables Appendix. The dependent variable takes value one when a firm f starts exporting to Angola at time t. The key independent variable is a dummy indicating if the firm has at least one manager with specific export experience in Angola. Specifications in columns (2), (3), and (4) include firm fixed effects. Firm-time controls are firm size, productivity, share of skilled workers, age, foreign ownership, mean and standard deviation of both age and education of firm f managers, mean and standard deviation of worker fixed effects corresponding to the managers of firm f coming from the wage analysis, and industry-level exports. See the Appendix for more details. All covariates have been divided by their respective standard deviation in order to deliver a comparable metric. Standard errors clustered at the firm-level in parentheses: $^a p < 0.01$, $^b p < 0.05$, $^c p < 0.1$.

In order to establish the statistical significance of the 2002 spike and control for other factors we run our export entry model (2) focusing on Angola as a destination. Data is only varying across firms and time now and so we drop destination-year dummies and replace them by year dummies. At the same time, we employ firm fixed effects as opposed to firm-time fixed effects while always using firm-time controls. We consider export experience alone as well as interacted with year dummies to detect time breaks in the data. Key columns are 3 and 4. Column 3 shows specific export experience

significantly matters only post 2002. At the same time, column 4 makes use of additional time dummies to show this can be fully attributed to the year 2002, i.e., the year the conflict suddenly ended.

5.4 *Managers arriving and leaving*

The analysis presented so far focuses on the *presence* of managers with experience in a firm at a given point in time. In what follows we present some additional results about the *arrival* and *departure* of managers with experience. More specifically, we consider sub-samples of the observations used in the estimations provided in Tables 7 and 8 to better isolate the arrival of specific export knowledge into a firm and the departure of specific export knowledge from a firm. We use firm-time fixed effects and market-time dummies in all estimations.

In terms of arrival we consider, as in column (3) of Tables 7 and 8, firms who are not exporting in $t-1$ and look at whether they export in t or not depending on whether there is in the firm at least one manager with specific export experience in t. However, unlike in Tables 7 and 8, we now only consider firms that in $t-1$ have no managers with export experience (neither general nor specific) while further imposing that all firms in t have managers with export experience—though not necessarily specific the considered market. This means we compare the probability to start exporting to a given destination or to start exporting a specific product—for firms without experienced managers in $t-1$—depending on whether the managers arriving in t have export experience that is specific to the destination/product or not. In both cases, managers with export experience have arrived in t but in one case the knowledge is specific while in the other it is not.

In the case of the knowledge leaving a firm we consider, as in column (7) of Tables 7 and 8, firms who are exporting in $t-1$ and look at whether they export in t or not conditional on whether there is in the firm at least one manager with specific export experience in t. However, unlike in Tables 7 and 8, we now only consider firms that in $t-1$ do have managers with specific export experience while further imposing that all firms in t have managers with export experience though not necessarily specific to the considered market. This means we compare the probability to continue exporting to a given destination or to continue exporting a specific product—for firms with managers with specific experience—depending on whether the managers that work in the firm in t have export experience that is specific to the destination/product or not. In one case, specific export experience remains in the firm while in the other it leaves the firm.

The slice of the data we use to perform these analyses is quite peculiar and subject to clear selection biases. Therefore, we do not claim any causality for the effects we find

but still believe they are interesting to look at and compared with previous findings. Results, reported in Table 12 below, portrait an captivating picture. As far as the arrival of specific export knowledge is concerned, columns (1) and (2) point to a positive and significant effect with a magnitude larger than the comparable column (3) of Tables 7 and 8 and broadly in line with IV results in column (4) of Tables 7 and 8. Turning to specific knowledge leaving a firm column (4) suggests that when product-specific knowledge departs the probability to continue exporting a specific product substantially decreases. The magnitude we find is in line with the IV impact we obtain in column (8) of Table 8. However, when looking at destination-specific knowledge there is no significant impact. This is in line with a scenario in which the destination-specific knowledge of the manager leaving the firm has been fully transferred to the firm who does not experience any reduction in trade performance.

Table 12: Probability to Start and Continue Exporting to a Specific Destination or a Specific Product Depending on Whether Specific Export Experience Arrives or Leaves a Firm

	Prob. Start Exporting		**Prob. Continue Exporting**	
	(1)	(2)	(3)	(4)
Experience	Dest.	Prod.	Dest.	Prod.
Arrival or Departure of Manag. w/ Specific Export Exp.	0.048^a	0.034^a	0.032	-0.109^a
	(0.007)	(0.003)	(0.025)	(0.029)
Market-Year Dummies	X	X	X	X
Firm-Year FE	X	X	X	X
Observations	12,231	54,179	14,190	6,772
R^2	0.331	0.145	0.454	0.365

Notes: This Table reports OLS coefficients and standard errors for the core covariates of our model of firm's starting and continuing exporting a specific product or to a specific destination (2). The dependent variable takes value one when a firm f starts exporting to a new (left panel) or continues exporting to a current (right panel) market m at time t. The key independent variable is a dummy indicating if managers with specific export experience have arrived into (left panel) or left from (right panel) a firm. See Section 3 for the definition of a manager and the export experience (and its refinements). All specifications include firm-year fixed effects and market-time dummies. Standard errors clustered at the firm-level in parentheses: $^a p < 0.01$, $^b p < 0.05$, $^c p < 0.1$.

5.5 *Additional findings*

We now come back to analyzing the impact of the *presence* of managers with export experience and report in Tables 13 and 14 a number of additional findings. In Table 13 we look at whether specific export experience interacts with the degree of product differentiation and/or the financial vulnerability of a firm's products. In this respect we believe export experience should be relatively more valuable to firms selling more differentiated products, i.e., products whose attributes are more difficult to observe, and products needing more financing, for example because of longer production processes

and larger mismatch between investments and profits requiring more managerial effort and expertise. We also believe this should be particularly the case for firms starting to export. In Table 13 we thus look at entry probabilities and focus on experience in a product to examine the interaction between the presence of specific export experience with a measure of product differentiation and a measure of external financial dependence. We consider only our two most demanding specifications (firm-time fixed effects and IV). The positive and significant interaction coefficients do suggest that export experience is more valuable to firms selling more differentiated products and products needing more external financing.

Table 13: Probability to Start Exporting a Specific Product; Interactions with External Financial Dependence and Product Differentiation

	Prob. Start Exporting			
	(1)	(2)	(3)	(4)
Manag. w/ Spec. Export Exp.	0.007^a	0.008^a	0.014^a	0.013^a
	(0.000)	(0.001)	(0.001)	(0.002)
Manag. w/ Spec. Export Exp. * Ext. Fin. Dep.	0.029^a		0.041^a	
	(0.004)		(0.011)	
Manag. w/ Spec. Export Exp. * Prod. Diff.		0.008^b		0.029^a
		(0.003)		(0.008)
Product-Year Dummies	X	X	X	X
Firm-Year FE	X	X	X	X
IV			X	X
Observations	775,675	775,675	313,369	313,369
R^2	0.128	0.127	—	—

Notes: This Table reports OLS and IV estimator coefficients and standard errors for the core covariates of our model of firm's starting exporting a specific product (2) further enriched with product-specific measures of external financial dependence and product differentiation. Estimation results for all other covariates are provided in the Tables Appendix. The dependent variable takes value one when a firm f starts exporting a new product p at time t. The key independent variable in columns (1) and (3) is the interaction between a dummy indicating if the firm has at least one manager with product-specific export experience and our measure of external financial dependence. In columns (2) an (4) the key variable is the interaction between a dummy indicating if the firm has at least one manager with product-specific export experience and our measure of product differentiation. See Section 3 for the definition of a manager and the export experience (and its refinements) as well as for the description of the external financial dependence and product differentiation measures. All specifications include firm-year fixed effects and product-year dummies. Specifications in columns (3) and (4) employ an IV estimator while other specifications refer to an OLS estimator. The instruments for the two reported covariates are built on a dummy indicating whether the firm has at least one manager with product-specific export experience at time $t-3$. This information is sometimes missing so leading to a smaller estimation sample. All covariates, except product-year dummies, have been divided by their respective standard deviation in order to deliver a comparable metric. Standard errors clustered at the firm-level in parentheses: $^a p < 0.01$, $^b p < 0.05$, $^c p < 0.1$.

