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Determinants to the existence of foreign firms in Vietnam*

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Abstract
This paper studies the life span of 187 new foreign firms in Vietnam that were created in 2000 and measures for how many years they stay in the market over the 2000-2011 period. The Cox proportional hazard model is employed to ascertain the relative importance of industry- and firm-specific variables in explaining the time period between firm birth and its disappearance from economic activity. The empirical results show that foreign firms with larger start-up size and growing current size are more likely to stay longer in the market. We also find that foreign firms entering the market with wholly-owned subsidiaries rather than doing joint ventures with local partners can live longer. In addition, locating in industrial zones or export processing zones increases the survival probability of foreign firms. Culture distance is found to have a quite strong impact on the survival of foreign firms. Proximities in culture make it easier for foreign firms in cooperating with local partners; therefore increasing their success in foreign markets. Further, locating in provinces that have advantages in infrastructure and transportation can help foreign firms to reduce it failure probability.

Key words: Foreign firm; Survival; Duration; Foreign direct investment
JEL classification: F2; L1; L6

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1. Introduction

Considerable studies on the survival of new firms have revealed that these firms experience of high failure rates (Dunne, Roberts, & Samuelson, 1989; Mata & Portugal, 1994) and this finding is largely shared by those studies which have focused especially on the survival of new foreign firms. However, most of these studies are empirically carried out on foreign firms in developed countries. Typical are the works of Li (1995) on the survival of foreign subsidiaries in US computer and pharmaceutical industries; Mitchell, Shaver, and Yeung (1994) on Canadian firms that entered US medical sector market; Berkema, Bell, and Pennings (2002) on entries in different countries by Dutch firms; McCloughan and Stone (1998) on foreign manufacturing plants in UK Northern region; Mata and Portugal (2000; 2002) on foreign entries in Portugal. By contrast, there is a remarkable lack of study on the survival of foreign entries in transition and developing countries.

This is the reason why this paper intends to contribute to the existing literatures on firm survival with the focus on the life time of foreign firms subsequent to entry in Vietnam. The empirical results can be important for managers of multinational companies in evaluating the chances of their success and implementing strategic choices for their survival in a foreign market, especially in a transition economy like Vietnam.

Most studies have used panel data of firms in varied countries to investigate determinants of firm survival (Agarwal & Audretsch, 2001; Audretsch, 1991; Audretsch & Mahmood, 1994, 1995; Dunne et al., 1989; Li, 1995; Mata & Portugal, 1994, 2000, 2002; Mata, Portugal, & Guimaraes, 1995). At the firm level, these studies mostly show that firm size, number of plant firms possess, entry mode as a fully-owned subsidiary, ownership advantages, the extent of diversification, and organizational learning and experience exert a negative effect on the failure rate of firms. At the industrial level, industry growth has been proved to have a positive effect on the firm survival while entry rate and industry concentration are likely to decrease the chances of survival of new firms.

This paper studies the life span of 187 new foreign firms in Vietnam that were created in 2000 and measures for how many years they stay in the market over the 2000-2011 period. The Cox proportional hazard model is employed to ascertain the relative importance of industry- and firm-specific variables in explaining the time period between firm birth and its disappearance from economic activity. The empirical results show that foreign firms with larger start-up size and growing current size are more likely to stay longer in the market. We also find that foreign firms entering the market with wholly-owned subsidiaries rather than doing joint ventures with local partners can live longer. In addition, locating in industrial zones or export processing zones increases the survival probability of foreign firms due to tax priority and other incentives. Culture distance is found to have a quite strong impact on the survival of

foreign firms. Proximities in culture make it easier for foreign firms in cooperating with local partners; therefore increasing their success in foreign markets. Further, locating in provinces that have advantages in infrastructure and transportation can help foreign firms to reduce it failure probability.

The study is organized as follows. Section 2 presents the hypotheses to be tested and variables. Section 3 discusses methodological issues, including the description of the data source, the methods used in computing the variables, and the statistical methodology employed. Also in this section, the study gives an overview of the sample characteristics and exit patterns. Section 4 provides empirical results. The final section is conclusions.

2. Hypotheses and variables

This section aims to discuss the characteristics, industries as well as locations of foreign firms which are likely to affect their survival and to develop a set of specific hypotheses about their expected effects.

2.1. Firm size

Many empirical studies found that the probability of firm survival increases with firm size (Dunne et al., 1989; Disney, Haskel, & Heden, 2003; Evans, 1987; Mata & Portugal, 1994, 2000, 2002; Mata et al., 1995). Firm size is mostly measured by number of employees, but alternative proxies such as value added and sales yield a very similar picture (Dosi, 2007). Researchers proved that both firm initial size and current size are important determinants on firm survival and have positive effect on the firm survival probability (Mata et al., 1995; Dunne, Roberts, & Samuelson, 1988).

Dunning (1993) showed that when entering a new foreign market, a foreign firm has to face considerably higher entry costs than local firms, for instance the costs of acquiring information about that foreign market. As small firms own less resources such as financial capital and management skills, they are naturally disadvantaged and find it difficult to compete with local and other foreign firms, and hence more likely to fail. Further, Dunne et al. (1989) stated that initial size is a significant factor because it shows the role of firm history in explaining current failure. Indeed, Evan (1987) and Audretsch (1991; 1995) found that among a cohort of new firms in U.S. manufacturing, the probability of plant exit was decreasing with initial size. This finding is consistent with the empirical result of Mata and Portugal (1994) on Portuguese manufacturing firms.

