FACTORS WHICH AFFECT THE DYNAMICS OF PRIVATELY-OWNED CHINESE FIRMS: AN INTERDISCIPLINARY EMPIRICAL EVALUATION
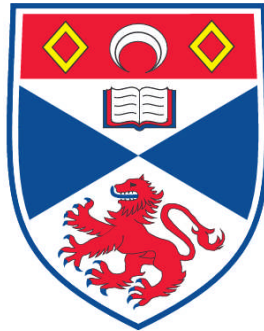
Zhibin Xu

**A Thesis Submitted for the Degree of PhD
at the
University of St. Andrews**

2007

**Full metadata for this item is available in
Research@StAndrews:FullText
at:
http://research-repository.st-andrews.ac.uk/**

**Please use this identifier to cite or link to this item:
http://hdl.handle.net/10023/372**

FACTORS WHICH AFFECT THE DYNAMICS
OF PRIVATELY-OWNED CHINESE FIRMS:
AN INTERDISCIPLINARY EMPIRICAL EVALUATION

by

ZHIBIN XU
BA (NANJING UNIVERSITY OF ECONOMICS & FINANCE)
MEIR(UNIVERSITY OF ST.ANDREWS)

A thesis submitted to
The University of St. Andrews
for the degree of
DOCTOR OF PHILOSOPHY

DECLARATIONS

I, ..., hereby certify that this thesis, which is approximately .... words in length, has been written by me, that it is the record of work carried out by me and that it has not been submitted in any previous application for a higher degree.

Date.................................   Signature of candidate

I was admitted as a research student in .... [month, year] and as a candidate for the degree of .... in.........................[month, year]; the higher study for which this is record was carried out in the University of St. Andrews between .... [year] and .... [year].

Date.................................   Signature of candidate

I hereby certify that the candidate has fulfilled the conditions of the Resolution and Regulations appropriate for the degree of .... in the University of St. Andrews and that the candidate is qualified to submit this thesis in application for that degree.

Date.................................   Signature of Supervisor

In submitting this thesis to the University of St. Andrews I understand that I am giving permission for it to be available for use in accordance with the regulations of the University library for the time being in force, subject to any copyright vested in the work not being affected thereby. I also understand that the title and abstract will be published, and that a copy of the work may be made and supplied to any *bona fide* library or research work.

Date.................................   Signature of candidate

CONTENTS

PART IV: STATISTICAL AND ECONOMETRIC ANALYSIS

PART V: CONCLUSIONS

LIST OF TABLES

LIST OF FIGURES

ABSTRACT

The thesis focuses on those factors which affect firm growth in the setting of the Chinese transition economy, such as size, age, entrepreneurship, resources, and environment. As regards the complexity of the business expansion mechanism, an interdisciplinary approach combining the fields of economics and management is adopted. Using fieldwork methods, new data were gathered in face-to-face interviews with 83 owner-managers of the Chinese privately owned firms in P. R. China in 2004, as well as in follow-up telephone interviews in 2006. The unique body of qualitative and quantitative data in terms of firm operation, human resources management, finance, technology and innovation, enterprise culture and competitive environment, were collected by a specially designed survey instrument, and enabled a number of new hypotheses to be tested in both economic and managerial aspects.

With respect to the modern developments of Gibrat's Law (1931) and Jovanovic's Learning Theory (1982) in economics, the effects of two "stylized factors", namely size and age, along with a vector of firm-specific, environmental and selection bias variables, on firm growth, were examined in Heckman's (1979) two-step selection model with the correction for sample selection bias and heteroscedasticity. The results indicated that the "stylized facts" that smaller and younger firms grew faster were also valid in the setting of China.

