PRE-ENTRY DECISIONS AND NEW VENTURE SURVIVAL IN CHINA

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Abstract

This research paper applies the Resource Based View (RBV) to investigate the impacts of pre-entry decisions made by foreign investors on the survivability of new Foreign Invested Enterprises (FIEs) in China. Using a sample of 4,764 new ventures with the Cox survival model, we found that factors including the CATA (Current Assets to Total Assets) ratio, firm size, and technology status of the industries are positively related to new venture survival, and that factors like the inland area dummy variable are negatively related to new venture survival. The result for having a state-owned firm as a partner is not significant in our study. By identifying the key factors mentioned above as unique resources for FIEs, based on the RBV, the results of our research have the potential to help foreign investors to improve their firms' chances of success before they establish their new ventures in the Chinese market.

Keywords: Resource Based View, New Venture, Cox Survival Model, Survivability.

Dedication

This paper is dedicated to my dear parents back in China for their continuous support, not only during the year of this Master's program, but also throughout my life. Without their support in every aspect of my life, I could never have made it this far.

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1: Introduction

Past studies have revealed that new foreign investment enterprises often suffer from very high failure rates (Phillips and Kirchhoff 1989; Watson and Everett 1996; Brian 2003). One of the most essential questions in entrepreneurship is why some new ventures succeed while others fail. Consequently, researchers in accounting, strategy, corporate finance, and operation management have made considerable efforts to investigate the cause of new foreign venture failure and have attempted to build up theoretical models to explain and predict it (Miller and Friesen 1978; Boyd 1991; Bamford, Dean and McDougall 2000). Despite their efforts, much remains uncertain about which particular conditions and factors are favourable to the survival of new foreign ventures in emerging markets such as China (Gilbert, Menon and Schwartz, 1990; Merchant and Schendel, 2000).

In 1978, after about 30 years of upholding a communistic state, Deng Xiaoping (former head of the Party) and the Chinese government took the decision to release the economic frontiers to international trade. They thereby shifted China from an autarkic system, with a low intensity of trade and foreign investment, to a state extremely exposed to international trade. Since beginning to develop a more open economy, China has undergone dramatic economic and social changes (Zweig, 2002). Economic reforms were launched to lessen boundaries and bring greater freedom of movement from and to China (Gao, 2004). However, these changes also came with repeated setbacks and cyclical uncertainties. Even so, China has become one of the fastest growing regions for foreign direct investment and other internationalization activities by foreign investors.

A paper called "Determinants of the Performance of Foreign Invested Enterprises in China" will act as our research benchmark (Cheng and Wu, 2001). In this paper, the authors tried to discover the key factors in the performance of foreign invested enterprises (FIEs) in China. The results showed that cash contributed by foreign parent companies had a significant positive influence on current performance. Additionally, the authors of this paper also found that foreign management improved subjective performance. Surprisingly, the results also revealed that FIEs located in Special Economic Zones (SEZs) performed worse than those located out of SEZs and that FIEs owned by other foreign investors did not perform any worse than FIEs owned by Hong Kong investors. The reasons why we used this paper as our benchmark framework are as follows.

1) Our research also focused on Chinese manufacturing industries. 2) Some of the key findings, such as those involving location and partner selection, could be researched further in our paper.

The purpose of our paper is to use the Resource Based View (RBV) to further investigate and evaluate the existence of the relationships between companies' business performance and their market pre-entry decisions into China. The RBV was developed by Wernerfelt (1984) and Barney (1991) as an economic tool that could be applied to discover the strategic resources available to a firm. The fundamental concept behind the RBV is that the basis for a competitive advantage for a firm lies mainly in the application of many of the unique resources embedded in the firm (Wernerfelt, 1984). In order for a firm to gain sustainable returns, a conversion from a short-term competitive advantage into a more sustainable one is needed and this requires that the resources held by a firm are unique in nature and not perfectly mobile (Barney, 1991). Barney (1991) also argued that sustainable competitive advantage originates from the resources and capabilities a firm controls that are valuable, rare, imperfectly imitable and non-substitutable (VRIN). Any resources that satisfy any of the four conditions defined by VRIN will help a firm to maintain its sustainable competitive advantage (Barney, 1991; Makadok, 2001).

Overall, most of the results from our research are consistent with our hypotheses and suggest that the RBV is a useful method to help FIEs to make their pre-entry decisions before they move into the Chinese market. Determinants, including state-owned firms as chosen partners, location, CATA, firm size, and technology status of the industries, fit the criteria of VRIN as unique resources for firms. Specifically, we found that factors such as inland regions and coastal regions are negatively related to new venture survival; the other factors, including technology status of the industries, firm size, and the current assets to total assets ratio are all positively related to new venture survival.

This study contributes to the existing management accounting and entrepreneurship literature in at least three ways. First, it contributes to the research methodology of empirical management accounting by using survivability as the measure of business success for firms at the start-up stage. At this stage, survivability is a more objective way to measure firm performance than traditional financial measures since many new firms carry large losses that make these measures inaccurate. Second, the results of this study have the potential to help foreign entrepreneurs in China improve their firms' chances of success by focusing more on factors such as business location, selection of partners, capital structure, and technology status of the industries. Finally, our data analysis uses a larger sample size of 4,764 ventures from across the country than that of our benchmark framework from Wu and Cheng. Their paper used a sample

of 350, which solely targeted the FIEs in Guangdong and Hainan provinces (Wu and Cheng, 2001). A larger sample size will increase the representativeness of our sample and generalizablity of our findings.