However, it should be noted that the size in the host economy of foreign entries can be part of the parent firm's entry decision. Therefore, without information about the parent company at the time of the entry, we cannot evaluate the size of the foreign entry. The foreign-owned entry may be small in the host economy but not small in the world

economy, in which case it is not a small firm. For example, if parent firm follows the "judo economics" strategy, it will prefer to set up subsidiaries in foreign countries at small size to avoid incumbents' aggressive behaviour (Scherer and Ross, 1990). In addition, parent firms may want their foreign subsidiaries to be small to avoid big losses in the case that subsidiaries are not efficient enough to survive. This strategy is particularly appropriate if entry cost is sunk (Mata and Portugal, 2002). Another case can happen when new foreign firms has small initial size not because they wanted to be small, but because they did not have the funds to be larger. Nevertheless, this case may rarely happen because the fact that foreign firms are normally owned by already existing firms which have strong finance capability to set up entry at a large scale (Dunning, 1993).

The above arguments suggest that in the case of foreign firms, the explanation of the initial size's effect on firm survival based on estimated results may not be exact as long as we do not have enough information about the entry strategy of parent firms.

Besides studying the effect of initial size on the firm survival, the scholars paying special attention to the post-entry evolution of new firms and its effects on survival prefer to employ the firm's current size in their models (Mata et al., 1995). As mentioned above, new firms generally enter market at small scales and have to face cost disadvantages compared with incumbents, which makes it more difficult for them to survive. Therefore, for those that are able to survive, they need to reduce this cost gap. This provides them with a strong incentive to grow. This is the main argument in Audretsch (1995), who found that initial size is positively related to survival, but negatively related to post entry growth, meaning that smaller firms grow faster. Because growth reduces average costs, firms should be less likely to exit after having grown. In other words, current size should be a better predictor of failure than initial size because the current size of firms can reflect the firm's growth and the capacity of its reaction to their market success over time (Dunne et al., 1988; Mata et al., 1995).

Jovanovic (1982) is the first person discussing the importance of post-entry learning and growth on firm survival. The author argues that at birth new firms do not know their true ability. They decide the entry scale based on their beliefs about their ability level, but this level is very imprecisely estimated. By going into activity and observing their outcomes in the market, firms learn about their true abilities and revise the initial estimates. They therefore have to adapt to changing environments and link changes in their strategy choices to the changing configuration of that environment so that they can shape the process of selection and survival. Those firms which experience bad outcome realise that they are inefficient and accordingly exit from the market. On the contrary, those which perform well recognize that they are efficient. These firms not only survive, but they also grow. The empirical studies of Mata and Portugal (2000; 2002) and Mata et al. (1995) reveal that both domestic and foreign firms in Portugal

with larger current size, being the most efficient, are less likely to exit. These results are also supported by the works of Dunne et al. (1989) on U.S. manufacturing plants and Disney et al. (2003) on manufacturing firms in the United Kingdom.

Based on the above arguments, we will investigate the effects of both initial and current sizes on the survival of new foreign firms in Vietnam and propose the following hypothesis:

Hypothesis 1: Larger foreign firms are less likely to exit from the market than smaller ones.

2.2. Ownership structure

According to Dunning's (1993) eclectic theory of the multinational corporation, foreign firms exist because they have ownership advantages due to firm-specific assets, which are difficult to trade. These specific advantages help foreign firms to overcome the disadvantages inherent in doing business abroad due to the lack of local knowledge. Barney (1991) shows that specific advantages arise from "tacit knowledge" such as technical knowledge. Unlike machines or blueprints, they cannot be easily transferred to other firms. They can exist and create value only in the firms in which they have evolved. Kogut and Zander (1993) find that the more tacit the technology is, the more firms prefer to set up wholly-owned subsidiaries rather than sharing the knowledge with other partners. In their views, there is a distinguishable boundary in the knowledge between the partners in the joint venture. It therefore is difficult to have a common understanding between partners by which to transfer knowledge from idea in to productions and markets efficiently.

In some cases, joint ventures are preferred than wholly-owned subsidiaries. Transaction costs theory points out that joint ventures are a response to market failures for particular assets held by different companies. For example, local firms find it difficult to acquire technical knowledge owned by foreign firms, and foreign firms also find it difficult to buy knowledge about the local markets such as information about administrative procedures, labour skills, demand conditions and relationship with local authorities (Mata and Portugal, 2000). It thus becomes cheaper for the parties to share both assets through a joint venture than to trade them through the market.

However, joint ventures also have costs. Foreign firms when making joint venture with local partners might suffer from transaction costs arising from writing and enforcing contracts, haggling over terms and contingent claims, and administering transactions (Kogut, 1989). Moreover, Mata and Portugal (2000) state that a joint venture may be troubled not only by cultural differences between the partners, but also by conflicts in sharing proprietary assets. As the co-operative ventures ages, and firms learn about the other partner's assets, the benefits of joint ventures are often offset by

their costs. The negative effect of joint ventures' instability on foreign firms' survival is discussed in the literature. For example, Hennart (1991) and Yamawaki (1997) revealed that wholly-owned subsidiaries of Japanese multinationals were less likely to exit than joint ventures.

The above analysis suggests a higher exit probability for joint ventures when compared to foreign wholly-owned subsidiaries.

Hypothesis 2: Wholly-owned subsidiaries are less likely to exit from the market than joint ventures.

2.3. Location

The factor endowment theory of international trade developed by Heckscher and Ohlin suggests that location of international production is based on comparative advantages of factor costs. Therefore, if firms use FDI to minimize costs, they will move to the location where production costs are lowest. Location advantages can help firms reduce production costs, thereby increasing the likelihood of firms' survival compared with their competitors locating in worse conditions. The concept of location advantages as reviewed by Cave (1982), Dunning (1993) and Brainard (1997) covers many aspects, including production costs and factor endowments such as labor force and infrastructure; market size; and policies to attract FDI.