We perform in Table 14 a related exercise. The recent literature on China and trade

has documented[19] many instances in which increasing imports from China put western firms and labour markets under competitive pressure generating a number of negative (employment cuts, firm death) and positive (skill and technological upgrading) reactions. Within this increasingly difficult environment we believe managerial export experience should be particularly valuable. To this end we break down our data at the firm-time-product-destination level and interact experience in a destination with a Chinese import penetration measure – based on Autor et al. (2014) – for product p in destination d at time t. Our Chinese import penetration measure proxies for the increasing degree of competition faced by a firm in exporting its products to a particular destination. We focus on firms that are already established and thus estimate a model of export continuation while including both destination-time and product-time dummies along with firm or firm-time fixed effects. Results shown in Table 14 suggest that import competition from China reduces continuation probabilities. At the same time the interaction with experience in a destination is positive and significant in the two non-IV specifications while being very close to significance in the IV specification; with the latter drawing on a much smaller sample. Though not extremely robust, these finding may suggest a connection between increasing import competition from China and the importance of specific export experience.

5.6 Endogeneity and other issues

Reverse causality. Does a firm hire managers with export experience to improve its trade performance or does the firm decide (based for example on some positive shocks) to export and then hires managers with export experience? In other words, how important is the issue of reversed causality in our analysis?

First, it is important to consider that, as established in Section 4, managers with export experience cost more and the more so if they have an export experience matching the market portfolio of a firm. Therefore, such managers should in all likelihood improve firm performance along some margins and it would be difficult to argue that export performance (especially when related to specific experience) would not be part of those margins. Whether the magnitudes we get here are lower or higher than the causal effect is another question.

Second, shocks pushing a firm to start/continue exporting that have been so far considered by the international trade literature (Bernard et al., 2012) are firm-time specific (e.g. productivity, skill intensity, R&D intensity, quality). We fully allow for such shocks

[19] See, for example, Autor et al. (2014), Bernard et al. (2006), Bloom et al. (2016a) and Mion and Zhu (2013).

Table 14: Probability to Continue Exporting a Specific Product to a Specific Destination; Interaction with Chinese Import Penetration

	Prob. Continue Exporting		
	(1)	(2)	(3)
Manag. w/ Spec. Export Exp.	0.003	0.012[a]	0.046[a]
	(0.002)	(0.004)	(0.014)
Manag. w/ Spec. Export Exp. * Imp. Penetr. China	0.004[a]	0.005[a]	0.005
	(0.001)	(0.001)	(0.003)
Imp. Penetr. China	0.105	-0.017[a]	-0.023[a]
	(0.998)	(0.006)	(0.006)
Product-Year Dummies	X	X	X
Destination-Year Dummies	X	X	X
Firm FE and Firm controls	X		
Firm-Year FE		X	X
IV			X
Observations	1,514,409	1,514,409	757,654
R^2	0.302	0.518	—

Notes: This Table reports OLS and IV estimator coefficients and standard errors for the core covariates of an enriched version of our model of firm's continuation into a foreign destination (2). Estimation results for all other covariates are provided in the Tables Appendix. The dependent variable takes value one when a firm f continues exporting product p to a current destination d at time t. The key independent variables are a dummy indicating if the firm has at least one manager with destination-specific export experience, a measure of Chinese import penetration in destination d of product p and time t and the interaction between the two. See Section 3 for the definition of a manager and the export experience (and its refinements) as well as for our measure of Chinese import penetration. The specification in columns (1) includes firm fixed effects and the firm-time covariates discussed in the previous Tables while specifications (2) and (3) include firm-year fixed effects. The Specification in columns (3) employs an IV estimator while other specifications refer to an OLS estimator. The instruments for the first two covariates are built on a dummy indicating whether the firm has at least one manager with destination-specific export experience at time $t-3$. This information is sometimes missing so leading to a smaller estimation sample. All specifications include destination-year and product-year dummies. All covariates, except destination-year and product-year dummies, have been divided by their respective standard deviation in order to deliver a comparable metric. Standard errors clustered at the firm-level in parentheses: $^a p < 0.01$, $^b p < 0.05$, $^c p < 0.1$.

and in particular our framework allows such shocks to be arbitrarily correlated with the presence of managers with specific export experience by means of firm-year fixed effects.

Third, in order to be an issue in our IV analysis, the more general case of firm-time-market shocks/omitted variables should be such that those unobservables are correlated with specific export experience at time t as well as at time $t-3$. In this respect there is substantial evidence – including Das et al. (2007), Iacovone and Javorcik (2012) and Moxnes (2010) – that there are large sunk investment costs firms have to incur in order to export in a given market and that the time frame corresponding to firm's decisions today affecting export performance tomorrow (like setting up or increasing investments in quality and/or productivity) is about two yeas. Therefore, $ManExp_{fmt-3}$ should be uncorrelated with a firm's shocks and investments in between $t-2$ and t; those eventually leading the firm to improve its trade performance in t.

Fourth, in order to further address the issue of reverse causality we exploit the exo-

geneity of the sudden end of the Angolan civil war in 2002. The shock was unanticipated and right after the shock exporting firms did not have the time to prepare themselves to take advantage of the opportunities offered by the new politically stable setting by, for example, hiring managers with export experience. However, some firms in 2002 had managers with export experience in Angola while others had not and we show later on this makes a difference.

Finally, IV estimates in our analysis are typically larger than non-instrumented one. We believe this is consistent with substitutability being at work between hiring a manager with export experience and other export performance-enhancing forms of investments. More specifically, suppose that a firm is interested in entering (or staying, or improving its performance) in market m. The firm can either hire a manager with market-m export experience or undertake another costly activity, A_{fmt}, unobservable to us. Suppose that both choices affect the firm trade performance with respect to market m. Both choices are costly: in particular, our wage analysis shows that hiring a manager with specific export experience entails paying an extra wage premium. If the distribution of the unobservable A_{fmt} across firms, markets and time is positively (negatively) correlated to $ManExp_{fmt}$, the estimated coefficient of the latter will be upward (downward) biased. A positive correlation means that the A activity and hiring a manager with specific export experience are complementary. A negative correlation instead reveals that the two forms of investment are substitutes. The empirical international trade literature (Bernard et al., 2012) has no clear stance towards investments improving trade performance being substitutes or complements. Therefore, the sign of the bias is a priori ambiguous and our IV findings point towards substitutability.

Selection. The value of exports is observed only if a firm starts or continues to export to a market. We cope with the issue of firm selection into a market by using firm-year fixed effects and market-year dummies; most of the determinants of export entry emphasized by the trade literature are either at the firm-time or market-time level. A more recent strand of the literature, including Morales et al. (2014), is exploring other determinants of firm export behavior which are truly firm-time-market specific and are related to a firm's past activity in "related" markets. We could certainly incorporate such determinants in our analysis to better address selection but, so far, it is not clear whether they provide valid exclusion restriction, i.e. whether they affect entry and/or continuation but not the value of exports.

Alternative definitions of entry and continuation. Though characterized by an overall strong degree of persistency over time, export activity can be erratic, especially when considering "young exporters". Eaton et al. (2008) show, using Colombian data, that nearly

one half of all new exporters stops exporting after just one year, and total exports are dominated by a small number of large and stable exporters.[20] Békés and Muraközy (2012) shows, using Hungarian data, that temporary trade is a pervasive feature of the data which is characterized by a number of specificities in terms of the firms, markets, and products involved. Therefore, a concern could be whether our results are sensitive to the the presence of short-lived export participation. In unreported results, available upon request, we have experimented with more stringent definitions of continuing and new exporters in a given market, based on the firm activity both in $t-1$ and in $t-2$ (as in Eaton et al., 2008), finding very similar results.

Alternative way of dealing with reverse causality. As an alternative way of dealing with reverse causality we construct an additional manager with specific experience dummy. We consider such dummy being equal to one if the firm has at least one manager with specific experience in t with the additional constraint that the managers should have been hired by the firm either in $t-1$ or $t-2$ or $t-3$. In unreported results, available upon request, we have used such a dummy as an alternative instrument. Estimations confirm our previous findings.

6. Conclusions and policy implications

This paper exploits a unique dataset for Portugal that allows to finely measure firm trade performance and managers' wages as well as to draw a sharp portrait of managers' mobility across firms. The paper shows that the export experience gained by managers in *previous* firms leads their *current* firm towards higher export performance, and commands a sizeable wage premium for the manager. Moreover, export knowledge proves to be very valuable when it is *market-specific*: managers with experience related to markets served by their current firm receive an even higher wage premium; firms are more likely to enter markets where their managers have experience; exporters are more likely to stay in those markets, and their sales are on average higher. At the same time, we show that the experience premium accrued by different types of managers (general, production, financial and sales) aligns with a knowledge diffusion story. We also find market-specific experience to be more valuable in terms of trade performance to firms selling products that are more differentiated and/or financially vulnerable while at the same time experience seems to help some firms coping with increasing import competition from China. Last but not least, when focusing on the Angolan market, we find robust evidence that export experience in Angola drives a differential behaviour across firms in terms of their

[20] See Amador and Opromolla (2013) for similar findings using Portuguese data.

entry rates in 2002, which is exactly the year the civil war unexpectedly came to a swift end.