2: Literature Review and Hypotheses

The term resource means anything that could be treated as a strength or weakness of a given firm. More officially, a firm's resources at a given time could be termed as (tangible and intangible) assets attached semi-permanently to the firm (Caves, 1980). The RBV addresses the major weakness of traditional performance measures, which overemphasize financial performance. It complements traditional financial accounting measures with non-financial measures that focus on unique resources such as selection of partners, location, and technology status of the industries, etc (Peng, 2001). Past studies examining the impact of the RBV on performance generally report positive results. A paper published by Harrison, Hitt, Hoskisson and Ireland in 1991 presented evidence that suggests unique resources are associated with higher performance in business development. Actions taken to gain unique resources allow firms to equip themselves with new and valuable capabilities.

When a foreign investor takes the decision to enter the Chinese market, it intends to find a strategy where it is possible to attain its sustainable competitive advantage in the new location. Since the 1980s, research on sources of sustained competitive advantages has become one of the most important areas in the field of strategic management (Porter, 1985; Rumelt, 1984). Wernerfelt (1984) introduced resources as one source of competitive advantage and thereby started an ongoing discussion in this area. As a result, it is critical to focus on discussing the heterogeneity among resources (Peteraf, 1993; Barney, 1991), e.g., technology intensity (Grant, 1997; Kogut and Zander, 1996), and dynamic capabilities (Teece et al., 1997). The variety of resources reveals the inequality among them and shows that they make different contributions to the competitive advantage of a firm.

The model of the resource-based view of the firm assumes that firms within an industry may be heterogeneous due to their possession of different strategic resources. Additionally, the model supposes that these resources may not be perfectly distributed across firms and therefore the heterogeneity or the source of competitive advantage can be sustained (Barney, 1991). Generally, it can be said that firm resources include assets, capabilities, organizational processes, firm attributes, information, knowledge, etc. These resources enable strategies to improve a firm's competence and effectiveness (Daft, 1983). The variety of resources is often categorized into three distinct groups: (1) physical capital resources (Williamson, 1975), (2) human capital

resources (Becker, 1964), and (3) organizational capital resources (Tomer, 1987). Still, not all the resources held by a firm may lead its business to a sustainable competitive position. A resource needs to possess four properties to meet the requirements for a sustainable competitive position: 1) it must be valuable; 2) it must be rare; 3) it must be imperfectly imitable; and 4) it must not be replaceable (Barney, 1991). If a firm wishes to follow an internationalization strategy, its aim must be to attain such resources in the entered country, leading to a more sustainable competitive advantage.

This study extends the RBV approach to management by investigating how capably unique resources could help new foreign investors to survive in the early stage of their business life cycle. Previous studies on new ventures have proposed four major challenges to new ventures' survival in China. First, new foreign ventures may encounter challenges such as a lack of local knowledge, which might lead to disadvantages in competing with domestic companies who are well adapted to the local environment (Lu and Beamish, 2001). Second, new foreign ventures are unable to endure unpredictable environmental shocks due to a lack of financial resources and flexibility (Dhanaraj and Beamish, 2003; Coviello and McAuley, 1999). Third, selecting the right location to start new ventures could be also critical to foreign investors since different parts of China will have different intensities of economic openness (Hu and Chen, 1996). Fourth and last, acting as the first mover in immature industries is also a vital factor for new ventures' survival; otherwise, new ventures have to face fiercer competition posed by well-established firms in a mature industry (Jennings and Beaver, 1997). The results of this paper will also help foreign investors to predict the risk of investing in emerging markets and thus can be used to predict new FIE survival.

2.1 Hypothesis I

China is a very complex society, by virtue of its deeply embedded cultural heritage, long history, diverse political development, strong local identities, traditions and distinctive dialects, and so on (Li and Li, 1999). This social structural complexity can become one of the biggest challenges for most foreign investors as they make their pre-entry decisions. To solve this issue, a logical approach for an FIE would be to undertake a joint venture with a local partner to run their business in China.

Joint-venture enterprises in China can be divided into several forms: a foreign investor merges with a state-owned enterprise, a foreign investor merges with a collective enterprise, a foreign investor merges with a private enterprise, or a foreign investor merges with a foreign

investor or with an investor from Taiwan, Hong Kong, or Macau (Shige and Beamish, 1998). Based on the RBV, the first combination would be the most popular choice for FIEs and the reason is simple. By making use of the governmental background as a unique resource, a state-owned enterprise manages to provide what a foreign investor really looks for, such as funds, governmental examination, approval for land and connections with the local government officials.