According to Meyer (1998), the economic open policy in transition economies creates potential business opportunities for foreign firms. Most investors are attracted by new markets, low labor costs and favorable policies towards FDI in these countries. One of the most important policies to attract foreign investors is establishment of industrial zones or export processing zones with priority policies mostly on taxation for foreign investors (Zhou, Delios, & Yang, 2002). For instance, in China foreign firms locating in such as Special Economic Zones and Open Coastal Cities not only receive priorities in terms of profit tax, import duties and land use fees, but also get benefit from good infrastructure conditions and supporting services such as relating to administrative procedures. In fact, these special zones have attracted a major FDI inflows to China (Cheng & Kwan, 2000; Zhou et al., 2002). In Vietnam, similar zones have been established since 1991 and offer lower profit tax and other incentives, especially if at least 80% of output is exported.

Besides the attraction of preferential treatments, foreign firms are likely to locate in these special zones due to the existence of agglomeration economies, which are positive externalities stemming from the geographic clustering of industries. The localization theory stipulates that firms benefit from locating in the vicinity of other firms in the same industry. They benefit from specialized labour markets, the availability of suppliers to the industry, and the exchange of knowledge with other firms

in the cluster (Krugman, 1991; Marshall, 1920). Moreover, new foreign investors which are unfamiliar with the new environment may use the experience and performance of earlier investors as indicators of the underlying business climate at the location. Crozet, Mayer, and Mucchielli (2004) study foreign firms in France and find that proximity allows foreign entrants to learn experience from others and to exploit earlier investors' understanding of new business environment. Further, Head et al. (1995; 1999) showed that Japanese manufacturing firms in the United States prefer to cluster to obtain benefits from technology spillovers, specialized labor markets, and availability of input suppliers to the industry. Some empirical studies in transition economies such as China (Cheng and Kwan, 2000; Head and Ries, 1996) and Hungary (Boudier-Bensabaa, 2005) also reveal that foreign firms prefer to concentrate in the same place.

These arguments lead to our next hypothesis, which posits that

Hypothesis 3: Locating in industrial zones or export processing zones increases the likelihood of survival of foreign firms.

2.4. Control variables

Other variables need to be taken into account in the empirical analysis. At the firm level, the study includes the *cultural distance* and *profit before tax*.

Dunning (1993) suggests that one of the disadvantages of foreign firms compared with local firms is differences in culture. The differences in culture may lead foreign firms to difficulties in understanding and cooperating with local partners that can reduce their potential performance. In this study, we suggest that foreign firms originated from Asian countries can have higher survival probability compared with others.

Another characteristics of foreign firms we control for is the firm performance. Scholars have used many different indicators to measure firm performance such as sales growth, numbers of employees, turnovers, volume of export, and profit (Baum & Wally, 2003; Hansen & Wernerfelt, 1989; Malmberg et al., 2000). In this study, we use profit as an indicator for firm performance and argue that a foreign firm is considered to be successful in doing business if it can consistently generate profit over time.

Besides firm-specific characteristics that are supposed to have impact on the firm survival, we also analyse the effects of the environment in which entry occurs. The characteristics of industries, locations and effects of agglomeration economies will be considered.

At the industry level, this study analyzes the influences of *entry rate* and *industry size* on the survival of firms. Mata and Portugal (1994; 2002) indicate that the extent of entry in a market increases the competitiveness in that market. So in markets with high entry rate, the firms' lifetime is expected to be shorter. Because in such market, not only is each new firm subjected to more intense competition from those of its own kind, but

also each generation of entrants has to face a continuously renewed challenge posed by the new waves of entrants each years. There is plenty of evidence that industries where entry is easy are also industries where exit is more likely. Dunne et al. (1988) and Mata and Portugal (1994) find a strong positive correlation between the flows of entry and exit across markets. Because the effects of entry depend on the relationship between the extent of entry and market size, the study also includes a variable of industry size and expects that the industry size will have a negative effect on the survival of foreign firms.

As discussed in the previous section, foreign firms have tendencies to locate in places where required factors of their production are relatively abundant to reduce production and transportation costs. Our research thus supposes that locating in regions with high income per capita, development in human capital, and advantages in infrastructures and transportation will decrease the likelihood of failure of foreign firms. Fotopoulos and Louri (2000) when studying the survival of newly-created Greek manufacturing firms find that firms located in the country's largest urban environment, Athens, face better survival prospects. This result suggests that 'centripetal' forces such as agglomeration economies and other market-pull factors remain a strong determinant in location choices by foreign firms.

Moreover, the region with good conditions attracts more and more new foreign investments. Then at a certain level, the cumulative number of foreign firms will create positive agglomeration externalities and make that region more attractive. Many empirical studies have found that benefits from agglomeration economies motivate foreign firms in the same industries to locate in a specific place. For example, Head et al. (1995) and Head, Ries, and Swenson (1999) find that new Japanese firms prefer to locate near both Japanese and US firms in the same industries, and Crozet et al. (2004) also find similar evidence about the industrial concentrations of foreign firms in France. It is thus possible to expect a positive relationship between agglomeration economies and the likelihood of foreign firm survival.

3. Methods

3.1. Data

The dataset used in this study is also obtained from the yearly surveys of the enterprises operating in Vietnam conducted by the General Statistics Office of Vietnam since 2000. These are comprehensive surveys covering all state enterprises, non-state enterprises that have equal or greater than 10 employees, 20% of sampled non-state enterprises with fewer than 10 employees, and all foreign enterprises across 64 provinces and cities in Vietnam. The longitudinal capacity of the dataset, i.e., each firm is identified through a unique tax code, allows a firm to be followed over time.

The purpose of this study is to follow a cohort of firms that started operations in 2000 to measure their life span in the period 2000-2011. For this purpose, survival is defined as the continued presence of the foreign firms in Vietnam, and failure as the firms' exit. To identify the changes of the foreign firms created in 2000, the study implemented a three-step procedure. First, by using the information about the year of starting operation, we can keep 187 foreign firms created in 2000. Second, by using tax codes of newly created foreign firms in 2000, we merge with all surveyed foreign firms over 11 years from 2001 to 2011. After merging, we can obtain the longitudinal information of these firms over the twelve years. Finally, we measure the life span of each new foreign firm.

