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Abstract

Using a unique sample of foreign affiliates in Sub-Saharan Africa, we study the relationship of the extensive and intensive margins of their intra-firm trade with knowledge transfer to them from their parent companies. We find that the engagement of foreign affiliates in intra-firm trade and their share of intra-firm trade are positively associated with the probability of these receiving crucial parental assistance in the use of patents, trademarks, and brand names, technology and know-how, access to foreign supplier network, and access to global markets. Foreign affiliates which engage in intra-firm trade and those with a higher share of this type of trade also receive more important overall parental assistance. The positive associations between intra-firm trade and knowledge transfer in the form of patents, trademarks and brand names are weaker in countries with relatively strong legal rights than in countries with relatively weak legal rights. Our findings point to the interplay between property rights and intangible assets theories of the multinational firm by suggesting that the joint role of knowledge flows in production and of multinational firm boundaries as facilitators of transfers of tangibles and intangibles is crucial.

Keywords: knowledge transfer, intra-firm trade, foreign affiliates, Sub-Saharan Africa

JEL Classification: F14, F21, F23, L21, L23, L24

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1 Introduction

Intangible assets theories of the Multinational Corporation (MNC) have highlighted the facilitation of the transfer of intangibles, rather than of tangible goods, as the primary reason for the existence of multinational firm boundaries.[1] Recent empirical evidence on the scarcity of affiliated parties which trade tangible goods with each other within borders (Atalay et al., 2014) and across borders (Ramondo et al., 2016, Blanas and Seric, 2017) has been viewed as a validation of these theories (Atalay et al., 2014). Although property rights theories of the MNC have undoubtedly put more emphasis on tangible goods, intangible assets theories are incomplete as they remain silent about the differences in the transfer of intangibles from MNC headquarters to foreign affiliates with and without intra-firm trade. The latter is particularly relevant if we consider two essential concepts. First, according to the knowledge-based view of the firm, final output cannot be produced unless there is knowledge exchange among different stages of production (Simon, 1991; Grant, 1996b). Hence, the facilitation of the transfer of intangibles accompanying the transfer of tangible goods is an essential issue for foreign affiliates with intra-firm trade. Second, based on the former concept, MNCs which trade at arm's length, rather than intra-firm, are likely to face the crucial issue of non-internalised knowledge transactions. Hence, their parent companies may be less incentivised to invest in relationship-specific assets, including those of intangible nature.

This paper is the first to look into the differences in knowledge transfer from parent companies to foreign affiliates with intra-firm and arm's length trade. In doing so, it provides novel empirical evidence on the associations of the existence (extensive margin) and shares (intensive margin) of foreign affiliates' intra-firm imports and intra-firm exports with knowledge transfer to them from their parents. The identification of these associations improves considerably our understanding of the role of knowledge flows in production and of (multinational) firm boundaries as facilitators of transfers of tangibles and intangibles.

The empirical analysis is conducted with the use of firm-level data from the UNIDO Africa Investor Survey 2010. The dataset includes highly detailed information about 1466 foreign affiliates which engage in international trade and are located in 19 countries of Sub-Saharan Africa. It covers the year 2009 and all sectors of the economy. Foreign affiliates are registered businesses whose parents are based in countries of various income and development levels inside and outside Sub-Saharan Africa.

Although the dataset lacks time variation which could potentially allow us to study the

[1] Among others, see Arrow (1969), Teece (1977), Ethier (1986), Aitken et al. (1996), Ethier and Markusen (1996), Blomström and Kokko (1998), and Atalay et al. (2014).

causal relationship of knowledge transfer from the parent with the extensive and intensive margins of intra-firm trade, it befits the empirical analysis for three main reasons. First, we capture knowledge transfer from the parent to the foreign affiliate with measures of the importance of parental assistance to it in five main areas. These areas are the use of patents, trademarks and brand names, technology and know-how, quality upgrading of staff, access to foreign supplier network, and access to global markets. The measures range between 0 and 5, with higher values indicating more important parental assistance. Using this raw information, we also compute the benchmark and alternative overall measures of parental assistance as the mean and weighted average, respectively, of the measures of parental assistance in the five aforementioned areas. For the alternative overall measure, we use the first component loadings of the principal component analysis as weights. Second, information on the intensive margins of intra-firm imports and intra-firm exports is readily available. Based on this information, we then create dummy variables capturing the extensive margins of the two intra-firm trade flows. Therefore, we can identify the existence and the extent of the vertical relationship between a foreign affiliate and its parent without relying on Input-Output tables or disaggregated classifications of products produced in the two entities (e.g. Alfaro and Charlton, 2009). Third, the richness of the dataset allows us to isolate the relationship between knowledge transfer from the parent and intra-firm trade by controlling for numerous firm-level factors in regressions.

As the measures of parental assistance by area have more than two discrete outcomes with a natural ordering, we estimate ordered probit models where each of these measures is used as the dependent variable. The main explanatory variable is the dummy for intra-firm imports or intra-firm exports, capturing the extensive margin of intra-firm trade, or the share of each of the two intra-firm trade flows, capturing the intensive margin of intra-firm trade. When the benchmark or the alternative overall measure of parental assistance is used as the dependent variable, the model becomes linear and is estimated by OLS. In all regressions, unobserved heterogeneity across affiliate countries, affiliate industries and parent countries is accounted for by the corresponding fixed effects.

From the empirical analysis, we find that the engagement of foreign affiliates in intra-firm trade and their share of intra-firm trade are positively associated with the probability of these receiving crucial parental assistance in the use of patents, trademarks and brand names, technology and know-how, access to foreign supplier network, and access to global markets. Foreign affiliates that engage in intra-firm trade and those with a higher share of this type of trade also receive more important overall assistance from their parents. The intuition

for these findings is that parent companies of MNCs with intra-firm trade have a greater incentive to invest in relationship-specific assets than parent companies of MNCs with arm's length trade and subsequently, they are induced to transfer more critical knowledge to their foreign affiliates. Hence, the joint role of knowledge flows in production and of multinational firm boundaries as facilitators of transfers of both tangibles and intangibles is crucial, pointing to the interplay between property rights and intangible assets theories of the MNC.

By contrast, we find that foreign affiliates with intra-firm imports are less likely to receive crucial parental assistance in quality upgrading of their staff. Existing empirical evidence shows that the probability of engagement in intra-firm imports is higher in more skill-intensive firms (Corcos et al., 2013; Blanas and Seric, 2017) and in foreign affiliates with a higher intangible to tangible capital ratio (Blanas and Seric, 2017). Therefore, a possible explanation for this finding is that foreign affiliates with intra-firm imports already possess the human capital required to further process the intermediate inputs sourced from their parents. Another possible explanation is that labour skills are incorporated in the inputs imported from the parent and are thus sourced in embodied form (Keller and Yeaple, 2013). This finding, though, and its possible interpretations should be treated with caution as it does not hold when the estimating sample is restricted to foreign affiliates in goods-producing industries. However, even if intra-firm imports substitute for the transfer of this type of knowledge, the complementarity of intra-firm trade with transfer of the other four types of knowledge suggests that the distinction between embodied and disembodied knowledge transfer considered in Keller and Yeaple (2013) is likely to explain only a part of multinational production.

In relation to the empirical evidence on the scarcity of foreign affiliates with intra-firm trade (Ramondo et al., 2016, Blanas and Seric, 2017) and on the intangible to tangible capital ratio being a strong determinant of intra-firm trade (Blanas and Seric, 2017), our findings also suggest that, even if multinational firm boundaries are mostly determined by the facilitation of knowledge transfers (Atalay et al., 2014), the most important of these transfers are concentrated among the relatively few foreign affiliates with intra-firm trade.

Finally, we find that the positive associations of intra-firm trade with knowledge transfer from the parent in the form of patents, trademarks and brand names are weaker in countries with relatively strong legal rights than in countries with relatively weak legal rights. This finding suggests that the parent companies of MNCs with arm's length trade have a greater incentive to invest in relationship-specific assets and to transfer more critical knowledge to their foreign affiliates that are located in the first than in the second type of countries.

The remainder of this paper is structured as follows. Section 2 provides the theoretical

background rationalising the relationship of a foreign affiliate's intra-firm trade with knowledge transfer to it from its parent. Section 3 describes the data, the construction of variables and descriptive statistics for knowledge transfer from the parent to foreign affiliates with and without intra-firm trade. Section 4 describes the econometric model, Section 5 presents the main empirical results, while Section 6 discusses numerous robustness checks. Section 7 concludes and provides some suggestions for further research.

2 Theoretical background

In this section, we describe the theoretical background of the relationship between foreign affiliates' intra-firm trade and knowledge transfer to them from their parents. To this purpose, we first introduce main elements of the knowledge-based view of the firm and the concept of costly knowledge transfer and absorption and then, we incorporate these into the property rights model of firm organisational choices developed by Antràs and Helpman (2004).

Knowledge-based view of the firm

Two fundamental elements of the knowledge-based view of the firm is that knowledge is a critical production input (Grant, 1996b) and that agents specialise in specific areas of knowledge due to bounded rationality (Simon, 1991). The combination of these two elements implies that final output cannot be produced unless there is flow of knowledge and ideas among different stages of production (Grant, 1996b; Hansen, 1999). Put differently, the production of final output entails that one production stage acknowledges the relevance of the expertise of the other production stages to its own problems and has sufficient knowledge and understanding of the problems faced and dealt with by them (Simon, 1991).[2] Lack of knowledge exchange among different production stages for coordination purposes can adversely affect production efficiency. For instance, failure to consider manufacturability of a product at an early stage is likely to lead to its extensive re-design and subsequently, to a delay in the transformation of an idea into a commercial product (Simon, 1991).

The need for coordination among different stages of production emphasises knowledge acquisition and application, rather than knowledge creation. Same as Grant (1996b), although we acknowledge the importance of knowledge creation and its connection with knowledge acquisition and application, our focus in this paper is on the latter. That is, we are interested in the capacity of the foreign affiliate to add its own knowledge to embodied or disembodied

[2]This concept is valid regardless of the production process being concentrated in a single entity in a single location, or fragmented across multiple entities in a single or multiple locations.

knowledge that it receives from the parent company or any other affiliated or unaffiliated party. In the case of embodied knowledge, the foreign affiliate makes implicit usage of sourced knowledge in embodied form as it produces final output by observing only the manufactured outcome of sourced knowledge, not the knowledge per se.[3] However, the transfer of disembodied knowledge remains crucial even in this case as it is unlikely that all types of knowledge required for production can be transferred in embodied form. Therefore, we consider the costs of knowledge transfer and absorption as particularly relevant (Teece, 1977).

Costly knowledge transfer and absorption

The literature highlights three main reasons for the relatively costly transfer and absorption of knowledge outside firm boundaries, one pertinent to the property rights view of the firm and two pertinent to the knowledge-based view of the firm. The first reason is that the biggest part of knowledge is of tacit nature (Polanyi, 1958; Keller, 2004) and thus, contracts cannot be fully written ex-ante. In contrast to explicit knowledge, tacit knowledge cannot be communicated based on a common language[4] because it is hard to articulate and can only be observed and acquired through its application (Polanyi, 1958; Nelson and Winter, 1982; Winter, 1987; Von Hippel, 1988; Von Hippel, 1994; Grant, 1996b). Being also part of a larger system of inter-dependent components (Teece, 1986; Winter, 1987; Hansen, 1999) implies that its effective use requires knowledge of the larger system.[5] In short, tacit knowledge is characterised by low codifiability, high complexity, low teachability, and high system dependence (Zander and Kogut, 1995). Because of these characteristics, its conversion into explicit knowledge is impossible or very costly as it leads to substantial information loss (Grant, 1996a; Grant, 1996b).

Second, due to asymmetric information, the buyer of a knowledge input cannot know in advance its productivity, while the seller cannot commit to truthful claims about it (Ethier, 1986; Keller, 2004). This makes it difficult for two unaffiliated parties to reach an agreement on its pricing and licencing cost (Buckley and Casson, 1976; Teece, 1981). Third, regardless of unilateral or synergistic generation of knowledge, the latter can be used competitively by unaffiliated parties (Arora and Merges, 2004). In other words, market transactions involve

[3]For this case, see Demsetz (1988), Rivera-Batiz and Romer (1991), Grossman and Helpman (1991), Eaton and Kortum (2002), Keller (2004), and McGrattan and Prescott (2010).

[4]The language of statistical control systems in Crémer et al. (2007) is an example of common language. In general, according to Grant (1996b), statistics is a useful language for the transfer of explicit knowledge (e.g. Ford company's cash balances), but inappropriate for the transfer of tacit knowledge (e.g. information about the capabilities of Ford's managers).

[5]For instance, if software module functions are highly system-dependent, they can be used effectively only by employees who have knowledge of the larger system (Hansen, 1999).

the risk of knowledge diffusion and expropriation.[6] In particular, explicit knowledge can be imitated very easily because of its high codifiability and teachability and its low complexity and system dependence (Zander and Kogut, 1995). Tacit knowledge is also unprotected in market transactions as it can hardly be patented (Bar-Gill and Parchomovsky, 2004).

Part of explicit and all tacit knowledge is stored in individuals but is created within firms and is thus deemed as firm-specific (Grant, 1996b). The idiosyncratic nature of knowledge implies that it is the most strategically-important resource that firms possess (Quinn, 1992). It allows them to extend existing capabilities and create new ones that are not easily replicable and subsequently, to maintain and increase their competitive advantage in local and global markets (Grant, 1991; Grant, 1996b; Moran, 2007). Grant (1996a) highlights the association of a firm's superior profitability with resource- and capability-based advantages. Wernerfelt (1984) argues that a firm aims for an advantageous resource position so that it will be difficult for competitors to catch up. Similarly, Prahalad and Hamel (2006) argue that a firm's long-run competitiveness stems from its ability to create competencies faster and at a lower cost than competitors that will lead to the production of innovative products. According to Grant (1996b), the longevity of a firm's competitive advantage depends on the inimitability of its underlying capabilities, while Teece (1986) argues that firm boundaries help innovating firms to avoid being outperformed by imitators and losing significant economic returns from innovation. Knowledge protection is also likely to explain why host-country policies that condition foreign investment upon technology sharing of foreign MNCs with local firms act as disincentives for knowledge transfers from parent companies to their foreign affiliates (Blomström et al., 1994; Urata and Kawai, 2000).

According to the literature on intellectual property rights (henceforth IPRs), their role in protecting knowledge and subsequently, in reducing knowledge transfer and absorption costs is important. In particular, it argues that non-integrated firms are more incentivised to make relationship-specific investments in environments where these are strong than in environments where these are weak (Arora and Merges, 2004). Arora and Merges (2001) highlight the role of patents in facilitating knowledge transfers outside firm boundaries. Gans et al. (2002) finds that start-up companies which are protected by strong IPRs are more likely to collaborate with other firms under a licence or a contract.[7] Instead, firms which operate in environments with weak IPRs are less likely to contract their knowledge and technology and rather opt for

[6] Numerous real-life cases of knowledge diffusion and expropriation from unaffiliated parties, as well as of unaffiliated parties which started as collaborators and ended up as competitors for the same product have been reported in the business press (e.g. Apple Vs Samsung in Economist (2012a) and Economist (2012b)) and in academic studies (Ponzetto, 2014; Arora and Merges, 2001; Arora and Merges, 2004; Moran, 2007).

[7] In general, strong IPRs contribute to the independence and viability of small, dynamic and highly-innovative firms which act as suppliers of inputs to relatively large firms (Arora and Merges, 2004).

non-licencing alliances such as joint ventures (Oxley, 1997; Oxley, 1999; Anand and Khanna, 2000; Zhao, 2006). In line with these empirical evidence, Ponzetto (2014) builds a theoretical model predicting that the optimal organisational choice of the firm under strong IPRs is non-integration.

Organisation of MNCs and knowledge transfer from the parent to the foreign affiliate

Antràs and Helpman (2004) combine the property rights theory of the MNC (Antràs, 2003) with firm heterogeneity à la Melitz (2003) in order to study the self-selection of firms into different sourcing modes. Their model predicts that the most productive firms source from an affiliated party in a foreign country by engaging in FDI. Less productive firms, instead, can only source from an unaffiliated party in a foreign country by engaging in foreign outsourcing. Hence, the most productive firms trade intra-firm, while less productive firms trade at arm's length. This theoretical result is driven by the plausible assumption that the affiliate set-up cost associated with FDI is greater than the unaffiliated supplier search cost associated with foreign outsourcing. In order to draw conclusions about the differences in knowledge transfer from parent companies to foreign affiliates with intra-firm and arm's length trade, we embed into this set-up the concepts of knowledge flows in production and of costly knowledge transfer and absorption described above.

Upon observation of their productivity and selection of their sourcing mode, parent companies of MNCs with intra-firm and arm's length trade address the generated coordination requirements by transferring knowledge to their foreign affiliates.[8] As knowledge flows are an indispensable part of production and are facilitated within firm boundaries, parent companies of MNCs with intra-firm trade are more incentivised to make relationship-specific investments than parent companies of MNCs with arm's length trade. Therefore, parents of the first MNC type are induced to transfer more critical knowledge to their foreign affiliates as compared to parents of the second MNC type (Zander and Kogut, 1995; Grant, 1996b).

In addition, since IPRs facilitate knowledge transfers outside firm boundaries, parent companies of MNCs with arm's length trade are more incentivised to make relationship-specific investments and to transfer more critical knowledge to their foreign affiliates when the latter are located in countries with relatively strong IPRs than in countries with relatively weak IPRs. Finally, in the case that a type of knowledge can be fully incorporated into a material input, the concept of knowledge flows in production does not apply anymore. Hence,

[8] Antràs and Helpman (2004), Grossman et al. (2006) and Corcos et al. (2013) use the term "headquarter services", while Grant (1996b) stresses that the primary task of management is to deal with the coordination required for knowledge integration.

intra-firm imports from the parent can substitute for transfer of a specific type of knowledge to the foreign affiliate, in line with the distinction made in Keller and Yeaple (2013) between knowledge transfer in embodied and disembodied form.

3 Data and descriptive statistics

In this section, we describe the firm-level dataset, the construction of main variables[9] and their descriptive statistics.

We retrieve the firm-level data from the UNIDO Africa Investor Survey 2010. The purpose of this survey was the collection of information about "for-profit" public and private businesses and their assessment of the current business environment in 19 Sub-Saharan African countries.[10] Face-to-face interviews were conducted for data collection purposes, primarily with the most senior decision maker of the firm. Stratified sampling by the economic sub-sector, number of employees and ownership of each firm resulted in the creation of a representative sample of registered domestic and foreign-owned firms. The sample covers all economic sectors for the financial year 2009.[11] All raw monetary variables are in national currencies. For cross-country consistency, we express these variables into US dollars (US$) with the use of currency exchange rate data from the World Bank's World Development Indicators (WDI).

The extensive and intensive margins of intra-firm trade

In total, there are 6497 firms in the dataset, of which 2403 are foreign-owned. Information on intra-firm trade of foreign affiliates is readily available in the dataset. Hence, the identification of foreign affiliates which are vertically linked to their parent companies is possible without the use of Input-Output tables or disaggregated classifications of products produced by the two entities (Alfaro and Charlton, 2009). Information on the share of production inputs, by value, imported from the parent company in total production inputs captures the intensive margin of intra-firm imports. Similarly, information on the share of direct exports, by value, to the parent and/or a sister affiliate in total direct exports captures the intensive margin of intra-firm exports. We capture the extensive margins of intra-firm imports and intra-firm exports with dummies indicating that the corresponding share is non-zero. As there are 728 foreign affiliates that have not reported values for either of the two shares, we drop these from the sample. In addition to these firms, we drop from the sample 209 foreign

[9] A short description of the variables is included in Table A1.

[10] These are: Burkina Faso, Burundi, Cameroon, Cape Verde, Ethiopia, Ghana, Kenya, Lesotho, Madagascar, Malawi, Mali, Mozambique, Niger, Nigeria, Rwanda, Senegal, Tanzania, Uganda, and Zambia.

[11] For a detailed description of the design and implementation of the survey, see UNIDO (2011).

affiliates that do not engage in international trade. Among the remaining 1466 foreign affiliates that engage in international trade, 1318 of these are importers, of which 31% imports intra-firm, and 621 are exporters, of which 33.3% exports intra-firm (Table 1). The average importing foreign affiliate imports 20% of its production inputs from its parent, while the average exporting foreign affiliate directs 17% of its exports to its parent or a sister affiliate (Table 2).[12]

<< Table 1 about here >>

<< Table 2 about here >>

Knowledge transfer from the parent to the foreign affiliate

We capture knowledge transfer from the parent to the foreign affiliate with measures of the importance of assistance provided by the parent to the foreign affiliate in five areas. The five areas examined are the use of patents, trademarks and brand names, technology and know-how, quality upgrading of staff, access to foreign supplier network, and access to global markets. The measures range between 0 and 5, with higher values indicating more important parental assistance. In particular, the lowest value indicates that the foreign affiliate received no assistance from the parent, while higher values indicate that the foreign affiliate received parental assistance that was not important, slightly important, important, very important, and crucial, respectively. We also construct the overall measure of parental assistance as the mean level of assistance received from the parent in the 5 aforementioned areas. Alternatively, we construct it as a weighted average, with weights obtained from the first component loadings of the principal component analysis.

Table 3 displays the descriptive statistics for the benchmark and alternative overall measures of parental assistance and the measures of parental assistance by area to foreign affiliates with and without intra-firm imports (Panel A) and to foreign affiliates with and without intra-firm exports (Panel B). The last column in each panel displays the p-values of the t-tests for the statistical difference in the mean values of parental assistance to the corresponding foreign affiliate types. In Panel A, all p-values are less than 5% and hence, all pairs of mean values can be compared. In Panel B, all p-values are less than 5% except for the p-value corresponding to parental assistance in quality upgrading of staff. The comparisons reveal that foreign affiliates

[12]Using the same sample of foreign affiliates, Blanas and Seric (2017) make a comprehensive descriptive statistics analysis of the extensive and intensive margins of intra-firm and arm's length trade for the whole sample, by affiliate sector, affiliate industry, affiliate country, and by pairs of parent countries and affiliate sectors.

with intra-firm imports receive, on average, more important overall parental assistance than foreign affiliates without intra-firm imports, as well as more important parental assistance in the use of patents, trademarks and brand names, technology and know-how, access to foreign supplier network, and access to global markets. They, instead, receive, on average, less important parental assistance in quality upgrading of their staff than foreign affiliates without intra-firm imports. Similarly, foreign affiliates with intra-firm exports receive, on average, more important overall parental assistance than foreign affiliates without intra-firm exports, as well as more important parental assistance in all areas except for the quality upgrading of staff.