Although managers everywhere spend a reasonable amount of time and energy cultivating interpersonal ties, managers who run their businesses in China rely much more heavily on the cultivation of personal relationships with the local government officials to improve their business performance. Boisot and Child (1996) argue that the traditional "markets versus hierarchies" typology needs to be modified in order to explain how firms behave and perform in the Chinese market. Peng and Heath (1996) identified an expansion strategy that is neither hierarchy nor market. The real driving force behind it seems to be a process of "boundary blurring" where interpersonal ties cultivated among managers and government officials are translated into inter-organizational ties targeted at better firm profitability. Additionally, Walder (1995) argued that the solid ties developed between managers and local officials in China's township and village enterprises function as an efficient governance mechanism, which results in some firms' superior financial performance relative to that of others. Scarce resources in China are allocated mainly based on relationships rather than on bureaucratic regulations. Essentially, a good relationship with the government could smooth the progress of business dealings while formal regulations often inhibit them. Hence, a good connection with local government can help FIEs build personal networks that help them to get over regulatory hurdles. This makes good relationships vital for the performance and survival of a business in China.

Generally speaking, a superior tie with the local government facilitates a firm's access to regulated industries, constrained market segments, and production factors (especially scarce raw materials and capital procurement). Such a tie also helps a firm's infrastructure access, distribution arrangements, wholesale networking, and project location selection. The benefits mentioned above will improve revenues or reduce costs for firms. Additionally, Zhou and Li (2008) also propose that by collaborating with the State-Owned Enterprises (SOEs), this strategy will better utilize advanced technology knowledge from foreign investors and further allow adaptive product innovation for the local markets. Hence, a joint venture with a state-owned firm could easily help FIEs to gain benefits by better negotiating with the local government officials during some of the business processes mentioned above and by better matching the needs of local

consumers through superior technology advancements provided by foreign investors for product innovation. Finally, since collaborating with a state-owned enterprise strictly satisfies the four conditions defined in VRIN, it is reasonable to regard it as a unique resource and make the following hypothesis.

Hypothesis I: There will be a positive relationship between choosing a state-owned enterprise as a partner and new venture survival.

2.2 Hypothesis II

In the Chinese market, geographic location has a strong influence on the performance of the businesses operated by FIEs since political, social, and economic environments tend to vary in different parts of China (Shan, 1991; Child and Stewart, 1997) and different regions of China have different intensities of the economic openness (Hu and Chen, 1996). Consequently, location can act as a unique resource for foreign investors before they open their businesses in China. In terms of the economic openness, China can be categorized into three different regions.

The first region contains Beijing, fourteen open cities, and five special economic zones.[1] Since the cities from this region enjoy different beneficial policies, they play multiple roles as "windows" in developing the foreign-oriented economy, gaining foreign exchanges through exporting products and importing advanced technologies, and as "radiators" in accelerating inland economic development. Preferential policy typically contains a special tax and tariff incentive; consequently, many foreign investors in this part of China may enjoy this most market-oriented environment after they set up their businesses there (Yeung *et al*., 2009).

The second category includes most of the inland provinces in China. This area is less industrialized in terms of economy but is rich in natural resources and possesses the lowest labour costs in China. The amount of foreign investment in this region is far less than in the other regions of China. Based on the information provided by the China National Bureau of Statistics in 2002, only 19% of the total foreign investment flooded into the inland region by the end of 2001 (National Bureau of Statistics of China, 2002). Local governments in this region have a stronger motivation to attract foreign investors to boost their economy but lack experience. This region has fewer tax and economic incentives than the first region, and the business infrastructure and local market are often immature. In general, the corporate income tax rate for most of these provinces

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[1] The five special economic zones are Shenzhen, Zhuhai, Shantou, Xiamen, and Hainan. The fourteen open cities include Dalian, Qinhuangdao, Tianjin, Yantai, Qingdao, Lianyungang, Nantong, Shanghai, Ningbo, Wenzhou, Fuzhou, Guangzhou, Zhanjiang, and Beihai.

is 33% compared to 15% in the open cities and special economic zones (National People's Congress [NPC], 1991).

The last region includes the coastal provinces in China (excluding those areas assigned as special economic zones or open cities). This region also gives some economic incentives to foreign investors but with fewer tax incentives, and is at the stage of developing its business infrastructure to attract foreign capital. In general, with respect to its openness to foreign investment, this region ranks between the open and the inland categories.

Given the different intensities of economic openness and their implications for an FIE's performance, another reasonable hypothesis could also be drawn here.

Hypothesis II: There will be a positive relationship between the degree of economic openness in different regions of China and new venture survival.

2.3 Hypothesis III

The technology status of the industries to a given sector in the Chinese market is also one of the key factors that FIEs have to take into account. Generally speaking, there are three major stages in the development of industrial structure in China: labour-intensive, capital-intensive, and technology-intensive.

First launched during the 1930s in the United States, the classification of manufacturing industries based on their technology intensity has become widely employed since the 1950s in other industrialized countries, especially for the analysis of an industrial sector's pattern of specialization and its comparative performance in international trade (OECD, 1997). In the latest versions developed by the OECD in the 1990s, and subsequently adopted by other international institutions such as Eurostat, the taxonomy enables manufacturing industry sectors to be combined into four different groupings according to their level of technology intensity. They are defined as follows: low-technology, medium-low-technology, medium-high-technology and high-technology. Sectors are assigned according to the values derived from indicators based on the amount of R&D expenses as determined by the OECD. The OECD data uses the average values drawn from a set of industrialized countries, originally a group of ten nations which was subsequently increased to twelve including Italy (OECD, 1997).[2]

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[2] These are the twelve countries for which there is complete data available in the group denoted by the OECD as RD2: Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, Spain, Sweden, the United Kingdom, the United States of America.