3.2. Statistical model

Conventional statistical methods, such as the method of ordinary least squares, are ill-suited to deal with duration analysis. The main reason is that information with respect to duration is typically incomplete, since at the time of the survey there are a number of cases that did not fail. Those observations are called right-censored because their durations in fact exceed a given (known) threshold. Standard estimation procedures do not account properly for this problem, producing biased and inconsistent estimates (Mata & Portugal, 1994). We need, therefore, to employ models especially designed to take this problem into account, which lead us to the hazard model. The key concept in the hazard model is the hazard rate which gives the probability that a unit exits the initial state within a particular time interval.

Following Wooldridge (2002), the hazard function $h(t)$ without covariates that is the instantaneous rate of leaving per unit of time is written:

$$h(t) = \lim_{\Delta t \to 0} \frac{P(t \le T < t + \Delta t \mid T \ge t)}{\Delta t} = \frac{f(t)}{S(t)}$$

where T is the firm's life duration, $f(t)$ is probability density function of T and $S(t)$ is the survivor function that is the probability of "surviving" past time t. Empirical estimates of either survival or hazard rates can easily be computed employing respectively the Kaplan-Meier estimator or the life-table methodology.

Usually in economics, we are interested in hazard functions conditional on a set of covariates. When the covariates do not change over time, the conditional hazard is:

$$h(t; x) = \lim_{\Delta t \to 0} \frac{P(t \le T < t + \Delta t \mid T \ge t, x)}{\Delta t}$$

And when the covariates change over time, the conditional hazard is:

$$h\left[t; x(t)\right] = \lim_{\Delta t \to 0} \frac{P\left[t \le T < t + \Delta t \mid T \ge t, x(t + \Delta t)\right]}{\Delta t}$$

However, this study aims at not only evaluating either survival or hazard rates but also investigating the influence of the covariates on the probability of failure. In other

words, the study will implement a multivariate model of the survival of foreign firms. For this purpose, the proportional hazard model proposed by Cox (1972) will be applied. The proportional hazard that a foreign firm *j* faces can be written as:

$$h_j(t;x) = h_0(t)\exp(\beta_x X_j)$$

where $h_0(t)$ is the baseline hazard function that is common to all foreign firms in the population, X is a vector of explanatory variables for the j^{th} firm that can be time-invariant or time-variant covariates, and β is a vector of parameters. Negative coefficients equivalent to risk ratios $\exp(\beta_x)$ less than one implies that the hazard rate decreases and the probability of survival increases, while positive coefficients and risk ratio greater than one imply an increase in the hazard rate and a decreases in the probability of survival.

Clearly, the baseline hazard function equals the hazard function for $X = 0$. Accordingly, the effect of a unit change in a covariate is to produce a constant proportional change in the hazard rate. In other words, the hazard subject *j* faces is multiplicatively proportional to the baseline hazard, and the function $\exp(\beta_x)$ was chosen simply to avoid the problem of $h(t; x)$ ever turning negative. Parametric procedures require that $h_0(t)$ assumes a specific form, but an improper choice of the baseline hazard function can produce unreliable or unstable estimates. However, this problem can be solved since the β vector can be estimated with unspecified hazard baseline function via the definition of the proper partial likelihood function (Cox, 1972). Thus, a non-parametric procedure can be used to estimate the effects of covariates.

Estimation is performed by maximum likelihood methods. The lifetime variable is an increasing count of the years that a foreign firm survives and will be right censored if it still survives until the end of the period 2000-2011. The *hazard rate* (dependent variable) is the probability that a firm exits its lifetime period, given that it survives up till the last year of the period.

Following the discussions of the hypotheses, the explanatory variables are computed mostly based on the works of Mata and Portugal (1994; 2000; 2002) and Head et al. (1995) as follows:

- *Initial size*: the number of employees when foreign firms started operation in 2000.
- *Current size*: the current number of employees over years.
- *Ownership structure*: Dummy variable which takes the value 1 if foreign firms are wholly owned by foreign investors, 0 if they are joint ventures.
- *Location*: Dummy variable which takes the value 1 if foreign firms are located in an industrial zone or an export processing zone, 0 otherwise.

- *Cultural distance*: Dummy variable which takes the value 1 if foreign investors are from the Asian countries, 0 otherwise.
- *Firm performance*: Profit before tax.
- *Entry rate*: the number of new foreign firms created in 2000 in the same 2-digit industry.
- *Industry size*: the number of all kinds of firms in the industry; and the number of employees in all kinds of firms in the same 2-digit industry.
- *Location-specific characteristics:* income per capita by province, human capital development measured by the number of undergraduate students, and infrastructure conditions proxied by the distance to the nearest big harbor.
- *Agglomeration economies:* proxied by the number of foreign firms in the same 2-digit industry by province.

With the exception of initial size and entry rate which refer to the conditions at the time of the firm's entry and the distance to the nearest big harbors that does not change over time, all variables are time-varying. It means that they can have different values over the life time of foreign firms. In some cases, these variables reflect post-entry decisions and in other cases they simply reflect the evolution of the environment.

3.3. Sample

The sample includes 187 foreign firms that entered in Vietnam in 2000, of which 87%s are wholly-owned by foreign investors. Regarding the nationalities of foreign investors, around 83% are Asian investors of which a half are from Taiwan. Around 50% of new foreign firms are located in industrial zones or export processing zones, and most of them are operating in manufacturing sector. Nearly 43% of new foreign firms chose Hanoi, the capital and Ho Chi Minh City, the biggest city to set up their operation. Table 1 show that on average, foreign entrants employed 154 employees at the first year of operation. However, there is a big gap between the minimum and maximum number of employees. At the minimum level, entrants employed only 1 employee while the maximum number is 2627. Over 12 years of operation, the firm size that is measured by the number of employees increased. In 2011, the average number of employees was 479, increasing more than three time as large as the average start-up size.