We also conduct the analysis by affiliate country, affiliate sector, and combinations of parent countries and affiliate sectors. Whenever the t-tests allow for comparisons of mean values, we document that foreign affiliates with intra-firm imports and foreign affiliates with intra-firm exports receive, on average, more important overall parental assistance than foreign affiliates without intra-firm imports and intra-firm exports, respectively.[13] For the analysis by affiliate sector, we use the ISIC Rev. 1.1 in order to split the whole economy into five sectors, namely, agriculture (1–5), mining (10–14), manufacturing (15–39), electricity, gas and water (EGW) supply and construction (40 and 45), and services (50–99). Based on Hatzichronoglou (1997) and UNCTAD and UNIDO (2011), we further decompose the manufacturing sector into resource-based, low-tech, and high- and medium-tech manufacturing industries. Similarly, based on Eurostat (2011), we further decompose the services sector into knowledge-intensive and less knowledge-intensive services industries.[14] For the analysis by parent country and affiliate sector, we consider parents based in high-income countries, in low/middle-income countries outside Sub-Saharan-Africa, and in Sub-Saharan African countries. The first group comprises parent countries which are classified as high-income by the World Bank's Historical Country Classification for the year 2010. Based on the same classification, the second group comprises parent countries outside Sub-Saharan Africa which are classified as upper-middle-income, lower-middle-income or low-income.

<< Table 3 about here >>

In addition, we compare kernel and percentile distributions of foreign affiliates with and without intra-firm imports and of foreign affiliates with and without intra-firm exports in terms

[13] The relevant descriptive statistics tables are available upon request.

[14] Resource-based manufacturing: 15, 16, 20, 21, 23, 25, 26, 27; Low-tech manufacturing: 17, 18, 19, 22, 28, 36; High- and medium-tech manufacturing: 24, 29, 30, 31, 32, 33, 34, 35, 37, 38; Knowledge-intensive services: 61, 62, 64, 65, 66, 67, 70, 71, 72, 73, 74, 80, 85, 92; Less knowledge-intensive services: 50, 51, 52, 55, 60, 63, 75, 90, 91, 93, 95, 99.

of the overall assistance that they receive from their parent. The relevant figures are relegated to the Online Appendix (Figures A1 to A4). Kernel densities demonstrate a higher skewness to the left for foreign affiliates with intra-firm imports and intra-firm exports as compared to those without intra-firm imports and intra-firm exports, respectively. Specifically, the concentration of foreign affiliates with either of the two intra-firm trade flows is lower in the left tail and higher in the right tail of the corresponding distribution. Similarly, percentile distributions reveal a more important overall parental assistance received by foreign affiliates with intra-firm imports and intra-firm exports in all 7 percentiles except for the 99th, where differences vanish.[15]

Additional firm-level variables

In order to capture the size of foreign affiliates, we use information on the total number of their permanent full-time employees. We compute labour productivity as the ratio of total sales to the total number of permanent full-time employees and skill intensity as the share of permanent full-time managerial, technical and supervisory workers in total permanent full-time employment. The intangible to tangible capital ratio is the sum of expenditures on training and advertising divided by the total value of fixed assets. The age of foreign affiliates is the number of years since their establishment. Transfer pricing within MNCs[16] is captured by the ratio of taxes paid by foreign affiliates to their total sales. The descriptive statistics for these variables point to salient heterogeneity across foreign affiliates in all these dimensions (Table 2).

Information on the foreign ownership share of foreign affiliates allows us to identify the majority-owned, that is, those which are owned by at least 50% by a foreign investor. In addition, information on five modes of foreign investment allows us to identify foreign affiliates which have been created as wholly-owned enterprises, as joint ventures, through purchases of pre-existing assets from local private owners, through purchases of pre-existing assets from foreign private owners, or through purchases of pre-existing state-owned assets. The first two modes capture Greenfield FDI, while the other three modes capture mergers and acquisitions (M&As). By exploiting information on the principal motive for foreign investment, we also

[15] We obtain very similar graphs when we plot kernel densities and percentile distributions of the alternative overall measure of parental assistance to importing and exporting foreign affiliates and of the measures of parental assistance to them by area. As regards kernel densities, the concentration of foreign affiliates with intra-firm imports and intra-firm exports in the left tail of the distributions is lower. In percentile distributions, the importance of parental assistance that they receive is greater in almost all percentiles, especially, the intermediate ones. These figures are available upon request.

[16] Transfer pricing is the transfer of tangible and intangible assets of the MNC to its foreign affiliates for tax evasion purposes. Among others, see Desai et al. (2006), Dischinger and Riedel (2011), Bauer and Langenmayr (2013), Keuschnigg and Devereux (2013), and Davies et al. (2017).

identify the main business purpose that foreign affiliates serve. Specifically, this can be the access to new markets, low-cost production, access to inputs and natural resources, collaboration with a specific partner in the host country, exporting back to the home country, benefits from a trade agreement, and any other motive to be specified by the firms themselves. The descriptive statistics for the dummy variables reveal that most of the foreign affiliates in the sample are majority-owned, have been created as wholly-owned enterprises, and their main business purpose is to access new markets (Table 1).

4 Econometric model

The variables capturing parental assistance in five areas have more than two discrete outcomes with a natural ordering. Hence, we study their association with the extensive and intensive margins of intra-firm imports and intra-firm exports by estimating the following ordered probit model for foreign affiliate z in country c and industry j, whose parent company is located in country p:

$$K_{zcjp} = \alpha + \beta_1 * X_{zcjp} + \beta_2 * controls_{zcjp} + \beta_c * D_c + \beta_j * D_j + \beta_p * D_p + \epsilon_{zcjp} \quad (1)$$

The dependent variable, K_{zcjp}, is the measure of parental assistance in one of the five areas examined. The main explanatory variable, X_{zcjp}, is the dummy for intra-firm imports or intra-firm exports capturing the extensive margin of intra-firm trade, or the share of intra-firm imports or intra-firm exports, capturing the intensive margin of intra-firm trade. Import regressions are estimated on the sample of importing firms, while export regressions are estimated on the sample of exporting firms. Marginal effects are produced for the highest outcome of the dependent variable (= 5). Hence, a positive (negative) and statistically significant β_1 suggests that the engagement in intra-firm trade or the share of intra-firm trade is positively (negatively) associated with the probability of a foreign affiliate receiving crucial assistance from the parent in a certain area.

In contrast to the measures of parental assistance in five areas, the benchmark and alternative overall measures are continuous variables. Hence, when one of these two measures is the dependent variable, the model becomes linear and is estimated by OLS. In these regressions, the overall measures are normalised so that their mean equals 0 and their standard deviation equals 1. This allows for an easier interpretation of their coefficient estimates, as each value

of the normalised measures indicates its difference from the mean of the original measures in numbers of standard deviations (Marin and Verdier, 2014; Bloom et al., 2014).

Unobserved heterogeneity across affiliate countries, affiliate industries and parent countries is accounted for by the sets of dummies D_c, D_j, and D_p, respectively. A set of control variables capturing additional characteristics of foreign affiliates is included in $controls_{zcjp}$. On the one hand, larger and more productive foreign affiliates have the technical and managerial capabilities which are necessary for the absorption of knowledge (Teece, 1977). Older foreign affiliates also have a greater absorptive capacity as they can develop capabilities over time (Teece, 1977). The absorptive capacity is also greater in skill-intensive foreign affiliates and in those with greater investment in intangibles such as training, marketing and R&D (Oshima, 1973; Teece, 1977). On the other hand, foreign affiliates with these characteristics may already possess an important part of knowledge required for their operations and therefore, they may be in less need for acquiring knowledge from their parent. Firm age may also capture the development by foreign affiliates of backward linkages in the host and nearby countries over time[17] and subsequently, the gradual decrease in their dependence on parent companies for production inputs and associated knowledge. In addition to firm age, the ties between a foreign affiliate and its parent may also be captured by the first entity's majority foreign ownership status. By definition, the parent company of a majority-owned foreign affiliate (MOFA) has residual rights of control over relationship-specific assets and the control of its management. Hence, it is likely to transfer more critical knowledge to the foreign affiliate (Long, 2005; Desai et al., 2002).[18]

In order to account for all these factors, we first add to the model the size of the foreign affiliate, captured by its total permanent full-time employment, and labour productivity, measured as the ratio of total sales to total permanent full-time employment. The two variables enter the model in logs. In addition, we incorporate skill intensity and the intangible to tangible capital ratio. The first is computed as the share of permanent full-time managerial workers in total permanent full-time workers, while the second is computed as the ratio of expenditures on training and advertising to the total value of fixed assets. We also add a dummy variable indicating that the foreign affiliate is majority-owned (MOFA) and the age of the foreign affiliate, captured by the number of years since its establishment. Using employment, productivity, skill intensity, and the intangible to tangible capital ratio as controls

[17] For instance, McAleese and McDonald (1978) examine the Irish manufacturing over the period 1952–1974 and show that input purchases of MNC affiliates from local suppliers increased with the years of their presence in the country. Also, Belderbos et al. (2000) find that Japanese MNCs increase the local content of their output by 0.6 percentage points with each additional year of operating experience in other Asian countries.

[18] For more details about this argument, see Moran (2007).

is important also because these variables have been documented as determinants of intra-firm trade (Blanas and Seric, 2017).

The potency of interaction between the parent and the foreign affiliate and therefore, the transfer of knowledge from the first entity to the second, is stronger when the foreign affiliate is a wholly-owned enterprise, rather than a joint venture (Mansfield and Romeo, 1980; Lee and Mansfield, 1996; Ramachandran, 1993; Desai et al., 2002). In addition, according to the resource-based view of the firm, cross-border M&As allow the acquiring firm to complement its intangible technological advantages with a local firm's capabilities (e.g. marketing and distribution) that are imperfectly mobile (Nocke and Yeaple, 2007; Antràs and Yeaple, 2013).[19] If such a complementarity exists, then the parent company is expected to transfer critical knowledge to its foreign affiliate that has been created through M&As. For these reasons, we incorporate in the model dummies indicating the mode of creation of the foreign affiliate (e.g. wholly-owned firm, join venture). Since the five modes examined are mutually exclusive, we consider the dummy variable indicating the creation of the foreign affiliate as a wholly-owned enterprise to be the reference variable and exclude it from the regressions. Then, the marginal effects of the other dummies of this group are interpreted with respect to this variable.

Knowledge transfer from the parent company to its foreign affiliate may also be determined by the type of FDI and the main business purpose that the latter entity serves. We control for this factor with dummies indicating the principal motive for foreign investment such as access to new markets, cost-effective production and access to inputs. Although the vertical link between the foreign affiliate and its parent is captured primarily by the extensive and intensive margins of intra-firm trade, the dummies indicating cost-effective production, input access, exporting back to the home country, and benefits from a trade agreement can also capture this vertical link. Since the motives examined are mutually exclusive, we consider the dummy variable indicating any principal motive to be specified by the firm itself as the reference variable and exclude it from the regressions. The final control in our model is the ratio of taxes paid by the foreign affiliate to its total sales and accounts for transfer pricing.

5 Empirical results

We start this section with the empirical analysis of the relationship between parental assistance to foreign affiliates by area and the extensive and intensive margins of intra-firm imports.

[19] For instance, by 1987, NEC had entered into over 100 strategic alliances aiming at the internalisation of its partners' technology, skills, and ideas, which would complement with its core competency in semiconductor manufacturing (Prahalad and Hamel, 2006).

Table 4 displays the results of the estimation of the benchmark model with the dummy for intra-firm imports as the main explanatory variable. The marginal effect of the extensive margin of intra-firm imports in column 1 is positive and statistically significant at 1%. This suggests that the engagement of foreign affiliates in intra-firm imports is associated with a 10% higher probability of these receiving crucial parental assistance in the use of patents, trademarks, and brand names. The positive and statistically significant marginal effects of the main explanatory variable in columns 2, 4 and 5 are interpreted similarly. That is, the engagement of foreign affiliates in intra-firm imports is also associated with a 7%, 4% and 5% higher probability of these receiving crucial parental assistance in technology and know-how, access to foreign supplier network, and access to global markets, respectively. By contrast, the marginal effect of the extensive margin of intra-firm imports in column 3 is negative and statistically significant. Hence, the engagement of foreign affiliates in intra-firm imports is associated with a 3% lower probability of these receiving crucial parental assistance in quality upgrading of their staff.

<< Table 4 about here >>

Table 5 displays the results of the estimation of the benchmark model with the share of intra-firm imports as the main explanatory variable. The positive and significant marginal effects of the intensive margin of intra-firm imports in columns 1, 2, 4 and 5 suggest that the higher share of foreign affiliates' intra-firm imports is associated with a higher probability of these receiving crucial parental assistance in the use of patents, trademarks, and brand names, technology and know-how, access to foreign supplier network and access to global markets. The insignificant marginal effect of the main explanatory variable in column 3 suggests that there is no statistically significant association between the intensive margin of foreign affiliates' intra-firm imports and the probability of these receiving crucial parental assistance in quality upgrading of their staff.

<< Table 5 about here >>

Based on the marginal effects of the control variables in import regressions, we document that foreign affiliates of larger size, proxied by their employment level, are more likely to receive crucial parental assistance in global markets access, while those with a higher intangible to tangible capital ratio are less likely to receive crucial parental assistance in this area. Foreign affiliates of higher productivity are more likely to receive crucial parental assistance in the use of patents, trademarks and brand names, in technology and know-how and in access to

foreign supplier network. Foreign affiliates which were domestic firms before being acquired by foreign investors and those created as joint ventures are more likely to receive crucial parental assistance in the use of patents, trademarks and brand names and in quality upgrading of staff, respectively. Crucial parental assistance in the first area is more likely to be received also by foreign affiliates whose main business purpose is to benefit from a trade agreement, while crucial parental assistance in both areas is more likely to be received also by foreign affiliates whose main business purpose is to access new markets, to lower production costs, and to access inputs and resources. Lower production costs and access to inputs as the main business purpose of foreign affiliates are also associated with a higher probability of these receiving crucial parental assistance in access to global markets.

Having analysed the relationship of parental assistance by area with intra-firm imports, we now shift the focus onto its relationship with the extensive and intensive margins of intra-firm exports. The results of the estimation of the benchmark model with the dummy for intra-firm exports as the main explanatory variable are displayed in Table 6. The positive and significant marginal effects of the extensive margin of intra-firm exports in columns 1, 2 and 5 suggest that the engagement of foreign affiliates in intra-firm exports is associated with a higher probability of these receiving crucial parental assistance in the use of patents, trademarks and brand names, technology and know-how, and access to global markets. The marginal effects of the main explanatory variable in columns 3 and 4 are statistically insignificant at all conventional levels, suggesting that there is no statistically significant association of the extensive margin of foreign affiliates' intra-firm exports with the probability of these receiving crucial parental assistance in quality upgrading of their staff and in access to foreign supplier network.

<< Table 6 about here >>

The estimation results obtained when the main explanatory variable is the share of intra-firm exports are shown in Table 7. As indicated by the positive and significant marginal effects of the intensive margin of intra-firm exports in columns 1, 2, 4 and 5, the higher share of foreign affiliates' intra-firm exports is associated with a higher probability of these receiving crucial parental assistance in the use of patents, trademarks and brand names, technology and know-how, access to foreign supplier network, and access to global markets. The marginal effect of the main explanatory variable in column 3 is negative but insignificant, suggesting that there is no statistically significant association between the intensive margin of foreign affiliates' intra-firm exports and the probability of these receiving crucial parental assistance in quality upgrading of their staff.

<< Table 7 about here >>

Regarding the marginal effects of the control variables in export regressions, we document that foreign affiliates with a higher productivity level and a higher intangible to tangible capital ratio are more likely to receive crucial parental assistance in access to foreign supplier network and in the use of patents, trademarks, and brand names, respectively. In addition, foreign affiliates of higher skill intensity and majority-owned foreign affiliates are more likely to receive crucial parental assistance in the use of patents, trademarks and brand names and in technology and know-how. Foreign affiliates whose main business purpose is to benefit from a trade agreement are more likely to receive crucial parental assistance in the use of patents, trademarks, and brand names and in access to global markets. Crucial parental assistance in the latter area is also more likely to be received by foreign affiliates which were state-owned companies before being acquired by foreign investors and by those which were previously operating in the host country under a different foreign ownership. By contrast, foreign affiliates which were domestic firms before being acquired by foreign investors are less likely to receive crucial parental assistance in technology and know-how and in access to global markets. Also, those whose main business purpose is to join a specific partner in the host country are less likely to receive crucial parental assistance in the use of patents, trademarks, and brand names.[20]

The analysis of the relationship between the overall measures of parental assistance and the extensive and intensive margins of intra-firm imports and intra-firm exports is made in Table 8. In particular, the table shows the results of OLS estimations of the benchmark model where the dependent variable is the benchmark and the alternative overall measure of parental assistance in odd-numbered and even-numbered columns, respectively. As shown in columns 1–6, the marginal effects of the dummies for intra-firm imports and intra-firm exports and the share of intra-firm imports are positive and statistically significant. The marginal effect of the share of intra-firm exports is positive and significant in column 7, but it is insignificant in

[20] We estimate the regressions in Tables 4 to 7 with marginal effects produced for the other four outcomes of the dependent variable (Tables A4 to A8). In line with the main results, we find that the engagement of foreign affiliates in intra-firm imports and intra-firm exports and the higher shares of their two intra-firm trade flows are associated with a lower probability of these not receiving parental assistance in the use of patents, trademarks, and brand names, in technology and know-how, in access to foreign supplier network and in access to global markets. The two margins of intra-firm imports and exports are also negatively associated with the probability of foreign affiliates receiving unimportant, slightly important and important parental assistance in these four areas. By contrast, the two margins of intra-firm imports and exports are positively associated with the probability of foreign affiliates receiving very important parental assistance in the aforementioned four areas. Also in line with the main results, we find that the extensive margin of intra-firm imports is positively associated with the probability of foreign affiliates not receiving parental assistance in quality upgrading of staff, as well as with the probability of these receiving unimportant, slightly important and important parental assistance in this area. It is, instead, negatively associated with the probability of foreign affiliates receiving very important parental assistance in this specific area.

column 8. The results suggest that the engagement of foreign affiliates in intra-firm imports and intra-firm exports and their higher shares of the two intra-firm trade flows are associated with a more important overall assistance from their parent companies.

<< Table 8 about here >>

The marginal effects of the controls suggest that foreign affiliates with a higher skill intensity and those which were state-owned before being acquired by foreign investors receive more important overall parental assistance. This is also true for foreign affiliates whose main business purpose is to access new markets, to lower production costs, to access inputs and resources, and to benefit from a trade agreement.[21]

As stressed in the theoretical background, strong intellectual property rights induce firms to transfer knowledge outside their boundaries. For this reason, we estimate the ordered probit and OLS regressions of the previous tables after including interaction terms between the extensive and intensive margins of intra-firm trade and a proxy for (intellectual) property rights in affiliate countries. For the latter, we use the legal rights strength index developed by the World Bank's World Development Indicators (WDI). This index ranges between 1 and 10, with higher values indicating stronger legal rights in these countries. The results of ordered probit and OLS estimations are displayed in columns 1–5 and 6–7 of Table 9, respectively. Each of the four panels corresponds to regressions with one of the key explanatory variables and its corresponding interaction term. The legal rights strength does not enter the model individually as it is captured by affiliate-country fixed effects.

The negative and significant marginal effects of the interaction terms in the first column of all four panels suggest that the engagement of foreign affiliates in intra-firm trade and their higher share of intra-firm trade are associated with a lower probability of these receiving crucial parental assistance in the use of patents, trademarks and brand names when these firms are based in countries with relatively strong legal rights than in countries with relatively weak legal rights. In addition, the negative and significant marginal effect of the interaction term in the second column of Panel B suggests that the higher share of intra-firm imports of foreign affiliates is associated with a lower probability of these receiving crucial parental assistance in technology and know-how when these firms are based in countries with relatively strong legal rights than in countries with relatively weak legal rights.[22]

[21] In tables that are available upon request, we show that the main results remain largely unchanged when we estimate ordered probit and OLS regressions with standard errors clustered by affiliate country and affiliate industry, by affiliate country and parent country, as well as by affiliate country, affiliate industry and parent country.

[22] As part of the same empirical exercise, we interact the extensive and intensive margins of intra-firm imports

<< Table 9 about here >>

In conclusion, our empirical analysis reveals that the engagement of foreign affiliates in intra-firm imports and intra-firm exports and the shares of their two intra-firm trade flows are positively associated with the probability of these receiving crucial parental assistance in the use of patents, trademarks, and brand names, technology and know-how, access to foreign supplier network, and access to global markets. Foreign affiliates which engage in intra-firm trade and those with a higher share of this type of trade also receive a more important overall parental assistance. However, the positive associations of the extensive and intensive margins of intra-firm imports and exports with parental assistance in the use of patents, trademarks and brand names are weaker in affiliate countries with relatively strong legal rights than in affiliate countries with relatively weak legal rights.

As discussed in the theoretical background, the intuition for these findings is that parent companies of MNCs with intra-firm trade have a greater incentive to invest in relationship-specific assets than parent companies of MNCs with arm's length trade and subsequently, they are induced to transfer more critical knowledge to their foreign affiliates. Importantly, though, parent companies of MNCs with arm's length trade have a greater incentive to make relationship-specific investments and to transfer more critical knowledge to their foreign affiliates that are located in countries with relatively strong legal rights than in countries with relatively weak legal rights.

