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A life cycle analysis of Hunan's enterprises and their determinants

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ABSTRACT

Using the life table method, we analyzed in this paper the survival of enterprises that were established from 1980 to 2007 in the Hunan province. Based on the quantile indicators, the average remaining firm lifespan in the specified period of time and the average survival time during a specific period of time, we conducted a comparative study using enterprises associated with different cities, industries, capital sizes, types of ownership and periods of establishment. The results show that there are great differences in firm survival that correlate with differences in city affiliation, industry, capital size, ownership type and period of establishment. Survival of Chinese enterprises is affected not only by the location of the business, the industry and the capital scale, which are usual players in the classical theory of industrial organization, but also by the nature of ownership and the time of establishment, which are determined by China's national context.

1. Introduction

Enterprise life cycle theory indicates that enterprises, like organisms, experience a process of development from the time when they flourish to the time when they decline: in other words, from birth to death. Firm survival and death have been the focus of research in academic circles around the world. Previous research has indicated that in the United States, only about 68% of small and medium enterprises (SMEs) can survive for more than 5 years, 19% for six to 10 years and only about 13% for more than 10 years (Lv, 2000), whereas in France, more than 50% of new enterprises close in 5 years (Abdesselam, Bonnet and Le Pape, 2004). Few scholars have conducted systematic, accurate research on the conditions that Chinese enterprises require for longer life expectancy because of the difficulty of obtaining sample data, and most of these scholars estimate that the average life expectancy is 3.5 years based on experience. Based on information from 527,499 enterprises founded from 1980 to 2007 that was collected from the database of the industry and commerce bureau of the Hunan province, we calculate the median survival time of China's enterprises in each city of the Hunan province. For this purpose, we use the life table method to conduct a grouped comparative study based on the characteristics of different enterprises. Our purpose is to obtain insight into the actual state of survival of China's enterprises and to provide points of reference for the government in developing relevant economic policy.

2. Literature review

There are many studies of the survival of enterprises and its influencing factors. Brüderl, Preisendörfer and Ziegler (1992) once grouped the factors that affect business survival into three categories: the individual factors of entrepreneurs, the enterprise-

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specific factors and environmental factors (e.g., industry, geography, and economic cycles, et al.). Considering individual factors of individual factors of entrepreneurs, such as the gender, age, occupational background, and level of education, has an important impact on the survival of the firm. However, because the data of the individual characteristics of entrepreneurs is commonly unavailable, few empirical studies have been conducted on the impact of the personal characteristics of entrepreneurs on firm survival. However, Abdesselam et al. (2004) conducted relevant empirical research using the survey data of the French National Institute of Statistical and Economic Studies.

As for the enterprise factors, the existing literature has focused on the impact of age and firm size on firm survival. Scholarly opinion is conflicted regarding the impact of firm age on business survival. Among these opinions, Carroll and Hannan (2000), Nelson and Winter (1982), and Stinchcombe (1965) have suggested that as enterprises increase in age, they gradually adapt to their environment, form a unique culture and process, and establish a stable and trusting relationship with other stakeholders in the market; therefore, older enterprises tend to experience a lower risk of death than new enterprises. Brüderl and Schussler (1990), Fichman and Levinthal (1991), Mahmood (2000), and other researchers have shown another relationship between firm age and its risk of death. They have suggested that the risk of death among enterprises does not predictably decrease with age but instead displays an inverted "U"-relationship. They argue that in the early stages after inception, the enterprise's risk of death increases and reaches its maximum with the continuous consumption of seed capital. The risk of firm death, then, decreases with its increasing age; therefore, the relationship between the risk of death and age follows an inverted "U" pattern. However, Baum (1989) and Hannan (1998) have indicated that older enterprises' behavior was more rigid than that of young enterprises, making it difficult for them to adapt to dramatic changes in the competitive environment. Thus, when companies reached a certain age, the risk of death would increase. With regard to firm size, scholars' views are more consistent. Most scholars agree that the smaller the business, the larger the gap is from the minimum efficient scales; thus, compared with larger enterprises, these smaller businesses have a greater risk of death.

Considering the external environmental variables that affect firm survival, we note that industrial and geographical factors have been shown to have a significant impact on firm survival. Research has shown that industries' minimum efficient scales (*MES*), growth rates, rates of entrance and other factors influence firm survival. Because the requirements of the industries' minimum efficient scales are more difficult to achieve when industries' minimum efficient scales are larger, firms face a greater risk of death (Mahmood, 1992; Mata and Portugal, 1994; Audretsch, 1995a). The enterprises in high-growth or larger-size industries incur a smaller risk of death because they operate under better demand conditions. Mata and Portugal (1994) and Audretsch (1995b) et al. have reached similar conclusions through empirical research.

Concerning the impact of regions on the survival of firms, there are arguments both for a positive and for a negative impact of regional agglomeration on firm survival. Though both Audretsch and Vivarelli (1995) and Gerlach and Wagner (1994) do not find a statistically significant correlation between these two factors, Keeble and Walker (1994) provide empirical evidence for a positive impact of agglomeration measured by population density on the hazard rate for new firms, and Fotopoulos and Louri (2000) employ data from the Greek manufacturing sector and determine that the likelihood of survival for small new enterprises is highest in most agglomerated regions.

In a transition period from a planned economy to a market economy, China's economic situation differs greatly from that of other countries. In China, a large number of state-owned enterprises constitute the majority of the country's overall enterprises. During the transition process, however, individual-owned and foreign-funded enterprises have been gradually introduced. The government protects state-owned enterprises because they undertake not only economic functions but also important social function. The foreign capital introduced is commonly connected to advanced technology and management. The individual-owned enterprises' strength is in their continuous improvement, but they still experience government discrimination. Thus, we expect the characteristics of enterprise survival to vary based on different types of ownership.

Additionally, at present, little concrete research is available regarding changes to conditions for firm survival that have occurred during the past 30 years in China because it is undergoing the transition process from a planned economy to a market economy. Likewise, few general studies have been conducted on determinants of firm survival in China. The main recent literature on the subject is the analysis by the Shenzhen Stock Exchange (2005) that considers the survival conditions of small and medium-sized listed companies in China. Because the listed enterprises only account for a small proportion of China's total enterprises, in this paper we employ a large firm sample from a particular province to provide a concrete analysis of the survival conditions in China.

3. Data samples and empirical approach

3.1. The data sample

We investigated the industry and commerce bureau and a multitude of enterprises in Hunan in December 2007, and we collected all database information for all firms in the Hunan province from January 1, 1980 to December 17, 2007. The data include the firm's dates of inception, closure dates (if dissolved before December 17, 2007), registered capital, business ownership types, associated industries and city locations.

A preliminary analysis of the data showed that a total of 527,499 enterprises were established in the Hunan province from 1980 to 2007 and that 294,618 enterprises were closed during that period; there were 174,934 new enterprises established in Changsha (33.16% of the newly established enterprises in the Hunan province), and there were 352,593 newly established enterprises in other cities, making up the other 66.84%. The industries covered by these firms include all 89 industry categories of the China