In our study, we will classify the manufacturing industries for the technology status of the industries factor in China based on their technology intensity. The sectors that rank as the most technology intensive will be classified as sectors having the least competition within their industries since most of the companies wanting to enter might not have the financial and technological resources to develop their corresponding products. In 2008, Qi and his colleagues also suggested that high technology industries (semiconductors, aerospace, software, telecommunications, etc.) are very knowledge-intensive, capital intensive, and highly complex. Therefore, it is possible to assume that the higher the technology intensity for a specific sector, the harder it is for firms to enter the sector.

Most of the labour-intensive industries belong to the less competitive markets; on the other hand, the capital/technology driven industries belong to the more competitive markets. The investment scope of foreign investors in China has transformed from the labour-intensive industries in the mid-90s to the more capital-intensive and technology-intensive industries, such as electronics, pharmaceuticals, machinery, etc. The reason behind this trend is mainly that the potential profits generated by the industries in the technology intensive markets are expected to be much higher and firms will face an unsaturated market with less competition. In most of the labour-intensive industries, new ventures are expected to face a much more fierce competition environment due to the low entry barriers, which can mean low profit margins (Porter, 1985). It will be much easier for new ventures to survive in the technology intensive sectors by leveraging superior technology knowledge and acting as the market's first movers. These two factors will constitute the ventures' unique resources. Hence, it is wise to assume competitive intensity is positively related to technology intensity and to suggest the following hypothesis.

Hypothesis III: Firms that enter technology intensive sectors will be more likely to survive than the firms that enter labour intensive sectors.

2.4 Hypothesis IV

In terms of the capital structure, a firm's current assets to total assets (CATA) ratio is a strong indicator for the liquidity evaluation. Generally, the higher the CATA ratio, the greater the firm's liquidity and the greater the firm's ability to pay its short-term creditors. Based on the RBV, this kind of financial flexibility can be treated as a unique resource since business failure is more likely to occur with firms that do not have access to sufficient funds to meet their obligations as they become due. In 1999, Samuel, Daniel and Clark also suggest that firms with a lower CATA ratio are more likely to go bankrupt. Coviello and McAuley (1999) have also shown

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that firms with weaker financial flexibility often lack financial resources that are necessary to maintain their business growth in a foreign country and are therefore unable to get over barriers like the liability of foreignness. These findings support the notion of the CATA ratio as an impacting factor for performance in the internationalization process. Thus, it is appropriate to assume that any foreign investors who are thinking about investing in China should provide sufficient short-term cashflow to their new ventures and keep their CATA ratio as high as possible so that a higher success rate in turning their investment into financial performance is expected. Provided the assumption is right as outlined above, the fourth hypothesis is made here.

Hypothesis IV: There will be a negative relationship between the current assets to total assets ratio of the new venture and new venture survival.

2.5 Hypothesis V

From a resource-based perspective, firm size is a critical resource leading to high performance (Grant, 1991). Porter (1980) also contends that firm size is a determinant factor that affects corporate survival and profitability. In the international business literature, firm size has been found to have significant influence on FIEs' market performance as large size often enhances their ability to invest in advanced technologies, and to enjoy economies of scale and scope (Kogut and Singh, 1988). Shuman and Seeger (1986) have identified that small businesses differ fundamentally from large companies. The differences do not only exist in ownership and organizational structure and processes, but significant differences were also found in resource availability, which is necessary for international business expansion (Carrier, 1994). In this regard, Bloodgood, Sapienza and Almeida (1996) propose the idea of the significance of resource availability when a firm decides to invest abroad. They believe that there exists a positive relationship between the size of the new venture and the new venture's performance. Dhanaraj and Beamish (2003) also regard firm size as a factor of financial resource availability and they explain that those firms that have excessive access to resources will use these resources as a competitive advantage to expand their business to foreign markets. In the case of the Chinese market, large FIEs will attract more assistance from local government since they can have a larger impact and influence on the local economy than smaller FIEs. Based on the factors discussed above, it is reasonable to draw the following assumption.

Hypothesis V: There will be a positive relationship between the firm size of the new venture and new venture survival.

3: Research Methodologies

3.1 Sample selection

China is a suitable test field for this research since it is one of the fastest growing emerging regions in the world, and the business opportunities created by its rapid economic growth have recently attracted the interest of many foreign investors. Based on the World Investment Report released in 2004 (UNCTAD, 2004), China has become the largest host country for foreign direct investment in the world. Most of the foreign direct investment in China takes the form of foreign invested enterprises, which are composed of wholly owned ventures and joint ventures between a foreign investor and a domestic partner (collectively referred to as ventures hereafter). Current research also proposes that emerging markets such as China pose significant management challenges for new ventures (Li and Atuahene-Gima, 2001; Nee, 1992; Peng and Heath, 1996). Hence, China offers a very interesting environment for predicting new venture survival and the results collected from this study could also help new foreign investors to finalize their pre-entry decisions.