There are several policy implications stemming from our analysis. Our findings point to the importance of the presence of market-specific knowledge within the firm as a way to achieve competitiveness over and beyond firm productivity and scale. Improving firms' productivity and scale of operations is notoriously difficult and can be very expensive. Therefore, policies fostering knowledge exchange and diffusion of best practices among firms might be a more cost-effective tool that the Portuguese government might wish to employ in order to increase Portuguese firms' competitiveness and performance. Our findings also point to the existence of sizeable knowledge diffusion across firms via the mobility of managers. The presence of such knowledge flows means that policies directly affecting managerial skills and knowledge in some firms will sooner or later spill-over to other firms. With specific reference to the export activity, this has profound implications for the design and evaluation of export promotion programmes. Indeed, existing firm-level quantifications of the benefits of export promotion activities (Mion and Muûls, 2015, Broocks and Van Biesebroeck, 2017) focus on benefits directly enjoyed by supported firms so neglecting spill-overs effects on other firms.

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Appendix

A-1. Trade data

Statistics Portugal collects data on export and import transactions by firms that are located in 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 (in kilos and, in some case, additional product-specific measuring units) of transacted goods, and the relevant international commercial term (FOB, CIF, FAS, etc.).[I] We were able to gain access to data from 1995 to 2005 for the purpose of this research. We use data on export transactions only, aggregated at the firm-destination-year level.

A-2. Matched employer-employee data

The second main data source, *Quadros de Pessoal*, is a longitudinal dataset matching virtually all firms and workers based in Portugal.[II] Currently, the data set collects data on about 350,000 firms and 3 million employees. As for the trade data, we were able to gain access to information from 1995 to 2005. The data are made available by the Ministry of Employment, drawing on a compulsory annual census of all firms in Portugal that employ at least one worker. Each year, every firm with wage earners is legally obliged to fill in a standardized questionnaire. Reported data cover the firm itself, each of its plants, and each of its workers. Variables available in the dataset include the firm's location, industry, total employment, sales, ownership structure (equity breakdown

[I] In the case of intra-EU trade, firms have the option of "adding up" multiple transactions only when they refer to the same month, product, destination/origin country, Portuguese region and port/airport where the transaction originates/starts, international commercial term, type of transaction (sale, re-sale,...etc.), and transportation mode. In the case of intra-EU trade, firms are required to provide information on their trade transactions if the volume of exports or imports in the current year or in the previous year or two years before was higher than 60,000 euros and 85,000 euros respectively. More information can be found at: http://webinq.ine.pt/public/files/inqueritos/pubintrastat.aspx?Id=168.

[II] Public administration and non-market services are excluded. *Quadros de Pessoal* has been used by, amongst others, Cabral and Mata (2003) to study the evolution of the firm size distribution; by Blanchard and Portugal (2001) to compare the U.S. and Portuguese labor markets in terms of unemployment duration and worker flows; by Cardoso and Portugal (2005) to study the determinants of both the contractual wage and the wage cushion (difference between contractual and actual wages); by Carneiro et al. (2012) who, in a related study, analyze how wages of newly hired workers and of existing employees react differently to the business cycle; by Martins (2009) to study the effect of employment protection on worker flows and firm performance. See these papers also for a description of the peculiar features of the Portuguese labor market.

among domestic private, public or foreign), and legal setting. The worker-level data cover information on all personnel working for the reporting firms in a reference week. They include information on gender, age, occupation, schooling, hiring date, earnings, hours worked (normal and overtime), etc. The information on earnings includes the base wage (gross pay for normal hours of work), seniority-indexed components of pay, other regularly paid components, overtime work, and irregularly paid components.[III] It does not include employers' contributions to social security.

Each firm entering the database is assigned a unique, time-invariant identifying number which we use to follow it over time. 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 a worker's social security number, allowing us to follow individuals over time. 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. The public availability requirement facilitates the work of the services of the Ministry of Employment that monitor the compliance of firms with the law (e.g., illegal work).

A-3. Combined dataset and data processing

The two datasets are merged by means of the firm identifier. 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 agriculture and fishery (Nace rev.1, 2-digit industries 1, 2, and 5) as well as minor service activities and extra-territorial activities (Nace rev.1, 2-digit industries 95, 96, 97, and 99). 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. Our analysis focuses on manufacturing firms only (Nace rev.1 codes 15 to 37) because of the closer relationship between the export of goods and the industrial activity of the firm. Even though we focus on manufacturing firms we use data *both* on manufacturing and non-manufacturing firms to build some of our variables, including export experience as well as the Nace rev.1 2-digit code, size, and productivity of the previous employing firm.

Each worker in *Quadros de Pessoal* (QP) has a unique 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.

All the information in QP is collected during the month of November of each year. Worker-level variables refer to October of the same year. To control for outliers, we apply a trimming based on the hourly wage and eliminate 0.5 percent of the observations on

[III] It is well known that employer-reported wage information is subject to less measurement error than worker-reported data. Furthermore, the Quadros de Pessoal registry is routinely used by the inspectors of the Ministry of Employment to monitor whether the firm wage policy complies with the law.

both extremes of the distribution. We thank Anabela Carneiro for providing us with the conversion table between education categories (as defined in QP) and number of years of schooling. Firm-level variables refer to the current calendar year (except firm total sales that refer to the previous calendar year). The location of the firm is measured according to the NUTS 3 regional disaggregation. 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.

A-4. Definitions

Some concepts are recurring in the explanation of a majority of the tables and figures. We define them here.

Firm-level variables

Firm Age Firm age at time t is equal to the (log) difference between t and the year (minus one) the firm was created. The year the firm was created is replaced to missing whenever it is earlier than 1600.
Firm Export Status We divide firms into new, never, continuing, exiting and other exporters. Firm f at time t is a new exporter if the firm exports in t but not in $t-1$. If the opposite happens, the firm is an exiting exporter at time t. If the firm exports both in $t-1$ and in t it is a continuing exporter in t. If the firm does not export neither in $t-1$ nor in t then it is a never exporter in t. If the firm is not observed in $t-1$ then we classify it as other exporter in t. Never exporter is the reference category in the wage analysis.
Firm Productivity Firm (apparent labor) productivity at time t is equal to the (log) ratio between total sales (sales in the domestic market plus exports) and the number of all workers employed by the firm as resulting from the firm record.
Firm Size Firm size at time t is equal to the (log) number of all workers employed by the firm as resulting from the firm record.
Foreign Ownership A firm is defined as foreign-owned if 50 percent or more of its equity is owned by a non-resident.
Industry-level Exports They are obtained aggregating HS6 codes export data from the BACI dataset provided by CEPII and represent (log) aggregate exports of Portugal of products belonging to Nace rev.1 2-digit industries.
Share of Skilled Workers Share of firm's workers with 12 or more years of education.

Worker-level variables

Hourly Wage (Log) hourly wage is computed adding base and overtime wages plus regular benefits (at the month-level) and dividing by the number of regular and overtime hours worked in the reference week multiplied by $4.\bar{3}$. We apply a trimming of the top and bottom 0.5 per cent. Regular and overtime hours worked are set to (i) missing if (individually) greater than 480 per month, (ii) to zero if negative.
Hiring Date The year the worker was hired in the firm is a variable that is directly registered in QP. Since there are few instances when the hiring date changes from year

to year for the same worker-firm spell, we create a robust version of the hiring date computed using the mode for each firm-worker spell. If there is a tie, we take the minimum year in the spell.
Tenure This variable is measured as the difference between the current year and the hiring date.

Country-groups

We partition export destinations into seven groups: Spain, other top 5 export destination countries (Italy, UK, France, and Germany), other EU countries (Austria, Belgium or Luxembourg, Denmark, Finland, Greece, Ireland, Netherlands, Sweden), OECD countries not belonging to the EU (USA, Australia, Canada, Switzerland, Czech Republic, Hungary, Iceland, Japan, South Korea, Mexico, Norway, New Zealand, Poland, Slovakia, Turkey), countries belonging to the Community of Portuguese Language Countries (CPLP in Portuguese—Angola, Brazil, Cape Verde, Guinea-Bissau, Mozambique, Sao Tome and Principe, and Timor-Leste), China, and the rest of the World. We adopted this partition because of the following reasons. First, Portugal is an economy deeply rooted into the European market. EU countries are special and we further divide them into top 5 destinations (based on the number of Portuguese exporting firms, as well as total exports, in 2005) and other EU countries. The strong cultural ties and proximity to Spain also require attention which is why we separately consider Spain. Exports to OECD as compared to non-OECD countries are likely to be different in terms of both exported products and quality range. At the same time, China and countries sharing language ties with Portugal are also likely to be characterized by different exports patterns.