This thesis also explored managerial factors contributing to firm growth – viz. entrepreneurship theory, resource-based view in strategic management, and contingency theory in organizational behaviour. A variety of statistical methods were utilized to operationalize entrepreneurial orientation (EO), intangible assets (IA), and contingency factors (e.g. structure, environment, strategy, etc), and econometric models were estimated to examine their relationship with firm dynamics. The evidence suggested that IA might be more capable of facilitating firm growth than EO. However, when both were disaggregated into a lower level of attributes, the influences on growth may vary. Further, contingency theory, originally proposed for the case of larger firms in the west, was also validated in this study on the Chinese sampled firm. The combination of organizational forms and contingency configurations presented a higher power to explain business expansion. It implied that "the good fit" of contingency factors influenced firm dynamics only in a moderate way, whereas "the badness of fit" in configuration could engender either the highest or lowest firm growth, subject to their organizational structures.

ACKNOWLEDGEMENTS

PART I: INTRODUCTION

CHAPTER 1   INTRODUCTION

1.1 Introduction

The chief objective of this thesis is to identify the factors which affect the firm dynamics in the setting of the Chinese transition economy. In the process of empirically examining these growth factors, this thesis endeavours to make an important contribution to the existing literature on firm growth in three major aspects. First, concerning the complexity of the business expansion mechanism, an interdisciplinary approach[1] combining the fields of economics and management is adopted, to rise to the challenge of this sophistication. Second, the process of data collection is innovative and entrepreneurial as it involves specialist techniques to get access to the field, through gatekeepers, and then following up with this intensive fieldwork (interview based) in both 2004 and 2006, during which the primary source data were successfully gathered. Third, while the literature of firm growth is largely based on western experiences, this thesis sets out to remedy this neglect of developing countries' cases, and expands the empirical research, notably to the largest, and one of the fastest-growing, developing countries in the world, namely the People's Republic of China (PRC).

The development of this thesis can be broadly compared to the construction of a building. The first stage is to "lay the foundations", which is the literature review of the theory and evidence of firm growth (Part II, Chapter 2, 3). While economists focus on the discussion of whether the business expansion process is stochastic or deterministic, which is originally based on the discipline of industrial organization, scholars in management studies concentrate on exploring the significant determinants of firm growth in varying fields (i.e. entrepreneurship, strategic management and organizational behaviour). After the groundwork is done, the second stage is to obtain

---

[1] It should be noted that this interdisciplinary approach also corresponds to my MEIR background and the doctoral degree in management, economics and philosophy that I am applying for.

suitable "bricks" that are the data for the later empirical analyses (Part III, Chapter 4, 5). Due to the novelty of this research in China, there is no secondary source data available to conveniently serve special research needs of this kind. Bearing in mind this difficulty, a fieldwork methodology was adopted, and the data collection was undertaken by fact-to-face interviews, using an administered questionnaire during September-December 2004, and subsequently follow-up telephone interviews in February 2006 in the Province of Guangdong in China. This fieldwork involved more than 90 owner-managers in Chinese private firms interviewed twice in a two-year period. A pooled database containing more than 20,000 datapoints was thereby constructed, and the general characteristics of sampled firms were described. Based on this large scale two-stage database construction, the last phase was to build up the architecture by empirically examining and testing the firm's growth determinants (e.g. Gibrat's law of proportionate effect, 1931; Jovanovic's learning theory, 1982; Miller's entrepreneurial orientation, 1983; Wernerfelt's resource-based view, 1984; and Burns and Stalker's contingency theory, 1961) in statistical and econometric analyses (Part IV, Chapter 6, 7, 8). Upon the completion of this "building", major findings are summarized and the recommendations for further research are drawn in the last chapter (Part V, Chapter 9).

For introductory purposes, the remaining material of this chapter is organized as follows. Section 1.2 illustrates the major rationale of this thesis, and the philosophy behind the process of identifying the key elements of firm growth. Section 1.3 presents the specific content of each chapter in this thesis, and their objectives and relevant contributions to the existing studies. Finally, section 1.4 concludes the chapter.

1.2 Rationale and Philosophy

With regard to the rationale of this thesis, three key questions need answering, such as "why choose the topic of firm growth in the Guangdong Province of China" (research target), "why choose a fieldwork methodology" (data collection), and "how does one choose growth determinants from the theoretical and empirical literature" (research philosophy). This section is here to answer these questions.

