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Foreign and multinational ownership impact on firm exit: a sectoral analysis

Abstract

This article examines the impact of foreign and multinational ownership on firm exit using a sample of Portuguese firms for the period 2007-2016, with Kaplan-Meier survival functions and a Cox proportional hazard model. The results show that purely domestic firms endure worse survival prospects than multinationals, but this is more related to firm-level variables and not because of the effects of foreignness or multinational ownership. The disaggregated results at a sectoral level provide support for the contingent role of foreignness in very specific sectors of the Portuguese economy.

Keywords Exit, survival, firm death, liability of foreignness, multinational ownership

Introduction

Multinational corporations (MNCs) play an important role in the host country's wealth (Forte, 2016). According to the UNCTAD (2012), the exports of foreign affiliates accounted for one-third of the world's exports and their value added represented 10 percent of the world's growth domestic product in 2011. It is generally accepted that foreign direct investment (FDI) allowed the transformation of some economies from exporters of agricultural goods and raw materials to exporters of manufacturing goods (Lipsey, 2004). Dunning and Lundan (2008) suggest that FDI has a positive impact on a host country's economic growth, technology and innovation capacity, employment, balance of payment and structure of trade, market structure, performance and business practices, linkages, spillovers and clustering.

To date, the existing research on FDI has focused mostly on its productivity spillovers and on the identification of its major drivers (see e.g. Gerschewski, 2013; Pananond, 2015). However, another stream of studies has gone beyond productivity spillovers and examined the impact of FDI on firm survival (Görg & Strobl, 2005).

This constitutes a critical issue as firm survival shapes a host country's market structure and economy and is related to job stability and economic wealth. The European Union is one of the most important economic areas in the world as both a source of and destination for FDI. Moreover, many countries pursue active policies of FDI based on expected benefits that complement domestic investment, with these benefits being more

relevant the longer foreign companies endure (Resmini & Marzetti, 2020). Considering the particular case of the Portuguese economy, foreign subsidiaries play an important role in the economy as they account for 17.0% the employment and are responsible for 39.9% of the country's exports (Instituto Nacional de Estatística, 2020).

From a theoretical point of view, the impact of MNCs on host countries' market structure and economy is a controversial topic because existing studies reached conflicting results. For example, studies support both a positive (Girma & Gong, 2008; Varum, Rocha, & Valente da Silva, 2014) and negative (Mata & Freitas, 2012; Pittiglio & Reganati, 2015) impact of foreignness on survival. Likewise, MNCs have also been found to be more (Blanchard, Dhyne, Fuss, & Mathieu, 2016) and less (Bandick, 2010) footloose (i.e., more likely to exit an economy) than domestic firms.

Against this background, the objective of this research is to answer the following research questions: Do foreign firms survive longer than domestic-based MNCs and purely domestic firms? Are multinationals, foreign and domestic-based, inherently more footloose than purely domestic firms? Is the impact of foreign and multinational ownership the same across the various sectors of activity in Portugal?

In order to clarify these topics, a quantitative approach was followed. Initially, Portuguese firms were classified into three categories: foreign multinationals, i.e., firms whose largest owner is from abroad (FMNCs); domestic-based multinationals, whose largest owner is home-based and operate subsidiaries abroad (DMNCs); and purely domestic firms, whose largest owner is home-based and do not operate subsidiaries abroad (DFs). Then, an analysis of survival by the Kaplan-Meier estimator was conducted to explore the unconditional likelihood of survival, followed by Cox regressions to look for the impact of ownership dummies on firm survival and controlling for multiple covariates at firm level. The analysis covers a 10-year period between 2007 and 2016 and the results were then further decomposed at a sectoral level to allow a more fine-grained analysis of the ownership role.

This study makes several contributions to the existing body of knowledge. First, it analyzes the effects of foreign and multinational ownership simultaneously on firm exit, which has generated conflicting results; second, it addresses the call by Forte (2016) for studies to use more recent data (most studies use samples pre 2010) to reflect current business environments; and third, it explores foreign and multinational ownership intricacies in both manufacturing and service sectors of activity, on which studies are scarce to date (Forte, 2016; Silva & Moreira, 2019).

The results of this study make several contributions to the literature and to policy makers. From a literature standpoint, they underline the stance of the resource-based view (RBV) and the effect of globalization of the firms on exit patterns. From the perspective of governmental entities and policy makers, there is evidence of tax discriminations favoring multinationals comparatively to purely domestic firms (Haufler et al., 2018); therefore, it is important to evaluate whether multinationals are more footloose as this information could be helpful to fine-tune existing policies, particularly considering their role in the Portuguese economy. The results may also contribute to evaluating the extent to which achieving a high degree of firm internationalization contributes to firms that are less rooted, and that in turn lead to a more instable economy. Additionally, it is important to understand FDI performance and its role as firm survival has an impact on the country's industrial restructuring dynamics, growth and employment.

The article is organized as follows. After this introduction, the next section reviews the various streams of the literature regarding the impact of the structure of ownership on exit. Then the characteristics of the sample are described followed by the results of the Kaplan-Meier survival functions and of the Cox proportional hazard model estimations. The article concludes with a summary of the main findings, policy implications, research limitations and the future research directions.

Literature review

The existing studies on firm survival have followed several lines of research. An early stream of the literature focused on examining the main reasons that contributed to the survival of firms. Early on, Dunne, Roberts and Samuelson (1988, 1989) found that plant size and age was positively associated with survival and that exit rates varied across industries. Since then, various studies have extended the knowledge on the factors that contribute to firm survival. These studies include: *market factors* such as the institutional environment (Dhanaraj & Beamish, 2009), the (unfavorable) economic environment (Godart et al., 2012; Varum et al., 2014), economies of scale and technological environment of the industry (Audretsch & Mahmood, 1994), and globalization (Coucke & Sleuwaegen, 2008); and *firm factors* such as foreign experience (Vermuelen & Barkema, 2001), host country experience (Delios & Beamish, 2001), equity ownership (Brouthers & Hennart, 2007; Dhanaraj & Beamish, 2004),

market entry mode (Dhanaraj & Beamish, 2004; Mata & Portugal, 2000) and the timing of entry (Delios & Makino, 2003; Papyrina, 2007), among others.

Amid these factors, one which has particularly attracted the attention of scholars is the impact of foreign ownership on survival. This has given rise to three lines of research: studies examining the liability of foreignness only; studies exploring the footloose nature of multinationals only; and studies examining both the impact of foreign and multinational ownership on survival in which this study is framed.