Finally, two possible explanations for our finding on the lower likelihood of foreign affiliates with intra-firm imports receiving crucial parental assistance in quality upgrading of their staff are as follows. The first explanation is based on existing empirical evidence showing that the probability of engagement in intra-firm imports is higher in more skill-intensive firms (Corcos et al., 2013; Blanas and Seric, 2017) and in foreign affiliates with a higher intangible to tangible capital ratio (Blanas and Seric, 2017). This evidence suggests that foreign affiliates with intra-firm trade may already possess the human capital required to further process the intermediate inputs sourced from their parents. As stressed in the theoretical background, another possible explanation is that labour skills are incorporated in the inputs imported from

and exports with the rule of law index for the 19 affiliate countries. We draw data on this index from the Mo Ibrahim Foundation for the year 2010. The index ranges between 0 and 100, with higher values indicating a stronger rule of law in these countries. In line with the benchmark results, we find that the positive association of the engagement of foreign affiliates in intra-firm imports with the probability of these receiving crucial parental assistance in the use of patents, trademarks and brand names, as well as the positive associations of their engagement in intra-firm imports and their share of intra-firm imports with the probability of these receiving crucial parental assistance in technology and know-how and in access to foreign supplier network are weaker in affiliate countries with relatively strong rule of law than in affiliate countries with relatively weak rule of law (Table A9).

the parent and are thus sourced in embodied form (Keller and Yeaple, 2013).

6 Robustness checks

In this section, we test the robustness of our main results by performing numerous checks. To save on space, we show only a selection of the relevant tables, while the rest of these are available in the Online Appendix or upon request.

Since factors such as geographic distance between affiliate and parent countries may affect the cost of knowledge transfer from parent companies to their foreign affiliates (Teece, 1977; Grossman et al., 2006), we re-estimate the benchmark model after replacing affiliate-country and parent-country dummies with dummies for affiliate-parent-country pairs. As shown in Table 10, the main results remain largely unchanged in terms of sign, size and precision. Alternatively, we re-estimate an augmented version of the benchmark model where we control for geographic distance, common official language, and past colonial ties between affiliate and parent countries (Table A10). We draw data on these country-level variables from CEPII. The main results remain largely unchanged in this case as well. We also find that geographic distance between affiliate and parent countries is negatively associated with the benchmark overall measure of parental assistance, as well as with probability of foreign affiliates receiving crucial parental assistance in the use patents, trademarks and brand names and in access to global markets. In some of the export regressions, we also find negative associations of common language and past colonial ties between affiliate and parent countries with parental assistance to foreign affiliates.

<< Table 10 about here >>

In addition to the benchmark variables for knowledge transfer from the parent, we construct dummy variables indicating the degree of importance of parental assistance in the five areas examined. We then estimate probit and OLS models where the dummies for intra-firm imports and intra-firm exports and the shares of the two intra-firm trade flows are regressed on the dummies for parental assistance by area. The dummy indicating crucial parental assistance (i.e., rank = 5) in each area is treated as the reference variable and is thus excluded from the regressions. Hence, in line with our main results, the negative and significant marginal effects and coefficient estimates of the dummies for the importance of parental assistance point to weaker associations of the extensive and intensive margins of intra-firm trade with parental assistance that is less than crucial (Table A11).

As part of the same exercise, we estimate the benchmark model with alternative dummy variables for intra-firm imports and intra-firm exports and alternative variables for firm size, skill intensity, and age, as well as for transfer pricing. In particular, we use as the main explanatory variable dummies indicating that imports from the parent and exports to the parent and/or sister affiliate account for at least 25% and 75% of the foreign affiliate's total production inputs and total direct exports, respectively. Table 11 reveals that the results are very similar to the main ones in terms of sign, size and precision. We also replace total permanent full-time employment with total sales and skill intensity with the average wage and the wage gaps between non-production and production workers, managerial and production workers, and between managerial and non-production workers. We compute the average wage as the ratio of the total wage bill to total permanent full-time employment. The relative wages for different types of workers are computed as the ratios of the monthly wage for one type of worker to the monthly wage for another.

<< Table 11 about here >>

The age of the foreign affiliate is replaced by dummies indicating whether its age ranges between 1 and 5 years, 6 and 10 years, 11 and 20 years, or is above 20 years. We use the last dummy as the reference variable and drop it from the regressions. As an alternative proxy for transfer pricing, we use the tax to assets ratio, computed as the ratio of the tax amount paid by the foreign affiliate to the total value of its assets. In all regressions with alternative controls, the main results remain largely unchanged (Tables A12 to A16). We also find a positive association of sales with the probability of foreign affiliates receiving crucial parental assistance in the use of patents, trademarks, and brand names, technology and know-how and access to foreign supplier network. The wage gaps between non-production and production workers and between managerial and non-production workers are positively associated with the probability of foreign affiliates receiving crucial parental assistance in the use of patents, trademarks, and brand names. By contrast, the wage gap between managerial and production workers is negatively associated with overall parental assistance, as well as with the probability of foreign affiliates receiving crucial parental assistance in the use of patents, trademarks, and brand names and in access to foreign supplier network. Also, the youngest foreign affiliates and those between 10 and 20 years old receive more important and less important parental assistance, respectively, than foreign affiliates with 20+ years of age. We find no statistically significant associations of the average wage and the tax to assets ratio with all measures of parental assistance.

In an additional exercise, we ensure that the relationship of knowledge transfer from the

parent with intra-firm trade is not influenced by the source of competition that foreign affiliates face. In doing so, we incorporate in the benchmark model dummy variables indicating that competition for the foreign affiliate's main product comes mostly from imports, from domestic firms in the host country, or from other foreign-owned firms in the host country. The first dummy is considered as the reference variable and is excluded from the regressions. Table 12 shows that the main results remain largely unchanged. In both import and export regressions, we find that parental assistance to foreign affiliates facing competition mostly from domestic firms in the host country is less important than parental assistance to foreign affiliates facing mostly import competition. In export regressions, we also find that parental assistance to foreign affiliates facing competition mostly from other foreign-owned firms in the host country is more important than parental assistance to foreign affiliates facing competition mostly from imports.

<< Table 12 about here >>

As the acquisition of machinery and technological equipment from the parent is likely to be associated with both intra-firm trade and knowledge transfer from the parent, we control in additional regressions for the main channel through which the firm acquires capital goods. In particular, we add to the benchmark model dummy variables indicating whether capital goods are imported directly by the foreign affiliate, are acquired from local distributors, or are acquired from the parent company. We consider the dummy indicating acquisition of capital goods from any other source to be specified by the firm as the reference variable. The question regarding the main mode of acquisition of capital goods is addressed only to foreign affiliates in non-services industries and hence, these regressions are estimated on a sample covering only the non-services economy. By and large, the main results remain unchanged, as shown in Table 13. In import regressions, we also find a positive association between acquisition of capital goods from the parent and the probability of foreign affiliates receiving crucial parental assistance in the use of patents, trademarks, and brand names. In export regressions, we find negative associations of acquisition of capital goods through direct imports and local distributors with overall parental assistance and the probability of foreign affiliates receiving crucial parental assistance in the use of patents, trademarks, and brand names.

<< Table 13 about here >>

Following Atalay et al. (2014), in Table 14 we obtain very similar results to the main ones in estimations of the benchmark model on a sample which comprises only firms in goods-

producing industries.[23] The only crucial difference is that the negative association between the engagement in intra-firm imports and the probability of foreign affiliates receiving crucial parental assistance in quality upgrading of their staff becomes statistically insignificant. Hence, the relevant finding in the main results table and its possible interpretations should be treated with caution. Finally, using information on the importance of assistance received by individual foreign investors from other associate companies of the business group in the five areas examined, we obtain very similar results to those from benchmark ordered probit estimations (Table A17).

<< Table 14 about here >>

7 Conclusion

In this paper, we use a unique sample of foreign affiliates in 19 Sub-Saharan African countries in order to study the relationship of the extensive and intensive margins of their intra-firm trade with knowledge transfer to them from their parent companies.

We find that the engagement of foreign affiliates in intra-firm trade and their share of intra-firm trade are positively associated with the probability of these receiving crucial parental assistance in the use of patents, trademarks and brand names, technology and know-how, access to foreign supplier network, and access to global markets. Foreign affiliates which engage in intra-firm trade and those with a higher share of intra-firm trade also receive more important overall assistance from their parents. Importantly, the positive associations of intra-firm trade with parental assistance in the use of patents, trademarks and brand names are weaker in countries with relatively strong legal rights than in countries with relatively weak legal rights.

These findings point to the interplay between property rights and intangible assets theories of the MNC. In particular, they suggest that the joint role of knowledge flows in production and of multinational firm boundaries as facilitators of both tangibles and intangibles is crucial. The identification of the causal relationship between knowledge transfer from the parent and intra-firm trade could shed more light on the interplay between these two types of theories as it could indicate whether the facilitation of transfers of tangibles goods or intangibles is the primary reason for the creation of foreign affiliates with intra-firm trade. Since the

[23] In accord with the US Bureau of Economic Analysis (http://www.bea.gov/faq/index.cfm?faq_id=182 – accessed June 13, 2017) and the US Bureau of Labour Statistics (http://www.bls.gov/iag/tgs/iag06.htm#about – accessed June 13, 2017), this sample comprises foreign affiliates in agriculture (1–5), mining (10–14), manufacturing (15–39), and construction (45).

current form of our dataset lacks the time dimension which could potentially allow us to study the causal relationship between knowledge transfer from the parent and intra-firm trade, we consider this topic as a promising avenue for future research.

With respect to the empirical evidence on the scarcity of foreign affiliates with intra-firm trade (Ramondo et al., 2016; Blanas and Seric, 2017) and on the intangible to tangible capital ratio being a strong determinant of intra-firm trade (Blanas and Seric, 2017), our findings also suggest that, even if the primary role of multinational firm boundaries is the facilitation of knowledge transfers (Atalay et al., 2014), the most important of these transfers are concentrated among the relatively few foreign affiliates with intra-firm trade. This is likely to have important implications for the role of FDI as a channel for cross-country knowledge diffusion (Keller, 2004), calling for further theoretical and empirical investigation on the new basis highlighted above.

Tables with main descriptive statistics

Table 1: Descriptive statistics for dummy variables

Dummy variable	No		Yes		Total	
	#	%	#	%	#	%
intra-firm imports	909	69	409	31	1318	100
intra-firm exports	414	66.7	207	33.3	621	100
majority-owned foreign affiliate (MOFA)	170	11.8	1272	88.2	1442	100
wholly-owned firm	455	31.5	988	68.5	1443	100
joint venture	1207	83.6	236	16.4	1443	100
local firm acquisition	1357	94	86	6	1443	100
foreign firm acquisition	1353	93.8	90	6.2	1443	100
privatisation	1400	97	43	3	1443	100
principal motive to invest: market access	412	28.7	1022	71.3	1434	100
principal motive to invest: low-cost structure	1331	92.8	103	7.2	1434	100
principal motive to invest: input access	1329	92.7	105	7.3	1434	100
principal motive to invest: join partner	1381	96.3	53	3.7	1434	100
principal motive to invest: export back home	1401	97.7	33	2.3	1434	100
principal motive to invest: TA benefits	1391	97	43	3	1434	100
principal motive to invest: other	1359	94.8	75	5.2	1434	100

Notes: Authors' calculations. Each dummy is equal to 1 if the corresponding statement is valid, and 0 otherwise. The descriptive statistics for the dummies indicating engagement in intra-firm imports and intra-firm exports are produced on the samples of importing and exporting foreign affiliates, respectively, and conditional on the response rates for the corresponding intra-firm trade flows. The descriptive statistics for the rest of the variables are produced on the sample of trading foreign affiliates. For the description of the variables, see Table A1.
Source: UNIDO Africa Investor Survey 2010.

Table 2: Descriptive statistics for non-dummy variables

Variable	Obs	Mean	Sd	Min	Max
intra-firm imports (share)	1318	0.20	0.36	0	1
intra-firm exports (share)	621	0.17	0.33	0	1
employment	1455	220	655	0	15887
productivity	1424	21	337	0	11409
skill intensity	1425	0.18	0.15	0	1
intangible to tangible capital	1400	1.63	31.28	0	838
firm age	1458	19	17	1	142
tax to sales	1287	0.05	0.09	0	1

Notes: Authors' calculations. The descriptive statistics for the shares of intra-firm imports and intra-firm exports are produced on the samples of importing and exporting foreign affiliates, respectively, and conditional on the response rates for the corresponding intra-firm trade flows. The descriptive statistics for the rest of the variables are produced on the sample of trading foreign affiliates. For the description of the variables, see Table A1.
Source: UNIDO Africa Investor Survey 2010.

Table 3: Descriptive statistics for parental assistance to importing and exporting foreign affiliates

Panel A: Importing foreign affiliates							
Type of parental assistance	Intra-firm imports	Obs	Mean	Sd	Min	Max	t-test (pvalue)
overall (mean)	without	890	3.3	1.1	0	5	0.000
	with	397	3.5	0.9	0	5	
overall (weighted average)	without	890	3.2	1.1	0	5	0.000
	with	397	3.5	0.9	0	5	
patents, trademarks, brand names	without	886	3	1.6	0	5	0.000
	with	394	3.6	1.4	0	5	
technology and know-how	without	886	3.4	1.3	0	5	0.000
	with	396	3.7	1.2	0	5	
quality upgrading of staff	without	887	3.2	1.2	0	5	0.015
	with	395	3	1.3	0	5	
foreign supplier network access	without	888	3.5	1.3	0	5	0.006
	with	395	3.7	1.2	0	5	
global markets access	without	883	3.1	1.6	0	5	0.000
	with	394	3.5	1.5	0	5	
Panel B: Exporting foreign affiliates							
Type of parental assistance	Intra-firm exports	Obs	Mean	Sd	Min	Max	t-test (pvalue)
overall (mean)	without	402	3.3	1.1	0	5	0.000
	with	204	3.6	0.9	0	5	
overall (weighted average)	without	402	3.3	1.1	0	5	0.000
	with	204	3.6	1	0	5	
patents, trademarks, brand names	without	402	3.1	1.6	0	5	0.000
	with	202	3.7	1.3	0	5	
technology and know-how	without	402	3.4	1.4	0	5	0.001
	with	202	3.7	1.1	0	5	
quality upgrading of staff	without	402	3.1	1.3	0	5	0.679
	with	202	3.1	1.3	0	5	
foreign supplier network access	without	402	3.5	1.4	0	5	0.032
	with	202	3.7	1.2	0	5	
global markets access	without	402	3.4	1.5	0	5	0.000
	with	203	3.9	1.3	0	5	

Notes: Authors' calculations. For the description of the variables, see Table A1.
Source: UNIDO Africa Investor Survey 2010.

Tables with main results

Table 4: Parental assistance by area and the extensive margin of intra-firm imports

	(1)	(2)	(3)	(4)	(5)
Dependent variable:	*crucial* parental assistance in				
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access
intra-firm imports (dummy)	**0.10*** **	**0.07*** **	**-0.03** **	**0.04***	**0.05** **
	[0.02]	**[0.02]**	**[0.01]**	**[0.02]**	**[0.02]**
employment	0.002	0.007	0.004	0.01	0.02**
	[0.009]	[0.009]	[0.006]	[0.010]	[0.009]
productivity	0.01**	0.01*	-0.005	0.01**	-0.001
	[0.006]	[0.006]	[0.004]	[0.006]	[0.007]
skill intensity	0.07	0.06	-0.004	-0.03	-0.04
	[0.07]	[0.07]	[0.04]	[0.07]	[0.07]
intangible to tangible capital	0.0003	0.0002	0.00004	0.000004	-0.0003*
	[0.0002]	[0.0003]	[0.0001]	[0.0002]	[0.0002]
MOFA	0.04	0.06*	0.008	-0.02	-0.007
	[0.03]	[0.03]	[0.02]	[0.03]	[0.03]
firm age	-0.0005	-0.00005	-0.00004	0.0004	-0.0004
	[0.0006]	[0.0006]	[0.0004]	[0.0007]	[0.0007]
joint venture	-0.02	0.006	0.03*	0.03	0.03
	[0.03]	[0.03]	[0.02]	[0.03]	[0.03]
local firm acquisition	0.08*	0.02	0.03	0.05	-0.008
	[0.05]	[0.04]	[0.03]	[0.05]	[0.04]
foreign firm acquisition	0.001	0.005	-0.01	0.001	0.02
	[0.04]	[0.04]	[0.03]	[0.04]	[0.04]
privatisation	0.07	0.09	0.03	0.05	0.03
	[0.07]	[0.07]	[0.04]	[0.07]	[0.07]
market access	0.09*	0.02	0.08**	0.07	0.07
	[0.05]	[0.04]	[0.03]	[0.05]	[0.05]
low cost	0.1**	0.03	0.08**	0.1	0.1**
	[0.06]	[0.06]	[0.04]	[0.07]	[0.06]
input access	0.2***	0.06	0.1***	0.05	0.1*
	[0.06]	[0.06]	[0.04]	[0.07]	[0.06]
join partner	-0.008	0.01	0.08	-0.07	0.02
	[0.07]	[0.07]	[0.05]	[0.07]	[0.07]
export back home	0.1	0.06	0.07	0.01	0.01
	[0.08]	[0.08]	[0.06]	[0.10]	[0.09]
TA benefits	0.2***	-0.07	0.01	0.04	0.1
	[0.07]	[0.07]	[0.05]	[0.07]	[0.07]
tax to sales	-0.08	-0.06	-0.009	-0.1	-0.1
	[0.1]	[0.1]	[0.08]	[0.1]	[0.1]
Obs	1056	1057	1059	1059	1055
$Pseudo - R^2$	0.090	0.087	0.079	0.059	0.076
$Log - likelihood$	-1575.4	-1421.6	-1519.1	-1496.0	-1624.4
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes

Notes: Ordered probit estimations with affiliate-country, affiliate-industry, and parent-country dummies in all columns. Dummies take value 1 if the corresponding statement is valid, and 0 otherwise. Among non-dummy explanatory variables, only employment and productivity are in logs. Marginal effects produced for the highest outcome of the dependent variable (= 5) are displayed in all columns. *** significant at 1%, ** significant at 5%, * significant at 10%, based on robust standard errors. For the description of the variables, see Table A1.

Table 5: Parental assistance by area and the intensive margin of intra-firm imports

Dependent variable:	(1)	(2)	(3)	(4)	(5)
	crucial parental assistance in				
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access
intra-firm imports (share)	**0.1*** **	**0.1*** **	-0.03	**0.07** **	**0.07** **
	[0.03]	**[0.03]**	[0.02]	**[0.03]**	**[0.03]**
employment	0.003	0.007	0.004	0.01	0.02**
	[0.009]	[0.009]	[0.006]	[0.010]	[0.009]
productivity	0.01**	0.01*	-0.006	0.01**	-0.001
	[0.006]	[0.006]	[0.004]	[0.006]	[0.007]
skill intensity	0.06	0.06	-0.005	-0.04	-0.05
	[0.07]	[0.07]	[0.04]	[0.07]	[0.07]
intangible to tangible capital	0.0003	0.0002	0.00002	0.00002	-0.0003*
	[0.0002]	[0.0003]	[0.0001]	[0.0002]	[0.0002]
MOFA	0.05	0.06**	0.007	-0.02	-0.006
	[0.03]	[0.03]	[0.02]	[0.03]	[0.03]
firm age	-0.0003	0.0001	-0.00009	0.0005	-0.0003
	[0.0006]	[0.0006]	[0.0004]	[0.0007]	[0.0007]
joint venture	-0.02	0.003	0.03*	0.02	0.02
	[0.03]	[0.03]	[0.02]	[0.03]	[0.03]
local firm acquisition	0.08*	0.02	0.03	0.05	-0.007
	[0.05]	[0.04]	[0.03]	[0.05]	[0.04]
foreign firm acquisition	-0.004	0.002	-0.010	-0.0003	0.02
	[0.04]	[0.04]	[0.03]	[0.04]	[0.04]
privatisation	0.07	0.08	0.03	0.05	0.03
	[0.07]	[0.07]	[0.04]	[0.07]	[0.07]
market access	0.09*	0.02	0.08**	0.06	0.07
	[0.05]	[0.04]	[0.03]	[0.05]	[0.05]
low cost	0.1**	0.03	0.08*	0.1	0.1**
	[0.06]	[0.06]	[0.04]	[0.07]	[0.06]
input access	0.2***	0.06	0.1***	0.05	0.1*
	[0.06]	[0.06]	[0.04]	[0.07]	[0.06]
join partner	-0.004	0.01	0.08	-0.07	0.02
	[0.07]	[0.07]	[0.05]	[0.07]	[0.07]
export back home	0.1	0.05	0.07	0.01	0.010
	[0.08]	[0.08]	[0.06]	[0.10]	[0.09]
TA benefits	0.2***	-0.07	0.01	0.03	0.1
	[0.07]	[0.07]	[0.05]	[0.07]	[0.07]
tax to sales	-0.06	-0.04	-0.01	-0.1	-0.1
	[0.1]	[0.1]	[0.08]	[0.1]	[0.1]
Obs	1056	1057	1059	1059	1055
$Pseudo - R^2$	0.090	0.088	0.078	0.060	0.076
$Log - likelihood$	-1575.1	-1419.1	-1520.2	-1494.8	-1624.4
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes

Notes: Ordered probit estimations with affiliate-country, affiliate-industry, and parent-country dummies in all columns. Dummies take value 1 if the corresponding statement is valid, and 0 otherwise. Among non-dummy explanatory variables, only employment and productivity are in logs. Marginal effects produced for the highest outcome of the dependent variable (= 5) are displayed in all columns. *** significant at 1%, ** significant at 5%, * significant at 10%, based on robust standard errors. For the description of the variables, see Table A1.