Sample correlations between the independent variables are shown in Table 2. In general, the correlation coefficients are low, except the correlation between the 2 variables *initial size* and *current size* ($r = 0.65$).

3.4. Patterns of exit

The study estimates firm survival rate at the different ages by using the Kaplan-Meier estimates. Table 3 shows that the overall survival rate is about 90% in the year foreign firms were created, but around 34% of them die before they reach the age of thirteen. The highest numbers of foreign firms exited the market in the year of entry (19 firms) compared with the later years implying that the first year of operation is the most difficult time for new entrants.

Table 3 and Graph 1 also demonstrate that larger foreign firms are likely to live longer than smaller ones in both initial size and current size. Here firms are defined large if they have equal or more than 100 employees, otherwise they are considered small. It seems that the effect of current size on the foreign firm survival is stronger than initial size. Firms with small current size are more likely to exit than firms with small initial size, and firms with larger current size have higher survival rates than firms with larger initial size after twelve years of operation. It is noted that in the first year, only 33% of the entrant had large size but after twelve years, large firms accounted for 71% of the total surviving firms. This result indicates that post-entry evolution is an important determinant of firm performance.

As expected, foreign firms that entered under wholly-owned mode are likely to live longer than joint ventures. After twelve years of operation, only 52% of joint ventures survive while 69% of wholly-owned foreign firms can continue their thirteenth year. In terms of the firm location, while only 27% of foreign firms located in industrial zones died after twelve years of operation, this number is 41% for firms located outside industrial zones. Moreover, Kaplan-Meier estimates shows that foreign firms belonging to Asian investors can live longer than firms owned by the other countries. Whereas 69% of Asian firms can survive until the thirteenth year, only 48% of foreign firms owned by other investors can do that. In addition, the Kaplan-Meier estimates also show that ownership structure and culture distance have the strongest and immediate effect on the firm survival compared with the other indicators. From the first to the ninth year, ownership structure has stronger effect on survival rate than culture distance. But the situation changes for the last two years of the research when the effect of culture distance become stronger.

Table 1: Descriptive statistics

	Variables	Description	Average	Min	Max
1.	Initial size	Number of employees when foreign firms started operation in 2000 (Unit: hundred person)	1.54	0.01	26.27
2.	Current size	The current number of employees over years (Unit: hundred person)	3.36	0	83.54
3.	Ownership structure	Dummy variable which takes the value 1 if foreign firms are wholly owned by foreign investors, 0 if they are joint ventures			
4.	Location	Dummy variable which takes the value 1 if foreign firms are located in an industrial zone or an export processing zone, 0 otherwise		Dummy variable	
5.	Cultural distance	Dummy variable which takes the value 1 if foreign investors are from Asian countries, 0 otherwise			
6.	Profit	The profit before tax of foreign firms (Unit: Billion VND)	23.6782	-347.129	1873.516
7.	Entry rate	The number of new foreign firms created in 2000 in the same 2-digit industry (Unit: firm).	10.19	1	20
8.	Number of all firms	The number of all kinds of firms in the same 2-digit industry (Unit: thousand firms)	2.824	0.012	85.288
9.	Number of all employees	The number of employees in all kinds of firms in the same 2-digit industry (Unit: Hundred thousand persons).	1.943	0.0102	17.647
10.	Income per capita	Income per capita in the province where firms locate (Unit: Million VND/ person)	19.885	1.940	185.359
11.	Student	Number of undergraduate students in the province where firms locate (Unit: Ten thousand students)	16.819	0.0226	69.027
12.	Distance to harbor	The distance in km to the nearest big harbors by province (Unit: kilomette)	32.79	0	313.2
13.	Agglomeration economies	The no. of foreign firms in the same 2-digit industries in the province where firms locate (Unit: firm)	42.56	0	1098

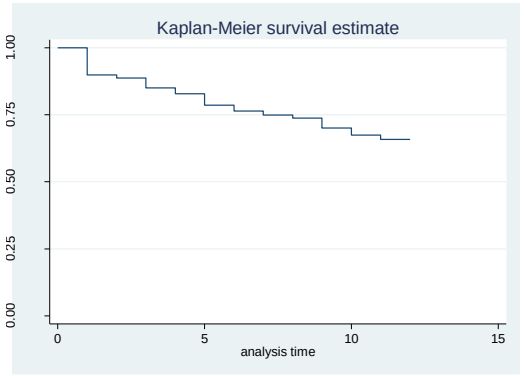
Table 2: Correlations in the dataset

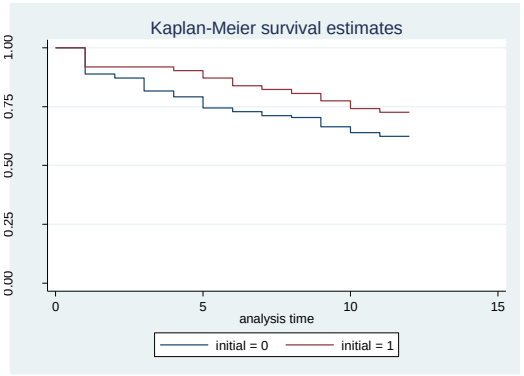
Variables	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Initial size	1												
2. Current size	0.65	1											
3. Ownership structure	-0.05	0.02	1										
4. Location	-0.08	-0.03	-0.04	1									
5. Cultural distance	0.07	0.08	0.10	-0.04	1								
6. Profit	0.07	0.21	-0.03	0.03	-0.10	1							
7. Entry rate	0.03	0.01	0.20	-0.06	0.20	-0.02	1						
8. Number of all firms	0.003	-0.006	0.02	-0.02	-0.12	0.14	0.07	1					
9. Number of all employees	0.22	0.17	0.16	-0.12	0.08	0.04	0.22	0.53	1				
10. Income per capita	-0.068	0.09	-0.09	0.11	-0.06	0.08	-0.12	0.19	0.20	1			
11. Student	-0.15	0.005	-0.11	0.06	-0.07	0.06	-0.18	0.10	0.07	0.54	1		
12. Distance to harbor	0.11	-0.003	-0.15	-0.20	-0.04	0.05	0.13	0.18	0.09	-0.20	-0.18	1	
13. Agglomeration economies	-0.03	0.017	0.10	0.09	0.02	-0.01	0.08	0.20	0.22	0.32	0.16	-0.21	1