The liability of foreignness

A first group of studies focused on the impact of foreignness on survival, i.e., the liability of foreignness. The main notion is that foreign firms face additional costs compared to local firms (Caves, 1996; Hymer, 1976). The impact of the liability of foreignness has its roots in the work of Zaheer (1995), who analyzed foreign exchange trading rooms in New York and Tokyo, finding that profits per trader were higher in rooms operated by local banks than in those operated by foreign banks. She attributed this to cost disadvantages faced by foreign firms when doing business abroad, i.e., the liability of foreignness. These liabilities stem from factors such as the unfamiliarity of the environment, economic nationalism and prejudices, government restrictions, cultural, political and economic differences and difficulties of coordination given geographic distance (Gorostidi-Martinez & Zhao, 2017; Wan, Williamson, & Pandit, 2020).

However, despite these cost disadvantages that foreign firms might face compared to their local peers, there are several reasons that should allow firms to offset the liability of foreignness. Resource-based theories suggest that a sustained competitive advantage is more related to a firm's own resources than the structure of the industries, and that these resources are more likely to generate long-lasting rents than environmental-based ones (SubbaNarasimha, 2001). For example, the RBV poses that firms use unique resources and capabilities that are unevenly distributed and not easily transferred among firms (Barney, 1991; Wernerfelt, 1984) as a competitive advantage in international markets. Thus, firms will only internationalize if they hold a competitive advantage that allows them to outweigh the costs of the liability of foreignness (Barney, 1991; Peteraf, 1993). Considering the increasing number of merger and acquisition activities, firms can buy specific assets in market pools so that they hold a specific asset and a sustained competitive advantage when entering international markets. Also, in the current global

setting, firms can outsource third-party services (e.g., marketing or human resources), which allows them to gain knowledge of international markets and reduce the potential disadvantages of doing business abroad. Finally, as time passes by and firms learn about the host country institutional environment (Kostova & Zaheer, 1999), they will be more likely to develop better connections and to gradually overcome any existing foreign disadvantage. As a result, foreign subsidiaries are able to outperform domestic firms not only at the time of entry, but also, and particularly, in the long run as any existing liability of foreignness fades (Wan et al., 2020). Therefore, considering the RBV and the ever-increasing global environment, foreign firms are not more likely to exit an economy than domestic firms.

The footloose nature of multinationals

A second group of studies concentrated on exploring the relationship between multinational ownership and firm survival. Multinationals have certain characteristics that enable them to profitably relocate production to other countries as a response to adverse environmental changes at home (domestic-based MNCs) and in host countries (foreign affiliates). Kogut and Kulatilaka (1994) argue that MNCs have wide networks that allow various options for relocating production across multiple locations. Multinationals have been found to shift production across countries as a response to unfavorable environmental changes such as labor cost increases (Belderbos & Zou, 2007). Moreover, although some of the changes that make MNCs exit a country may have an impact on purely domestic firms as well, multinationals' decisions to relocate are based not only on whether they are making profits in a particular host country, but also on whether they can make higher profits in alternative locations (Berry, 2010). Other factor contributing to MNCs' footloose nature is the evolution of the product life cycle. If a MNC chooses a location based on product life cycle considerations, that location will most likely be temporary as MNCs change locations along their life cycle. Baden-Fuller (1989) found that multi-plant firms closed plants more easily than single-plant firms because of a higher efficiency of their internal factor markets in redeploying the production equipment and the labor force of the divested plant. Blanchard et al. (2016) revisited footloose MNCs and concluded they are less rooted to the local economy because, contrary to domestic firms, they can relocate tangible and intangible assets to other affiliates of the group.

In turn, counter arguments for a more rooted nature of MNCs compared to purely domestic firms stem from the effects of sunk costs on firms' market abandonment (Dixit & Pindyck, 1994). The higher the sunk costs, the greater the value of waiting before exiting a market. As multinationals are often more skilled and capital-intensive than purely domestic firms, they face higher sunk costs when setting up production, making them less likely to abandon a market more rapidly than purely domestic firms (Lipsey, 2004; Van Beveren, 2007). Existing studies on productivity differences between firms support the notion that multinationals have a productivity premium compared to purely domestic firms (Criscuolo & Martin, 2009). Evidence shows that multinationals, both foreign and domestic, are less likely to unconditionally exit an economy as they tend to be larger and more productive than purely domestic firms (Van Beveren, 2007). Similarly, Bernard and Jensen (2007) also found that plants owned by multi-plant firms and U.S. multinationals were less likely to exit than incumbent plants. Only the more productive firms are able to turn into multinationals and investing abroad is accepted as improving a firm's efficiency due to the learning effect, which favors multinationals (Ferragina et al., 2014). Therefore, multinationals are expected to be unconditionally less likely to exit an economy than purely domestic firms.

Foreignness and multinationality

Finally, a third strand of literature extended the debate to behavior differences between foreign and domestic-based MNCs. Because the latter are more rooted in their home country, it is not clear whether they react the same way as foreign MNCs to changes in the economy.

Investment in the home country is considered more important than that in a host country and divesting units abroad is considered more impersonal to MNCs' managers (Boddewyn, 1983). Overall, divesting a foreign unit appears to be an easier route of action compared to divesting a domestic unit (Boddewyn, 1983; Pennings et al., 1994). Because managers are more likely to dispose of units they are less emotionally attached to (Silva & Moreira, 2019), they may exhibit a more favorable bias towards home country units.

Nowadays, however, firms have globalized and extended themselves in multiple ways beyond national borders. MNCs adopt international, multi-domestic, global and transnational strategies (Bartlett & Ghoshal, 1989) to approach the various international markets. Exit decisions are also often related to host country characteristics such as

growth, uncertainty and labor costs (Panibratov & Brown, 2018; Silva & Moreira, 2019). With increasing globalization, the world has become more homogenous and convergent (Levitt, 1983) meaning that, on one hand, MNCs understand world markets as a whole and, on the other hand, entry and exit decisions are more likely to be bound to market attractiveness than by home bias decisions. MNCs may even relocate their headquarters to another country because of tax considerations in their home country (Voget, 2011). Resmini and Marzetti (2020) show that, despite the assumption of a home bias in divestment decisions, i.e., the notion that domestic subsidiaries are less likely to be divested than foreign ones in MNCs, the home bias disappears when controlling for country-, sector- and firm-specific effects. The decision to divest was not found to be biased by emotional elements but instead, to be the outcome of complex strategies and decisions within a multinational (Resmini & Marzetti, 2020). In this sense, domestic MNC capital should not be particularly more rooted to a home economy; instead, when a country stops being attractive for a domestic multinational, that will most likely also hold true for a foreign unit. The main difference for survival may lie in MNCs' greater resources and capacity to face harsh environmental scenarios compared to smaller firms. Therefore, domestic MNCs should not be more likely stay on (or leave) businesses than similar foreign investments. Table 1 presents the body of evidence on the impact of foreign and multinational ownership on firm exit.