Our paper applies a sample of new manufacturing ventures taken from the Chinese Foreign Invested Enterprises Database (CFIED). The CFIED is collected by the National Bureau of Statistics of China (NBSC), utilizing annual financial reports gathered by the Ministry of Commerce of the People's Republic of China (MOFCOM). It includes basic information such as annual financial reports about 53,000 ventures operating within China's manufacturing industries. Most of these FIEs in China have followed generally accepted Chinese accounting principles and have been audited by either a Chinese or Western audit firm while preparing their financial statements in the annual reports. Thus, it is logical to assume all the data collected in the database is no less reliable than comparable data from government sources in other countries since the consequences of submitting fraudulent reports are high in China and failing to report could also jeopardize the continuity of a venture's business licenses. Additionally, non-financial information such as the venture's start date, a geographic area code, number of employees, ownership structure, and export ratio are also included in the annual reports. The NBSC agreed to provide four years (from 1998 to 2001) of data from manufacturing ventures that submitted their annual reports for at least one year between 1998 and 2001. The initial sample consisted of 4,957

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ventures that started their business in or after 1998. We defined the new ventures as the companies that started operating in or after 1999. In the database, we used a variable to specify the operating status of the ventures. We eliminated ventures that included extreme values or were lacking information related to the variables used for the statistical analysis. Our final sample was composed of 9,625 firm-years of data from 4,764 ventures. Of these ventures, 1,610 went bankrupt or discontinued their operations within the observation period (from 1998 to 2001). Table 1 and Figure 1 depict the survival rate distribution of the sample ventures.

As shown in Table 1, around 55% firms survived their first 4 years of operation. In other words, 45% firms failed. This low success rate is similar to previous studies' findings using samples of Japanese and U.S. firms (Makino and Beamish, 1998; Headd, 2003). As shown in Figure 1, censored ventures were only used for the calculation of survival ratios in firm ages for which we have data. Censored ventures are defined as ventures that did not fail until the end of the observation period (i.e. 2001). For instance, if a venture started in 1999 and continued to operate until the end of 2001, the venture is one of the 1,023 ventures censored at the end of their third year of operation. Censored and failed ventures reduce the total number of ventures at risk at the beginning of the next period. For example, of the 4,621 ventures that survived their first year of operation, 364 ventures failed in the second year, and 488 ventures were censored. Consequently, only the remaining 3,769 surviving ventures were kept for the analysis in the third year. Among these 3,769 ventures, 699 failed in the third year of their operation. Therefore, the hazard ratio (failure rate) is 19% (699 divided by 3,769).

3.2   Variable Measurement

3.2.1   Independent Variables

Since we are analyzing our data for the impacts of pre-entry decisions made by foreign investors before they enter the Chinese market, we are only looking at the values for each independent variable at the beginning of the period for each corresponding firm ID. For example, when we consider the case of firm size, we only need to look into the first assigned value in the total asset column with its corresponding firm ID. Once we calculate the natural log of the total assets, we will assign this same result to the rest of the years for this corresponding firm ID.

First, a variable called State Owned (SO) is used to indicate the extent of state ownership of the firm in our database. This variable is a one-digit code and there are three numbers associated with it. Code one indicates there is a majority of share control contributed by state-

owned firms, meaning more than fifty percent comes from state-owned partners. Code two represents relative share control from state-owned firms, showing that part of the joint venture is owned by state-owned partners. Finally, code nine means there is no share control from state-owned firms, meaning that either the foreign investors wholly own the business or that it is a joint venture with types of firms other than state-owned. In our Matlab program, a dummy variable is used here to evaluate this variable. We assign value one to any firms that are coded as either one or two and assign value zero to those coded as nine. Secondly, two dummy variables are used to indicate three different regions in China distinguished in terms of their economic openness. LOC_1 is coded as 1 for FIEs located in coastal provinces other than the special economic zones and 14 open cities. LOC_2 is coded as 1 for FIEs located in inland (non-coastal) areas in China. The reference category refers to the FIEs located in Beijing, 14 open cities, and 5 special economic zones. Third, a dummy variable is used to indicate which industries are technology intensive. Traditionally, there is also a major trend for foreign investors to move from a labour intensive industry to a technology intensive industry. Therefore, we use the R&D intensity to capture the timing of the entry. If a foreign company gets into an industry with a higher R&D intensity, they will compete with fewer players in this industry. In our database, there are thirty-six industry categories and each of them starts with a two-digit industry code. Based on an OECD classification (1997), ten industries are categorized as the most technology intensive industries and equivalent to the most competitive industry sectors. These include exploitation of oil and natural gas, exploitation and selection of non-ferrous metal mines, oil processing and coking industries, manufacture of medicines, smelting of non-ferrous metal and processing of press, manufacture of mine equipment, manufacture of electric machines and equipment, manufacture of electrical and communication equipment, manufacture of instruments and meters and office-use machines, and manufacture and supplying of electric power, steam and hot water. Value one is assigned to the technology intensive group for our data analysis. Fourth, we use the current assets and total assets as proxies for the calculation of our current assets to total assets ratios. For each firm ID, we retrieve all the values from the column of current assets to divide with all the values from the column of total assets. Finally, the variable for firm size is measured in terms of the natural log of start-of-period total assets.