Product-groups

We use the Isic rev2 3-digit classification to divide export products into 29 categories ranging from "Food manufacturing" (code 311) to "Other Manufacturing Industries" (code 390). The Isic rev2 is a widely used classification allowing to bridge products to industries and for which both information on the degree of product differentiation - borrowed from Rauch (1999) - and financial vulnerability - borrowed from Manova et al. (2015) - is readily available. At the same time data on both trade and production across countries over 1995-2005 is easily accessible at this level of disaggregation from the CEPII (Centre d'Etude Prospectives et d'Informations Internationales) trade and production dataset. This data is needed to compute our measure of Chinese import penetration in country d for product p à la Autor et al. (2014). The 29 product categories we end up working with also represent a balance between a sufficient level of detail on the one side and the need to economise on the dimensionality of the dataset involved in estimations on the other side.

A-5. High-dimensional fixed effects

All specifications in the paper are estimated with OLS. With large data sets, estimation of a linear regression model with two high-dimensional fixed effects poses some compu-

tational 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 reg2hdfe implementing Guimarães and Portugal (2010)'s algorithm; this routine has also been used in Carneiro et al. (2012), and Martins and Opromolla (2012). 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 reg2hdfe routine setting the convergence criterion for the iteration method to 0.001. As we are not interested in worker and/or firm fixed effects per se, we keep all observations for which covariates are available and not the largest connected group.

Tables Appendix

Table B-15: Wage regression with basic experience and experience in a destination, controls (1st set, for Table 4)

	(1)	(2)	(3)	(4)	(5)	(6)
Age (Years)	0.025^a	0.025^a	0.023^a	0.025^a	0.025^a	0.023^a
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age Squared (Years)	-0.000^a	-0.000^a	-0.000^a	-0.000^a	-0.000^a	-0.000^a
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Education (Years)	0.041^a	0.040^a	0.003^a	0.041^a	0.040^a	0.003^a
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Tenure (Years)	0.005^a	0.005^a	0.003^a	0.005^a	0.005^a	0.003^a
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Manager (0/1)	0.559^a	0.553^a	0.058^a	0.559^a	0.553^a	0.058^a
	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.002)
2nd Firm (or later)	-0.016^a	-0.004^a	0.014^a	-0.016^a	-0.004^a	0.014^a
	(0.001)	(0.001)	(0.003)	(0.001)	(0.001)	(0.003)
3rd Firm (or later)	0.015^a	0.013^a	0.008^a	0.015^a	0.012^a	0.008^a
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
4th Firm (or later)	0.031^a	0.015^a	0.008^a	0.031^a	0.015^a	0.008^a
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
5th Firm (or later)	0.029^a	0.014^c	0.016^c	0.027^a	0.014^c	0.015^c
	(0.009)	(0.007)	(0.009)	(0.009)	(0.007)	(0.009)
6th Firm (or later)	0.030	0.051^b	0.020	0.029	0.051^b	0.020
	(0.027)	(0.024)	(0.025)	(0.026)	(0.024)	(0.025)
7th Firm (or later)	0.174	0.063	0.122	0.169	0.064	0.122
	(0.117)	(0.091)	(0.088)	(0.116)	(0.091)	(0.088)
2nd Firm (or later) and manag.	-0.065^a	-0.047^a	0.058^a	-0.065^a	-0.047^a	0.058^a
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
3rd Firm (or later) and manag.	0.037^a	0.027^a	0.054^a	0.040^a	0.029^a	0.055^a
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
4th Firm (or later) and manag.	0.029^b	0.018	0.040^a	0.032^b	0.020	0.040^a
	(0.014)	(0.013)	(0.013)	(0.014)	(0.013)	(0.013)
5th Firm (or later) and manag.	-0.023	-0.022	-0.056^b	-0.020	-0.019	-0.056^b
	(0.039)	(0.035)	(0.027)	(0.039)	(0.034)	(0.028)
6th Firm (or later) and manag.	0.059	0.068	-0.024	0.065	0.074	-0.021
	(0.110)	(0.106)	(0.060)	(0.107)	(0.102)	(0.060)
7th Firm (or later) and manag.	-0.709^b	-0.322^c	-0.252^b	-0.685^a	-0.306^c	-0.256^b
	(0.281)	(0.192)	(0.123)	(0.266)	(0.176)	(0.122)
Observations	4,006,826	4,004,447	3,609,284	4,006,826	4,004,447	3,609,284
R^2	0.598	0.697	0.925	0.598	0.697	0.925

Robust standard errors in parentheses
^{a} p<0.01, ^{b} p<0.05, ^{c} p<0.1

Notes: This Table includes the first set of controls for the regressions of Table 4. See the Appendix for details on covariates. All specifications include year dummies, and those not including fixed effects also contain region (NUTS-3) and industry (NACE 2-digits) dummies. $^a p < 0.01$, $^b p < 0.05$, $^c p < 0.1$.

Table B-16: Wage regression with basic experience and experience in a destination, controls (2nd set, for Table 4)

	(1)	(2)	(3)	(4)	(5)	(6)
Firm Size (log)	0.030^a	0.012^a	0.054^a	0.030^a	0.012^a	0.054^a
	(0.000)	(0.001)	(0.001)	(0.000)	(0.001)	(0.001)
Apparent Labor Productivity (log)	0.075^a	0.006^a	0.005^a	0.076^a	0.006^a	0.005^a
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Exports PT	-0.058^a	0.047^a	0.067^a	-0.058^a	0.047^a	0.067^a
	(0.000)	(0.001)	(0.001)	(0.000)	(0.001)	(0.001)
Firm Age (log)	0.002^a	-0.003^a	0.001^a	0.002^a	-0.003^a	0.001^a
	(0.000)	(0.001)	(0.001)	(0.000)	(0.001)	(0.001)
Foreign Ownership (0/1)	0.026^a	0.014^a	0.006^a	0.026^a	0.014^a	0.006^a
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Share of Skilled Workers	0.160^a	-0.080^a	0.035^a	0.160^a	-0.080^a	0.035^a
	(0.002)	(0.003)	(0.002)	(0.002)	(0.003)	(0.002)
Size of Prev. Firm (0/1)	-0.005^a	0.053^a	-0.550^a	-0.007^a	0.053^a	0.090
	(0.001)	(0.001)	(0.206)	(0.001)	(0.001)	(0.209)
App. Prod. of Prev. Firm (0/1)	-0.273^a	-0.235^a	-0.097^a	-0.276^a	-0.235^a	-0.097^a
	(0.004)	(0.004)	(0.008)	(0.004)	(0.004)	(0.008)
Size of Previous Firm	-0.007^a	-0.004^a	0.002^a	-0.006^a	-0.005^a	0.002^a
	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.001)
App. Prod. of Previous Firm	0.030^a	0.024^a	0.010^a	0.030^a	0.024^a	0.010^a
	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.001)
Sector of Previous Firm Equal	0.076^a		-1.367^a	0.077^a		-1.051^a
	(0.001)		(0.280)	(0.001)		(0.281)
d_age_mg	0.008^c	-0.003	0.030^a	0.008^c	-0.002	0.030^a
	(0.005)	(0.005)	(0.004)	(0.005)	(0.005)	(0.004)
d_educ_mg	-0.080^a	-0.025^a	-0.008^b	-0.080^a	-0.025^a	-0.008^b
	(0.004)	(0.005)	(0.003)	(0.004)	(0.005)	(0.003)
Avg. Managers' Age	0.001^a	0.000^a	-0.000^a	0.001^a	0.000^a	-0.000^a
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Std. Dev. Managers' Age	0.001^a	0.000^a	0.000^a	0.001^a	0.000^a	0.000^a
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Avg. Managers' Education	0.004^a	0.001^a	-0.000^b	0.004^a	0.001^a	-0.000^b
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Std. Dev. Managers' Education	0.002^a	-0.001^a	-0.000^b	0.002^a	-0.001^a	-0.000^b
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Export Exp. (0/1)	0.006^a	0.014^a	-0.004^c	0.022^a	0.010^a	-0.003
	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.002)
Observations	4,006,826	4,004,447	3,609,284	4,006,826	4,004,447	3,609,284
R^2	0.598	0.697	0.925	0.598	0.697	0.925

Robust standard errors in parentheses
^{a} p<0.01, ^{b} p<0.05, ^{c} p<0.1

Notes: This Table includes the second set of controls for the regressions of Table 4. See the Appendix for details on covariates. All specifications include year dummies, and those not including fixed effects also contain region (NUTS-3) and industry (NACE 2-digits) dummies. $^a p < 0.01$, $^b p < 0.05$, $^c p < 0.1$.