TABLE 1 – HERE

Data and descriptive statistics

The data used to examine differences between the survival of purely domestic firms, domestic-based MNCs and foreign firms is constructed based on the SABIⁱ (Iberian Balance Sheet Analysis System) database commercialized by Bureau van Dijk, which has been used by major state institutions and in academic papers in the field of management (see e.g. Mata & Freitas, 2012; Verdu-Jover et al., 2018).

The database was constructed according to the following criteria: only Portuguese firms were included in the analysis; only manufacturing and services sectors were included (a similar procedure to the one adopted by Van Beveren (2007)); the sectors of activity

were classified according to the Instituto Nacional de Estatísticaⁱⁱ based on the NACE Rev.2 nomenclature, i.e., a 4-digit statistical classification of economic activities in the European Community;ⁱⁱⁱ firms were uniquely defined by their Bureau van Dijk ID and data on employment, profits, wages, etc., available for a 10-year period between 2007-2016 for which information was complete; only firms with at least 10 employees in any year of the sample were included because very small firms have limited reporting requirements (a similar criterion used in previous studies such as Mata and Portugal (1994), Mata et al. (1995) and Van Beveren (2007)); a firm is defined as exiting in year t when this was the last year of operation of the firm – however, only closures and liquidations were considered (following Van Beveren (2007)); age was calculated based on firms’ start of operations in Portugal (as SABI provides information on the date of the creation of the firm, as well as information on its legal status such as being active, into liquidation, inactive); firms were classified as foreign-owned (FMNC) when their largest owner is from abroad, domestic-based MNCs (DMNC) when their largest owner is home-based, and they operate subsidiaries abroad, and as purely domestic firms (DF) when their largest owner is home-based and they do not operate subsidiaries abroad (a procedure followed by Mata and Freitas (2012)).^{iv} The use of the listed criteria and the exclusion of firms for which data was incomplete (e.g. gaps in the record) for the period of analysis resulted in a final sample of 12,599 firms.

Before examining the relationship between ownership and survival, the distribution of firms by ownership and sector of activity is presented in Table 2.

TABLE 2 – HERE

Accordingly, most of the sample is composed by purely domestic firms (approximately 78 percent) and small firms (firms with less than 50 employees represent approximately 77 percent of the sample). The sample is composed by a higher percentage of service (approximately 65 percent of the sample) than manufacturing firms, but there is a higher number of large, foreign-owned firms (large firms with at least 250 employees or more account for 2 percent of the sample) than of large, purely domestic firms or than large, domestic-based MNCs. The Portuguese economy is highly characterized by a

predominance of small and medium-sized enterprises (99.9 percent) with 96.1 percent of them being micro firms^v (Pordata, 2020).^{vi}

TABLE 3 – HERE

Table 3 presents the average exit rates of firms measured by the number of exits relative to the total number of firms. Of the whole sample, there were 11.92 percent exits, mostly of purely domestic firms operating in the service sector.

Empirical methodology

The analysis is organized in two stages. The first stage is based on the use of the Kaplan-Meier estimator, a nonparametric method that estimates the probability of survival to a certain age (calculating a survival distribution), allowing survival distributions of two or more groups of between-subjects factors to be compared for equality. In the second stage, Cox regressions are used to investigate the effects of several variables on the time a specified event (the exit of the firm) took to happen.

Survival analysis

The analysis began with the use of the Kaplan-Meier to estimate the probability of unconditional survival up to a certain age and compare survival patterns across the various groups of firms. The interest is in the probability that the period of survival is of at least length t . The probability is given by the survival function:

$$S(t) = 1 - F(t) = \Pr(T \geq t),$$

where T represents a random variable and $F(t)$ is the cumulative probability distribution of T . The most frequently used non-parametric estimate of the survival function is the Kaplan-Meier estimator which is given by:

$$S(t) = \prod_{j|t_j \leq t} \left(\frac{n_j - d_j}{n_j} \right),$$

where $S(t)$ is the probability of surviving up to age t , defined as the difference between year t and the year of incorporation of the firm, whereas the exit event is identified as the interruption of firm's activities,^{vii} n_j is the number of firms that have survived up to t_j years of age and d_j is the number of firms that died at age t_j (Greene, 2003).

The first objective is to analyze the differences in survival patterns between foreign-owned firms, domestic-based MNCs and purely domestic firms. Figure 1 presents the survival curves for the whole sample of firms. The results show that, unconditionally, both foreign-owned firms and domestic-based MNCs exhibit a higher survival rate than purely domestic firms. This is a similar result to that obtained by Van Beveren (2007) or Blanchard et al. (2016), who also found better survival prospects for multinationals than for national firms.

FIGURE 1 – HERE

The analysis was further extended by examining differences in survival patterns for the manufacturing and services sectors of activity separately (Figure 2 and 3). The results for both sectors confirm the same pattern found for the whole sample, i.e., purely domestic firms survive unconditionally less than domestic-based MNCs and foreign-owned firms.

FIGURE 2 – HERE

FIGURE 3 – HERE

To check for statistically significant differences between the survival functions across foreign and domestic levels of ownership, log-rank, non-parametric tests of homogeneity were conducted to compare the survival distributions from two samples

(Table 4). A null hypothesis in the log-rank test means there is no difference in survival probabilities between two groups. The results support the notion that purely domestic firms survive less than domestic-based MNCs and foreign-owned firms, but they also reveal statistically significant differences between the survival of domestic-based MNCs and foreign firms. Van Beveren (2007) also found the results between the survival of domestic-based MNCs and foreign firms to be less clear cut.^{viii}

TABLE 4 – HERE

Empirical model

The analysis supports previous findings that MNCs survive longer than purely domestic firms and shows statistically significant differences between the survival of MNCs and purely domestic firms. While this is an important finding, a limitation of the use of Kaplan-Meier survival functions is that it does not consider the factors that may affect survival.

To unravel the impact of foreign and multinational ownership on firms’ exit patterns, it is necessary to control for some firm characteristics that are associated with survival probabilities. This was done by using a multivariate analysis based on a hazard model. The central concept in duration analysis is the hazard rate that estimates the probability that a firm exits within a time interval, assuming it survived until then. The estimated proportional hazard model is given by:

$$\lambda (a, x, \beta, \lambda_0) = \phi(x, \beta) \lambda_0(a),$$

where the hazard function $\lambda (\cdot)$ depends multiplicatively on the vector of explanatory variables x with unknown coefficients β and the baseline hazard $\lambda_0 (a)$ (corresponding to $\phi (\cdot)$ equal to 1). For the special case where $\phi (x, \beta) = \exp (x'\beta)$, estimation of β does not require specification of the baseline hazard $\lambda_0 (a)$ (Kiefer, 1988). Considering that the interest is in the effect of the covariates on the hazard (and not in the shape of the baseline hazard), the choice is to normalize the baseline hazard to 1 and estimate using the partial likelihood approach suggested by Cox (1972).