3.2.2   Dependent Variable

The dependent variable is the hazard ratio, the probability that a new venture may not succeed in a year given that the venture has survived in the previous years. We defined the failure of a venture as being dissolved or bankrupted. The survival period of those ventures that had not

failed at the end of our observation period is the time between their start-up year and the end of our observation period.

3.3 Cox Semi-parametric Survival Model

Given the properties of our dependent variables, we decided to use a survival analysis in order to analyze the impacts of the independent variables on the dependent variable. We applied the Cox (1972) semi-parametric model since our interest is in the relationship between independent and dependent variables rather than the hazard distribution itself (Cox and Oakes 1984). The Cox model is defined as follows.

$$H(t \mid x_i) = h_0(t) \exp(\beta x_i) \tag{1}$$

where H(t|x) is the hazard function of being bankrupted or dissolved at age t. X is the vector of independent and control variables which represent venture characteristics and environmental factors that affect the probability of failure. The baseline hazard function $h_0(t)$ reflects the hazard function for ventures without consideration of covariates (that is, xi=0). The Cox model estimates the coefficient vector β based on the maximization of the following likelihood function (Cox 1972):

$$L(\beta) = \prod_{i=1}^{k} \frac{\exp(x_i' \beta)}{\sum_{j \in R(t)} \exp(x_j' B)} \tag{2}$$

where k denotes the number of distinct firm ages in which the sample ventures failed, and R(t) is the "risk" set of ventures that had not failed at the beginning of the firm age t.

The hazard models have an advantage over regression models in that it is possible to include time-varying covariates (that is, those covariates that can change over the observation period) in the hazard models. However, among the variables discussed in the previous section, all five variables, namely state-owned firm as a partner, location, technology status of the industries, CATA, and firm size, do not vary over time. Thus, since none of the variables in our study change over time, the advantage of this quality with hazard models is not taken into account for our analysis.

4: Statistical Interpretations and Results

Table 2 reports the descriptive statistics of the variables used in our study. In terms of location, 47.1 percent are located in open cities, 41.4 percent are located in coastal areas, and the remaining 11.5 percent are located in inland provinces. The mean value for the share contributed by the state-owned partner is 0.0725. The average size of the sampled ventures as measured by a logarithmic function of their total assets is 9.76. The mean value for the technology intensity is 0.2311.

Table 3 reports the Pearson's correlation for the independent variables used in this research. Including the location dummies, the correlation coefficients between the independent variables are high, ranging from -0.6463 to 0.1266. With 9,625 firm-year observations from a sample of 4,764 firms and high correlations across the independent variables, multicollinearity did threaten the coefficient estimates reported in Table 4. Thus, it is wise to separate the highly correlated variables, including LNTA, partner and CATA from the rest of the independent variables for our regression.

The Cox model was estimated using the STCOX command of the STATA version 9 statistical package. The diagnostic test of the Cox model's proportional hazards assumption using Schoenfeld (1982) residuals indicates that none of the additional factors have a time varying effect on the dependent variable. Hence, any issues related to the time varying effect will not be considered here.

The results of the Cox model are reported in Table 4. Since three of the variables, including CATA, LNTA, and partner are highly correlated, it is necessary to divide the six variables into two groups. The first group includes LNTA, CATA, and state-owned firms as a partner; the second group includes coastal areas dummy, inland area dummy, and technology status of the industries. All of the six variables were found to be associated with new venture survival except for coastal areas dummy and state-owned firm as a partner. Those which were found to have particularly significant impacts on new venture survival are CATA, firm size, inland area dummy and technology status of the industries.

A positive (or negative) coefficient associated with a binary covariate indicates that ventures with that specific characteristic have a higher (or lower) probability of failure than those

ventures that do not have that characteristic. Higher (or lower) probability also indicates earlier (or later) timing of the failure. A similar interpretation holds true for interval/ratio variables. However, since there is no reference category for these variables, the exponent of the estimate is the multiplicative factor by which the probability increases or decreases.