1.2.1 Research Target: Firm Growth in China

The first question can be addressed in three ways. First, the dynamics of firms are virtually concerned with all walks of life. High-growth firms are "gazelles", the term coined by Birch (1996), or "ten-percenters" as put by Storey (1996). These "run-fast-and-jump-high" firms have attracted a great amount of attention. They are regarded as the crucial economic propellants of the society so far as government is concerned. Thus they seem to be the ideal potential creditors/debtors for financial institutions, and the major employment providers for ordinary job seekers, and so forth. The importance of this topic is clearly reflected in the multiple levels of societal needs, which thus delineates the principal research interest of this study.

Second, whilst the dynamics of the small and medium sized enterprises (SMEs) have been widely discussed in the western studies, very limited empirical research has been undertaken in the context of developing countries, especially in a large transition economy like PRC. Putting aside the debate of the pros and cons of globalization, the increasing trend of internationalization has integrated the west with the east more tightly than ever. While East Asia and the Pacific region have enjoyed the higher GDP per capita growth than other regions in the world (see Figure 1.1 below), China itself ranks the highest GDP growth in the region (see Figure 1.2 below). As the

largest fast-growing emerging market, China has evidently attracted not only world's investors but also academic researchers.

Figure 1.1 Gross Domestic Product (GDP) per Capita Index, 1993-2003[2]
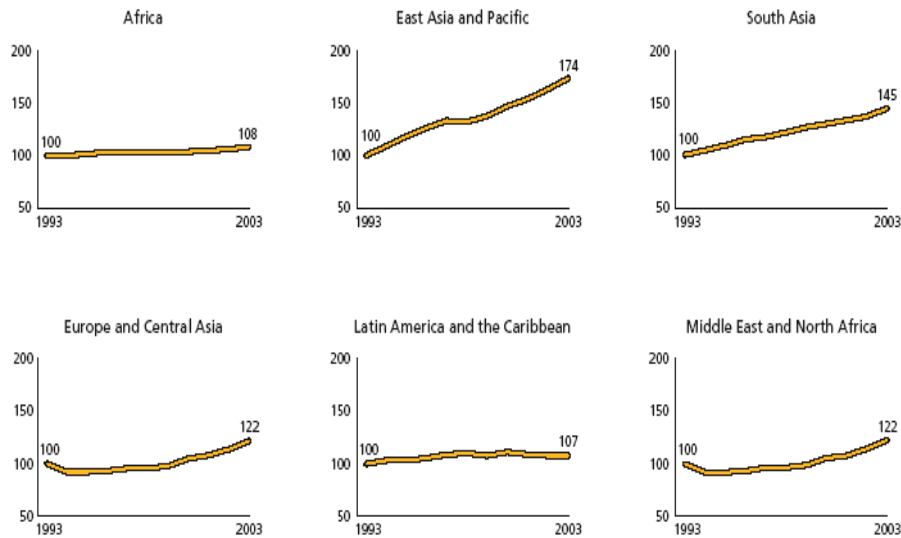
Figure 1.2 GDP in Nations 1980-2000[3]
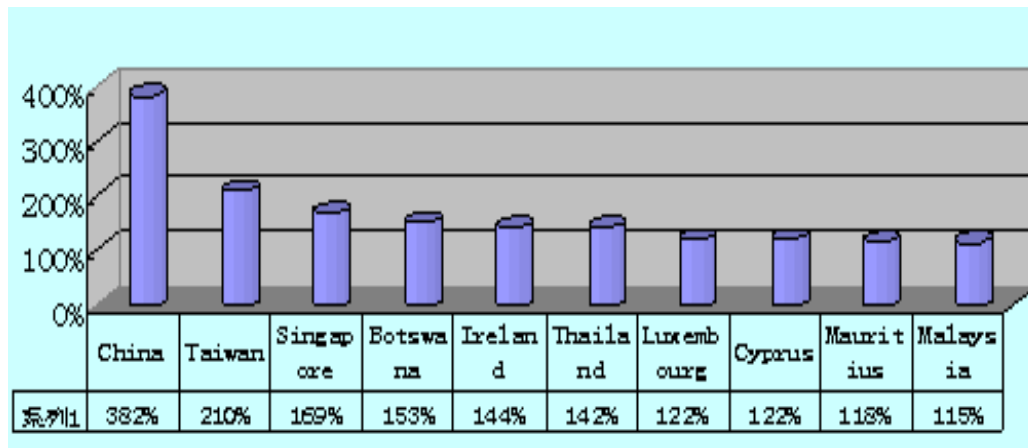
Third, China's economy has been developed in a quite unbalanced way. While some coastal regions (e.g. Guangzhou-based Pearl River Delta[4], Shanghai-based