The empirical model used is the following:

$$h(a) = h_0(a) \exp [\alpha Own + \beta X],$$

$$X = [(Age_{it}), \ln (Size_{it}), \ln (Product_{it}), \ln (CostEmp_{it}), (Export_{it}), (Urban_{it})],$$

$$Own = [For_i, Dom_i],$$

where,

$h(a)$ = hazard rate; rate at which firms exit at time a , conditional upon having survived up to $a - 1$;

$h_0(a)$ = baseline hazard;

For_i = foreign multinational ownership dummy;

Dom_i = domestic multinational ownership dummy.

Age_{it} = number of years since firm entry;

$\ln (Size_{it})$ = log of employment (number of employees) of firm i in year t ;

$\ln (Product_{it})$ = log of the ratio of turnover (in thousands of euros) and employees (in number of employees) of firm i in year t ;

$\ln (CostEmp_{it})$ = log of the cost per employee (in thousands of euros) of firm i in year t ;

$Export_{it}$ = export dummy;

$Urban_{it}$ = urban center dummy;

Empirical model variables

Except for ‘foreign multinational ownership’, ‘domestic multinational ownership’ and ‘urban’, all other variables are time-varying, i.e., they have different values over the lifespan of the firm. These variables were measured annually and the empirical model assumes that the most recent observations of these variables were the determinants of exit (Mata & Portugal, 2000).

Foreignness is measured using a dummy variable assuming the value of 1 in the case the firm is foreign and 0 if otherwise (Ferragina et al., 2014; Van Beveren, 2007). Domestic multinational is measured using a dummy variable assuming the value of 1 in the case the firm is a Portuguese-owned multinational and 0 if otherwise (Ferragina et al., 2014; Van Beveren, 2007).^{ix} Age is defined by the number of years since firm entry or the date it was set up in Portugal. Based on both firms’ learning about the host country institutional environment (Kostova & Zaheer, 1999) and firms’ evolutionary perspective (Stinchcombe, 1965), old firms with routine business models are more likely to stay in business than young firms and to have the characteristics that previously prevented them from exiting. Size is measured by the logarithm of a firm’s number of employees

(Van Beveren, 2007; Coucke & Sleuwaegen, 2008). When compared to small firms, large firms appear to be in a stronger position to face increasing competition and avoid death as they reach economies of scale more easily and have a broader set of firm-specific resources such as conducting research and development activities. Productivity is measured using the logarithm of the ratio of a firm's turnover to its level of employment (Van Beveren, 2007). It is well accepted in the literature that the poor performance of a subsidiary alongside the overall performance of a firm are among the primary reasons to divest an operating unit (Cho & Cohen, 1997; Ravenscraft & Scherer, 1991). High performing and productive firms are considered more attractive to their owners and less likely to be divested (Silva & Moreira, 2019). Cost per employee is measured using the logarithm of a firm's annual cost per employee (Van Beveren, 2007). Intangible resources are often a source of a sustained competitive advantage. Ownership advantages are related to the firm's ability to develop specific assets that cannot be easily copied by competitors, such as human capital, and that constitute a competitive advantage (Mata & Portugal, 2000; Wernerfelt, 1984). MNCs are expected to be more efficient than purely domestic firms to the extent that these higher costs reflect a higher human capital skill due to investment in training and specific human resources. Export orientation is measured using a dummy variable assuming the value of 1 in the case the firm exported, or 0 in the case the firm did not export (Alvarez & Görg, 2009; Coucke & Sleuwaegen, 2008). Larger and more productive firms are expected to be exporters which in turn may provide additional advantages, contributing to the survival of the firm. Urban, i.e., if the firm operates in large urban areas is measured using a dummy variable assuming the value of 1 in the case the firm is in the districts of Lisbon or Porto, or 0 otherwise (Varum et al., 2014). While being located in a large urban area brings the benefits and the wealth of the various resources available, these areas show higher levels of competition and the diseconomies of agglomeration decrease firms' likelihood of survival (Varum et al., 2014).

To gain further insights into the sample, descriptive statistics were performed before estimating the model (Table 5). Despite the fact that most of the sample is composed by purely domestic firms, multinationals play a more important role in employment and value added, accounting for 54 percent of the number of employees in the sample and 70 percent of the turnover.^x This is because MNCs are on average larger, reach higher levels of turnover and have a higher productivity than purely domestic firms. Domestic-

based MNCs are on average older and show a higher export-oriented nature than purely domestic firms and foreign-owned firms.

TABLE 5 – HERE

Estimation results

Table 6 presents the results of the Cox regressions applied to the sample for the period 2007-2016.^{xi} For each regression, the exponential hazard rates and the robust standard errors are reported. The Wald test provides satisfactory support to the model used.

TABLE 6 – HERE

The coefficients for *For* and *Dom* were not statistically significant. These results reject both the existence of the liability of foreignness and that multinationals are more footloose. These findings allow two conclusions to be drawn. First, domestic-based MNCs and foreign MNCs are neither more nor less rooted to the Portuguese economy than other types of firms. Second, the explanation for the more rooted or footloose nature of firms comes from features other than ownership. In particular, the results highlight the impact of the different variables included in the empirical model such as age, size, productivity, cost per employee, export orientation and urban location in the survival of firms, which is in line with the industrial organization literature (Hopenhayn, 1992) and with the overall findings on firm survival (see e.g. Mata & Portugal, 2002; Taymaz & Özler, 2007; Van Beveren, 2007).

Sectoral analysis

The large size of the sample allowed a further decomposition in order to explore specific sectoral^{xii} differences that may interact with the variables in the model and

contribute to explaining the likelihood of exit in the Portuguese economy. Table 7 presents the estimations of the model using a fine-grained sectoral disaggregation.

An overview of the disaggregated results per sector shows that being foreign owned decreased the likelihood of exit by 31% in the wholesale and retail trade sector of activity. In turn, being foreign owned decreased the probability of survival by 151% and 223% in the in the accommodation and catering and the information and communication sectors, respectively. Regarding domestic-owned multinationals, no support was found for their impact in any of the sectors. As for the remaining variables included in the model, despite this statistically significant change according to sector, the results seem consistent with those when the whole sample was used.