Table B-17: Wage regression with basic experience and experience in a destination, controls (3rd set, for Table 4)

	(1)	(2)	(3)	(4)	(5)	(6)
New Exporter (0/1)	-0.006^a	0.000	0.001	-0.005^a	-0.000	0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Continuing Exporter (0/1)	-0.017^a	0.006^a	0.006^a	-0.015^a	0.005^a	0.006^a
	(0.000)	(0.001)	(0.001)	(0.000)	(0.001)	(0.001)
Exiting Exporter (0/1)	0.009^a	0.003^a	0.003^a	0.009^a	0.004^a	0.003^a
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Other Exporter (0/1)	-0.004^a	0.003^a	0.003^a	-0.003^a	0.003^a	0.003^a
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Sector of Previous Firm Diff		-0.056^a	-1.384^a		-0.056^a	-1.069^a
		(0.001)	(0.280)		(0.001)	(0.281)
Sector of Prev. Firm (0/1)			-1.918^a			-0.963^a
			(0.250)			(0.251)
Matched Export Exp. (0/1)				-0.028^a	0.007^a	-0.001
				(0.001)	(0.001)	(0.001)
Constant	0.131			0.129		
	(.)			(.)		
Observations	4,006,826	4,004,447	3,609,284	4,006,826	4,004,447	3,609,284
R^2	0.598	0.697	0.925	0.598	0.697	0.925

Robust standard errors in parentheses
^{a} p<0.01, ^{b} p<0.05, ^{c} p<0.1

Notes: This Table includes the third set of controls for the regressions of Table 4. See the Appendix for details on covariates. All specifications include year dummies, and those not including fixed effects also contain region (NUTS-3) and industry (NACE 2-digits) dummies. $^a p < 0.01$, $^b p < 0.05$, $^c p < 0.1$.

Table B-18: Wage regression with basic experience and experience in a product, controls (1st set, for Table 5)

	(1)	(2)	(3)	(4)	(5)	(6)
Age (Years)	0.025^a	0.025^a	0.023^a	0.025^a	0.025^a	0.023^a
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age Squared (Years)	-0.000^a	-0.000^a	-0.000^a	-0.000^a	-0.000^a	-0.000^a
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Education (Years)	0.041^a	0.040^a	0.003^a	0.041^a	0.040^a	0.003^a
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Tenure (Years)	0.005^a	0.005^a	0.003^a	0.005^a	0.005^a	0.003^a
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Manager (0/1)	0.559^a	0.553^a	0.058^a	0.560^a	0.553^a	0.058^a
	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.002)
2nd Firm (or later)	-0.016^a	-0.004^a	0.014^a	-0.016^a	-0.005^a	0.014^a
	(0.001)	(0.001)	(0.003)	(0.001)	(0.001)	(0.003)
3rd Firm (or later)	0.015^a	0.013^a	0.008^a	0.015^a	0.012^a	0.008^a
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
4th Firm (or later)	0.031^a	0.015^a	0.008^a	0.031^a	0.015^a	0.008^a
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
5th Firm (or later)	0.029^a	0.014^c	0.016^c	0.028^a	0.014^c	0.016^c
	(0.009)	(0.007)	(0.009)	(0.009)	(0.007)	(0.009)
6th Firm (or later)	0.030	0.051^b	0.020	0.030	0.050^b	0.020
	(0.027)	(0.024)	(0.025)	(0.027)	(0.024)	(0.025)
7th Firm (or later)	0.174	0.063	0.122	0.173	0.065	0.123
	(0.117)	(0.091)	(0.088)	(0.116)	(0.091)	(0.088)
2nd Firm (or later) and manag.	-0.065^a	-0.047^a	0.058^a	-0.067^a	-0.050^a	0.058^a
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
3rd Firm (or later) and manag.	0.037^a	0.027^a	0.054^a	0.038^a	0.027^a	0.054^a
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
4th Firm (or later) and manag.	0.029^b	0.018	0.040^a	0.031^b	0.019	0.040^a
	(0.014)	(0.013)	(0.013)	(0.014)	(0.013)	(0.013)
5th Firm (or later) and manag.	-0.023	-0.022	-0.056^b	-0.020	-0.018	-0.056^b
	(0.039)	(0.035)	(0.027)	(0.039)	(0.035)	(0.028)
6th Firm (or later) and manag.	0.059	0.068	-0.024	0.060	0.067	-0.024
	(0.110)	(0.106)	(0.060)	(0.107)	(0.102)	(0.061)
7th Firm (or later) and manag.	-0.709^b	-0.322^c	-0.252^b	-0.690^a	-0.306^c	-0.253^b
	(0.281)	(0.192)	(0.123)	(0.266)	(0.174)	(0.122)
Observations	4,006,826	4,004,447	3,609,284	4,006,826	4,004,447	3,609,284
R^2	0.598	0.697	0.925	0.598	0.697	0.925

Robust standard errors in parentheses
^{a} p<0.01, ^{b} p<0.05, ^{c} p<0.1

Notes: This Table includes the first set of controls for the regressions of Table 5. See the Appendix for details on covariates. All specifications include year dummies, and those not including fixed effects also contain region (NUTS-3) and industry (NACE 2-digits) dummies. $^a p < 0.01$, $^b p < 0.05$, $^c p < 0.1$.

Table B-19: Wage regression with basic experience and experience in a product, controls (2nd set, for Table 5)

	(1)	(2)	(3)	(4)	(5)	(6)
Firm Size (log)	0.030^a	0.012^a	0.054^a	0.030^a	0.011^a	0.054^a
	(0.000)	(0.001)	(0.001)	(0.000)	(0.001)	(0.001)
Apparent Labor Productivity (log)	0.075^a	0.006^a	0.005^a	0.075^a	0.006^a	0.005^a
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Exports PT	-0.058^a	0.047^a	0.067^a	-0.058^a	0.047^a	0.067^a
	(0.000)	(0.001)	(0.001)	(0.000)	(0.001)	(0.001)
Firm Age (log)	0.002^a	-0.003^a	0.001^a	0.002^a	-0.003^a	0.001^a
	(0.000)	(0.001)	(0.001)	(0.000)	(0.001)	(0.001)
Foreign Ownership (0/1)	0.026^a	0.014^a	0.006^a	0.026^a	0.014^a	0.006^a
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Share of Skilled Workers	0.160^a	-0.080^a	0.035^a	0.160^a	-0.081^a	0.035^a
	(0.002)	(0.003)	(0.002)	(0.002)	(0.003)	(0.002)
Size of Prev. Firm (0/1)	-0.005^a		-0.550^a	-0.006^a		0.087
	(0.001)		(0.206)	(0.001)		(0.209)
App. Prod. of Prev. Firm (0/1)	-0.273^a	-0.235^a	-0.097^a	-0.275^a	-0.233^a	-0.097^a
	(0.004)	(0.004)	(0.008)	(0.004)	(0.004)	(0.008)
Size of Previous Firm	-0.007^a	-0.004^a	0.002^a	-0.006^a	-0.005^a	0.002^a
	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.001)
App. Prod. of Previous Firm	0.030^a	0.024^a	0.010^a	0.030^a	0.024^a	0.010^a
	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.001)
Sector of Previous Firm Equal	0.076^a		-1.367^a	0.077^a		-1.058^a
	(0.001)		(0.280)	(0.001)		(0.281)
d_age_mg	0.008^c	-0.003	0.030^a	0.008^c	-0.002	0.030^a
	(0.005)	(0.005)	(0.004)	(0.005)	(0.005)	(0.004)
d_educ_mg	-0.080^a	-0.025^a	-0.008^b	-0.080^a	-0.025^a	-0.008^b
	(0.004)	(0.005)	(0.003)	(0.004)	(0.005)	(0.003)
Avg. Managers' Age	0.001^a	0.000^a	-0.000^a	0.001^a	0.000^a	-0.000^a
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Std. Dev. Managers' Age	0.001^a	0.000^a	0.000^a	0.001^a	0.000^a	0.000^a
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Avg. Managers' Education	0.004^a	0.001^a	-0.000^b	0.004^a	0.001^a	-0.000^b
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Std. Dev. Managers' Education	0.002^a	-0.001^a	-0.000^b	0.002^a	-0.001^a	-0.000^b
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Export Exp. (0/1)	0.006^a	0.014^a	-0.004^c	0.013^a	0.003^a	-0.008^a
	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.002)
Observations	4,006,826	4,004,447	3,609,284	4,006,826	4,004,447	3,609,284
R^2	0.598	0.697	0.925	0.598	0.697	0.925

Robust standard errors in parentheses
^{a} p<0.01, ^{b} p<0.05, ^{c} p<0.1

Notes: This Table includes the second set of controls for the regressions of Table 5. See the Appendix for details on covariates. All specifications include year dummies, and those not including fixed effects also contain region (NUTS-3) and industry (NACE 2-digits) dummies. $^a p < 0.01$, $^b p < 0.05$, $^c p < 0.1$.