Table 6: Parental assistance by area and the extensive margin of intra-firm exports

Dependent variable:	(1)	(2)	(3)	(4)	(5)
	crucial parental assistance in				
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access
intra-firm exports (dummy)	**0.08*** **	**0.06** **	-0.006	0.04	**0.10*** **
	[0.03]	**[0.03]**	[0.02]	[0.03]	**[0.04]**
employment	-0.01	0.007	0.002	0.01	0.006
	[0.01]	[0.01]	[0.007]	[0.01]	[0.02]
productivity	-0.002	0.01	-0.001	0.02*	0.006
	[0.008]	[0.009]	[0.005]	[0.009]	[0.01]
skill intensity	0.3***	0.3**	0.05	0.06	-0.05
	[0.08]	[0.1]	[0.05]	[0.1]	[0.1]
intangible to tangible capital	0.0003**	0.00009	-0.00006	-0.0001	-0.0005
	[0.0001]	[0.0002]	[0.00009]	[0.0001]	[0.0003]
MOFA	0.09**	0.09**	0.01	0.004	0.05
	[0.04]	[0.04]	[0.02]	[0.05]	[0.05]
firm age	0.0002	0.0005	-0.0001	0.0006	-0.0004
	[0.0008]	[0.0008]	[0.0005]	[0.0009]	[0.0010]
joint venture	0.02	-0.02	0.02	0.02	0.02
	[0.03]	[0.04]	[0.02]	[0.04]	[0.04]
local firm acquisition	0.008	-0.09*	-0.02	-0.04	-0.10*
	[0.04]	[0.05]	[0.03]	[0.06]	[0.05]
foreign firm acquisition	0.002	0.04	-0.009	-0.05	0.1**
	[0.05]	[0.05]	[0.03]	[0.05]	[0.07]
privatisation	0.1	0.09	0.05	0.2*	0.2*
	[0.08]	[0.10]	[0.05]	[0.09]	[0.10]
market access	0.04	-0.004	0.04	0.003	0.07
	[0.06]	[0.06]	[0.04]	[0.07]	[0.07]
low cost	0.06	-0.06	-0.02	0.02	0.09
	[0.08]	[0.07]	[0.04]	[0.08]	[0.09]
input access	0.1	0.07	0.05	0.03	0.1
	[0.07]	[0.08]	[0.04]	[0.08]	[0.08]
join partner	-0.2***	-0.09	0.05	-0.08	-0.001
	[0.08]	[0.1]	[0.06]	[0.1]	[0.1]
export back home	0.1	-0.02	-0.05	0.07	-0.04
	[0.1]	[0.2]	[0.06]	[0.1]	[0.1]
TA benefits	0.2*	-0.08	-0.08	0.1	0.2*
	[0.08]	[0.1]	[0.05]	[0.10]	[0.10]
tax to sales	0.05	0.1	0.0001	0.1	0.2
	[0.1]	[0.2]	[0.07]	[0.1]	[0.2]
Obs	504	504	504	504	504
$Pseudo - R^2$	0.17	0.15	0.13	0.13	0.14
$Log - likelihood$	-678.0	-642.2	-685.3	-647.1	-676.7
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes

Notes: Ordered probit estimations with affiliate-country, affiliate-industry, and parent-country dummies in all columns. Dummies take value 1 if the corresponding statement is valid, and 0 otherwise. Among non-dummy explanatory variables, only employment and productivity are in logs. Marginal effects produced for the highest outcome of the dependent variable (= 5) are displayed in all columns. *** significant at 1%, ** significant at 5%, * significant at 10%, based on robust standard errors. For the description of the variables, see Table A1.

Table 7: Parental assistance by area and the intensive margin of intra-firm exports

Dependent variable:	(1)	(2)	(3)	(4)	(5)
	crucial parental assistance in				
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access
intra-firm exports (share)	**0.1*** **	**0.1** **	-0.04	**0.10** **	**0.1** **
	[0.05]	**[0.05]**	[0.03]	**[0.05]**	**[0.06]**
employment	-0.01	0.009	0.002	0.01	0.009
	[0.01]	[0.01]	[0.007]	[0.01]	[0.02]
productivity	-0.0008	0.02*	-0.001	0.02*	0.008
	[0.008]	[0.009]	[0.005]	[0.009]	[0.01]
skill intensity	0.2***	0.3**	0.05	0.05	-0.06
	[0.09]	[0.1]	[0.05]	[0.1]	[0.1]
intangible to tangible capital	0.0003**	0.00008	-0.00004	-0.0001	-0.0005
	[0.0001]	[0.0001]	[0.00009]	[0.0001]	[0.0003]
MOFA	0.08**	0.08*	0.01	0.001	0.04
	[0.04]	[0.04]	[0.02]	[0.05]	[0.05]
firm age	0.0003	0.0005	-0.0002	0.0006	-0.0003
	[0.0008]	[0.0008]	[0.0005]	[0.0009]	[0.0010]
joint venture	0.02	-0.02	0.02	0.02	0.02
	[0.03]	[0.04]	[0.02]	[0.04]	[0.04]
local firm acquisition	0.007	-0.09*	-0.02	-0.04	-0.09*
	[0.04]	[0.05]	[0.03]	[0.05]	[0.05]
foreign firm acquisition	0.003	0.04	-0.009	-0.05	0.1**
	[0.05]	[0.05]	[0.03]	[0.05]	[0.07]
privatisation	0.10	0.09	0.05	0.1	0.2*
	[0.08]	[0.09]	[0.05]	[0.09]	[0.10]
market access	0.04	-0.003	0.04	-0.00007	0.07
	[0.06]	[0.06]	[0.04]	[0.07]	[0.07]
low cost	0.06	-0.06	-0.02	0.02	0.10
	[0.07]	[0.07]	[0.04]	[0.08]	[0.09]
input access	0.1	0.07	0.05	0.03	0.1
	[0.07]	[0.08]	[0.04]	[0.08]	[0.08]
join partner	-0.2***	-0.09	0.05	-0.08	-0.006
	[0.08]	[0.1]	[0.06]	[0.1]	[0.1]
export back home	0.1	-0.01	-0.04	0.06	-0.02
	[0.1]	[0.2]	[0.06]	[0.1]	[0.1]
TA benefits	0.2**	-0.07	-0.08	0.1	0.2*
	[0.08]	[0.1]	[0.05]	[0.10]	[0.10]
tax to sales	0.07	0.1	-0.0001	0.1	0.2
	[0.1]	[0.2]	[0.07]	[0.1]	[0.2]
Obs	504	504	504	504	504
$Pseudo - R^2$	0.17	0.15	0.13	0.13	0.14
$Log - likelihood$	-676.5	-642.1	-684.3	-645.6	-678.6
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes

Notes: Ordered probit estimations with affiliate-country, affiliate-industry, and parent-country dummies in all columns. Dummies take value 1 if the corresponding statement is valid, and 0 otherwise. Among non-dummy explanatory variables, only employment and productivity are in logs. Marginal effects produced for the highest outcome of the dependent variable (= 5) are displayed in all columns. *** significant at 1%, ** significant at 5%, * significant at 10%, based on robust standard errors. For the description of the variables, see Table A1.

Table 8: Overall parental assistance and the extensive and intensive margins of intra-firm imports and intra-firm exports

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent variable:	overall measure (mean)	overall measure (weighted average)	overall measure (mean)	overall measure (weighted average)	overall measure (mean)	overall measure (weighted average)	overall measure (mean)	overall measure (weighted average)
intra-firm imports (dummy)	**0.2****	**0.2*****						
	[0.07]	**[0.07]**						
intra-firm imports (share)			**0.2*****	**0.3*****				
			[0.09]	**[0.09]**				
intra-firm exports (dummy)					**0.2****	**0.2****		
					[0.10]	**[0.10]**		
intra-firm exports (share)							**0.3****	0.2
							[0.1]	[0.2]
employment	0.04	0.04	0.04	0.04	-0.005	-0.005	0.0003	0.0004
	[0.03]	[0.03]	[0.03]	[0.03]	[0.04]	[0.04]	[0.04]	[0.04]
productivity	0.02	0.02	0.02	0.02	0.007	0.01	0.01	0.02
	[0.02]	[0.02]	[0.02]	[0.02]	[0.03]	[0.03]	[0.03]	[0.03]
skill intensity	0.06	0.03	0.05	0.02	0.6*	0.6*	0.6*	0.6*
	[0.2]	[0.2]	[0.2]	[0.2]	[0.3]	[0.3]	[0.3]	[0.3]
intangible to tangible capital	0.0003	0.0003	0.0004	0.0003	-0.0002	-0.0002	-0.0002	-0.0002
	[0.0005]	[0.0005]	[0.0005]	[0.0005]	[0.0006]	[0.0006]	[0.0007]	[0.0007]
MOFA	0.04	0.05	0.05	0.05	0.2	0.2	0.2	0.2
	[0.1]	[0.1]	[0.1]	[0.1]	[0.2]	[0.2]	[0.2]	[0.2]
firm age	-0.00004	-0.0001	0.0003	0.0003	0.0004	0.0007	0.0007	0.0008
	[0.002]	[0.002]	[0.002]	[0.002]	[0.003]	[0.003]	[0.003]	[0.003]
joint venture	0.1	0.1	0.10	0.10	0.1	0.1	0.1	0.1
	[0.08]	[0.08]	[0.08]	[0.08]	[0.1]	[0.1]	[0.1]	[0.1]
local firm acquisition	0.2	0.2	0.2	0.2	-0.2	-0.1	-0.2	-0.1
	[0.1]	[0.1]	[0.1]	[0.1]	[0.2]	[0.2]	[0.2]	[0.2]
foreign firm acquisition	0.01	-0.03	0.005	-0.04	0.09	0.10	0.09	0.10
	[0.1]	[0.1]	[0.1]	[0.1]	[0.2]	[0.2]	[0.2]	[0.2]
privatisation	0.2	0.2	0.2	0.2	0.4	0.4*	0.4	0.4*
	[0.2]	[0.2]	[0.2]	[0.2]	[0.3]	[0.2]	[0.3]	[0.2]
market access	0.4**	0.3**	0.4**	0.3**	0.2	0.2	0.3	0.2
	[0.2]	[0.2]	[0.2]	[0.2]	[0.2]	[0.2]	[0.2]	[0.2]
low cost	0.5**	0.5**	0.4**	0.4**	0.08	0.09	0.08	0.10
	[0.2]	[0.2]	[0.2]	[0.2]	[0.3]	[0.3]	[0.3]	[0.3]
input access	0.6***	0.5***	0.6***	0.5***	0.4	0.4	0.4	0.4
	[0.2]	[0.2]	[0.2]	[0.2]	[0.3]	[0.3]	[0.3]	[0.3]
join partner	0.08	0.06	0.08	0.07	-0.3	-0.3	-0.3	-0.3
	[0.2]	[0.2]	[0.2]	[0.2]	[0.3]	[0.3]	[0.3]	[0.3]
export back home	0.3	0.2	0.3	0.2	0.04	0.02	0.07	0.05
	[0.3]	[0.3]	[0.3]	[0.3]	[0.4]	[0.4]	[0.4]	[0.4]
TA benefits	0.4*	0.2	0.4*	0.2	0.3	0.1	0.3	0.1
	[0.2]	[0.2]	[0.2]	[0.2]	[0.3]	[0.3]	[0.3]	[0.3]
tax to sales	-0.4	-0.5	-0.4	-0.4	0.4	0.4	0.5	0.5
	[0.4]	[0.4]	[0.4]	[0.4]	[0.6]	[0.6]	[0.6]	[0.6]
Obs	1061	1061	1061	1061	505	505	505	505
R^2	0.12	0.13	0.12	0.13	0.24	0.24	0.24	0.24
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: OLS estimations with affiliate-country, affiliate-industry, and parent-country dummies in all columns. Dummies take value 1 if the corresponding statement is valid, and 0 otherwise. Among non-dummy explanatory variables, only employment and productivity are in logs. *** significant at 1%, ** significant at 5%, * significant at 10%, based on robust standard errors. For the description of the variables, see Table A1.

Table 9: Parental assistance and the extensive and intensive margins of intra-firm imports and intra-firm exports (the role of legal rights strength in affiliate countries)

Panel A: Extensive margin of intra-firm imports							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable:	*crucial* parental assistance in						
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access	overall measure (mean)	overall measure (weighted average)
intra-firm imports (dummy)	0.2***	0.2***	-0.07*	0.08	-0.006	0.3	0.4**
	[0.06]	[0.06]	[0.04]	[0.06]	[0.06]	[0.2]	[0.2]
* affiliate-country legal rights	**-0.02****	-0.01	0.006	-0.007	0.010	-0.02	-0.03
	[0.008]	[0.008]	[0.005]	[0.009]	[0.008]	[0.03]	[0.03]
Obs	1056	1057	1059	1059	1055	1061	1061
$Pseudo - R^2$	0.091	0.087	0.080	0.059	0.077		
$Log - likelihood$	-1572.4	-1420.4	-1518.3	-1495.7	-1623.7		
R^2						0.12	0.13
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Panel B: Intensive margin of intra-firm imports							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable:	*crucial* parental assistance in						
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access	overall measure (mean)	overall measure (weighted average)
intra-firm imports (share)	0.3***	0.3***	-0.08*	0.1*	-0.01	0.4*	0.5**
	[0.07]	[0.07]	[0.05]	[0.08]	[0.07]	[0.2]	[0.2]
* affiliate-country legal rights	**-0.03****	**-0.03****	0.01	-0.02	0.02	-0.04	-0.06
	[0.02]	**[0.02]**	[0.010]	[0.02]	[0.02]	[0.05]	[0.05]
Obs	1056	1057	1059	1059	1055	1061	1061
$Pseudo - R^2$	0.091	0.090	0.079	0.060	0.077		
$Log - likelihood$	-1572.4	-1416.4	-1519.4	-1494.2	-1623.5		
R^2						0.12	0.13
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Panel C: Extensive margin of intra-firm exports							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable:	*crucial* parental assistance in						
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access	overall measure (mean)	overall measure (weighted average)
intra-firm exports (dummy)	0.3***	0.1	0.02	0.08	0.1	0.6**	0.5
	[0.09]	[0.09]	[0.05]	[0.09]	[0.1]	[0.3]	[0.3]
* affiliate-country legal rights	**-0.03*****	-0.009	-0.003	-0.006	-0.004	-0.06	-0.04
	[0.01]	[0.01]	[0.007]	[0.01]	[0.01]	[0.04]	[0.04]
Obs	504	504	504	504	504	505	505
$Pseudo - R^2$	0.18	0.15	0.13	0.13	0.14		
$Log - likelihood$	-673.4	-641.8	-685.1	-647.0	-676.7		
R^2						0.25	0.24
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Panel D: Intensive margin of intra-firm exports							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable:	*crucial* parental assistance in						
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access	overall measure (mean)	overall measure (weighted average)
intra-firm exports (share)	0.3***	0.2	-0.006	0.1	0.05	0.6	0.3
	[0.1]	[0.1]	[0.07]	[0.1]	[0.1]	[0.4]	[0.4]
* affiliate-country legal rights	**-0.04****	-0.01	-0.006	-0.009	0.01	-0.06	-0.02
	[0.02]	[0.02]	[0.01]	[0.02]	[0.03]	[0.07]	[0.07]
Obs	504	504	504	504	504	505	505
$Pseudo - R^2$	0.17	0.15	0.13	0.13	0.14		
$Log - likelihood$	-673.9	-641.8	-684.2	-645.5	-678.5		
R^2						0.24	0.24
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Ordered probit and OLS estimations with affiliate-country, affiliate-industry, and parent-country dummies in columns 1–5 and 6–7 of all panels, respectively. Dummies take value 1 if the corresponding statement is valid, and 0 otherwise. Among non-dummy explanatory variables, only employment and productivity are in logs. Marginal effects produced for the highest outcome of the dependent variable (= 5) are displayed in columns 1–5 of all panels. *** significant at 1%, ** significant at 5%, * significant at 10%, based on robust standard errors. For the description of the variables, see Table A1.

Table 10: Parental assistance and the extensive and intensive margins of intra-firm imports and intra-firm exports (affiliate-parent-country fixed effects)

Panel A: Extensive margin of intra-firm imports							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable:	*crucial* parental assistance in						
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access	overall measure (mean)	overall measure (weighted average)
intra-firm imports (dummy)	**0.08*** **	**0.06** **	**-0.04*** **	0.01	0.03	0.08	0.1
	[0.02]	**[0.02]**	**[0.01]**	[0.02]	[0.02]	[0.08]	[0.08]
Obs	1056	1057	1059	1059	1055	1061	1061
$Pseudo - R^2$	0.19	0.19	0.18	0.17	0.17		
$Log - likelihood$	-1394.0	-1266.0	-1351.0	-1323.2	-1458.5		
R^2						0.23	0.23
Affiliate-country dummies	No	No	No	No	No	No	No
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	No	No	No	No	No	No	No
Affiliate-parent-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Panel B: Intensive margin of intra-firm imports							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable:	*crucial* parental assistance in						
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access	overall measure (mean)	overall measure (weighted average)
intra-firm imports (share)	**0.1*** **	**0.09*** **	**-0.04** **	0.03	0.04	0.1	**0.2***
	[0.03]	**[0.03]**	**[0.02]**	[0.03]	[0.03]	[0.1]	**[0.1]**
Obs	1056	1057	1059	1059	1055	1061	1061
$Pseudo - R^2$	0.19	0.19	0.18	0.17	0.17		
$Log - likelihood$	-1393.4	-1263.8	-1353.3	-1322.7	-1458.7		
R^2						0.23	0.23
Affiliate-country dummies	No	No	No	No	No	No	No
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	No	No	No	No	No	No	No
Affiliate-parent-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Panel C: Extensive margin of intra-firm exports							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable:	*crucial* parental assistance in						
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access	overall measure (mean)	overall measure (weighted average)
intra-firm exports (dummy)	**0.05***	**0.05***	-0.01	0.03	**0.08** **	0.2	0.2
	[0.02]	**[0.03]**	[0.02]	[0.03]	**[0.04]**	[0.1]	[0.1]
Obs	504	504	504	504	504	505	505
$Pseudo - R^2$	0.31	0.26	0.25	0.29	0.24		
$Log - likelihood$	-563.0	-556.7	-587.8	-529.2	-597.9		
R^2						0.28	0.28
Affiliate-country dummies	No	No	No	No	No	No	No
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	No	No	No	No	No	No	No
Affiliate-parent-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Panel D: Intensive margin of intra-firm exports							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable:	*crucial* parental assistance in						
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access	overall measure (mean)	overall measure (weighted average)
intra-firm exports (share)	**0.1** **	**0.10** **	-0.04	**0.10** **	0.07	0.3	0.2
	[0.04]	**[0.05]**	[0.03]	**[0.05]**	[0.06]	[0.2]	[0.2]
Obs	504	504	504	504	504	505	505
$Pseudo - R^2$	0.31	0.26	0.25	0.29	0.24		
$Log - likelihood$	-560.4	-555.6	-586.7	-527.2	-600.2		
R^2						0.28	0.28
Affiliate-country dummies	No	No	No	No	No	No	No
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	No	No	No	No	No	No	No
Affiliate-parent-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Ordered probit and OLS estimations with affiliate-parent-country and affiliate-industry dummies in columns 1–5 and 6–7 of all panels, respectively. Dummies take value 1 if the corresponding statement is valid, and 0 otherwise. Among non-dummy explanatory variables, only employment and productivity are in logs. Marginal effects produced for the highest outcome of the dependent variable (= 5) are displayed in columns 1–5 of all panels. *** significant at 1%, ** significant at 5%, * significant at 10%, based on robust standard errors. For the description of the variables, see Table A1.

Table 11: Parental assistance and the extensive margins of intra-firm imports and intra-firm exports with thresholds

Panel A: 25% of production inputs accounted for by intra-firm imports							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable:	*crucial* parental assistance in						
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access	overall measure (mean)	overall measure (weighted average)
intra-firm imports share ≥ 25% (dummy)	**0.09*** **	**0.08*** **	-0.02	**0.05***	**0.06** **	**0.2*** **	**0.2*** **
	[0.02]	**[0.02]**	[0.01]	**[0.03]**	**[0.02]**	**[0.07]**	**[0.07]**
Obs	1056	1057	1059	1059	1055	1061	1061
$Pseudo - R^2$	0.088	0.087	0.078	0.059	0.076		
$Log - likelihood$	-1577.8	-1421.2	-1520.0	-1495.6	-1624.2		
R^2						0.12	0.13
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Panel B: 75% of production inputs accounted for by intra-firm imports							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable:	*crucial* parental assistance in						
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access	overall measure (mean)	overall measure (weighted average)
intra-firm imports share ≥ 75% (dummy)	**0.1*** **	**0.1*** **	-0.02	**0.06***	0.05	**0.2** **	**0.2*** **
	[0.03]	**[0.03]**	[0.02]	**[0.03]**	[0.03]	**[0.08]**	**[0.08]**
Obs	1056	1057	1059	1059	1055	1061	1061
$Pseudo - R^2$	0.088	0.088	0.078	0.060	0.075		
$Log - likelihood$	-1578.5	-1418.9	-1520.8	-1495.1	-1626.1		
R^2						0.12	0.13
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Panel C: 25% of total exports accounted for by intra-firm exports							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable:	*crucial* parental assistance in						
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access	overall measure (mean)	overall measure (weighted average)
intra-firm exports share ≥ 25% (dummy)	**0.06***	0.05	-0.03	**0.07***	**0.09** **	0.2	0.1
	[0.03]	[0.04]	[0.02]	**[0.04]**	**[0.04]**	[0.1]	[0.1]
Obs	504	504	504	504	504	505	505
$Pseudo - R^2$	0.17	0.15	0.13	0.13	0.14		
$Log - likelihood$	-680.3	-643.5	-684.0	-646.0	-678.5		
R^2						0.24	0.24
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Panel D: 75% of total exports accounted for by intra-firm exports							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable:	*crucial* parental assistance in						
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access	overall measure (mean)	overall measure (weighted average)
intra-firm exports share 75% (dummy)	**0.1*** **	**0.09** **	-0.04	0.07	0.06	0.2	0.1
	[0.05]	**[0.04]**	[0.03]	[0.05]	[0.05]	[0.1]	[0.1]
Obs	504	504	504	504	504	505	505
$Pseudo - R^2$	0.17	0.15	0.13	0.13	0.14		
$Log - likelihood$	-676.7	-642.3	-684.1	-646.6	-680.3		
R^2						0.24	0.24
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Ordered probit and OLS estimations with affiliate-country, affiliate-industry, and parent-country dummies in columns 1–5 and 6–7 of all panels, respectively. Dummies take value 1 if the corresponding statement is valid, and 0 otherwise. Among non-dummy explanatory variables, only employment and productivity are in logs. Marginal effects produced for the highest outcome of the dependent variable (= 5) are displayed in columns 1–5 of all panels. *** significant at 1%, ** significant at 5%, * significant at 10%, based on robust standard errors. For the description of the variables, see Table A1.