In the manufacturing sector, neither foreign nor domestic multinationality has a statistically significant impact on survival, whereas the remaining variables exhibit statistical significance in the predicted sign except for size. Larger firms operating in the manufacturing industry face a higher likelihood of exit. Van Beveren (2007) found support for the impact of foreignness and multinationality on survival in the manufacturing sector, whereas Ferragina *et al.* (2012, 2014) and Pittiglio and Reganati (2015) only supported the liability effect of foreignness, but not that of multinationality. Regarding services, beginning with the wholesale and retail trade sector, support was found for the impact of foreignness on survival. Except for domestic multinationality and size, the remaining factors were statistically significant and behaved as expected. In the transport and storage sector, statistical support was only found for age and productivity with the expected signs. In the accommodation and catering sector, being foreign-owned increases the hazard of exit but age, size and productivity are also statistically important with the predicted sign. Like the previous sector, in the information and communication sector, foreignness is also a liability alongside size and only productivity is statistically significant and contributes to survival. Regarding the real estate activities sector, only age and productivity were statistically significant, whereas in the consultancy, scientific and technical activities sector, age, size, human capital and export orientation exhibited a negative and statistically significant impact on exit. In the administrative and support services sector, only age and export orientation were statistically significant with signs being as predicted. In both the education and human health and social work sectors, only productivity had a statistically significant impact on survival. Finally, in the 'others' sector, only age made a significant contribution to preventing exit. When compared with existing results on services, Van

Beveren (2007) found support for the liability of foreignness in services but not for the impact of domestic multinationality, whereas Ferragina et al. (2014) supported the positive effect of foreignness and the negative impact of domestic multinationality on exit. Using a more detailed approach, Ferragina et al. (2012) found that domestic multinationality prevented exit in the wholesale sector, whereas foreignness posed a liability in the sectors of wholesale, retail, real estate, R&D and business services. Our results in turn show that foreignness constituted an advantage for survival in the wholesale and retail sector, but a liability in the accommodation and catering and information and communication sectors.

TABLE 7 – HERE

Conclusions

This article investigates the relationship between ownership and exit patterns in Portuguese firms and across various sectors of the economy. To this end, the literature on the topic was revised and Kaplan-Meier and Cox regressions were used for the period 2007-2016. The analysis allowed: identification of differences in survival between foreign firms, domestic-based MNCs and purely domestic firms; identification of the impact of ownership level and other firm level variables on survival; and fine-grained analysis at a sectoral level.

The first research question concerned whether foreign firms are more likely than domestic-based MNCs and purely domestic firms to exit an economy. The literature favors the notion that MNCs engage in foreign investments when able to overcome the liability of foreignness and the results obtained support for the notion that firms with foreign ownership are no less likely to survive than domestic ones. The second research question sought to evaluate whether multinationals, foreign and domestic-based, were more footloose than purely domestic firms. Arguments presented support the concept that due to their inherent characteristics, multinationals should be more likely to persevere than purely domestic firms, but that there should not be any difference between domestic-based firms and foreign multinationals as these decisions are complex and not home or emotionally biased. The results show that, unconditionally,

purely domestic firms survive less than domestic-based MNCs and foreign firms. The descriptive statistics also reveal that multinationals are larger and more productive, have higher human capital resources and are more export oriented than purely domestic firms, which is in line with previous research (Blanchard et al., 2016; Taymaz & Özler, 2007; Van Beveren, 2007). This corroborates the notion that MNCs engage in new market expansion when they possess a competitive advantage, meaning they are often able to overcome any liability of foreignness also because of their inner characteristics – such as being larger, more productive and skilled – that give them additional advantages over local players.

Additionally, a model was tested considering foreignness, domestic multinational ownership and other firm level factors which it is agreed influence exit in the literature. The results provide further support to reject both the impact of foreignness (i.e., the liability of foreignness) and the footloose nature of domestic multinational ownership, highlighting instead the role of other firm-level factors such as age, size, productivity, human capital, export orientation and urban location on survival. Overall, MNCs do not show home bias towards divestment (Resmini & Marzetti, 2020) and in the case of unfavorable conditions in a home country, multinationals are simply better equipped and have the tools to delay the exit decision when compared to purely domestic firms, i.e., by the time multinationals consider the decision to exit, purely domestic firms may have already exited due to being unable to cope with the contextual changes.

Finally, the third research question concentrated on the impact of foreign and multinational ownership across the various sectors of activity in Portugal. For that purpose, the analysis was extended at a sectoral level and although no a priori hypotheses were formulated, the previous premises were expected to stand. However, the sectoral analysis leads to more intricate results as foreignness was found to have an impact on exit, contingent on the sector of the economy. Regarding domestic multinational ownership, no support was found for its impact at a sectoral level, which was in line with the results obtained for the whole sample, but not with some of the existing studies (Ferragina & Mazzotta, 2013; Ferragina et al., 2012; Van Beveren, 2007).

The sectoral analysis confirmed the advantages of foreign capital in the wholesale and retail trade sector, but in turn, that foreignness was a liability in the accommodation and catering and information and communication sectors. These results show that foreign capital can constitute a liability in specific segments of the economy. The results from

the pioneering study by Zaheer (1995) were obtained from the Western and Japanese finance (banks) sector. Disaggregating the various sectors of the economy revealed foreign specific costs related to doing business abroad.

The impact of foreign capital is contingent on the role and on the characteristics that the sector of activity plays in the host country's economy. Regarding the Portuguese wholesale and retail trade sector, its major players are worldwide foreign MNCs, highly knowledgeable in managing supply chains in the retail and fashion industries (e.g., Auchan, El Corte Inglés, Fnac, Zara, Calzedonia) and it is a very difficult sector for local firms to compete in. These MNCs hold ownership advantages such as short new product development cycles, efficient logistic supply chains and strong marketing campaigns, among others. For example, Zara's advantages include resource-based ones such as a private label reputation (that allows it entrance into every world market), and transaction-based ones such as scale-based purchases and production and distribution economies of scale (Bhardwaj, Eickman, & Runyan, 2011). Zara's entrance into foreign markets has been shown to particularly affect small and medium-sized firms in terms of competition (Dahan & Peltekoglu, 2011).

Conversely, in the accommodation and catering and information and communication sectors, foreignness emerges as a liability. This can be explained as one of the sectors is highly related to tourism (which plays an important role in the Portuguese economy), whereas the other is associated with communication (newspapers, television networks or media) activities, in which being local and highly knowledgeable of the host country's culture, traditions and characteristics constitutes a competitive advantage. Additionally, consumption of most of these services is bound to the country (e.g., tourism experiences and local TV shows). The results highlight that some firm-level factors are also sector contingent. For example, size increases the hazard of exit in the manufacturing sector which can be explained by large firms and industrial divestments and relocations to developing or low-cost countries. Nonetheless, regardless of their statistical significance, size and productivity appear to be consensual among the sectors in deterring exit (Silva & Moreira, 2019). The evidence found suggests that firms may have different behaviors according to specific sectors of the economy, meaning that the explanation for survival and exit is not always a straightforward one.