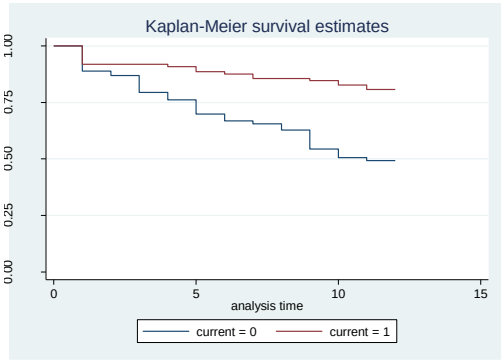
Table 3: Kaplan-Meier estimates for survival rate of foreign firms by different indicators

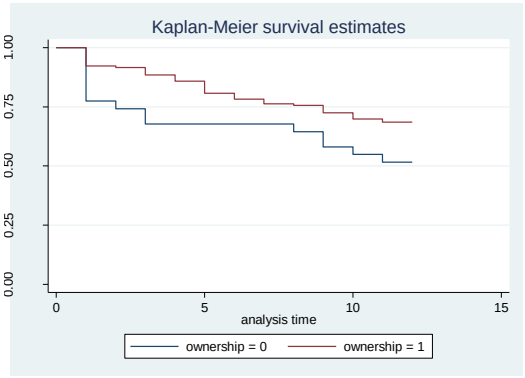
Duration	Sample		Survival rates										
	No. of firms survive	*Fail*	*All firms*	*Initial Size (0-100)*	*Initial Size (100+)*	*Cur. Size (0-100)*	*Cur. Size (+100)*	*Ownership (equal 0)*	*Ownership (equal 1)*	*Unlocate in IZ*	*Locate in IZ*	*Not Asian country*	*Asian country*
Year 2000	187	19	0.90	0.89	0.92	0.89	0.92	0.77	0.92	0.88	0.92	0.79	0.92
After 1 year	168	2	0.89	0.87	0.92	0.87	0.92	0.74	0.92	0.86	0.92	0.76	0.92
After 2 years	166	7	0.86	0.82	0.92	0.80	0.92	0.68	0.89	0.79	0.92	0.76	0.87
After 3 years	159	4	0.83	0.79	0.90	0.76	0.91	0.68	0.86	0.76	0.91	0.76	0.84
After 4 years	155	8	0.79	0.74	0.87	0.70	0.89	0.68	0.81	0.70	0.89	0.70	0.81
After 5 years	147	4	0.76	0.73	0.84	0.67	0.88	0.68	0.78	0.67	0.87	0.70	0.78
After 6 years	143	3	0.75	0.71	0.82	0.65	0.86	0.68	0.76	0.65	0.85	0.70	0.76
After 7 years	140	2	0.74	0.70	0.81	0.63	0.86	0.65	0.76	0.65	0.83	0.67	0.75
After 8 years	138	7	0.70	0.66	0.77	0.54	0.85	0.58	0.72	0.62	0.78	0.58	0.73
After 9 years	131	5	0.67	0.64	0.74	0.51	0.83	0.55	0.70	0.59	0.76	0.52	0.71
After 10 years	126	3	0.66	0.62	0.73	0.49	0.81	0.52	0.69	0.59	0.73	0.48	0.69
After 11 years	123	0	0.66	0.62	0.73	0.49	0.81	0.52	0.69	0.59	0.73	0.48	0.69

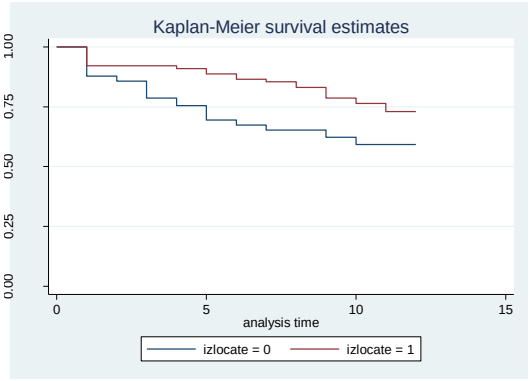
Graph 1: Kaplan-Meier survival estimates

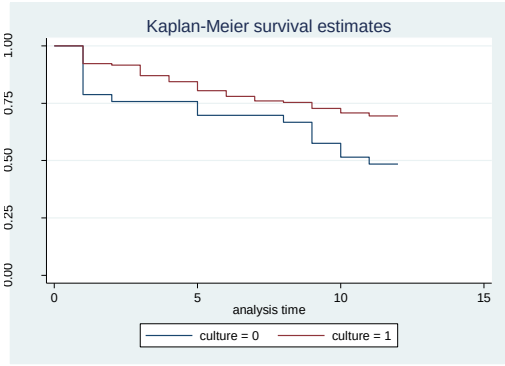












4. Empirical results

Table 4 presents the determinants of foreign firm exit in Vietnam. We recall that negative coefficients equivalent to risk ratios exp(β_x) less than one implies that the hazard rate decreases and the probability of survival increases, while positive coefficients equivalent to risk ratio greater than one implies an increase in the hazard rate and a decreases in the probability of survival. Because the variable *initial size* is highly correlated with the variable *current size,* we alternatively run two regressions with these variables. The estimated results show that *initial size*, *current size*, *ownership structure*, *location*, *cultural distance* and the *advantages in infrastructure and transportation* proxied by distance to the nearest harbor have statistically significant effects on foreign firm survival.