Table 12: Parental assistance and the extensive and intensive margins of intra-firm imports and intra-firm exports (main source of competition)

Panel A: Extensive margin of intra-firm imports							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable:	*crucial* parental assistance in						
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access	overall measure (mean)	overall measure (weighted average)
intra-firm imports (dummy)	**0.09*** **	**0.07*** **	**-0.02***	0.03	**0.06*** **	**0.2** **	**0.2*** **
	[0.02]	**[0.02]**	**[0.01]**	[0.02]	**[0.02]**	**[0.07]**	**[0.07]**
local competition (domestic firms)	-0.07***	-0.01	0.006	-0.03	-0.04*	-0.1*	-0.1
	[0.02]	[0.03]	[0.02]	[0.03]	[0.02]	[0.08]	[0.08]
local competition (foreign firms)	-0.001	-0.006	0.004	0.03	0.04	0.07	0.06
	[0.02]	[0.03]	[0.02]	[0.03]	[0.02]	[0.08]	[0.08]
Obs	1007	1008	1010	1010	1005	1011	1011
$Pseudo - R^2$	0.100	0.088	0.083	0.063	0.077		
$Log - likelihood$	-1482.3	-1346.8	-1434.6	-1422.0	-1551.0		
R^2						0.13	0.14
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Panel B: Intensive margin of intra-firm imports							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable:	*crucial* parental assistance in						
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access	overall measure (mean)	overall measure (weighted average)
intra-firm imports (share)	**0.1*** **	**0.1*** **	-0.01	0.05	**0.08*** **	**0.3*** **	**0.3*** **
	[0.03]	**[0.03]**	[0.02]	[0.03]	**[0.03]**	**[0.09]**	**[0.09]**
local competition (domestic firms)	-0.07***	-0.01	0.007	-0.03	-0.04*	-0.1*	-0.1
	[0.02]	[0.03]	[0.02]	[0.03]	[0.02]	[0.08]	[0.08]
local competition (foreign firms)	-0.0005	-0.005	0.005	0.03	0.04	0.07	0.06
	[0.02]	[0.03]	[0.02]	[0.03]	[0.02]	[0.08]	[0.08]
Obs	1007	1008	1010	1010	1005	1011	1011
$Pseudo - R^2$	0.100	0.090	0.082	0.063	0.077		
$Log - likelihood$	-1482.3	-1344.0	-1435.8	-1421.1	-1550.5		
R^2						0.14	0.14
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Panel C: Extensive margin of intra-firm exports							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable:	*crucial* parental assistance in						
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access	overall measure (mean)	overall measure (weighted average)
intra-firm exports (dummy)	**0.06** **	**0.06** **	0.01	0.03	**0.10*** **	**0.2** **	**0.2** **
	[0.03]	**[0.03]**	[0.02]	[0.03]	**[0.03]**	**[0.1]**	**[0.1]**
local competition (domestic firms)	-0.05*	0.02	0.02	-0.01	-0.05	-0.08	-0.08
	[0.03]	[0.03]	[0.02]	[0.03]	[0.04]	[0.1]	[0.1]
local competition (foreign firms)	0.003	-0.004	0.04**	0.04	0.08**	0.2	0.2
	[0.03]	[0.03]	[0.02]	[0.04]	[0.04]	[0.1]	[0.1]
Obs	441	441	441	441	441	441	441
$Pseudo - R^2$	0.22	0.18	0.15	0.14	0.16		
$Log - likelihood$	-555.0	-539.5	-574.6	-558.8	-587.0		
R^2						0.27	0.27
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Panel D: Intensive margin of intra-firm exports							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable:	*crucial* parental assistance in						
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access	overall measure (mean)	overall measure (weighted average)
intra-firm exports (share)	**0.10** **	**0.1** **	0.005	**0.1***	**0.2*** **	**0.4** **	**0.4** **
	[0.05]	**[0.05]**	[0.03]	**[0.05]**	**[0.05]**	**[0.2]**	**[0.2]**
local competition (domestic firms)	-0.05*	0.02	0.02	-0.01	-0.05	-0.08	-0.08
	[0.03]	[0.03]	[0.02]	[0.03]	[0.04]	[0.1]	[0.1]
local competition (foreign firms)	0.007	-0.0008	0.05**	0.04	0.09**	0.2	0.2
	[0.03]	[0.03]	[0.02]	[0.04]	[0.04]	[0.1]	[0.1]
Obs	441	441	441	441	441	441	441
$Pseudo - R^2$	0.22	0.18	0.15	0.15	0.16		
$Log - likelihood$	-555.6	-539.2	-574.8	-557.5	-587.8		
R^2						0.27	0.27
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Ordered probit and OLS estimations with affiliate-country, affiliate-industry, and parent-country dummies in columns 1–5 and 6–7 of all panels, respectively. Dummies take value 1 if the corresponding statement is valid, and 0 otherwise. Among non-dummy explanatory variables, only employment and productivity are in logs. Marginal effects produced for the highest outcome of the dependent variable (= 5) are displayed in columns 1–5 of all panels. *** significant at 1%, ** significant at 5%, * significant at 10%, based on robust standard errors. For the description of the variables, see Table A1.

Table 13: Parental assistance and the extensive and intensive margins of intra-firm imports and intra-firm exports (acquisition mode of capital goods)

Panel A: Extensive margin of intra-firm imports							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable:	*crucial* parental assistance in						
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access	overall measure (mean)	overall measure (weighted average)
intra-firm imports (dummy)	**0.06****	0.04	**-0.03***	**0.05***	**0.04***	0.09	0.1
	[0.03]	[0.03]	**[0.02]**	**[0.03]**	**[0.03]**	[0.09]	[0.09]
source of capital goods (imports)	0.01	0.03	-0.00006	-0.02	-0.1	-0.2	0.06
	[0.08]	[0.10]	[0.06]	[0.10]	[0.09]	[0.4]	[0.4]
source of capital goods (local)	-0.01	0.02	0.003	-0.06	-0.1	-0.3	-0.02
	[0.08]	[0.1]	[0.06]	[0.1]	[0.09]	[0.4]	[0.4]
source of capital goods (parent)	0.1*	0.1	0.04	0.03	-0.1	0.01	0.3
	[0.08]	[0.1]	[0.06]	[0.1]	[0.09]	[0.4]	[0.4]
Obs	836	838	839	839	839	840	840
$Pseudo - R^2$	0.12	0.11	0.086	0.082	0.10		
$Log - likelihood$	-1197.3	-1089.6	-1191.8	-1154.3	-1249.2		
R^2						0.17	0.17
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Panel B: Intensive margin of intra-firm imports							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable:	*crucial* parental assistance in						
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access	overall measure (mean)	overall measure (weighted average)
intra-firm imports (share)	**0.09*****	**0.07***	-0.03	**0.09****	**0.07***	0.2	**0.2***
	[0.03]	**[0.04]**	[0.02]	**[0.04]**	**[0.04]**	[0.1]	**[0.1]**
source of capital goods (imports)	0.02	0.03	-0.0008	-0.01	-0.1	-0.2	0.06
	[0.08]	[0.09]	[0.06]	[0.10]	[0.09]	[0.4]	[0.4]
source of capital goods (local)	-0.004	0.02	0.0006	-0.05	-0.1	-0.3	-0.01
	[0.08]	[0.1]	[0.06]	[0.1]	[0.09]	[0.4]	[0.4]
source of capital goods (parent)	0.1*	0.1	0.03	0.02	-0.1	-0.01	0.3
	[0.08]	[0.10]	[0.06]	[0.1]	[0.09]	[0.4]	[0.4]
Obs	836	838	839	839	839	840	840
$Pseudo - R^2$	0.12	0.11	0.085	0.083	0.10		
$Log - likelihood$	-1196.8	-1088.7	-1192.9	-1152.6	-1248.7		
R^2						0.17	0.17
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Panel C: Extensive margin of intra-firm exports							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable:	*crucial* parental assistance in						
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access	overall measure (mean)	overall measure (weighted average)
intra-firm exports (dummy)	0.04	0.05	-0.007	0.03	**0.1*****	**0.2***	0.2
	[0.03]	[0.03]	[0.02]	[0.03]	**[0.04]**	**[0.10]**	[0.1]
source of capital goods (imports)	-0.10*	-0.1	-0.06	-0.09	-0.1	-0.5**	-0.2
	[0.06]	[0.09]	[0.05]	[0.09]	[0.09]	[0.3]	[0.3]
source of capital goods (local)	-0.2***	-0.1	-0.07	-0.10	-0.10	-0.6*	-0.2
	[0.07]	[0.1]	[0.06]	[0.1]	[0.1]	[0.3]	[0.4]
source of capital goods (parent)	0.01	-0.02	-0.05	-0.06	-0.2	-0.4	-0.004
	[0.07]	[0.10]	[0.06]	[0.1]	[0.1]	[0.3]	[0.4]
Obs	499	499	499	499	499	500	500
$Pseudo - R^2$	0.18	0.16	0.13	0.13	0.14		
$Log - likelihood$	-661.1	-631.2	-676.3	-639.4	-666.8		
R^2						0.25	0.24
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Panel D: Intensive margin of intra-firm exports							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable:	*crucial* parental assistance in						
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access	overall measure (mean)	overall measure (weighted average)
intra-firm exports (share)	**0.08***	0.07	-0.04	**0.1****	**0.1****	**0.2***	0.2
	[0.05]	[0.05]	[0.03]	**[0.05]**	**[0.06]**	**[0.1]**	[0.2]
source of capital goods (imports)	-0.09*	-0.1	-0.06	-0.09	-0.1	-0.5**	-0.2
	[0.05]	[0.09]	[0.05]	[0.09]	[0.09]	[0.2]	[0.3]
source of capital goods (local)	-0.2***	-0.1	-0.07	-0.09	-0.1	-0.6**	-0.3
	[0.06]	[0.1]	[0.05]	[0.1]	[0.1]	[0.3]	[0.4]
source of capital goods (parent)	0.006	-0.02	-0.05	-0.08	-0.2	-0.4	0.006
	[0.06]	[0.10]	[0.05]	[0.1]	[0.1]	[0.3]	[0.4]
Obs	499	499	499	499	499	500	500
$Pseudo - R^2$	0.18	0.16	0.13	0.14	0.14		
$Log - likelihood$	-660.4	-631.3	-675.3	-637.8	-668.6		
R^2						0.25	0.24
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Ordered probit and OLS estimations with affiliate-country, affiliate-industry, and parent-country dummies in columns 1–5 and 6–7 of all panels, respectively. Dummies take value 1 if the corresponding statement is valid, and 0 otherwise. Among non-dummy explanatory variables, only employment and productivity are in logs. Marginal effects produced for the highest outcome of the dependent variable (= 5) are displayed in columns 1–5 of all panels. *** significant at 1%, ** significant at 5%, * significant at 10%, based on robust standard errors. For the description of the variables, see Table A1.

Table 14: Parental assistance and the extensive and intensive margins of intra-firm imports and intra-firm exports (sample of firms in goods-producing industries)

Panel A: Extensive margin of intra-firm imports							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable:	*crucial* parental assistance in						
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access	overall measure (mean)	overall measure (weighted average)
intra-firm imports (dummy)	**0.10*** **	**0.08*** **	-0.03	**0.05** **	**0.04***	**0.2***	**0.2** **
	[0.03]	**[0.03]**	[0.02]	**[0.03]**	**[0.02]**	**[0.08]**	**[0.08]**
Obs	831	832	834	833	833	835	835
$Pseudo-R^2$	0.11	0.10	0.085	0.078	0.096		
$Log-likelihood$	-1203.6	-1090.0	-1188.9	-1150.6	-1250.9		
R^2						0.15	0.15
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Panel B: Intensive margin of intra-firm imports							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable:	*crucial* parental assistance in						
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access	overall measure (mean)	overall measure (weighted average)
intra-firm imports (share)	**0.1*** **	**0.1*** **	-0.02	**0.10** **	**0.06***	**0.3*** **	**0.3*** **
	[0.03]	**[0.03]**	[0.02]	**[0.04]**	**[0.03]**	**[0.1]**	**[0.1]**
Obs	831	832	834	833	833	835	835
$Pseudo-R^2$	0.11	0.10	0.084	0.079	0.097		
$Log-likelihood$	-1202.2	-1087.2	-1189.8	-1148.5	-1250.3		
R^2						0.15	0.16
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Panel C: Extensive margin of intra-firm exports							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable:	*crucial* parental assistance in						
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access	overall measure (mean)	overall measure (weighted average)
intra-firm exports (dummy)	**0.07*** **	**0.07** **	-0.006	0.04	**0.1*** **	**0.2** **	**0.2** **
	[0.03]	**[0.03]**	[0.02]	[0.03]	**[0.04]**	**[0.10]**	**[0.10]**
Obs	497	497	497	497	497	498	498
$Pseudo-R^2$	0.17	0.15	0.13	0.13	0.14		
$Log-likelihood$	-669.3	-635.2	-678.8	-637.5	-667.4		
R^2						0.25	0.25
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Panel D: Intensive margin of intra-firm exports							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable:	*crucial* parental assistance in						
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access	overall measure (mean)	overall measure (weighted average)
intra-firm exports (share)	**0.1*** **	**0.1** **	-0.04	**0.1** **	**0.1** **	**0.3** **	0.2
	[0.05]	**[0.05]**	[0.03]	**[0.05]**	**[0.06]**	**[0.1]**	[0.2]
Obs	497	497	497	497	497	498	498
$Pseudo-R^2$	0.17	0.15	0.13	0.13	0.14		
$Log-likelihood$	-667.3	-635.3	-677.8	-636.1	-669.3		
R^2						0.25	0.24
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Ordered probit and OLS estimations with affiliate-country, affiliate-industry, and parent-country dummies in columns 1–5 and 6–7 of all panels, respectively. Sample restricted to foreign affiliates in goods-producing industries. Dummies take value 1 if the corresponding statement is valid, and 0 otherwise. Among non-dummy explanatory variables, only employment and productivity are in logs. Marginal effects produced for the highest outcome of the dependent variable (= 5) are displayed in columns 1–5 of all panels. *** significant at 1%, ** significant at 5%, * significant at 10%, based on robust standard errors. For the description of the variables, see Table A1.

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Table A1: Description of variables

Variable	Description
patents trademarks, brand names	parental assistance in the use of patents, trademarks, and brand names
technology and know-how	parental assistance in technology and know-how
quality upgrading of staff	parental assistance in quality upgrading of staff
foreign supplier network access	parental assistance in access to foreign supplier network
global markets access	parental assistance in access to global markets
overall measure (mean)	mean of parental assistance in five areas
overall measure (weighted average)	weighted average of parental assistance in five areas (first component's loadings as weights)
intra-firm imports (dummy)	the firm has a non-zero share of production inputs imported from the parent in total production inputs
intra-firm imports (share)	share of production inputs imported from the parent in total production inputs
intra-firm exports (dummy)	the firm has a non-zero share of exports to the parent/sister affiliate in total direct exports
intra-firm exports (share)	share of exports to the parent/sister affiliate in total direct exports
employment	total number of permanent full-time employees
productivity	total sales to total permanent full-time employment
skill intensity	share of permanent full-time technical, supervisory and managerial employees in total number of permanent full-time employees
intangible to tangible capital	ratio of the sum of advertising and training expenditures to the total value of fixed assets
MOFA	the firm is owned by a foreign investor by at least 50% (dummy)
firm age	number of years since the establishment of the firm
wholly-owned firm	mode of initial foreign investment: creation of a new operation as a wholly-owned enterprise (dummy)
joint venture	mode of initial foreign investment: creation of a new operation as a joint venture (dummy)
local firm acquisition	mode of initial foreign investment: purchase of pre-existing assets from local private owners (dummy)
foreign firm acquisition	mode of initial foreign investment: purchase of pre-existing assets from foreign private owners (dummy)
privatisation	mode of initial foreign investment: purchase of pre-existing state-owned assets (dummy)
market access	principal motive for foreign investment: access to new markets (dummy)
low cost	principal motive for foreign investment: lower production cost (dummy)
input access	principal motive for foreign investment: access to natural resources/inputs (dummy)
join partner	principal motive for foreign investment: collaboration with a specific partner in the host country (dummy)
export back home	principal motive for foreign investment: exporting back to home country (dummy)
TA benefits	principal motive for foreign investment: benefits from a trade agreement (dummy)
other motive	principal motive for foreign investment: any other motive to be specified by the firm (dummy)
tax to sales	ratio of taxes to total sales

Description of variables (continued)

Variable	Description
intra-firm imports share $\geq 25\%$	at least 25% of the value of production inputs of the firm are accounted for by intra-firm imports (dummy)
intra-firm imports share $\geq 75\%$	at least 75% of the value of production inputs of the firm are accounted for by intra-firm imports (dummy)
intra-firm exports share $\geq 25\%$	at least 25% of the value of direct exports of the firm are accounted for by intra-firm exports (dummy)
intra-firm exports share $\geq 75\%$	at least 75% of the value of direct exports of the firm are accounted for by intra-firm exports (dummy)
patents, trademarks, brand names = 0	parental assistance in the use of patents, trademarks and brand names not received (dummy)
patents, trademarks, brand names = 1	parental assistance received in the use of patents, trademarks and brand names not important (dummy)
patents, trademarks, brand names = 2	parental assistance received in the use of patents, trademarks and brand names slightly important (dummy)
patents, trademarks, brand names = 3	parental assistance received in the use of patents, trademarks and brand names important (dummy)
patents, trademarks, brand names = 4	parental assistance received in the use of patents, trademarks and brand names very important (dummy)
patents, trademarks, brand names = 5	parental assistance received in the use of patents, trademarks and brand names crucial (dummy)
technology and know-how = 0	parental assistance in technology and know-how not received (dummy)
technology and know-how = 1	parental assistance received in technology and know-how not important (dummy)
technology and know-how = 2	parental assistance received in technology and know-how slightly important (dummy)
technology and know-how = 3	parental assistance received in technology and know-how important (dummy)
technology and know-how = 4	parental assistance received in technology and know-how very important (dummy)
technology and know-how = 5	parental assistance received in technology and know-how crucial (dummy)
quality upgrading of staff = 0	parental assistance in quality upgrading of staff not received (dummy)
quality upgrading of staff = 1	parental assistance received in quality upgrading of staff not important (dummy)
quality upgrading of staff = 2	parental assistance received in quality upgrading of staff slightly important (dummy)
quality upgrading of staff = 3	parental assistance received in quality upgrading of staff important (dummy)
quality upgrading of staff = 4	parental assistance received in quality upgrading of staff very important (dummy)
quality upgrading of staff = 5	parental assistance received in quality upgrading of staff crucial (dummy)
foreign supplier network access = 0	parental assistance in access to foreign supplier network not received (dummy)
foreign supplier network access = 1	parental assistance received in access to foreign supplier network not important (dummy)
foreign supplier network access = 2	parental assistance received in access to foreign supplier network slightly important (dummy)
foreign supplier network access = 3	parental assistance received in access to foreign supplier network important (dummy)
foreign supplier network access = 4	parental assistance received in access to foreign supplier network very important (dummy)
foreign supplier network access = 5	parental assistance received in access to foreign supplier network crucial (dummy)
global markets access = 0	parental assistance in access to global markets not received (dummy)
global markets access = 1	parental assistance received in access to global markets not important (dummy)
global markets access = 2	parental assistance received in access to global markets slightly important (dummy)
global markets access = 3	parental assistance received in access to global markets important (dummy)
global markets access = 4	parental assistance received in access to global markets very important (dummy)
global markets access = 5	parental assistance received in access to global markets crucial (dummy)

Description of variables (continued)

Variable	Description
sales	total value of sales of the firm
average wage	ratio of total wage bill to total number of permanent full-time employees
monthly wage (non-production to production workers)	ratio of monthly wage for non-production workers to monthly wage for production workers
monthly wage (managerial to production workers)	ratio of monthly wage for managerial workers to monthly wage for production workers
monthly wage (managerial to non-production workers)	ratio of monthly wage for managerial workers to monthly wage for non-production workers
firm age $= \{1, 5\}$	the firm's age is between 1 and 5 years (dummy)
firm age $= \{6, 10\}$	the firm's age is between 6 and 10 years (dummy)
firm age $= \{11, 20\}$	the firm's age is between 11 and 20 years (dummy)
tax to assets	total tax payment to total value of assets
source of capital goods (imports)	capital goods imported directly by the firm (dummy)
source of capital goods (local)	capital goods acquired from local distributors (dummy)
source of capital goods (parent)	capital goods acquired from the parent company (dummy)
source of capital goods (other)	capital goods acquired from any other source to be specified by the firm (dummy)
affiliate-country legal rights	index for strength of legal rights in affiliate country (0–10) (source: World Bank's World Development Indicators)
geographic distance	geographic distance between affiliate and parent countries (source: CEPII)
common language	common language between affiliate and parent countries (dummy) (source: CEPII)
past colonial ties	past colonial ties between affiliate and parent countries (dummy) (source: CEPII)

Notes: Authors' notation.