Policy implications

Some policy implications can be made, particularly regarding the desirability of the impact of multinational firms on employment and industrial output creation in Portugal. Besides the general notion and governmental policies of attracting FDI to generate positive spill overs, national policies should target the growth of existing purely domestic firms, contributing to their development into (multinationals) larger, more productive and export-oriented firms.

One way to change the structure of the Portuguese economy is to take the heterogeneity of the various sectors and the inefficiency of a fit-for-all policy into consideration. Instead, survival may be increased through the adoption of ownership-specific incentive policies which should be developed according to the sector of activity and its specific features. For example, internationalization programs may be suitable for manufacturing firms and automotive industry but unsuited to tourism players. Likewise, while human capital often leads to ownership specific advantages, its impact is more notable in manufacturing, consultancy, and scientific and technical activities. From a broader perspective, while foreignness (contingent on the sector of activity) and domestic multinational ownership per se do not ensure a longer presence in the market, foreign and domestic MNCs have the tools to survive longer. Hence, from a FDI standpoint, attracting foreign firms will most likely translate into a higher level of longevity comparative to that of purely domestic firms, which is particularly relevant in an economy such as the Portuguese one that is composed almost entirely of small and medium-sized businesses.

Limitations and future research directions

The development of this research presents some limitations. First, the sample used cannot be considered representative of the whole population of Portuguese firms as very small firms with limited reporting requirements were excluded from the sample. Additionally, survival was only tracked in Portugal. Also, small and fully domestic firms account for most of the sample used, which although in line with the Portuguese setting, creates an unbalanced sample in some sectors of activity. Based on the results of this study and on its limitations, future research can focus on comparing ownership status differences between sectors among various host countries. This line of research can be extended to examine not only the impact of foreign ownership, but also to relate the source of foreign capital to the liability of foreignness. In the case of Portugal, its

main trading partners are often other European countries such as Spain, France or Germany. Regarding the sample used, most foreign firms were from Spain, France, the United States, Germany and the United Kingdom, meaning developed countries. The liability of foreignness is expected to have a higher impact when owners are from culturally distant countries or in the case of highly specific sectors of the economies where a local knowledge of the market still plays a determinant role in holding a competitive advantage. New studies can also explore the interaction between variables, i.e., the interaction between foreignness, multinationality and other industry variables to understand which characteristics of the country and its sectors of the economy contribute most to the liability of foreignness.

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ⁱ A description of SABI's contents is available at: <https://www.bvdinfo.com/en-gb/our-products/data/national/sabi>

ⁱⁱ https://www.ine.pt/xportal/xmain?xpid=INE&xpgid=ine_bdc_tree&contexto=bd&selTab=tab2

ⁱⁱⁱ The NACE Rev.2 statistical classification of economic activities in the European Community can be downloaded from the Eurostat server at: <http://ec.europa.eu/eurostat/documents/3859598/5902521/KS-RA-07-015-EN.PDF>

^{iv} While other studies conducted in Portugal considered a firm to be domestic if less than 10% of the capital is held by foreigners, minority foreign if the share of foreign capital is between 10% and 49%, majority foreign if this share is between 50% and 99% and finally, wholly foreign-owned for the cases in which 100% of the capital is foreign, these studies use other sources of data such as the Portuguese Gabinete de Estratégia e Planeamento Quadros de Pessoal and often samples older than the year of 2005; SABI does not include such detailed information on ownership structure but instead, has newer data on firms available

^v Firms with less than 10 employees and a turnover below 2 million euros/year

^{vi} The methodology used excluded firms with less than 10 employees because these firms have limited reporting requirements and often do not have recorded employment for the sample period nor information on size, wages, profits, etc.

^{vii} The effect of age on the hazard rate is incorporated in the model because duration is a function of firm age

^{viii} Van Beveren (2007) found that if survival was not stratified by sector and year, survival functions between domestic-based MNCs and foreign firms were statistically significant; however, when stratifying over sectors and years, there were no statistically significant differences between the survival of domestic-based MNCs and foreign firms

^{ix} For the expected impact of *For* and *Dom* dummy variables on the hazard rate, see section 2, literature

^x It should be noted that only firms with at least 10 employees in any year of the sample were included

^{xi} The correlations matrix between the variables included in the study is provided in Appendix I

^{xii} Sectoral groups and composing NACE codes are presented in Appendix II

Table 1 – Studies examining the impact of foreign and multinational ownership on firm exit ^{a)}

Author	Country	Period	Sector	Foreignness on survival	Multinational on survival
Li & Guisinger (1991)	US	1978-1988	Manufacturing	Positive	
Audretsch & Mahmood (1994)	US	1976-1986	Manufacturing	Positive	
Mata & Portugal (2002)	Portugal	1983-1989	All sectors	Neutral	
Bernard & Sjöholm (2003)	Indonesia	1975-1989	Manufacturing	Negative	
Görg & Strobl (2003)	Ireland	1973-1996	Manufacturing	Negative	
Mata & Portugal (2004)	Portugal	1983-1990	All sectors	Positive	
Bernard & Jensen (2007)	US	1987-1997	Manufacturing		Positive
Narjoko & Hill (2007)	Indonesia	1993-2000	Manufacturing	Positive	
Taymaz & Özler (2007)	Turkey	1983-2001	Manufacturing	Neutral	Neutral
Van Beveren (2007)	Belgium	1996-2001	All sectors; manufacturing; services	Negative	Neutral
Bridges & Guariglia (2008)	UK	1997-2002	All sectors	Positive	
Girma & Gong (2008)	China	1999-2005	All sectors	Positive	
Álvarez & Görg (2009)	Chile	1990-2000	Manufacturing	Negative	
Bandick (2010)	Sweden	1993-2002	Manufacturing	Negative	Negative
Ferragina <i>et al.</i> (2012)	Italy	2004-2008	All sectors; manufacturing; services	Negative	Neutral
Mata & Freitas (2012)	Portugal	2006-2007	All sectors	Negative	Neutral
Ferragina <i>et al.</i> (2014)	Italy	2004-2008	All sectors; manufacturing; services	Negative	Neutral
Varum <i>et al.</i> (2014)	Portugal	1988-2005	Manufacturing	Positive	
Pittiglio & Reganati (2015)	Italy	2004-2008	All sectors; manufacturing; services	Negative	
Blanchard <i>et al.</i> (2016)	Belgium	1998-2008	All sectors; manufacturing; services		Negative

^{a)} Studies are presented chronologically

Table 2 – Sample distribution by size, sector and status of ownership in percentage of total sample