Table B-20: Wage regression with basic experience and experience in a product, controls (3rd set, for Table 5)

	(1)	(2)	(3)	(4)	(5)	(6)
New Exporter (0/1)	-0.006^a	0.000	0.001	-0.006^a	-0.001	0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Continuing Exporter (0/1)	-0.017^a	0.006^a	0.006^a	-0.017^a	0.004^a	0.006^a
	(0.000)	(0.001)	(0.001)	(0.000)	(0.001)	(0.001)
Exiting Exporter (0/1)	0.009^a	0.003^a	0.003^a	0.009^a	0.004^a	0.003^a
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Other Exporter (0/1)	-0.004^a	0.003^a	0.003^a	-0.003^a	0.003^a	0.003^a
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Sector of Prev. Firm (0/1)		-0.053^a	-1.918^a		-0.052^a	-0.972^a
		(0.001)	(0.250)		(0.001)	(0.251)
Sector of Previous Firm Diff		-0.056^a	-1.384^a		-0.053^a	-1.074^a
		(0.001)	(0.280)		(0.001)	(0.281)
Matched Export Exp. (0/1)				-0.012^a	0.025^a	0.006^a
				(0.001)	(0.001)	(0.001)
Constant	0.131			0.130		
	(.)			(6.429)		
Observations	4,006,826	4,004,447	3,609,284	4,006,826	4,004,447	3,609,284
R^2	0.598	0.697	0.925	0.598	0.697	0.925

Robust standard errors in parentheses
^{a} p<0.01, ^{b} p<0.05, ^{c} p<0.1

Notes: This Table includes the third set of controls for the regressions of Table 5. See the Appendix for details on covariates. All specifications include year dummies, and those not including fixed effects also contain region (NUTS-3) and industry (NACE 2-digits) dummies. $^a p < 0.01$, $^b p < 0.05$, $^c p < 0.1$.

Table B-21: Wage regression with different types of managers and export experience, controls (1st set, for Table 6)

	(1)	(2)	(3)	(4)	(5)	(6)
Age (Years)	0.026^a	0.025^a	0.023^a	0.026^a	0.025^a	0.023^a
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age Squared (Years)	-0.000^a	-0.000^a	-0.000^a	-0.000^a	-0.000^a	-0.000^a
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Education (Years)	0.041^a	0.040^a	0.003^a	0.041^a	0.040^a	0.003^a
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Tenure (Years)	0.005^a	0.005^a	0.003^a	0.005^a	0.005^a	0.003^a
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Other manager (0/1)	0.500^a	0.478^a	0.049^a	0.501^a	0.478^a	0.049^a
	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.002)
General manager (0/1)	0.432^a	0.520^a	0.098^a	0.432^a	0.520^a	0.098^a
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Production manager (0/1)	0.713^a	0.713^a	0.090^a	0.713^a	0.713^a	0.090^a
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Financial manager (0/1)	0.728^a	0.730^a	0.079^a	0.729^a	0.731^a	0.079^a
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Sales manager (0/1)	0.801^a	0.812^a	0.136^a	0.802^a	0.812^a	0.136^a
	(0.006)	(0.006)	(0.007)	(0.006)	(0.006)	(0.007)
2nd Firm (or later)	-0.017^a	-0.005^a	0.014^a	-0.017^a	-0.005^a	0.014^a
	(0.001)	(0.001)	(0.003)	(0.001)	(0.001)	(0.003)
3rd Firm (or later)	0.015^a	0.012^a	0.008^a	0.015^a	0.012^a	0.008^a
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
4th Firm (or later)	0.031^a	0.015^a	0.008^a	0.031^a	0.015^a	0.008^a
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
5th Firm (or later)	0.027^a	0.014^c	0.016^c	0.028^a	0.014^c	0.016^c
	(0.009)	(0.007)	(0.009)	(0.009)	(0.007)	(0.009)
6th Firm (or later)	0.029	0.050^b	0.019	0.029	0.050^b	0.020
	(0.026)	(0.024)	(0.025)	(0.026)	(0.024)	(0.025)
7th Firm (or later)	0.170	0.062	0.123	0.173	0.064	0.124
	(0.116)	(0.091)	(0.088)	(0.116)	(0.092)	(0.088)
2nd Firm (or later) and manag.	-0.045^a	-0.029^a	0.057^a	-0.046^a	-0.031^a	0.058^a
	(0.004)	(0.003)	(0.004)	(0.004)	(0.003)	(0.004)
3rd Firm (or later) and manag.	0.038^a	0.027^a	0.054^a	0.035^a	0.025^a	0.053^a
	(0.006)	(0.005)	(0.006)	(0.006)	(0.005)	(0.006)
4th Firm (or later) and manag.	0.030^b	0.019	0.040^a	0.028^b	0.018	0.040^a
	(0.013)	(0.012)	(0.013)	(0.013)	(0.012)	(0.013)
5th Firm (or later) and manag.	-0.012	-0.014	-0.053^c	-0.012	-0.014	-0.054^b
	(0.038)	(0.033)	(0.027)	(0.038)	(0.032)	(0.027)
6th Firm (or later) and manag.	0.051	0.066	-0.019	0.046	0.061	-0.022
	(0.094)	(0.091)	(0.061)	(0.094)	(0.091)	(0.061)
7th Firm (or later) and manag.	-0.623^b	-0.233	-0.261^b	-0.625^b	-0.232	-0.258^b
	(0.266)	(0.171)	(0.124)	(0.266)	(0.169)	(0.124)
Constant	0.114			0.115		
	(15.504)			(10.468)		
Observations	4,006,826	4,004,447	3,609,284	4,006,826	4,004,447	3,609,284
R^2	0.599	0.698	0.925	0.599	0.698	0.925

Robust standard errors in parentheses
^{a} p<0.01, ^{b} p<0.05, ^{c} p<0.1

Notes: This Table includes the first set of controls for the regressions of Table 6. See the Appendix for details on covariates. All specifications include year dummies, and those not including fixed effects also contain region (NUTS-3) and industry (NACE 2-digits) dummies. $^a p < 0.01$, $^b p < 0.05$, $^c p < 0.1$.

Table B-22: Wage regression with different types of managers and export experience, controls (2nd set, for Table 6)

	(1)	(2)	(3)	(4)	(5)	(6)
Firm Size (log)	0.030^a	0.011^a	0.054^a	0.029^a	0.011^a	0.054^a
	(0.000)	(0.001)	(0.001)	(0.000)	(0.001)	(0.001)
Apparent Labor Productivity (log)	0.075^a	0.007^a	0.005^a	0.075^a	0.006^a	0.005^a
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Exports PT	-0.058^a	0.047^a	0.067^a	-0.057^a	0.047^a	0.067^a
	(0.000)	(0.001)	(0.001)	(0.000)	(0.001)	(0.001)
Firm Age (log)	0.002^a	-0.003^a	0.001^a	0.002^a	-0.003^a	0.001^a
	(0.000)	(0.001)	(0.001)	(0.000)	(0.001)	(0.001)
Foreign Ownership (0/1)	0.027^a	0.015^a	0.006^a	0.027^a	0.015^a	0.006^a
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Share of Skilled Workers	0.164^a	-0.079^a	0.035^a	0.164^a	-0.079^a	0.035^a
	(0.002)	(0.003)	(0.002)	(0.002)	(0.003)	(0.002)
Size of Prev. Firm (0/1)	0.054^a		-0.006^a			
	(0.001)	(0.001)		(0.001)		
App. Prod. of Prev. Firm (0/1)	-0.273^a	-0.229^a	-0.096^a	-0.272^a	-0.228^a	-0.095^a
	(0.004)	(0.004)	(0.008)	(0.004)	(0.004)	(0.008)
Size of Previous Firm	-0.006^a	-0.005^a	0.002^a	-0.006^a	-0.005^a	0.002^a
	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.001)
App. Prod. of Previous Firm	0.030^a	0.023^a	0.010^a	0.030^a	0.023^a	0.010^a
	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.001)
Sector of Previous Firm Equal	0.077^a		-2.617^a	0.077^a		-2.621^a
	(0.001)		(0.245)	(0.001)		(0.245)
d_age_mg	0.010^b	0.001	0.030^a	0.010^b	0.001	0.030^a
	(0.005)	(0.005)	(0.004)	(0.005)	(0.005)	(0.004)
d_educ_mg	-0.079^a	-0.026^a	-0.008^b	-0.079^a	-0.026^a	-0.008^b
	(0.004)	(0.005)	(0.003)	(0.004)	(0.005)	(0.003)
Avg. Managers' Age	0.001^a	0.000^a	-0.000^a	0.001^a	0.000^a	-0.000^a
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Std. Dev. Managers' Age	0.001^a	0.000^a	0.000^a	0.001^a	0.000^a	0.000^a
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Avg. Managers' Education	0.004^a	0.001^a	-0.000^b	0.004^a	0.001^a	-0.000^b
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Std. Dev. Managers' Education	0.002^a	-0.001^a	-0.000^b	0.002^a	-0.001^a	-0.000^b
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Export Exp. (0/1)	0.023^a	0.011^a	-0.003	0.013^a	0.003^a	-0.008^a
	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.002)
Observations	4,006,826	4,004,447	3,609,284	4,006,826	4,004,447	3,609,284
R^2	0.599	0.698	0.925	0.599	0.698	0.925