Figure A1: Overall measure of parental assistance to importing foreign affiliates (kernel density)

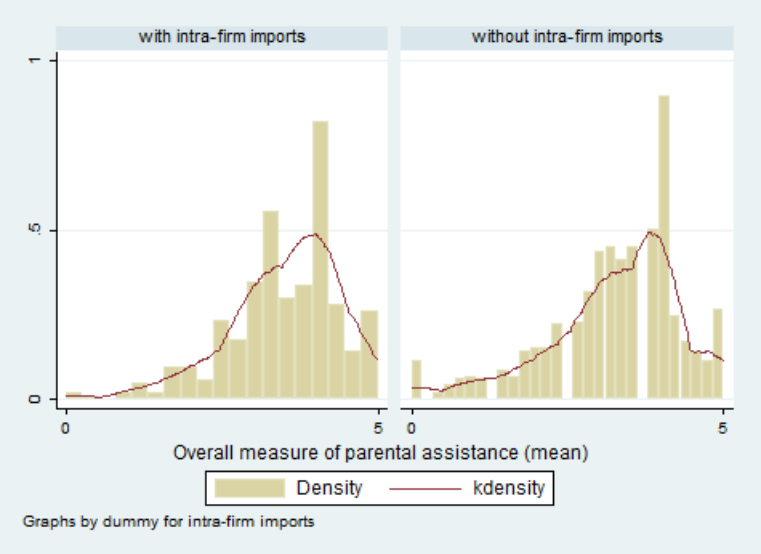

Figure A2: Overall measure of parental assistance to importing foreign affiliates (percentile distribution)

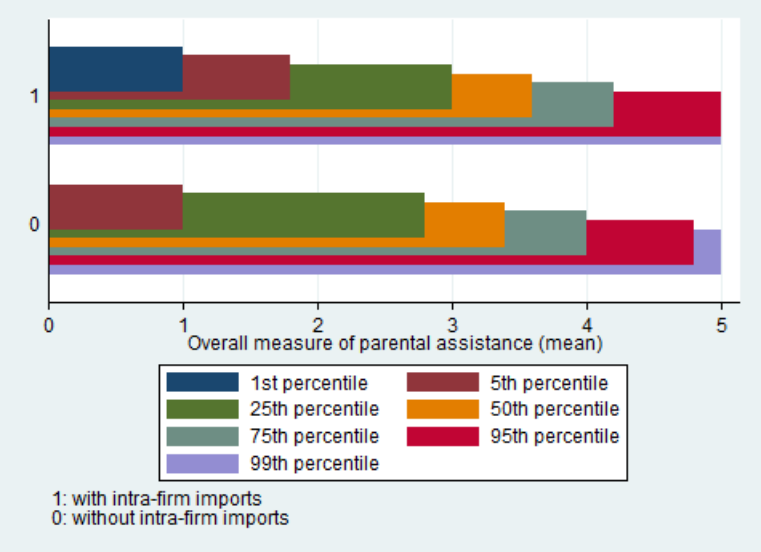

Figure A3: Overall measure of parental assistance to exporting foreign affiliates (kernel density)

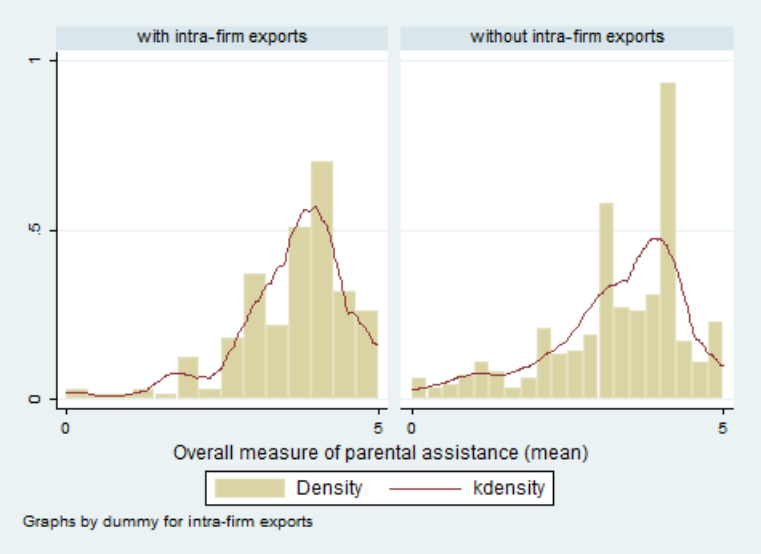

Figure A4: Overall measure of parental assistance to exporting foreign affiliates (percentile distribution)

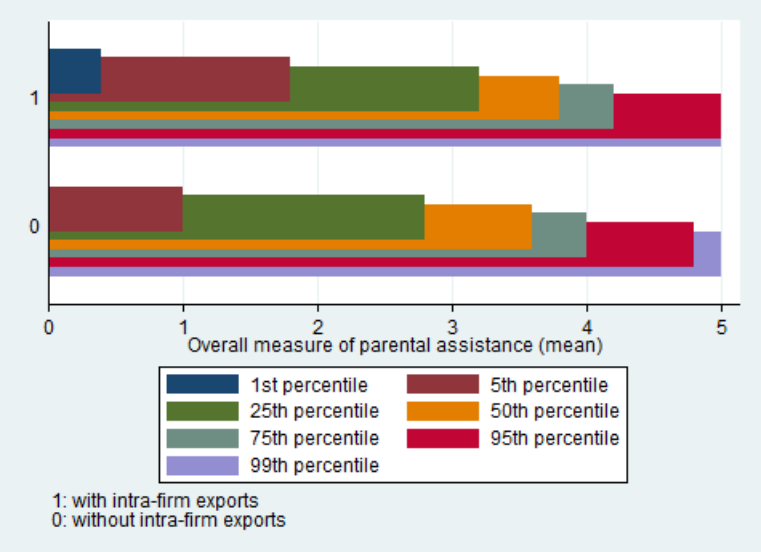

Table A2: Descriptive statistics for additional firm- and country-level dummy variables (robustness checks)

	Panel A: Firm-level					
Dummy variable	No		Yes		Total	
	#	%	#	%	#	%
intra-firm imports share $\geq 25\%$	1134	77.4	332	22.6	1466	100
intra-firm imports share $\geq 75\%$	1260	85.9	206	14.1	1466	100
intra-firm exports share $\geq 25\%$	1331	90.8	135	9.2	1466	100
intra-firm exports share $\geq 75\%$	1389	94.7	77	5.3	1466	100
patents, trademarks, brand names = 0	1263	89	156	11	1419	100
patents, trademarks, brand names = 1	1303	91.8	116	8.2	1419	100
patents, trademarks, brand names = 2	1330	93.7	89	6.3	1419	100
patents, trademarks, brand names = 3	1107	78	312	22	1419	100
patents, trademarks, brand names = 4	993	70	426	30	1419	100
patents, trademarks, brand names = 5	1099	77.4	320	22.6	1419	100
technology and know-how = 0	1341	94.4	80	5.6	1421	100
technology and know-how = 1	1363	95.9	58	4.1	1421	100
technology and know-how = 2	1347	94.8	74	5.2	1421	100
technology and know-how = 3	1034	72.8	387	27.2	1421	100
technology and know-how = 4	911	64.1	510	35.9	1421	100
technology and know-how = 5	1109	78	312	22	1421	100
staff quality upgrading = 0	1346	94.7	75	5.3	1421	100
staff quality upgrading = 1	1323	93.1	98	6.9	1421	100
staff quality upgrading = 2	1257	88.5	164	11.5	1421	100
staff quality upgrading = 3	961	67.6	460	32.4	1421	100
staff quality upgrading = 4	966	68	455	32	1421	100
staff quality upgrading = 5	1252	88.1	169	11.9	1421	100
foreign supplier network access = 0	1357	95.4	65	4.6	1422	100
foreign supplier network access = 1	1361	95.7	61	4.3	1422	100
foreign supplier network access = 2	1323	93	99	7	1422	100
foreign supplier network access = 3	1073	75.5	349	24.5	1422	100
foreign supplier network access = 4	911	64.1	511	35.9	1422	100
foreign supplier network access = 5	1085	76.3	337	23.7	1422	100
global markets access = 0	1266	89.5	149	10.5	1415	100
global markets access = 1	1328	93.9	87	6.1	1415	100
global markets access = 2	1299	91.8	116	8.2	1415	100
global markets access = 3	1116	78.9	299	21.1	1415	100
global markets access = 4	1008	71.2	407	28.8	1415	100
global markets access = 5	1058	74.8	357	25.2	1415	100
firm age = $\{1, 5\}$	1255	86.1	203	13.9	1458	100
firm age = $\{6, 10\}$	1154	79.1	304	20.9	1458	100
firm age = $\{11, 20\}$	943	64.7	515	35.3	1458	100
firm age > 20	1022	70.1	436	29.9	1458	100
import competition	969	71.3	390	28.7	1359	100
local competition (domestic firms)	862	63.4	497	36.6	1359	100
local competition (foreign firms)	887	65.3	472	34.7	1359	100
source of capital goods (imports)	306	26.8	837	73.2	1143	100
source of capital goods (local)	1013	88.6	130	11.4	1143	100
source of capital goods (parent)	988	86.4	155	13.6	1143	100
source of capital goods (other)	1122	98.2	21	1.8	1143	100
	Panel B: Country-level					
Dummy variable	No		Yes		Total	
	#	%	#	%	#	%
common language	200	56.8	152	43.2	352	100
past colonial ties	333	94.6	19	5.4	352	100

Notes: Authors' calculations. Each dummy is equal to 1 if the corresponding statement is valid, and 0 otherwise. For the description of the variables, see Table A1.
Source: UNIDO Africa Investor Survey 2010.

Table A3: Descriptive statistics for additional firm- and country-level non-dummy variables (robustness checks)

		Panel A: Firm-level			
Variable	Obs	Mean	Sd	Min	Max
sales (million USD)	1434	2	25	0	552
average wage (thousand USD)	1386	5	152	0	5569
monthly wage (non-production to production workers)	1275	2.71	3.67	0	67
monthly wage (managerial to production workers)	1274	3.97	4.24	0	69
monthly wage (managerial to non-production workers)	1315	2.07	2.08	0	23
tax to assets	1169	24.47	317.72	0	8920
		Panel B: Country-level			
Variable	Obs	Mean	Sd	Min	Max
affiliate-country legal rights strength	19	5.2	2.6	2	10
affiliate-country rule of law	19	58.3	13.6	29	87
geographic distance (in km)	352	5857	3446	24	16384

Notes: Authors' calculations. The data on legal rights strength in affiliate countries correspond to the year 2009. For the description of the variables, see Table A1.
Source: UNIDO Africa Investor Survey 2010.

Table A4: Unreceived parental assistance and the extensive and intensive margins of intra-firm imports and intra-firm exports

Panel A: Extensive margin of intra-firm imports					
	(1)	(2)	(3)	(4)	(5)
Dependent variable			*unreceived* parental assistance in		
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access
intra-firm imports (dummy)	**-0.06*** **	**-0.03*** **	**0.01** **	-0.01	**-0.03** **
	[0.01]	**[0.008]**	**[0.007]**	[0.007]	**[0.01]**
Obs	1056	1057	1059	1059	1055
$Pseudo - R^2$	0.090	0.087	0.079	0.059	0.076
$Log - likelihood$	-1575.4	-1421.6	-1519.1	-1496.0	-1624.4
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes
Panel B: Intensive margin of intra-firm imports					
	(1)	(2)	(3)	(4)	(5)
Dependent variable			*unreceived* parental assistance in		
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access
intra-firm imports (share)	**-0.08*** **	**-0.04*** **	0.01	**-0.02** **	**-0.04** **
	[0.02]	**[0.01]**	[0.009]	**[0.009]**	**[0.02]**
Obs	1056	1057	1059	1059	1055
$Pseudo - R^2$	0.090	0.088	0.078	0.060	0.076
$Log - likelihood$	-1575.1	-1419.1	-1520.2	-1494.8	-1624.4
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes
Panel C: Extensive margin of intra-firm exports					
	(1)	(2)	(3)	(4)	(5)
Dependent variable			*unreceived* parental assistance in		
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access
intra-firm exports (dummy)	**-0.04*** **	**-0.02** **	0.004	-0.01	**-0.04*** **
	[0.02]	**[0.01]**	[0.01]	[0.009]	**[0.01]**
Obs	504	504	504	504	504
$Pseudo - R^2$	0.17	0.15	0.13	0.13	0.14
$Log - likelihood$	-678.0	-642.2	-685.3	-647.1	-676.7
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes
Panel D: Intensive margin of intra-firm exports					
	(1)	(2)	(3)	(4)	(5)
Dependent variable			*unreceived* parental assistance in		
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access
intra-firm exports (share)	**-0.08*** **	**-0.04** **	0.02	**-0.03** *	**-0.04** **
	[0.03]	**[0.02]**	[0.02]	**[0.02]**	**[0.02]**
Obs	504	504	504	504	504
$Pseudo - R^2$	0.17	0.15	0.13	0.13	0.14
$Log - likelihood$	-676.5	-642.1	-684.3	-645.6	-678.6
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes

Notes: Ordered probit estimations with affiliate-country, affiliate-industry, and parent-country dummies in all columns of all panels. Dummies take value 1 if the corresponding statement is valid, and 0 otherwise. Among non-dummy explanatory variables, only employment and productivity are in logs. Marginal effects produced for the lowest outcome of the dependent variable (= 0) are displayed in all columns of all panels. *** significant at 1%, ** significant at 5%, * significant at 10%, based on robust standard errors. For the description of the variables, see Table A1.

Table A5: Unimportant parental assistance and the extensive and intensive margins of intra-firm imports and intra-firm exports

Panel A: Extensive margin of intra-firm imports					
	(1)	(2)	(3)	(4)	(5)
Dependent variable			*unimportant* parental assistance in		
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access
intra-firm imports (dummy)	**-0.03*** **	**-0.01*** **	**0.01** **	-0.008	**-0.01** **
	[0.006]	**[0.004]**	**[0.007]**	[0.005]	**[0.005]**
Obs	1056	1057	1059	1059	1055
$Pseudo - R^2$	0.090	0.087	0.079	0.059	0.076
$Log - likelihood$	-1575.4	-1421.6	-1519.1	-1496.0	-1624.4
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes
Panel B: Intensive margin of intra-firm imports					
	(1)	(2)	(3)	(4)	(5)
Dependent variable			*unimportant* parental assistance in		
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access
intra-firm imports (share)	**-0.03*** **	**-0.02*** **	0.01	**-0.01** **	**-0.02** **
	[0.008]	**[0.005]**	[0.008]	**[0.007]**	**[0.007]**
Obs	1056	1057	1059	1059	1055
$Pseudo - R^2$	0.090	0.088	0.078	0.060	0.076
$Log - likelihood$	-1575.1	-1419.1	-1520.2	-1494.8	-1624.4
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes
Panel C: Extensive margin of intra-firm exports					
	(1)	(2)	(3)	(4)	(5)
Dependent variable			*unimportant* parental assistance in		
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access
intra-firm exports (dummy)	**-0.02*** **	**-0.01** **	0.003	-0.008	**-0.02** **
	[0.009]	**[0.007]**	[0.010]	[0.007]	**[0.009]**
Obs	504	504	504	504	504
$Pseudo - R^2$	0.17	0.15	0.13	0.13	0.14
$Log - likelihood$	-678.0	-642.2	-685.3	-647.1	-676.7
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes
Panel D: Intensive margin of intra-firm exports					
	(1)	(2)	(3)	(4)	(5)
Dependent variable			*unimportant* parental assistance in		
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access
intra-firm exports (share)	**-0.04*** **	**-0.02** **	0.02	**-0.02**	**-0.03** **
	[0.02]	**[0.01]**	[0.02]	**[0.01]**	**[0.01]**
Obs	504	504	504	504	504
$Pseudo - R^2$	0.17	0.15	0.13	0.13	0.14
$Log - likelihood$	-676.5	-642.1	-684.3	-645.6	-678.6
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes

Notes: Ordered probit estimations with affiliate-country, affiliate-industry, and parent-country dummies in all columns of all panels. Dummies take value 1 if the corresponding statement is valid, and 0 otherwise. Among non-dummy explanatory variables, only employment and productivity are in logs. Marginal effects produced for the fifth highest outcome of the dependent variable (= 1) are displayed in all columns of all panels. *** significant at 1%, ** significant at 5%, * significant at 10%, based on robust standard errors. For the description of the variables, see Table A1.

Table A6: Slightly important parental assistance and the extensive and intensive margins of intra-firm imports and intra-firm exports

Panel A: Extensive margin of intra-firm imports					
	(1)	(2)	(3)	(4)	(5)
Dependent variable			*slightly important* parental assistance in		
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access
intra-firm imports (dummy)	**-0.02*** **	**-0.02*** **	**0.02** **	**-0.01***	**-0.01** **
	[0.004]	**[0.005]**	**[0.008]**	**[0.007]**	**[0.006]**
Obs	1056	1057	1059	1059	1055
$Pseudo - R^2$	0.090	0.087	0.079	0.059	0.076
$Log - likelihood$	-1575.4	-1421.6	-1519.1	-1496.0	-1624.4
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes
Panel B: Intensive margin of intra-firm imports					
	(1)	(2)	(3)	(4)	(5)
Dependent variable			*slightly important* parental assistance in		
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access
intra-firm imports (share)	**-0.02*** **	**-0.02*** **	0.02	**-0.02** **	**-0.02** **
	[0.005]	**[0.007]**	[0.01]	**[0.010]**	**[0.008]**
Obs	1056	1057	1059	1059	1055
$Pseudo - R^2$	0.090	0.088	0.078	0.060	0.076
$Log - likelihood$	-1575.1	-1419.1	-1520.2	-1494.8	-1624.4
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes
Panel C: Extensive margin of intra-firm exports					
	(1)	(2)	(3)	(4)	(5)
Dependent variable			*slightly important* parental assistance in		
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access
intra-firm exports (dummy)	**-0.01** **	**-0.01** **	0.004	-0.008	**-0.02*** **
	[0.005]	**[0.006]**	[0.01]	[0.007]	**[0.008]**
Obs	504	504	504	504	504
$Pseudo - R^2$	0.17	0.15	0.13	0.13	0.14
$Log - likelihood$	-678.0	-642.2	-685.3	-647.1	-676.7
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes
Panel D: Intensive margin of intra-firm exports					
	(1)	(2)	(3)	(4)	(5)
Dependent variable			*slightly important* parental assistance in		
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access
intra-firm exports (share)	**-0.02*** **	**-0.02** **	0.03	**-0.02***	**-0.02** **
	[0.009]	**[0.01]**	[0.02]	**[0.01]**	**[0.01]**
Obs	504	504	504	504	504
$Pseudo - R^2$	0.17	0.15	0.13	0.13	0.14
$Log - likelihood$	-676.5	-642.1	-684.3	-645.6	-678.6
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes

Notes: Ordered probit estimations with affiliate-country, affiliate-industry, and parent-country dummies in all columns of all panels. Dummies take value 1 if the corresponding statement is valid, and 0 otherwise. Among non-dummy explanatory variables, only employment and productivity are in logs. Marginal effects produced for the fourth highest outcome of the dependent variable (= 2) are displayed in all columns of all panels. *** significant at 1%, ** significant at 5%, * significant at 10%, based on robust standard errors. For the description of the variables, see Table A1.

Table A7: Important parental assistance and the extensive and intensive margins of intra-firm imports and intra-firm exports

Panel A: Extensive margin of intra-firm imports					
	(1)	(2)	(3)	(4)	(5)
Dependent variable			*important* parental assistance in		
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access
intra-firm imports (dummy)	**-0.03*** **	**-0.04*** **	**0.01** **	-0.02	**-0.01** **
	[0.007]	**[0.01]**	**[0.007]**	[0.01]	**[0.005]**
Obs	1056	1057	1059	1059	1055
$Pseudo - R^2$	0.090	0.087	0.079	0.059	0.076
$Log - likelihood$	-1575.4	-1421.6	-1519.1	-1496.0	-1624.4
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes
Panel B: Intensive margin of intra-firm imports					
	(1)	(2)	(3)	(4)	(5)
Dependent variable			*important* parental assistance in		
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access
intra-firm imports (share)	**-0.04*** **	**-0.07*** **	0.01	**-0.03** **	**-0.02** **
	[0.009]	**[0.02]**	[0.009]	**[0.02]**	**[0.007]**
Obs	1056	1057	1059	1059	1055
$Pseudo - R^2$	0.090	0.088	0.078	0.060	0.076
$Log - likelihood$	-1575.1	-1419.1	-1520.2	-1494.8	-1624.4
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes
Panel C: Extensive margin of intra-firm exports					
	(1)	(2)	(3)	(4)	(5)
Dependent variable			*important* parental assistance in		
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access
intra-firm exports (dummy)	**-0.02*** **	**-0.03** **	0.003	-0.02	**-0.03*** **
	[0.009]	**[0.02]**	[0.008]	[0.02]	**[0.01]**
Obs	504	504	504	504	504
$Pseudo - R^2$	0.17	0.15	0.13	0.13	0.14
$Log - likelihood$	-678.0	-642.2	-685.3	-647.1	-676.7
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes
Panel D: Intensive margin of intra-firm exports					
	(1)	(2)	(3)	(4)	(5)
Dependent variable			*important* parental assistance in		
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access
intra-firm exports (share)	**-0.04*** **	**-0.05** **	0.02	**-0.05** **	**-0.04** **
	[0.02]	**[0.02]**	[0.01]	**[0.03]**	**[0.02]**
Obs	504	504	504	504	504
$Pseudo - R^2$	0.17	0.15	0.13	0.13	0.14
$Log - likelihood$	-676.5	-642.1	-684.3	-645.6	-678.6
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes

Notes: Ordered probit estimations with affiliate-country, affiliate-industry, and parent-country dummies in all columns of all panels. Dummies take value 1 if the corresponding statement is valid, and 0 otherwise. Among non-dummy explanatory variables, only employment and productivity are in logs. Marginal effects produced for the third highest outcome of the dependent variable (= 3) are displayed in all columns of all panels. *** significant at 1%, ** significant at 5%, * significant at 10%, based on robust standard errors. For the description of the variables, see Table A1.

Table A8: Very important parental assistance and the extensive and intensive margins of intra-firm imports and intra-firm exports

Panel A: Extensive margin of intra-firm imports					
	(1)	(2)	(3)	(4)	(5)
Dependent variable			*very important* parental assistance in		
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access
intra-firm imports (dummy)	**0.03*** **	**0.02*** **	**-0.03** **	**0.01***	**0.02** **
	[0.008]	**[0.007]**	**[0.01]**	**[0.007]**	**[0.007]**
Obs	1056	1057	1059	1059	1055
$Pseudo-R^2$	0.090	0.087	0.079	0.059	0.076
$Log-likelihood$	-1575.4	-1421.6	-1519.1	-1496.0	-1624.4
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes
Panel B: Intensive margin of intra-firm imports					
	(1)	(2)	(3)	(4)	(5)
Dependent variable			*very important* parental assistance in		
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access
intra-firm imports (share)	**0.05*** **	**0.04*** **	-0.03	**0.02** **	**0.02** **
	[0.01]	**[0.010]**	[0.02]	**[0.009]**	**[0.010]**
Obs	1056	1057	1059	1059	1055
$Pseudo-R^2$	0.090	0.088	0.078	0.060	0.076
$Log-likelihood$	-1575.1	-1419.1	-1520.2	-1494.8	-1624.4
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes
Panel C: Extensive margin of intra-firm exports					
	(1)	(2)	(3)	(4)	(5)
Dependent variable			*very important* parental assistance in		
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access
intra-firm exports (dummy)	**0.03*** **	**0.02** **	-0.008	0.010	**0.01** **
	[0.01]	**[0.009]**	[0.02]	[0.008]	**[0.006]**
Obs	504	504	504	504	504
$Pseudo-R^2$	0.17	0.15	0.13	0.13	0.14
$Log-likelihood$	-678.0	-642.2	-685.3	-647.1	-676.7
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes
Panel D: Intensive margin of intra-firm exports					
	(1)	(2)	(3)	(4)	(5)
Dependent variable			*very important* parental assistance in		
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access
intra-firm exports (share)	**0.05*** **	**0.03** **	-0.05	**0.03***	**0.01***
	[0.02]	**[0.02]**	[0.04]	**[0.01]**	**[0.009]**
Obs	504	504	504	504	504
$Pseudo-R^2$	0.17	0.15	0.13	0.13	0.14
$Log-likelihood$	-676.5	-642.1	-684.3	-645.6	-678.6
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes

Notes: Ordered probit estimations with affiliate-country, affiliate-industry, and parent-country dummies in all columns of all panels. Dummies take value 1 if the corresponding statement is valid, and 0 otherwise. Among non-dummy explanatory variables, only employment and productivity are in logs. Marginal effects produced for the second highest outcome of the dependent variable (= 4) are displayed in all columns of all panels. *** significant at 1%, ** significant at 5%, * significant at 10%, based on robust standard errors. For the description of the variables, see Table A1.