	DFs	DMNCs	FMNCs	Total
Size 10 - 49	64.9	2.5	9.3	76.7
Size 50 - 249	11.7	2.3	4.8	18.8
Size \geq 250	1.6	0.9	2.0	4.5
Total sample	78.1	5.7	16.2	100.0
Size 10 - 49	22.9	0.6	1.6	25.1
Size 50 - 249	5.3	1.3	1.8	8.3
Size \geq 250	0.4	0.5	0.9	1.8
Manufacturing sample	28.5	2.3	4.3	35.2
Size 10 - 49	42.0	1.9	7.7	51.7
Size 50 - 249	6.4	1.0	3.0	10.5
Size \geq 250	1.2	0.4	1.1	2.7
Services sample	49.6	3.4	11.9	64.8

Table 3 – Percentages of exit by sector and status of ownership

	DFs	DMNCs	FMNCs	Total
Total sample	10.22	0.34	1.36	11.92
Manufacturing	4.19	0.13	0.33	4.65
Services	6.03	0.21	1.02	7.27

Table 4 – Log-rank test for the equality of the survival functions

	DFs vs DMNCs	DFs vs FMNCs	DMNCs vs FMNCs
Total sample	40.402***	25.979***	8.791**
Manufacturing	28.818***	26.725***	2.752
Services	14.411***	6.656**	4.524**

*** 99% Confidence interval

** 95% Confidence interval

Notes: The null hypothesis is that groups of firms' survival functions are equal. This statistic follows a chi square distribution with $r - 1$ degrees of freedom.

Table 5 – Summary statistics by type of ownership

	DFs	DMNCs	FMNCs
Number of firms	9,840	719	2,040
Percentage of the number of firms	78	6	16
Number of exits	1,288	43	171
Percentage of exits	86	3	11
Age in years	29.2	33.0	28.5
Size in number of employees	45.2	243.3	169.7
Productivity per employee (€1000/employee)	124.4	651.9	582.5
Cost per employee (€1000/employee)	17.6	34.5	38.4
Turnover (€1000/employee)	5,083.6	63,297.6	32,960.3
Exporter (0=No; 1=Yes)	0.4	0.8	0.6
Urban (0=No; 1=Yes)	0.5	0.6	0.7

Note: Values are sample means

Table 6 – Estimation results: Cox proportional hazard model

	All sectors
<i>For</i>	1.007 (0.084)
<i>Dom</i>	0.872 (0.159)
<i>Age</i>	0.979*** (0.002)
<i>Size</i>	0.942** (0.024)
<i>Product</i>	0.837*** (0.009)
<i>CostEmp</i>	0.667*** (0.036)
<i>Export</i>	0.700*** (0.065)
<i>Urban</i>	1.248*** (0.052)
Firms	12,599
Exits	1,502
-2LogLik	27,087.557
Wald's test χ^2	1,088.951***

***. Indicates statistical significance the 0.01 level.

**. Indicates statistical significance the 0.05 level.

*. Indicates statistical significance the 0.1 level.

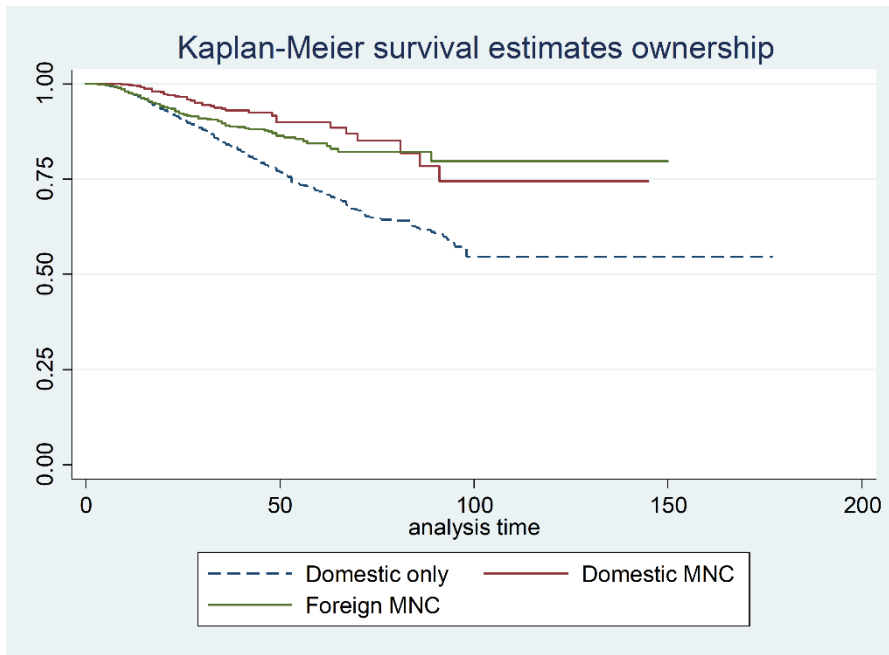
Table 7 – Estimation results by sectors: Cox proportional hazard model

	Manufacturing	Wholesale and retail	Transport and storage	Accommodation and catering	Information and communication	Real estate activities	Consultancy, scientific and technical activities	Administrative and support services	Education	Human health and social work	Others
<i>For</i>	1.273 (0.168)	0.688** (0.154)	0.476* (0.387)	2.514** (0.364)	3.225** (0.448)	0.674 (0.588)	1.160 (0.348)	1.183 (0.280)	1.244 (1.053)	0.487 (0.750)	0.698 (0.757)
<i>Dom</i>	1.055 (0.263)	1.390 (0.280)	0.874 (0.733)	0.000 (548.532)	2.173 (0.717)	1.325 (1.064)	0.475 (0.524)	0.634 (0.727)	0.000 (478.372)	0.000 (327.646)	1.923 (1.072)
<i>Age</i>	0.983*** (0.003)	0.981*** (0.004)	0.972*** (0.010)	0.954*** (0.009)	0.948* (0.029)	0.936** (0.024)	0.953** (0.015)	0.934*** (0.016)	1.002 (0.018)	0.975 (0.021)	0.934** (0.31)
<i>Size</i>	1.201*** (0.42)	1.048 (0.050)	0.917 (0.132)	0.785** (0.092)	1.476** (0.181)	0.867 (0.168)	0.774** (0.118)	0.938 (0.088)	0.834 (0.222)	1.132 (0.214)	0.742 (0.184)
<i>Product</i>	0.774*** (0.18)	0.774*** (0.022)	0.677*** (0.085)	0.700*** (0.043)	0.600*** (0.105)	0.880** (0.064)	0.979 (0.052)	0.873* (0.074)	0.485*** (0.144)	0.600*** (0.146)	0.939 (0.052)
<i>CostEmp</i>	0.563*** (0.062)	0.849** (0.078)	1.138 (0.196)	0.818 (0.158)	0.821 (0.338)	1.111 (0.224)	0.562*** (0.167)	0.895 (0.147)	1.303 (0.233)	1.240 (0.378)	0.614* (0.255)
<i>Export</i>	0.568*** (0.102)	0.509*** (0.124)	1.136 (0.281)	0.000 (279.459)	0.555 (0.523)	1.073 (1.072)	0.502** (0.331)	0.314** (0.392)	2.201 (0.768)	0.992 (1.040)	0.481 (0.702)
<i>Urban</i>	1.379*** (0.084)	1.391*** (0.100)	1.421 (0.245)	1.058 (0.197)	1.548 (0.483)	1.570 (0.441)	1.395 (0.273)	1.204 (0.220)	0.850 (0.409)	1.814 (0.377)	1.133 (0.417)
Firms	4,436	3,463	679	1,251	352	261	672	510	225	445	305
Exits	586	433	70	110	28	25	68	95	31	31	25
-2LogLik	9,206.488	6,645.232	820.197	1,397.555	268.510	257.295	821.534	1,083.624	280.949	352.590	253.979
Wald's χ^2	554.848***	356.599***	85.349***	161.712***	57.659***	18.565**	57.038***	82.316***	50.555***	23.366***	30.034***