Robust standard errors in parentheses
^{a} p<0.01, ^{b} p<0.05, ^{c} p<0.1

Notes: This Table includes the second set of controls for the regressions of Table 6. See the Appendix for details on covariates. All specifications include year dummies, and those not including fixed effects also contain region (NUTS-3) and industry (NACE 2-digits) dummies. $^a p < 0.01$, $^b p < 0.05$, $^c p < 0.1$.

Table B-23: Wage regression with different types of managers and export experience, controls (3rd set, for Table 6)

	(1)	(2)	(3)	(4)	(5)	(6)
New Exporter (0/1)	-0.005^a	-0.000	0.001	-0.006^a	-0.001	0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Continuing Exporter (0/1)	-0.015^a	0.004^a	0.006^a	-0.017^a	0.004^a	0.006^a
	(0.000)	(0.001)	(0.001)	(0.000)	(0.001)	(0.001)
Exiting Exporter (0/1)	0.008^a	0.003^a	0.003^a	0.008^a	0.004^a	0.003^a
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Other Exporter (0/1)	-0.003^a	0.003^a	0.003^a	-0.004^a	0.003^a	0.003^a
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Sector of Previous Firm Diff		-0.056^a	-2.635^a		-0.053^a	-2.638^a
		(0.001)	(0.245)		(0.001)	(0.245)
Sector of Prev. Firm (0/1)			-2.619^a		-0.053^a	-2.623^a
			(0.245)		(0.001)	(0.245)
Matched Export Exp. (0/1)	-0.029^a	0.005^a	-0.002	-0.013^a	0.024^a	0.006^a
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Constant	0.114			0.115		
	(15.504)			(10.468)		
Observations	4,006,826	4,004,447	3,609,284	4,006,826	4,004,447	3,609,284
R^2	0.599	0.698	0.925	0.599	0.698	0.925

Robust standard errors in parentheses
^{a} p<0.01, ^{b} p<0.05, ^{c} p<0.1

Notes: This Table includes the third set of controls for the regressions of Table 6. See the Appendix for details on covariates. All specifications include year dummies, and those not including fixed effects also contain region (NUTS-3) and industry (NACE 2-digits) dummies. $^a p < 0.01$, $^b p < 0.05$, $^c p < 0.1$.

Table B-24: Probability to Start and Continue Exporting to a Specific Destination, controls (for Table 7)

	(1)	(2)	(5)	(6)
Firm Size (log)	0.030[a]	0.027[a]	0.126[a]	0.124[a]
	(0.006)	(0.006)	(0.014)	(0.014)
App. Labor Productivity (log)	0.005[b]	0.005[b]	0.010[b]	0.010[b]
	(0.002)	(0.002)	(0.004)	(0.004)
Firm Age (log)	0.003	0.004	0.008	0.008
	(0.004)	(0.004)	(0.010)	(0.010)
Foreign Ownership (0/1)	0.001	0.000	0.004	0.004
	(0.002)	(0.002)	(0.004)	(0.004)
Exports PT	0.005	0.004	0.003	0.003
	(0.005)	(0.005)	(0.008)	(0.008)
Share of Skilled Workers	-0.002	-0.003	0.012[c]	0.012[c]
	(0.002)	(0.002)	(0.006)	(0.006)
Avg. Managers' Age	-0.002	-0.001	-0.000	0.000
	(0.002)	(0.002)	(0.004)	(0.004)
Std. Dev. Managers' Age	0.001	0.000	0.002	0.001
	(0.001)	(0.001)	(0.003)	(0.003)
Avg. Managers' Education	0.000	-0.000	-0.001	-0.001
	(0.002)	(0.002)	(0.005)	(0.005)
Std. Dev. Managers' Education	-0.001	-0.001	-0.001	-0.002
	(0.001)	(0.001)	(0.003)	(0.003)
Avg. FE Managers	0.003	0.003	0.002	0.002
	(0.003)	(0.003)	(0.008)	(0.008)
Std. Dev. FE Managers	-0.002	-0.003[c]	0.015[a]	0.014[a]
	(0.002)	(0.002)	(0.005)	(0.005)
Observations	166,860	166,860	52,124	52,124
R^2	0.175	0.176	0.256	0.257
Firm FE	X	X	X	X
Destination-Year Dummies	X	X	X	X

Robust standard errors in parentheses
[a] p<0.01, [b] p<0.05, [c] p<0.1

Notes: This Table reports OLS and IV estimator coefficients and standard errors for the control covariates of our model of firm's entry and continuation into a foreign destination (2). Estimation results for the main covariates, as well as more details regarding the econometric model and estimation techniques, are provided in the Table 7. All specifications include destination-year dummies. All covariates, except destination-year dummies, have been divided by their respective standard deviation in order to deliver a comparable metric. Standard errors clustered at the firm-level in parentheses: $^{a}p < 0.01$, $^{b}p < 0.05$, $^{c}p < 0.1$.

Table B-25: Probability to Start and Continue Exporting a Specific Product, controls (for Table 8)

	(1)	(2)	(5)	(6)
Firm Size (log)	0.011[a]	0.009[a]	0.076[a]	0.061[a]
	(0.002)	(0.002)	(0.016)	(0.016)
App. Labor Productivity (log)	0.002[a]	0.002[a]	0.009	0.007
	(0.001)	(0.001)	(0.006)	(0.006)
Firm Age (log)	-0.001	0.000	-0.011	-0.005
	(0.001)	(0.001)	(0.015)	(0.015)
Foreign Ownership (0/1)	0.001	0.001	0.003	0.001
	(0.001)	(0.001)	(0.005)	(0.005)
Exports PT	0.002	0.001	0.013	0.012
	(0.001)	(0.001)	(0.014)	(0.014)
Share of Skilled Workers	0.002[b]	0.001	0.001	-0.002
	(0.001)	(0.001)	(0.009)	(0.009)
Avg. Managers' Age	-0.001[b]	-0.001	0.002	0.009
	(0.001)	(0.001)	(0.006)	(0.006)
Std. Dev. Managers' Age	0.000	0.000	0.007	0.004
	(0.000)	(0.000)	(0.005)	(0.005)
Avg. Managers' Education	-0.001	-0.001	-0.000	-0.003
	(0.001)	(0.001)	(0.008)	(0.008)
Std. Dev. Managers' Education	-0.001[b]	-0.001[b]	-0.001	-0.004
	(0.000)	(0.000)	(0.004)	(0.004)
Avg. FE Managers	0.001	0.001	0.001	0.003
	(0.001)	(0.001)	(0.012)	(0.013)
Std. Dev. FE Managers	0.001	0.001	-0.008	-0.015[c]
	(0.001)	(0.001)	(0.007)	(0.008)
Observations	775,675	775,675	40,125	40,125
R^2	0.070	0.073	0.205	0.214
Firm FE	X	X	X	X
Product-Year FE	X	X	X	X

Robust standard errors in parentheses
[a] p<0.01, [b] p<0.05, [c] p<0.1

Notes: This Table reports OLS and IV estimator coefficients and standard errors for the core covariates of our model of firm's starting and continuing exporting a specific product (2). Estimation results for the main covariates, as well as more details regarding the econometric model and estimation techniques, are provided in the Table 8. All specifications include product-year dummies. All covariates, except destination-year dummies, have been divided by their respective standard deviation in order to deliver a comparable metric. Standard errors clustered at the firm-level in parentheses: $^{a}p < 0.01$, $^{b}p < 0.05$, $^{c}p < 0.1$.