In this study, the current assets to total assets (CATA) ratio is a ratio variable and has a highly significant negative coefficient ($\beta = -0.222$, $p < 0.015$). This implies that as the CATA increases by one unit, the probability of failure decreases to 80.09% (that is, $e^{-0.222}$) of the initial level. Equivalently, a one-unit increase in the CATA will reduce the probability of failure by 19.91%. If the CATA increases by three units, then the probability decreases by a factor of 0.514 (that is, $e^{-0.222 \times 3}$) or 48.6%. Since the CATA is calculated as current assets to total assets, the -0.222 coefficient suggests that a new foreign investor in China can increase its chance of survival by 19.91% with an incremental investment in current cashflow that is equal to 0.1% of its total assets. We also hypothesized that a venture involving the most technology intensive industry sectors will have a better chance of survival. The coefficient on technology status of the industries (TechInt) is negative and reasonably significant ($\beta = -0.0525$, $p < 0.5$). It suggests that if the technology intensity of the sector that the foreign investors choose to enter increases by one unit, the extra technology intensity will bring down the venture's probability of failure by 5.1%. Additionally, we had expected that ventures with a higher level of total assets would have a better survivability. Firm size is measured in terms of the logarithmic function of total assets (LNTA). The coefficient on LNTA is negative and highly significant ($\beta = -0.0589$, $p < 0.01$). This result indicates that as the LNTA increases by one unit, the probability of failure will be reduced to 94.3%. Furthermore, we had expected that there exists a negative relationship between inland area dummy and new venture survival. The coefficient on inland area dummy is positive and reasonably significant ($\beta = 0.0724$, $p < 0.25$). It suggests that the one locating their business in inland regions has a 7.5% more chance to fail relatively to ones locating their business in SEZs and 14 open cities.

Finally, yet importantly, we did not find that the two independent variables in the model had any significant impacts on new venture survival. These variables include coastal region dummy and state-owned firm as a partner.

5: Conclusion

This paper has explored the impacts of pre-entry decisions made by foreign investors on the survivability of new Foreign Invested Enterprises (FIEs) in China. Overall, most of the results are consistent with our hypotheses. These findings indicate that new ventures are more likely to survive by strictly following a resource based view that takes account of some of their unique resources, such as location, CATA, firm size, and technology status of the industries. This enables foreign investors to build up their competitive advantages before they start their businesses in the Chinese market.

Meanwhile, it is also important to note that some of the independent variables were found to be insignificant in predicting new venture survival. These variables include state-owned firm as a partner and coastal region dummy. First, the reason why choosing a state-owned enterprise as a partner was insignificant could be explained thusly. Steinfeld (1998) has pointed out that the problems of SOEs are as follows. 1) Lack of tight budget constraints. A SOE in China can still keep its business running even though it is not making any profit. 2) Lack of legally clear and enforceable property rights. In other words, whose business is it? No one will treat this business seriously since the money is not their own. 3) Lack of corporate governance. These problems can all be explained by the shortage of incentives and discipline structures to induce firm managers to act properly on behalf of firm owners. Finally, the reason why the coastal area dummy factor failed could be due to the similarities between the central cities regions and the coastal area. Since most foreign investors will locate their businesses in the central cities regions which are part of the coastal provinces, the coefficient for the coastal region was normally to be found insignificant in this case.

However, the results of this study should be interpreted in light of two drawbacks. First, this study only applies data from manufacturing industries in China. Future research is required to decide whether the results reported here can be generalized to other sectors as well as other countries. This is very important since different unique resources could be utilized for different market situations, cultural contexts, product strategies, and competitive environments (Barney 1991). Finally, in this study we have assumed that each of the unique resources is equally important to all ventures, without considering their differing competitive strategies. It might be possible that the match between the ventures' chosen strategies and their priorities regarding the

measures might affect their survivability. However, due to data limitations, it is not possible to find a suitable measure for venture strategy and the relative importance placed on the resource based view. Therefore, future research might seek to obtain such data in order to investigate whether the match between strategy and the degree of importance of the unique resources in the RBV affects new venture survivability.

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Figure 1: Survival Distribution for Sample Firms
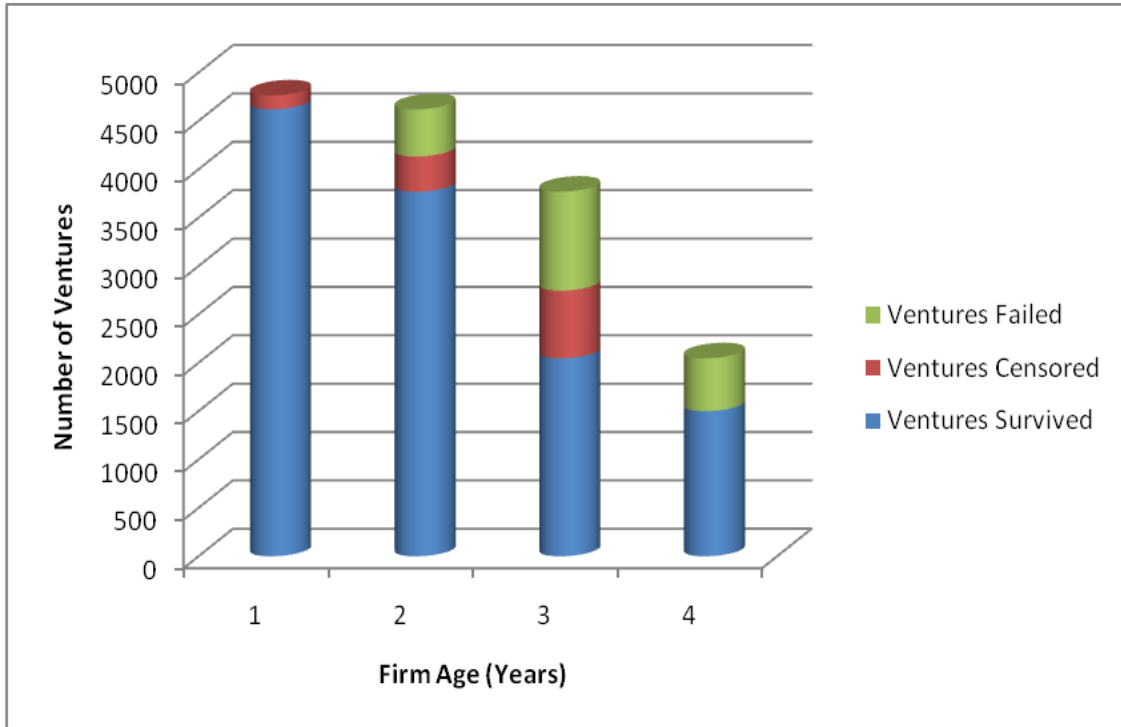
Table 1: Survival Distribution for Sample Ventures