The negative coefficient on the variable *current size* indicates that foreign firms with large current size will face a lower probability of exit. An increasing of one employee helps foreign firms reduce the probability of exit by 0.33%.[2] However, compared with *ownership structure*, *location* or *culture distance*, the effect of current size on the exit probability of foreign firms is not strong. The *initial size* also has a positive effect on the survival of foreign firms, although not very strong. However, the higher statistical significance of current size seems to emphasize the importance of post-entry growth to firm performance on their survival probability.

As expected, the *ownership structure* has a strong effect on the exit hazard of foreign firms in Vietnam. Wholly-owned foreign firms face hazard of exit of 46% less than joint ventures[3]. Consistent with the estimates by Kaplan-Meier estimator, the ownership structure together with culture distance have the strongest effects on the survival probability of foreign firms.

In the context of Vietnam, transaction cost theory is suitable to explain the effect of entry mode choices on foreign firm survival. As a transition economy, the institutional framework of Vietnam is still in the process of changing and only partially reformed, therefore unstable, inconsistent and inefficient. Several important legal documents, such as the law on the protection of intellectual property right, were issued but of low enforcement. Foreign firms in Vietnam are therefore concerned about the knowledge diffusion and prefer to internalize their transactions. Further, Vietnam has been characterized by a lack of transparency and a service sector to support business development (The PCI 2006 Report). Foreign firms have difficulties in access to information about local economic agents, and domestic firms lack knowledge of market mechanism and inexperience in doing business

[2] This percentage equals [exp(β) -1]/100 as measurement unit of current size is hundred employees

[3] This percentage equals [exp(β) -1]

with foreign partners. Hence, by setting a wholly owned subsidiary rather than a joint venture, a foreign firm can avoid transaction costs relating to searching, negotiating and monitoring local partners.

Table 4: The determinants of foreign firm exit

Independent Variables	(1)	(2)
Initial size		-0.19* (0.095)
Current size	-0.41*** (0.001)	
Ownership structure	-0.627** (0.050)	-0.540* (0.094)
Location	-0.512* (0.071)	-0.481* (0.078)
Cultural distance	-0.457 (0.136)	-0.584* (0.052)
Profit	-0.005 (0.406)	-0.005 (0.197)
Entry rate	0.009 (0.747)	-0.008 (0.733)
Number of all firms	-0.129 (0.157)	-0.076 (0.196)
Number of all employees	0.055 (0.628)	0.086 (0.358)
Income per capita	-0.02 (0.416)	-0.026 (0.316)
Student	0.01 (0.26)	0.15 (0.115)
Distance to harbor	0.0046** (0.020)	0.004** (0.037)
Agglomeration economies	0.005 (0.135)	0.005 (0.115)
Number of firms	187	187
Log likelihood	-286.09	-305.07
Chi square	48.88***	31.97***

Note: ***p< 0.01, **p< 0.05, *p<0.10. p-values are in parentheses.

In some cases, as discussed in Section 2.2, joint ventures are preferred than wholly-owned subsidiaries. Wholly-owned firms may have lower transaction costs for finding local

partners, but they may have higher transaction costs for finding labour and intermediate products as well as in negotiating local administrative requirements (e.g. procedures relating to taxes or customs). Therefore, joint ventures with local firms in a country with political economy issues like Vietnam may carry significant advantages. However, when the co-operative ventures ages, and foreign firms learn about the local partner's assets, the benefits of joint ventures are often offset by their costs associated with difference in culture and conflicts in sharing proprietary assets. Moreover, foreign subsidiaries are normally owned by large parent firms that already have experience in running business in many different markets. So, difficulties that wholly-owned subsidiaries have to cope with can be dealt with at appropriated costs.

These arguments suggest that being a wholly-owned foreign firm in a transition country like Vietnam brings foreign firms advantages, thereby increasing the survival probability compared with setting up joint ventures with local partners. However, we should note that given the dataset, we do not have information about merger or acquisitions from true exits. For instance, as joint ventures often end with one of the partners acquiring the commonly owned venture, this may lead to conclude that failure is more likely in case of a joint venture although the firm has not really exit, but it has been bought by one of the partners. This problem might distort the empirical result if most joint ventures disappear with this way.

The *location* of foreign firms also has the expected sign. Locating in industrial zones or export processing zones decreases the likelihood of exit of foreign firms by 40%. The most important explanation to this result can be the favoring policies issued by the Vietnamese government in order to attract foreign investments into industrial zones, export processing zones and hi-tech zones. The standard profit tax rate is 28% and preferred rates range from 10% to 20% if the investment is located in priority areas or satisfies certain investment promotion criteria (Law on Enterprise Profit Tax, No. 09/2003/QH11 issued on June 17, 2003 by the Vietnamese Assembly). For instance, foreign enterprises operating in export processing zones enjoy a profit tax rate at 10% and 15% in respect of production and service enterprises; operating in industrial zones enjoy profit tax rates at 15%, 10%, and 20% respectively for production, exporting and service enterprises; and operating in hi-tech zones have to pay 10% of profit tax after an eight-year tax holiday from the first year in which the enterprises are profitable. Moreover, these foreign firms also receive preferential policies on land renting prices, factory renting prices as well as supports in administrative procedures by provincial authorities.

In Section 2.3, we have supposed that besides tax priority and other incentives, foreign firms are also attracted to locate in industrial zones due to benefits stemming from agglomeration economies. However, the estimated results show that *agglomeration*

economies has no significant effect on the firm survival. This contradiction can be explained by using the works of Shaver and Flyer (2002) and Alcacer and Chung (2007). These authors argue that firms not only capture benefits from agglomeration economies but also contribute to agglomeration economies. Firms would therefore strategically choose location to gain exposure to others' localized knowledge while reducing leakage of their own knowledge to their competitors. Hence, once a firm locates in a certain place where other firms already established, the firm may obtain benefits from agglomeration economies, therefore increasing its probability of survival. However, the firm's specific knowledge can be spilled over and it benefits the proximal firms, therefore increasing the competition and reducing firm survival probability. Particularly, if agglomerating firms are in the same industries, the competition is much higher as input resources become scarce and their prices are bid up. The opposite effects of firm localization make the variable *agglomeration economies* statistically insignificant.