Table A9: Parental assistance and the extensive and intensive margins of intra-firm imports and intra-firm exports (the role of rule of law in affiliate countries)

Panel A: Extensive margin of intra-firm imports							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable:	*crucial* parental assistance in						
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access	overall measure (mean)	overall measure (weighted average)
intra-firm imports (dummy)	0.3***	0.3***	-0.09	0.2**	0.05	0.5*	0.7**
	[0.1]	[0.1]	[0.07]	[0.1]	[0.1]	[0.3]	[0.3]
* affiliate-country rule of law	**-0.003***	**-0.003***	0.001	**-0.003***	0.00004	-0.006	-0.008
	[0.002]	**[0.002]**	[0.001]	**[0.002]**	[0.002]	[0.005]	[0.005]
Obs	1056	1057	1059	1059	1055	1061	1061
$Pseudo-R^2$	0.091	0.088	0.079	0.060	0.076		
$Log-likelihood$	-1573.6	-1419.8	-1518.6	-1494.4	-1624.4		
R^2						0.12	0.13
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Panel B: Intensive margin of intra-firm imports							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable:	*crucial* parental assistance in						
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access	overall measure (mean)	overall measure (weighted average)
intra-firm imports (share)	0.2*	0.3**	-0.04	0.3**	0.04	0.6	0.7*
	[0.1]	[0.1]	[0.08]	[0.1]	[0.1]	[0.4]	[0.4]
* affiliate-country rule of law	-0.003	**-0.004***	0.0003	**-0.006***	0.0008	-0.007	-0.01
	[0.003]	**[0.003]**	[0.002]	**[0.003]**	[0.003]	[0.008]	[0.008]
Obs	1056	1057	1059	1059	1055	1061	1061
$Pseudo-R^2$	0.090	0.089	0.078	0.061	0.076		
$Log-likelihood$	-1574.6	-1417.8	-1520.2	-1492.7	-1624.3		
R^2						0.12	0.13
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Panel C: Extensive margin of intra-firm exports							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable:	*crucial* parental assistance in						
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access	overall measure (mean)	overall measure (weighted average)
intra-firm exports (dummy)	0.2	0.2	0.002	0.1	0.1	0.6	0.4
	[0.1]	[0.1]	[0.09]	[0.1]	[0.2]	[0.5]	[0.5]
* affiliate-country rule of law	-0.002	-0.002	-0.0001	-0.002	-0.0001	-0.006	-0.003
	[0.002]	[0.002]	[0.001]	[0.002]	[0.003]	[0.008]	[0.008]
Obs	504	504	504	504	504	505	505
$Pseudo-R^2$	0.17	0.15	0.13	0.13	0.14		
$Log-likelihood$	-677.4	-641.8	-685.3	-646.8	-676.7		
R^2						0.24	0.24
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Panel D: Intensive margin of intra-firm exports							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable:	*crucial* parental assistance in						
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access	overall measure (mean)	overall measure (weighted average)
intra-firm exports (share)	0.3*	0.2	-0.02	0.2	-0.006	0.6	0.2
	[0.2]	[0.1]	[0.1]	[0.2]	[0.2]	[0.5]	[0.6]
* affiliate-country rule of law	-0.004	-0.003	-0.0005	-0.003	0.003	-0.008	0.0004
	[0.004]	[0.003]	[0.002]	[0.004]	[0.004]	[0.01]	[0.01]
Obs	504	504	504	504	504	505	505
$Pseudo-R^2$	0.17	0.15	0.13	0.13	0.14		
$Log-likelihood$	-675.6	-641.7	-684.3	-645.2	-678.4		
R^2						0.24	0.24
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Ordered probit and OLS estimations with affiliate-country, affiliate-industry, and parent-country dummies in columns 1–5 and 6–7 of all panels, respectively. Dummies take value 1 if the corresponding statement is valid, and 0 otherwise. Among non-dummy explanatory variables, only employment and productivity are in logs. Marginal effects produced for the highest outcome of the dependent variable (= 5) are displayed in columns 1–5 of all panels. *** significant at 1%, ** significant at 5%, * significant at 10%, based on robust standard errors. For the description of the variables, see Table A1.

Table A10: Parental assistance and the extensive and intensive margins of intra-firm imports and intra-firm exports (affiliate-parent-country variables)

Panel A: Extensive margin of intra-firm imports							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable:	*crucial* parental assistance in						
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access	overall measure (mean)	overall measure (weighted average)
intra-firm imports (dummy)	**0.09*** **	**0.07*** **	**-0.03***	0.04	**0.05** **	**0.2** **	**0.2*** **
	[0.02]	**[0.02]**	**[0.01]**	[0.02]	**[0.02]**	**[0.07]**	**[0.07]**
geographic distance	-0.1***	-0.03	0.03	-0.05	-0.05	-0.2*	-0.2*
	[0.03]	[0.04]	[0.02]	[0.04]	[0.03]	[0.1]	[0.1]
common language	0.03	-0.05	-0.02	0.07	-0.04	-0.02	-0.03
	[0.06]	[0.06]	[0.03]	[0.06]	[0.05]	[0.2]	[0.2]
past colonial ties	0.02	0.06	0.05	-0.06	0.04	0.2	0.2
	[0.07]	[0.07]	[0.04]	[0.08]	[0.06]	[0.2]	[0.2]
Obs	1054	1055	1057	1057	1053	1059	1059
$Pseudo - R^2$	0.094	0.087	0.080	0.060	0.076		
$Log - likelihood$	-1566.1	-1418.5	-1515.9	-1492.5	-1621.6		
R^2						0.13	0.13
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Panel B: Intensive margin of intra-firm imports							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable:	*crucial* parental assistance in						
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access	overall measure (mean)	overall measure (weighted average)
intra-firm imports (share)	**0.1*** **	**0.1*** **	-0.02	**0.07** **	**0.07** **	**0.2*** **	**0.3*** **
	[0.03]	**[0.03]**	[0.02]	**[0.03]**	**[0.03]**	**[0.09]**	**[0.09]**
geographic distance	-0.1***	-0.04	0.03	-0.05	-0.05	-0.2*	-0.2*
	[0.03]	[0.03]	[0.02]	[0.04]	[0.03]	[0.1]	[0.1]
common language	0.03	-0.05	-0.02	0.07	-0.04	-0.02	-0.03
	[0.06]	[0.06]	[0.03]	[0.06]	[0.05]	[0.2]	[0.2]
past colonial ties	0.005	0.06	0.05	-0.07	0.03	0.2	0.2
	[0.07]	[0.08]	[0.04]	[0.08]	[0.06]	[0.2]	[0.2]
Obs	1054	1055	1057	1057	1053	1059	1059
$Pseudo - R^2$	0.094	0.089	0.079	0.061	0.076		
$Log - likelihood$	-1565.7	-1416.2	-1516.9	-1491.3	-1621.6		
R^2						0.13	0.13
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Panel C: Extensive margin of intra-firm exports							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable:	*crucial* parental assistance in						
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access	overall measure (mean)	overall measure (weighted average)
intra-firm exports (dummy)	**0.07** **	**0.06** **	-0.004	0.03	**0.10*** **	**0.2** **	**0.2** **
	[0.03]	**[0.03]**	[0.02]	[0.03]	**[0.04]**	**[0.10]**	**[0.10]**
geographic distance	-0.2***	-0.07	0.03	-0.07	-0.1*	-0.2	-0.2
	[0.05]	[0.06]	[0.03]	[0.06]	[0.06]	[0.2]	[0.2]
common language	-0.1*	-0.2***	-0.04	-0.1	-0.2*	-0.6**	-0.6**
	[0.07]	[0.08]	[0.04]	[0.09]	[0.1]	[0.3]	[0.3]
past colonial ties	-0.2*	0.005	0.01	0.04	0.1	0.07	0.07
	[0.1]	[0.1]	[0.07]	[0.1]	[0.1]	[0.4]	[0.4]
Obs	503	503	503	503	503	504	504
$Pseudo - R^2$	0.19	0.16	0.13	0.13	0.15		
$Log - likelihood$	-662.3	-635.3	-683.7	-644.0	-671.7		
R^2						0.26	0.26
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Panel D: Intensive margin of intra-firm exports							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable:	*crucial* parental assistance in						
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access	overall measure (mean)	overall measure (weighted average)
intra-firm exports (share)	**0.1*** **	**0.1** **	-0.03	**0.10** **	**0.1** **	**0.3** **	0.2
	[0.05]	**[0.05]**	[0.03]	**[0.05]**	**[0.06]**	**[0.1]**	[0.2]
geographic distance	-0.2***	-0.07	0.02	-0.07	-0.1*	-0.2	-0.2
	[0.05]	[0.05]	[0.03]	[0.06]	[0.06]	[0.2]	[0.2]
common language	-0.1*	-0.2***	-0.04	-0.1	-0.2*	-0.6**	-0.6**
	[0.07]	[0.07]	[0.04]	[0.09]	[0.1]	[0.3]	[0.3]
past colonial ties	-0.2*	-0.006	0.01	0.03	0.1	0.03	0.04
	[0.1]	[0.1]	[0.07]	[0.1]	[0.1]	[0.4]	[0.4]
Obs	503	503	503	503	503	504	504
$Pseudo - R^2$	0.19	0.16	0.13	0.14	0.14		
$Log - likelihood$	-660.1	-634.9	-682.8	-642.5	-673.6		
R^2						0.26	0.25
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Ordered probit and OLS estimations with affiliate-country, affiliate-industry, and parent-country dummies in columns 1–5 and 6–7 of all panels, respectively. Dummies take value 1 if the corresponding statement is valid, and 0 otherwise. Among non-dummy explanatory variables, only employment, productivity and geographic distance are in logs. Marginal effects produced for the highest outcome of the dependent variable (= 5) are displayed in columns 1–5 of all panels. *** significant at 1%, ** significant at 5%, * significant at 10%, based on robust standard errors. For the description of the variables, see Table A1.

Table A11: Dummies for each rank of parental assistance by area names and the extensive and intensive margins of intra-firm imports and intra-firm exports

Panel A: Use of patents, trademarks and brand names				
	(1)	(2)	(3)	(4)
Dependent variable:	intra-firm imports (dummy)	intra-firm imports (share)	intra-firm exports (dummy)	intra-firm exports (share)
patents, trademarks, brand names = 0	**-0.3*** **	**-0.2*** **	**-0.3*** **	**-0.2*** **
	[0.06]	**[0.04]**	**[0.09]**	**[0.07]**
patents, trademarks, brand names = 1	-0.07	-0.06	**-0.2***	-0.1
	[0.06]	[0.06]	**[0.09]**	[0.08]
patents, trademarks, brand names = 2	**-0.1***	**-0.1*** **	-0.1	-0.05
	[0.07]	**[0.05]**	[0.10]	[0.08]
patents, trademarks, brand names = 3	**-0.1** **	**-0.09** **	-0.05	**-0.09***
	[0.04]	**[0.04]**	[0.07]	**[0.05]**
patents, trademarks, brand names = 4	**-0.07** **	**-0.07** **	-0.05	**-0.08***
	[0.04]	**[0.03]**	[0.06]	**[0.05]**
Obs	980	1056	434	504
$Pseudo - R^2$	0.18		0.23	
$Log - likelihood$	-483.6		-217.2	
R^2		0.11		0.22
Affiliate-country dummies	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes
Panel B: Technology and know-how				
	(1)	(2)	(3)	(4)
Dependent variable:	intra-firm imports (dummy)	intra-firm imports (share)	intra-firm exports (dummy)	intra-firm exports (share)
technology and know-how = 0	**-0.2*** **	**-0.2*** **	**-0.3*** **	**-0.1** **
	[0.07]	**[0.05]**	**[0.1]**	**[0.07]**
technology and know-how = 1	-0.08	-0.09	-0.1	-0.10
	[0.08]	[0.07]	[0.1]	[0.10]
technology and know-how = 2	**-0.1***	**-0.1** **	-0.1	-0.07
	[0.07]	**[0.05]**	[0.1]	[0.08]
technology and know-how = 3	**-0.1*** **	**-0.1*** **	-0.04	-0.05
	[0.04]	**[0.04]**	[0.06]	[0.05]
technology and know-how = 4	**-0.08** **	**-0.09*** **	-0.03	-0.03
	[0.04]	**[0.03]**	[0.06]	[0.04]
Obs	981	1057	434	504
$Pseudo - R^2$	0.17		0.22	
$Log - likelihood$	-490.4		-218.8	
R^2		0.11		0.21
Affiliate-country dummies	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes
Panel C: Quality upgrading of staff				
	(1)	(2)	(3)	(4)
Dependent variable:	intra-firm imports (dummy)	intra-firm imports (share)	intra-firm exports (dummy)	intra-firm exports (share)
staff quality upgrading = 0	0.1	0.06	-0.06	0.05
	[0.07]	[0.06]	[0.1]	[0.1]
staff quality upgrading = 1	0.10	0.06	-0.005	0.03
	[0.06]	[0.06]	[0.1]	[0.08]
staff quality upgrading = 2	0.06	0.0008	0.09	0.1
	[0.06]	[0.05]	[0.08]	[0.07]
staff quality upgrading = 3	0.01	-0.004	-0.09	0.01
	[0.05]	[0.04]	[0.07]	[0.06]
staff quality upgrading = 4	-0.007	-0.02	-0.09	0.01
	[0.05]	[0.04]	[0.07]	[0.06]
Obs	983	1059	434	504
$Pseudo - R^2$	0.17		0.22	
$Log - likelihood$	-495.9		-218.9	
R^2		0.096		0.21
Affiliate-country dummies	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes

Dummies for each rank of parental assistance by area names and the extensive and intensive margins of intra-firm imports and intra-firm exports (continued)

Panel D: Access to foreign supplier network				
	(1)	(2)	(3)	(4)
Dependent variable:	intra-firm imports (dummy)	intra-firm imports (share)	intra-firm exports (dummy)	intra-firm exports (share)
foreign supplier network access = 0	-0.08	**-0.1***	-0.1	-0.10
	[0.07]	**[0.06]**	[0.1]	[0.07]
foreign supplier network access = 1	-0.06	0.007	-0.08	-0.06
	[0.08]	[0.07]	[0.1]	[0.10]
foreign supplier network access = 2	0.01	-0.04	-0.03	-0.08
	[0.05]	[0.05]	[0.1]	[0.06]
foreign supplier network access = 3	**-0.1*****	**-0.1*****	-0.08	**-0.09***
	[0.04]	**[0.03]**	[0.06]	**[0.05]**
foreign supplier network access = 4	**-0.09*****	**-0.09*****	**-0.1***	**-0.08***
	[0.04]	**[0.03]**	**[0.06]**	**[0.04]**
Obs	983	1059	434	504
$Pseudo - R^2$	0.18		0.21	
$Log - likelihood$	-489.9		-221.2	
R^2		0.11		0.21
Affiliate-country dummies	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes
Panel E: Access to global markets				
	(1)	(2)	(3)	(4)
Dependent variable:	intra-firm imports (dummy)	intra-firm imports (share)	intra-firm exports (dummy)	intra-firm exports (share)
global markets access = 0	**-0.1****	**-0.08***	**-0.2****	**-0.1****
	[0.05]	**[0.04]**	**[0.10]**	**[0.06]**
global markets access = 1	-0.06	-0.02	**-0.2****	-0.03
	[0.06]	[0.06]	**[0.1]**	[0.08]
global markets access = 2	**-0.1****	**-0.1*****	-0.04	-0.07
	[0.06]	**[0.04]**	[0.10]	[0.05]
global markets access = 3	-0.03	-0.04	**-0.1****	**-0.09****
	[0.04]	[0.03]	**[0.06]**	**[0.04]**
global markets access = 4	**-0.07***	-0.05	**-0.2*****	**-0.08***
	[0.04]	[0.03]	**[0.06]**	**[0.04]**
Obs	979	1055	434	504
$Pseudo - R^2$	0.17		0.23	
$Log - likelihood$	-491.1		-216.5	
R^2		0.11		0.21
Affiliate-country dummies	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes

Notes: Probit and OLS estimations with affiliate-country, affiliate-industry, and parent-country dummies in columns 1 and 3 and columns 2 and 4 of all panels, respectively. Dummies take value 1 if the corresponding statement is valid, and 0 otherwise. Among non-dummy explanatory variables, only employment and productivity are in logs. Marginal effects are displayed in columns 1 and 3 of all panels. *** significant at 1%, ** significant at 5%, * significant at 10%, based on robust standard errors. For the description of the variables, see Table A1.

Table A12: Parental assistance and the extensive and intensive margins of intra-firm imports and intra-firm exports (total sales in lieu of total employment)

Panel A: Extensive margin of intra-firm imports							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable:	*crucial* parental assistance in						
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access	overall measure (mean)	overall measure (weighted average)
intra-firm imports (dummy)	**0.10*** **	**0.07*** **	**-0.03** **	**0.04***	**0.05** **	**0.2** **	**0.2*** **
	[0.02]	**[0.02]**	**[0.01]**	**[0.02]**	**[0.02]**	**[0.07]**	**[0.07]**
sales	0.01**	0.01*	-0.002	0.01**	0.006	0.02	0.03
	[0.005]	[0.005]	[0.004]	[0.006]	[0.006]	[0.02]	[0.02]
Obs	1056	1057	1059	1059	1055	1061	1061
$Pseudo - R^2$	0.089	0.086	0.078	0.059	0.075		
$Log - likelihood$	-1576.1	-1421.7	-1520.0	-1496.0	-1626.5		
R^2						0.12	0.13
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Panel B: Intensive margin of intra-firm imports							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable:	*crucial* parental assistance in						
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access	overall measure (mean)	overall measure (weighted average)
intra-firm imports (share)	**0.1*** **	**0.1*** **	-0.03	**0.07** **	**0.07** **	**0.2*** **	**0.3*** **
	[0.03]	**[0.03]**	[0.02]	**[0.03]**	**[0.03]**	**[0.09]**	**[0.09]**
sales	0.01**	0.010*	-0.003	0.01**	0.006	0.02	0.03
	[0.005]	[0.005]	[0.004]	[0.006]	[0.006]	[0.02]	[0.02]
Obs	1056	1057	1059	1059	1055	1061	1061
$Pseudo - R^2$	0.089	0.088	0.078	0.060	0.075		
$Log - likelihood$	-1575.8	-1419.2	-1521.2	-1494.8	-1626.6		
R^2						0.12	0.13
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Panel C: Extensive margin of intra-firm exports							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable:	*crucial* parental assistance in						
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access	overall measure (mean)	overall measure (weighted average)
intra-firm exports (dummy)	**0.08*** **	**0.06** **	-0.006	0.04	**0.10*** **	**0.2** **	**0.2** **
	[0.03]	**[0.03]**	[0.02]	[0.03]	**[0.04]**	**[0.10]**	**[0.10]**
sales	-0.005	0.01	-0.0003	0.01*	0.006	0.003	0.008
	[0.007]	[0.008]	[0.005]	[0.008]	[0.01]	[0.03]	[0.03]
Obs	504	504	504	504	504	505	505
$Pseudo - R^2$	0.17	0.15	0.13	0.13	0.14		
$Log - likelihood$	-678.3	-642.3	-685.4	-647.1	-676.7		
R^2						0.25	0.25
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Panel D: Intensive margin of intra-firm exports							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable:	*crucial* parental assistance in						
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access	overall measure (mean)	overall measure (weighted average)
intra-firm exports (share)	**0.1*** **	**0.1** **	-0.03	**0.10** **	**0.1** **	**0.3** **	0.2
	[0.05]	**[0.05]**	[0.03]	**[0.05]**	**[0.06]**	**[0.1]**	[0.2]
sales	-0.004	0.01	0.00010	0.01*	0.008	0.008	0.01
	[0.007]	[0.008]	[0.005]	[0.008]	[0.01]	[0.03]	[0.03]
Obs	504	504	504	504	504	505	505
$Pseudo - R^2$	0.17	0.15	0.13	0.13	0.14		
$Log - likelihood$	-676.8	-642.2	-684.4	-645.6	-678.6		
R^2						0.24	0.24
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Ordered probit and OLS estimations with affiliate-country, affiliate-industry, and parent-country dummies in columns 1–5 and 6–7 of all panels, respectively. Dummies take value 1 if the corresponding statement is valid, and 0 otherwise. Among non-dummy explanatory variables, only total sales are in logs. Labour productivity is dropped from regressions for the avoidance of multi-collinearity. Marginal effects produced for the highest outcome of the dependent variable (= 5) are displayed in columns 1–5 of all panels. *** significant at 1%, ** significant at 5%, * significant at 10%, based on robust standard errors. For the description of the variables, see Table A1.