Table B-26: (Log) Value of Exports to a Specific Destination Conditional on Entry or Continuation, controls (for Table 9)

	(1)	(2)	(5)	(6)
Firm Size (log)	0.148	0.141	0.892[a]	0.875[a]
	(0.184)	(0.184)	(0.069)	(0.069)
App. Labor Productivity (log)	0.044	0.045	0.109[a]	0.107[a]
	(0.055)	(0.055)	(0.026)	(0.026)
Firm Age (log)	-0.201	-0.198	-0.073[c]	-0.069[c]
	(0.171)	(0.171)	(0.042)	(0.042)
Foreign Ownership (0/1)	-0.006	-0.006	0.012	0.010
	(0.073)	(0.073)	(0.024)	(0.024)
Exports PT	0.128	0.128	0.043	0.041
	(0.159)	(0.159)	(0.051)	(0.051)
Share of Skilled Workers	-0.009	-0.013	0.060[c]	0.055
	(0.108)	(0.108)	(0.035)	(0.035)
Avg. Managers' Age	0.012	0.012	-0.009	-0.004
	(0.070)	(0.070)	(0.020)	(0.020)
Std. Dev. Managers' Age	-0.014	-0.015	0.000	-0.004
	(0.056)	(0.056)	(0.013)	(0.013)
Avg. Managers' Education	-0.066	-0.067	-0.004	-0.008
	(0.084)	(0.083)	(0.024)	(0.024)
Std. Dev. Managers' Education	-0.075	-0.075	-0.008	-0.012
	(0.051)	(0.051)	(0.013)	(0.013)
Avg. FE Managers	0.017	0.016	-0.026	-0.024
	(0.150)	(0.150)	(0.037)	(0.037)
Std. Dev. FE Managers	0.016	0.015	0.033	0.026
	(0.084)	(0.083)	(0.021)	(0.022)
Observations	6,732	6,732	45,023	45,023
R^2	0.478	0.478	0.506	0.507
Firm FE	X	X	X	X
Destination-Year Dummies	X	X	X	X

Robust standard errors in parentheses
[a] p<0.01, [b] p<0.05, [c] p<0.1

Notes: This Table reports OLS and IV estimator coefficients and standard errors for the control covariates of our model of firm's entry and continuation into a foreign destination (2). Estimation results for the main covariates, as well as more details regarding the econometric model and estimation techniques, are provided in the Table 9. All specifications include destination-year dummies. All covariates, except destination-year dummies, have been divided by their respective standard deviation in order to deliver a comparable metric. Standard errors clustered at the firm-level in parentheses: $^{a}p < 0.01$, $^{b}p < 0.05$, $^{c}p < 0.1$.

Table B-27: (Log) Value of Exports of a Specific Product Conditional on Entry or Continuation, controls (for Table 10)

	(1)	(2)	(5)	(6)
Firm Size (log)	-0.136	-0.159	0.352^a	0.262^b
	(0.154)	(0.153)	(0.103)	(0.103)
App. Labor Productivity (log)	-0.120^b	-0.121^b	0.122^a	0.111^a
	(0.060)	(0.060)	(0.031)	(0.030)
Firm Age (log)	-0.153	-0.140	-0.109	-0.063
	(0.128)	(0.131)	(0.127)	(0.126)
Foreign Ownership (0/1)	-0.000	-0.003	-0.050	-0.061^c
	(0.048)	(0.048)	(0.034)	(0.034)
Exports PT	0.022	0.001	-0.043	-0.044
	(0.149)	(0.150)	(0.095)	(0.101)
Share of Skilled Workers	-0.136	-0.140	-0.047	-0.072
	(0.101)	(0.102)	(0.062)	(0.065)
Avg. Managers' Age	-0.099	-0.091	-0.027	0.008
	(0.068)	(0.067)	(0.033)	(0.035)
Std. Dev. Managers' Age	-0.081	-0.085^c	0.029	0.015
	(0.050)	(0.050)	(0.023)	(0.024)
Avg. Managers' Education	0.004	0.018	-0.041	-0.054
	(0.083)	(0.083)	(0.038)	(0.039)
Std. Dev. Managers' Education	0.054	0.058	-0.029	-0.044^c
	(0.048)	(0.047)	(0.022)	(0.023)
Avg. FE Managers	0.126	0.116	0.036	0.059
	(0.139)	(0.139)	(0.068)	(0.068)
Std. Dev. FE Managers	-0.007	0.003	0.016	-0.028
	(0.077)	(0.077)	(0.046)	(0.051)
Observations	11,853	11,853	29,033	29,033
R^2	0.419	0.421	0.440	0.445
Firm FE	X	X	X	X
Product-Year Dummies	X	X	X	X

Robust standard errors in parentheses
^{a} p<0.01, ^{b} p<0.05, ^{c} p<0.1

Notes: This Table reports OLS and IV estimator coefficients and standard errors for the control covariates of our model of firm's entry and continuation into a foreign destination (2). Estimation results for the main covariates, as well as more details regarding the econometric model and estimation techniques, are provided in the Table 10. All specifications include product-year dummies. All covariates, except destination-year dummies, have been divided by their respective standard deviation in order to deliver a comparable metric. Standard errors clustered at the firm-level in parentheses: $^a p < 0.01$, $^b p < 0.05$, $^c p < 0.1$.

Table B-28: Probability to Start Exporting in Angola; controls (for Table 11)

VARIABLES	(1) 1 pse	(2) 2 pse	(3) 3 pse	(4) 4 pse
Firm Size (log)	0.019^a	0.023^a	0.023^a	0.022^b
	(0.002)	(0.009)	(0.009)	(0.009)
App. Labor Productivity (log)	0.011^a	0.007^c	0.007^c	0.007^c
	(0.002)	(0.004)	(0.004)	(0.004)
Firm Age (log)	0.012^a	0.013^b	0.012^c	0.013^c
	(0.002)	(0.007)	(0.007)	(0.007)
Foreign Ownership (0/1)	-0.002^c	0.002	0.002	0.002
	(0.001)	(0.004)	(0.004)	(0.004)
Exports PT	-0.005^a	0.029^a	0.028^a	0.028^a
	(0.001)	(0.008)	(0.008)	(0.008)
Share of Skilled Workers	-0.001	0.005	0.004	0.005
	(0.002)	(0.004)	(0.004)	(0.004)
Avg. Managers' Age	0.001	0.002	0.002	0.002
	(0.001)	(0.003)	(0.003)	(0.003)
Std. Dev. Managers' Age	0.000	-0.004^c	-0.004^b	-0.004^b
	(0.002)	(0.002)	(0.002)	(0.002)
Avg. Managers' Education	0.001	-0.002	-0.002	-0.002
	(0.002)	(0.004)	(0.004)	(0.004)
Std. Dev. Managers' Education	0.001	-0.001	-0.001	-0.001
	(0.002)	(0.002)	(0.002)	(0.002)
Observations	28,420	28,420	28,420	28,420
R^2	0.024	0.383	0.384	0.384

Notes: This Table reports OLS estimator coefficients and standard errors for the control covariates of our model of firm's entry into a foreign destination (2) focused on Angola. Estimation results for the main covariates, as well as more details regarding the econometric model and estimation techniques, are provided in the Table 11. All covariates, have been divided by their respective standard deviation in order to deliver a comparable metric. Standard errors clustered at the firm-level in parentheses: $^a p < 0.01$, $^b p < 0.05$, $^c p < 0.1$.

Table B-29: Probability to Continue Exporting a Specific Product to a Specific Destination; Interaction with Chinese Import Penetration; controls (for Table 14)

	(1)
Firm Size (log)	0.121[a]
	(0.014)
App. Labor Productivity (log)	0.011[a]
	(0.004)
Firm Age (log)	0.006
	(0.010)
Foreign Ownership (0/1)	0.004
	(0.004)
Exports PT	0.002
	(0.008)
Share of Skilled Workers	0.012[c]
	(0.006)
Avg. Managers' Age	0.001
	(0.004)
Std. Dev. Managers' Age	0.002
	(0.003)
Avg. Managers' Education	-0.001
	(0.005)
Std. Dev. Managers' Education	-0.002
	(0.003)
Avg. FE Managers	0.000
	(0.008)
Std. Dev. FE Managers	0.014[a]
	(0.005)
Observations	1,514,409
R^2	0.302
Firm FE	X

Notes: This Table reports OLS estimator coefficients and standard errors for the control covariates of an enriched version of our model of firm's continuation into a foreign destination (2). Estimation results for the main covariates, as well as more details regarding the econometric model and estimation techniques, are provided in the Table 14. All covariates, except destination-year and product-year dummies, have been divided by their respective standard deviation in order to deliver a comparable metric. Standard errors clustered at the firm-level in parentheses: $^a p < 0.01$, $^b p < 0.05$, $^c p < 0.1$.