With respect to other control variables, as predicted, cultural distance has an effect on the survival of foreign firms. Foreign firms owned by Asian investors face a hazard of exit of 44% less than foreign firms from other countries. Similarities in culture make foreign investors easier to understand and cooperate with local partners, therefore reducing transaction costs in, for example, negotiating with local partners and officers, in finding and managing labors, and in searching for local suppliers.

Among the control variables reflecting provinces' characteristics where firms are located, only variable *distance to the nearest harbor* is statistically significant. This result shows that locating in provinces that have advantages in infrastructures and transportation will decrease the likelihood of failure of foreign firms. Most foreign firms invest abroad to produce products not only for satisfying local market's demand but also for exporting to another country. Using marine transportation method is the most common way to save transportation costs. Therefore, being located in places near harbour can help firms reduce transportation costs of products from factory site to the harbour.

Other control variables including *profit before tax* proxied for firm performance, *entry rate* and *industrial size* reflecting competitiveness in the industry and market, *income per capita* reflecting development of provinces, and *number of students* reflecting development in human capital of provinces have no significant effects on the survival probability of foreign firms. The unexpected result on profit before tax may be due to inexact information that firms provide with motivation of hiding the real profit of the company. We have predicted that the higher the competitiveness in the market, the lower the survival probability of new foreign firms. Therefore, the insignificance of *entry rate* and *industrial size* may suggest that the entry rate and the number of firms in the industries

of Vietnam are not large enough to create strong competitiveness among firms. *Income per capita* and *number of students* can reflect development of provinces, but may be not important factors that foreign firm consider when choosing location for investment in Vietnam.

5. Conclusions

This study has examined the longevity of new foreign firms created in 2000 in Vietnam over the period 2000-2011. We find that about 10% of new foreign firms died during the year of entry and 35% cannot reach the age of thirteen. Moreover, the survivors become larger in side over time. Twelve years after having started, the average size of new foreign firms is more than three times as large as their start-up size.

The Cox proportional hazard model is used to estimate the effects of firm size, ownership structure and firm location of the survival of new foreign firms. The estimated results are consistent with the findings in my own research in 2009 on determinants of the foreign firm survival in Vietnam[4], showing that foreign firms with larger start-up size and growing current size are more likely to stay in the market for a longer time. This result confirms that the ability to adapt to new environments and post-entry growth are important for the survival of new foreign firms. We also find that by setting up wholly-owned subsidiaries rather than doing joint ventures with local partners, foreign entrants can increase their survival probability because they can avoid the transaction costs associated to the instability of joint ventures. In addition, the study indicates that preferential policies on taxation and other incentives decrease the failure hazard of foreign firms locating in industrial zones or export processing zones.

Regarding control variables, cultural distance is found to have a strong impact on the survival of foreign firms. Proximities in culture make it easier for them in cooperating with local partners; therefore increasing their success in doing business in a foreign market. Moreover, positive and significant coefficient of the variable *harbor distance* suggests that locating in provinces that have advantages in infrastructures and transportation will decrease the likelihood of failure of foreign firms[5].

This study contributes to the existing literature on the firm survival, especially the survival of foreign subsidiaries in a transition country just like Vietnam. The empirical results are important for managers of multinational companies in evaluating the chances of their success and implementing strategic choices for the survival of their subsidiaries in a

[4] Chapter 4 of my PhD thesis (http://eprints-phd.biblio.unitn.it/133/)

[5] In my previous work in 2009, this variable is statistically insignificant.

foreign market. The study suggests that foreign firms should establish wholly-owned subsidiaries rather than joint ventures to avoid transaction costs arising from imperfect market. Moreover, industrial zones or export processing zones may be a good choice of location for foreign entrants. The empirical findings could be also useful for the provincial authorities in Vietnam in designing policies to attract more foreign direct investment. Institutions shape the efficiency of markets and influence firms' strategies and organizational forms (North, 1990). So it is important to have a stable, efficient and consistent institutional framework that can reduce or eliminate transaction costs, and under this framework, foreign and local firms are treated equally. This creates a fair playing field for all firms so that they can apply the best strategies when doing business without being concerned about transaction costs or costs caused by a weak institutional framework.

The study remains some limitations that provide suggestions for future studies. *First*, the study does not compare the survival of foreign firms and domestic firms. Therefore, we can not know exactly what are the characteristics associated with the survival of firms that differentiate foreign from domestic firms. *Second*, we do not know the identity of the foreign owners. This prevents us from using the parents' characteristics to explain the exit of subsidiaries. A new foreign firms has a parent firm in the home economy which provides sources for entry into the host economy, and will decide if and when foreign subsidiaries exit the host economy. In particular, if multinationals keep subsidiaries because of their option value, these subsidiaries should be less affected by the factors that determine survival than domestic firms, whose destiny is decided on their own merits alone. Therefore, without knowledge of the parent, for example its size and international footprint, it seems impossible to have exact conclusions about the factors affecting foreign firm survival if these factors are solely characteristics and performance of subsidiaries in the host economy. *Third*, we are not able to distinguish greenfield and acquisition foreign entrants. So the study cannot analyze how the entry mode affects the probability of firm survival. *Finally*, we cannot tell mergers and acquisitions from true exits. This can happen when a foreign firm after a period of operation decides to merge with or to acquire another foreign firm. So the identifiers (tax code) of the merging firm or the acquired firm disappear, and they are thus counted as exits in the dataset while they are in fact still surviving.

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