Table A13: Parental assistance and the extensive and intensive margins of intra-firm imports and intra-firm exports (average wage in lieu of skill intensity)

Panel A: Extensive margin of intra-firm imports							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable:	*crucial* parental assistance in						
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access	overall measure (mean)	overall measure (weighted average)
intra-firm imports (dummy)	**0.10*** **	**0.08*** **	**-0.03***	0.04	**0.04** **	**0.2** **	**0.2*** **
	[0.02]	**[0.02]**	**[0.01]**	[0.02]	**[0.02]**	**[0.07]**	**[0.07]**
average wage	0.002	-0.008	-0.010	0.009	0.01	0.003	0.003
	[0.009]	[0.010]	[0.006]	[0.01]	[0.010]	[0.03]	[0.03]
Obs	1031	1032	1034	1034	1030	1036	1036
$Pseudo - R^2$	0.089	0.089	0.081	0.060	0.078		
$Log - likelihood$	-1540.9	-1382.3	-1484.2	-1453.1	-1578.2		
R^2						0.12	0.13
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Panel B: Intensive margin of intra-firm imports							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable:	*crucial* parental assistance in						
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access	overall measure (mean)	overall measure (weighted average)
intra-firm imports (share)	**0.1*** **	**0.1*** **	-0.02	**0.07** **	**0.06** **	**0.2*** **	**0.3*** **
	[0.03]	**[0.03]**	[0.02]	**[0.03]**	**[0.03]**	**[0.09]**	**[0.09]**
average wage	0.001	-0.008	-0.010	0.009	0.01	0.001	0.002
	[0.009]	[0.010]	[0.006]	[0.01]	[0.010]	[0.03]	[0.03]
Obs	1031	1032	1034	1034	1030	1036	1036
$Pseudo - R^2$	0.089	0.090	0.080	0.061	0.078		
$Log - likelihood$	-1540.5	-1380.1	-1485.3	-1451.8	-1577.7		
R^2						0.13	0.13
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Panel C: Extensive margin of intra-firm exports							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable:	*crucial* parental assistance in						
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access	overall measure (mean)	overall measure (weighted average)
intra-firm exports (dummy)	**0.07** **	**0.05***	-0.007	0.04	**0.09** **	**0.2** **	**0.2***
	[0.03]	**[0.03]**	[0.02]	[0.03]	**[0.04]**	**[0.10]**	**[0.10]**
average wage	-0.007	0.002	-0.005	0.008	0.02	0.01	0.01
	[0.01]	[0.01]	[0.009]	[0.01]	[0.01]	[0.04]	[0.04]
Obs	496	496	496	496	496	497	497
$Pseudo - R^2$	0.16	0.14	0.12	0.13	0.14		
$Log - likelihood$	-678.7	-636.3	-678.2	-637.2	-665.5		
R^2						0.22	0.22
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Panel D: Intensive margin of intra-firm exports							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable:	*crucial* parental assistance in						
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access	overall measure (mean)	overall measure (weighted average)
intra-firm exports (share)	**0.1** **	**0.08***	-0.04	**0.09***	**0.1***	**0.3***	0.2
	[0.05]	**[0.05]**	[0.03]	**[0.05]**	**[0.06]**	**[0.1]**	[0.2]
average wage	-0.004	0.005	-0.006	0.01	0.02	0.02	0.02
	[0.01]	[0.01]	[0.009]	[0.01]	[0.01]	[0.04]	[0.04]
Obs	496	496	496	496	496	497	497
$Pseudo - R^2$	0.16	0.14	0.13	0.13	0.14		
$Log - likelihood$	-677.9	-636.3	-677.0	-636.2	-666.9		
R^2						0.21	0.21
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Ordered probit and OLS estimations with affiliate-country, affiliate-industry, and parent-country dummies in columns 1–5 and 6–7 of all panels, respectively. Dummies take value 1 if the corresponding statement is valid, and 0 otherwise. Among non-dummy explanatory variables, only employment, productivity and the average wage are in logs. Marginal effects produced for the highest outcome of the dependent variable (= 5) are displayed in columns 1–5 of all panels. *** significant at 1%, ** significant at 5%, * significant at 10%, based on robust standard errors. For the description of the variables, see Table A1.

Table A14: Parental assistance and the extensive and intensive margins of intra-firm imports and intra-firm exports (relative monthly wage for production, non-production and managerial workers in lieu of skill intensity)

Panel A: Extensive margin of intra-firm imports							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable:	*crucial* parental assistance in						
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access	overall measure (mean)	overall measure (weighted average)
intra-firm imports (dummy)	**0.10*** **	**0.07*** **	**-0.03** **	**0.05** **	**0.05** **	**0.2** **	**0.2** **
	[0.02]	**[0.02]**	**[0.02]**	**[0.02]**	**[0.02]**	**[0.07]**	**[0.07]**
monthly wage (non-production to production workers)	0.004*	-0.0003	0.001	0.002	-0.002	0.004	0.005
	[0.002]	[0.002]	[0.002]	[0.003]	[0.003]	[0.008]	[0.008]
monthly wage (managerial to production workers)	-0.006**	0.0004	-0.002	-0.008**	-0.004	-0.01	-0.01
	[0.003]	[0.003]	[0.002]	[0.004]	[0.004]	[0.01]	[0.01]
monthly wage (managerial to non-production workers)	0.01**	0.007	0.005	0.02**	0.005	0.03	0.02
	[0.007]	[0.007]	[0.005]	[0.009]	[0.008]	[0.03]	[0.03]
Obs	939	939	941	941	940	943	943
$Pseudo - R^2$	0.096	0.094	0.077	0.071	0.085		
$Log - likelihood$	-1387.7	-1253.1	-1347.6	-1310.8	-1430.2		
R^2						0.13	0.13
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Panel B: Intensive margin of intra-firm imports							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable:	*crucial* parental assistance in						
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access	overall measure (mean)	overall measure (weighted average)
intra-firm imports (share)	**0.1*** **	**0.1*** **	-0.02	**0.09*** **	**0.07** **	**0.3*** **	**0.3*** **
	[0.03]	**[0.03]**	[0.02]	**[0.04]**	**[0.03]**	**[0.10]**	**[0.10]**
monthly wage (non-production to production workers)	0.004	-0.0003	0.001	0.002	-0.002	0.004	0.005
	[0.002]	[0.002]	[0.002]	[0.003]	[0.003]	[0.008]	[0.008]
monthly wage (managerial to production workers)	-0.006**	0.0005	-0.002	-0.008**	-0.004	-0.01	-0.010
	[0.003]	[0.003]	[0.002]	[0.004]	[0.004]	[0.01]	[0.01]
monthly wage (managerial to non-production workers)	0.01**	0.007	0.005	0.02**	0.004	0.03	0.02
	[0.007]	[0.007]	[0.005]	[0.009]	[0.008]	[0.03]	[0.03]
Obs	939	939	941	941	940	943	943
$Pseudo - R^2$	0.096	0.096	0.076	0.073	0.085		
$Log - likelihood$	-1387.5	-1251.1	-1349.0	-1308.7	-1430.3		
R^2						0.13	0.14
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Panel C: Extensive margin of intra-firm exports							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable:	*crucial* parental assistance in						
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access	overall measure (mean)	overall measure (weighted average)
intra-firm exports (dummy)	**0.06** **	**0.06***	-0.008	0.04	**0.1*** **	**0.2** **	**0.2***
	[0.03]	**[0.03]**	[0.02]	[0.03]	**[0.04]**	**[0.10]**	**[0.10]**
monthly wage (non-production to production workers)	0.005*	0.0006	0.0008	0.003	0.008**	0.02	0.01
	[0.003]	[0.003]	[0.002]	[0.003]	[0.003]	[0.009]	[0.009]
monthly wage (managerial to production workers)	-0.007*	-0.004	-0.004	-0.01**	-0.01**	-0.03**	-0.03**
	[0.004]	[0.005]	[0.003]	[0.005]	[0.005]	[0.01]	[0.01]
monthly wage (managerial to non-production workers)	0.01**	0.01*	0.01**	0.01	0.005	0.05*	0.05*
	[0.006]	[0.008]	[0.005]	[0.01]	[0.009]	[0.02]	[0.02]
Obs	479	479	479	479	479	480	480
$Pseudo - R^2$	0.17	0.16	0.13	0.14	0.15		
$Log - likelihood$	-646.4	-600.4	-644.0	-601.1	-629.7		
R^2						0.24	0.24
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Panel D: Intensive margin of intra-firm exports							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable:	*crucial* parental assistance in						
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access	overall measure (mean)	overall measure (weighted average)
intra-firm exports (share)	**0.1*** **	**0.08***	-0.04	**0.1** **	**0.1** **	**0.3***	0.2
	[0.05]	**[0.05]**	[0.03]	**[0.05]**	**[0.06]**	**[0.2]**	[0.2]
monthly wage (non-production to production workers)	0.005*	0.0005	0.0008	0.003	0.007**	0.01	0.01
	[0.003]	[0.003]	[0.002]	[0.003]	[0.003]	[0.009]	[0.010]
monthly wage (managerial to production workers)	-0.007*	-0.004	-0.003	-0.01**	-0.01**	-0.03**	-0.03**
	[0.004]	[0.005]	[0.003]	[0.005]	[0.005]	[0.01]	[0.01]
monthly wage (managerial to non-production workers)	0.01**	0.01*	0.01**	0.01	0.006	0.05*	0.05*
	[0.006]	[0.008]	[0.005]	[0.01]	[0.009]	[0.03]	[0.02]
$Pseudo - R^2$	0.17	0.16	0.13	0.14	0.15		
$Log - likelihood$	-644.4	-600.7	-642.9	-599.7	-632.4		
R^2						0.24	0.24
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Ordered probit and OLS estimations with affiliate-country, affiliate-industry, and parent-country dummies in columns 1–5 and 6–7 of all panels, respectively. Dummies take value 1 if the corresponding statement is valid, and 0 otherwise. Among non-dummy explanatory variables, only employment and productivity are in logs. Marginal effects produced for the highest outcome of the dependent variable (= 5) are displayed in columns 1–5 of all panels. *** significant at 1%, ** significant at 5%, * significant at 10%, based on robust standard errors. For the description of the variables, see Table A1.

Table A15: Parental assistance and the extensive and intensive margins of intra-firm imports and intra-firm exports (dummies for firm age ranges)

Panel A: Extensive margin of intra-firm imports							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable:	*crucial* parental assistance in						
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access	overall measure (mean)	overall measure (weighted average)
intra-firm imports (dummy)	**0.09*** **	**0.08*** **	**-0.03** **	0.04	**0.05** **	**0.2** **	**0.2*** **
	[0.02]	**[0.02]**	**[0.01]**	[0.02]	**[0.02]**	**[0.07]**	**[0.07]**
firm age = {1, 5}	0.07*	0.07*	0.01	0.07*	0.06*	0.2	0.2*
	[0.04]	[0.04]	[0.02]	[0.04]	[0.04]	[0.1]	[0.1]
firm age = {6, 10}	0.0005	0.02	-0.01	-0.007	-0.009	-0.03	-0.05
	[0.03]	[0.03]	[0.02]	[0.03]	[0.03]	[0.09]	[0.09]
firm age = {11, 20}	0.0005	0.01	-0.02	0.01	0.03	-0.01	-0.009
	[0.02]	[0.02]	[0.02]	[0.03]	[0.02]	[0.08]	[0.08]
Obs	1066	1067	1069	1069	1065	1071	1071
$Pseudo - R^2$	0.089	0.087	0.080	0.060	0.077		
$Log - likelihood$	-1592.4	-1433.6	-1533.2	-1510.4	-1637.1		
R^2						0.13	0.13
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Panel B: Intensive margin of intra-firm imports							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable:	*crucial* parental assistance in						
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access	overall measure (mean)	overall measure (weighted average)
intra-firm imports (share)	**0.1*** **	**0.1*** **	-0.03	**0.06***	**0.07** **	**0.2*** **	**0.3*** **
	[0.03]	**[0.03]**	[0.02]	**[0.03]**	**[0.03]**	**[0.09]**	**[0.09]**
firm age = {1, 5}	0.06*	0.06*	0.01	0.07*	0.06	0.2	0.2
	[0.04]	[0.04]	[0.02]	[0.04]	[0.04]	[0.1]	[0.1]
firm age = {6, 10}	-0.003	0.02	-0.01	-0.008	-0.01	-0.04	-0.06
	[0.03]	[0.03]	[0.02]	[0.03]	[0.03]	[0.09]	[0.09]
firm age = {11, 20}	-0.0002	0.01	-0.02	0.01	0.03	-0.01	-0.010
	[0.02]	[0.02]	[0.02]	[0.03]	[0.02]	[0.08]	[0.08]
Obs	1066	1067	1069	1069	1065	1071	1071
$Pseudo - R^2$	0.090	0.088	0.079	0.060	0.077		
$Log - likelihood$	-1591.1	-1431.3	-1534.6	-1509.4	-1636.8		
R^2						0.13	0.14
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Panel C: Extensive margin of intra-firm exports							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable:	*crucial* parental assistance in						
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access	overall measure (mean)	overall measure (weighted average)
intra-firm exports (dummy)	**0.07*** **	**0.06** **	-0.002	0.04	**0.1*** **	**0.2** **	**0.2** **
	[0.03]	**[0.03]**	[0.02]	[0.03]	**[0.04]**	**[0.10]**	**[0.10]**
firm age = {1, 5}	0.02	0.03	-0.03	-0.05	-0.04	-0.1	-0.10
	[0.05]	[0.06]	[0.03]	[0.05]	[0.06]	[0.2]	[0.2]
firm age = {6, 10}	0.005	0.03	-0.01	-0.02	-0.007	-0.008	-0.04
	[0.04]	[0.04]	[0.03]	[0.05]	[0.05]	[0.1]	[0.1]
firm age = {11, 20}	-0.03	-0.03	-0.04*	-0.03	-0.05	-0.2**	-0.2*
	[0.03]	[0.03]	[0.02]	[0.04]	[0.04]	[0.1]	[0.1]
Obs	511	511	511	511	511	512	512
$Pseudo - R^2$	0.16	0.14	0.13	0.13	0.14		
$Log - likelihood$	-699.7	-659.4	-697.7	-662.6	-689.9		
R^2						0.23	0.23
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Panel D: Intensive margin of intra-firm exports							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable:	*crucial* parental assistance in						
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access	overall measure (mean)	overall measure (weighted average)
intra-firm exports (share)	**0.1*** **	**0.10** **	-0.03	**0.09***	**0.1** **	**0.3** **	0.2
	[0.05]	**[0.05]**	[0.03]	**[0.05]**	**[0.05]**	**[0.1]**	[0.2]
firm age = {1, 5}	0.02	0.03	-0.03	-0.05	-0.04	-0.1	-0.10
	[0.05]	[0.06]	[0.03]	[0.05]	[0.06]	[0.2]	[0.2]
firm age = {6, 10}	-0.0005	0.02	-0.009	-0.02	-0.01	-0.02	-0.05
	[0.04]	[0.04]	[0.03]	[0.05]	[0.05]	[0.1]	[0.1]
firm age = {11, 20}	-0.04	-0.04	-0.04*	-0.04	-0.05	-0.2**	-0.2*
	[0.03]	[0.03]	[0.02]	[0.04]	[0.04]	[0.1]	[0.1]
Obs	511	511	511	511	511	512	512
$Pseudo - R^2$	0.16	0.14	0.13	0.13	0.13		
$Log - likelihood$	-698.7	-659.5	-697.1	-661.3	-691.9		
R^2						0.23	0.22
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Ordered probit and OLS estimations with affiliate-country, affiliate-industry, and parent-country dummies in columns 1–5 and 6–7 of all panels, respectively. Dummies take value 1 if the corresponding statement is valid, and 0 otherwise. Among non-dummy explanatory variables, only employment and productivity are in logs. Marginal effects produced for the highest outcome of the dependent variable (= 5) are displayed in columns 1–5 of all panels. *** significant at 1%, ** significant at 5%, * significant at 10%, based on robust standard errors. For the description of the variables, see Table A1.

Table A16: Parental assistance and the extensive and intensive margins of intra-firm imports and intra-firm exports (tax to assets ratio in lieu of tax to sales ratio)

Panel A: Extensive margin of intra-firm imports							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable:	*crucial* parental assistance in						
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access	overall measure (mean)	overall measure (weighted average)
intra-firm imports (dummy)	**0.1*** **	**0.09*** **	-0.02	0.03	**0.04***	**0.2*** **	**0.2*** **
	[0.02]	**[0.02]**	[0.01]	[0.03]	**[0.02]**	**[0.07]**	**[0.07]**
tax to assets	0.0000004	0.00000004	0.000002	0.000002	-0.00001	-0.000008	-0.00001
	[0.00001]	[0.00001]	[0.00001]	[0.00001]	[0.00001]	[0.00004]	[0.00003]
Obs	976	978	979	980	976	981	981
$Pseudo - R^2$	0.091	0.096	0.080	0.060	0.075		
$Log - likelihood$	-1448.4	-1295.9	-1387.8	-1374.6	-1505.5		
R^2						0.11	0.12
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Panel B: Intensive margin of intra-firm imports							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable:	*crucial* parental assistance in						
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access	overall measure (mean)	overall measure (weighted average)
intra-firm imports (share)	**0.1*** **	**0.1*** **	-0.003	0.04	**0.05***	**0.3*** **	**0.3*** **
	[0.03]	**[0.03]**	[0.02]	[0.03]	**[0.03]**	**[0.09]**	**[0.09]**
tax to assets	0.000007	0.000005	0.000001	0.000004	-0.000009	0.000002	-0.0000010
	[0.00001]	[0.00001]	[0.00001]	[0.00001]	[0.00001]	[0.00004]	[0.00004]
Obs	976	978	979	980	976	981	981
$Pseudo - R^2$	0.090	0.098	0.080	0.060	0.075		
$Log - likelihood$	-1449.3	-1293.1	-1388.4	-1374.3	-1505.5		
R^2						0.11	0.12
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Panel C: Extensive margin of intra-firm exports							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable:	*crucial* parental assistance in						
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access	overall measure (mean)	overall measure (weighted average)
intra-firm exports (dummy)	**0.06** **	**0.07** **	0.006	0.03	**0.09*** **	**0.2** **	**0.2** **
	[0.03]	**[0.03]**	[0.02]	[0.03]	**[0.04]**	**[0.10]**	**[0.10]**
tax to assets	-0.000002	0.0000002	-0.0000004	0.000005	-0.00003*	-0.00003	-0.00003
	[0.000010]	[0.00001]	[0.000008]	[0.00001]	[0.00002]	[0.00005]	[0.00005]
Obs	467	467	467	467	467	468	468
$Pseudo - R^2$	0.18	0.16	0.14	0.13	0.14		
$Log - likelihood$	-616.9	-587.5	-616.3	-595.3	-630.4		
R^2						0.23	0.23
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Panel D: Intensive margin of intra-firm exports							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable:	*crucial* parental assistance in						
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access	overall measure (mean)	overall measure (weighted average)
intra-firm exports (share)	**0.1*** **	**0.1*** **	-0.005	**0.1** **	**0.1** **	**0.4*** **	**0.3***
	[0.05]	**[0.05]**	[0.03]	**[0.05]**	**[0.06]**	**[0.1]**	**[0.2]**
tax to assets	-0.000003	-0.0000004	0.00000004	0.000003	-0.00003*	-0.00003	-0.00003
	[0.000009]	[0.00001]	[0.000008]	[0.00001]	[0.00002]	[0.00005]	[0.00005]
Obs	467	467	467	467	467	468	468
$Pseudo - R^2$	0.18	0.16	0.14	0.14	0.14		
$Log - likelihood$	-613.9	-586.1	-616.3	-593.5	-631.4		
R^2						0.24	0.23
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Ordered probit and OLS estimations with affiliate-country, affiliate-industry, and parent-country dummies in columns 1–5 and 6–7 of all panels, respectively. Dummies take value 1 if the corresponding statement is valid, and 0 otherwise. Among non-dummy explanatory variables, only employment and productivity are in logs. Marginal effects produced for the highest outcome of the dependent variable (= 5) are displayed in columns 1–5 of all panels. *** significant at 1%, ** significant at 5%, * significant at 10%, based on robust standard errors. For the description of the variables, see Table A1.

Table A17: Assistance to individual foreign investor from other associate companies in the business group and the extensive and intensive margins of intra-firm imports and intra-firm exports

Panel A: Extensive margin of intra-firm imports					
Dependent variable:	*crucial* parental assistance in				
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access
intra-firm imports (dummy)	0.02	0.004	0.02	0.02	0.003
	[0.02]	[0.02]	[0.02]	[0.02]	[0.03]
Obs	519	519	518	521	516
$Pseudo - R^2$	0.17	0.16	0.13	0.11	0.12
$Log - likelihood$	-699.2	-711.3	-728.0	-751.4	-768.0
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes
Panel B: Intensive margin of intra-firm imports					
Dependent variable:	*crucial* parental assistance in				
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access
intra-firm imports (share)	0.01	0.01	0.02	0.02	0.02
	[0.02]	[0.02]	[0.02]	[0.03]	[0.04]
Obs	519	519	518	521	516
$Pseudo - R^2$	0.17	0.16	0.13	0.11	0.12
$Log - likelihood$	-699.4	-711.3	-728.3	-751.7	-767.9
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes
Panel C: Extensive margin of intra-firm exports					
Dependent variable:	*crucial* parental assistance in				
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access
intra-firm exports (dummy)	**0.04***	**0.04***	0.01	**0.03****	**0.1*****
	[0.02]	**[0.02]**	[0.02]	**[0.02]**	**[0.04]**
Obs	205	205	204	205	204
$Pseudo - R^2$	0.33	0.31	0.28	0.27	0.29
$Log - likelihood$	-221.5	-233.4	-240.4	-240.8	-243.1
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes
Panel D: Intensive margin of intra-firm exports					
Dependent variable:	*crucial* parental assistance in				
	patents, trademarks, brand names	technology and know-how	quality upgrading of staff	foreign supplier network access	global markets access
intra-firm exports (share)	**0.09****	**0.07***	-0.004	0.02	**0.1***
	[0.04]	**[0.03]**	[0.03]	[0.03]	**[0.06]**
Obs	205	205	204	205	204
$Pseudo - R^2$	0.34	0.31	0.28	0.26	0.28
$Log - likelihood$	-220.4	-233.7	-240.7	-242.3	-248.0
Affiliate-country dummies	Yes	Yes	Yes	Yes	Yes
Affiliate-industry dummies	Yes	Yes	Yes	Yes	Yes
Parent-country dummies	Yes	Yes	Yes	Yes	Yes

Notes: Ordered probit estimations with affiliate-country, affiliate-industry, and parent-country dummies in all columns. Sample restricted to foreign affiliates owned by an individual foreign investor. Dummies take value 1 if the corresponding statement is valid, and 0 otherwise. Among non-dummy explanatory variables, only employment and productivity are in logs. Marginal effects produced for the highest outcome of the dependent variable (= 5) are displayed in all columns. *** significant at 1%, ** significant at 5%, * significant at 10%, based on robust standard errors. For the description of the variables, see Table A1.