(1) Age of the venture (years)	(2) Number of ventures at risk [a]	(3) Number of ventures that fail	(4) Number of ventures censored [b]	(5) Survival Function [c]	(6) Hazard Ratio [d]
1	4764	0	143	100%	0%
2	4621	364	488	92%	8%
3	3769	699	1023	75%	19%
4	2047	547	1500	55%	27%

a. Number of ventures at risk is the number of ventures that had not failed at the beginning of the age interval.

b. Censored ventures are defined as ventures that had not failed until the end of the observation period (i.e. 2001). For example, if a venture started in 1999 and continued to operate until the end of 2001, the venture is one of the 801 ventures censored at the end of their third year of operation.

c. The survival function using the Kaplan-Meier (1958) procedure is calculated using the following expression: $S(t) = \prod_{j|t_j \leq t} (\frac{n_j - d_j}{n_j})$, where S(t) indicates the probability of survival by age t, n_j is the number of ventures at risk at the beginning of age t_j, d_j is the number of ventures failed in age t_j.

d. The hazard ratio is calculated from the following expression: $h(t) = \frac{[S(t-1) - S(t)]}{S(t-1)}$, where h($t$) is the probability of failure at age t, S(t) is Kaplan-Meier's estimate of survival function.

Table 2: Descriptive Statistics

Variable	Mean	Standard Deviation
Technology status of the industries (TechInt)	0.23117	0.0042974
Firm Size (LNTA)	9.76011	0.184965
Current Assets to Total Assets (CATA)	0.53973	0.0026759
Joint Venture (JV)	0.56	0.5
State-Owned partnership (Partner)	0.07252	0.0026436
Coastal Areas Dummy (Loc1)	0.414	0.499
Inland Area Dummy (Loc2)	0.115	0.319

TechInt: dummy variable equal to 1 for technology intensive industry, 0 otherwise.
LNTA: logarithmic function of total assets.
CATA: the ratio between current assets to total assets.
JV: dummy variable equal to 1 for joint venture and 0 for wholly owned ventures.
Partner: dummy variable equal to 1 for selecting the state-owned as a partner, 0 otherwise.
LOC1: dummy variable equal to 1 for coastal area, 0 otherwise.
LOC2: dummy variable equal to 1 for inland area, 0 otherwise.

Table 3: Pearson's Correlations among Variables

	CATA	LNTA	Partner	TechInt	Loc1	Loc2
Current Assets to Total Assets (CATA)	1					
Firm Size (LNTA)	-.0781*	1				
State-Owned firm as a partner (Partner)	-.0689	.0916	1			
Technology status of the industries (TechInt)	.0504*	.1190**	.0633	1		
Coastal Area Dummy (Loc1)	-.0128	.0127	-.0992*	.0019	1	
Inland Area Dummy (Loc2)	-.0287**	-.0227*	.1266	.0007*	-.6463	1

** Correlation is significant at the 0.01 level (2-tailed).
*Correlation is significant at the 0.05 level (2-tailed).

Table 4: Regression Results for Cox Model

Independent Variables	Expected sign	Cox Model	
		Coefficient	Hazard Ratio
Firm Size (LNTA)	-	-0.0589361***	0.942767
Current Asset/Total Assets (CATA)	-	-0.2216388**	0.8012047
State-Owned firm as a partner (Partner)	-	0.0469123	1.04803
Coastal Areas Dummy (Loc1)	+	0.0126442	1.012724
Inland Area Dummy (Loc2)	+	0.0723665*	1.075049
Technology status of the industries (TechInt)	-	-0.0525232*	0.9488323
Log-likelihood		-14204.709	
Model chi-square		34.45*** (17 d.f.)	

 ***, ** and *, significant at the 0.01, 0.05 and 0.1 level or better, respectively

TechInt: dummy variable equal to 1 for technology intensive industry, 0 otherwise.
LNTA: logarithmic function of total assets.
CATA: the ratio between current assets to total assets.
Partner: dummy variable equal to 1 for selecting the state-owned as a partner, 0 otherwise.
Loc1: dummy variable equal to 1 for coastal area, 0 otherwise.
Loc2: dummy variable equal to 1 for inland area, 0 otherwise.