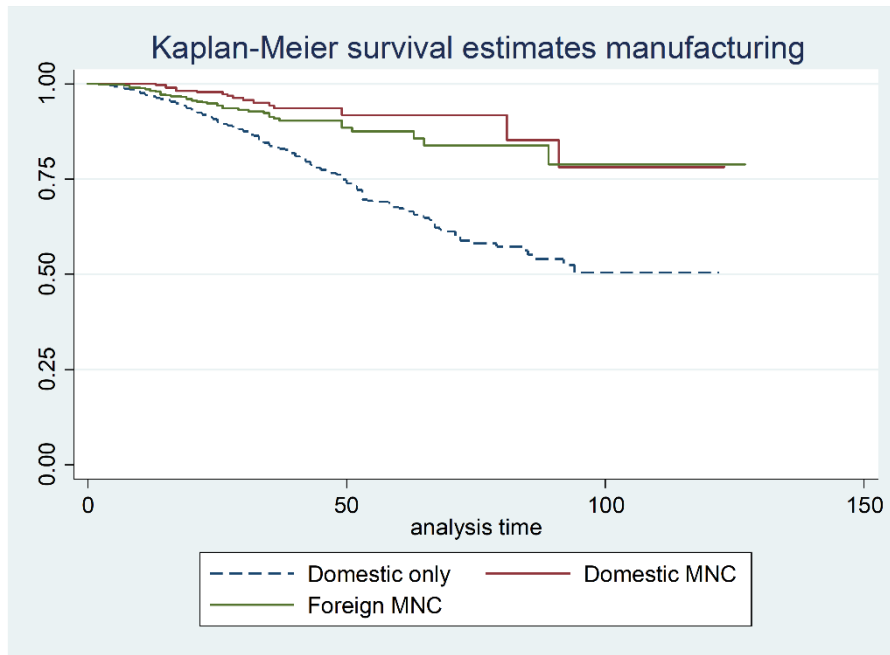
***. Indicates statistical significance the 0.01 level.

**. Indicates statistical significance the 0.05 level.

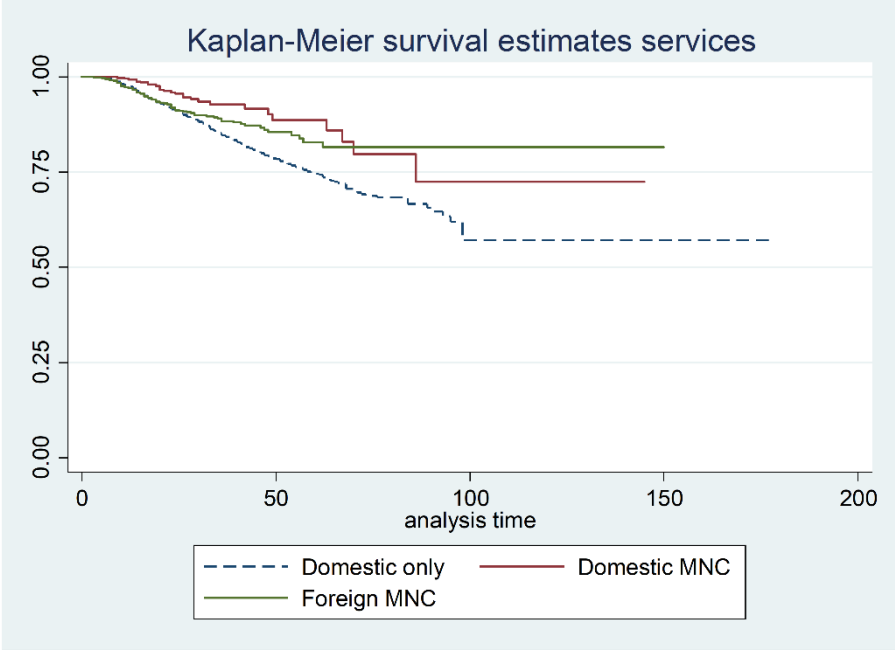
*. Indicates statistical significance the 0.1 level.



Note: Survival probability on the vertical axis. Analysis time represents firm age
Figure 1 – Kaplan-Meier survival functions by ownership



Note: Survival probability on the vertical axis. Analysis time represents firms' age
Figure 2 – Kaplan-Meier survival functions by ownership in the manufacturing sector



Note: Survival probability on the vertical axis. Analysis time represents firms' age
Figure 3 – Kaplan-Meier survival functions by ownership in the services sector

Appendix

Appendix I

	<i>For</i>	<i>Dom</i>	<i>Age</i>	<i>Size</i>	<i>Product</i>	<i>CostEmp</i>	<i>Export</i>
<i>For</i>							
<i>Dom</i>	-0.108**						
<i>Age</i>	-0.022*	0.055**					
<i>Size</i>	0.208**	0.187**	0.097**				
<i>Product</i>	0.213**	0.104**	0.085**	0.161**			
<i>CostEmp</i>	0.331**	0.157**	0.097**	0.193**	0.509**		
<i>Export</i>	0.158**	0.160**	0.056**	0.310**	0.290**	0.245**	
<i>Urban</i>	0.155**	0.036**	0.033**	0.046**	0.083**	0.191**	0.020*

Appendix II

Sectoral group	NACE Codes
Manufacturing	10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33
Wholesale and retail trade	45, 46, 47
Transport and storage	49, 50, 51, 52, 53
Accommodation and catering	55, 56
Information and communication	58, 59, 60, 61, 62, 63
Real estate activities	68
Consultancy, scientific and technical activities	69, 70, 71, 72, 73, 74, 75
Administrative and support services	77, 78, 79, 80, 81, 82
Education	85
Human health and social work	86, 87, 88
Others	64, 65, 66, 84, 90, 91, 92, 93, 94, 95, 96