---

[2] Source: World Bank World Development Indicators Database, 2005
[3] Source: International Monetary Fund, 2005
[4] This region mainly refers to Guangdong Province in which Guangzhou is the largest economic centre.

Yangtze River Delta[5], and Beijing-based Bo Hai Bay Rim integrated economic zone[6])
have well-established mature market economies, the inland provinces are far behind,
in the sense of economic development. With the purpose of discussing firms'
dynamics in the context of the market economy, Guangdong province in the Pearl
River Delta, the first region in China to open the market to the world, is not
completely fitting, yet is the last candidate for this work. According to the statistics,
the GDP of Guangdong has increased dramatically in the past two decades (see Figure
1.3 below) and the GDP per capita in 2005 increased 84.7% compared with that in
2000, up to the level of 2,882 US dollars (in 2005 price)[7]. Nationally speaking,
Guangdong also enjoys a much higher GDP growth rate than the national average (see
Figure 1.4 below). Therefore, Guangdong Province is regarded as the appropriate
research target, with the advantage that it well resembles the market economy, and
can therefore represent the other similar regions in China.

Figure 1.3 GDP Growth Rate of Guangdong Province, 1978-2003[8]

---
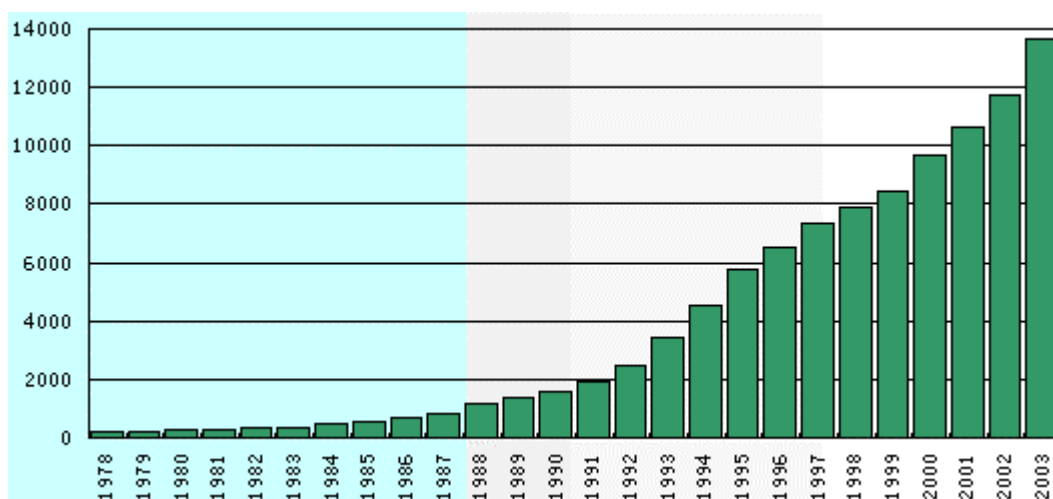
[5] This region mainly relates to the city of Shanghai, Jiangsu and Zhejiang Provinces, in which Shanghai is the centre.
[6] This region includes Beijing, Tianjin, Liaoning, Hebei and Shandong Provinces, in which Beijing is the centre.
[7] Source: Guangdong Provincial Statistics Bureau, 2006
[8] Source: Guangdong Provincial Statistics Bureau, 2005

Figure 1.4 GDP Growth Rate:

Guangdong Province vs. National Average in China[9]

Green Line:
Guangdong

Blue Line:
National Average
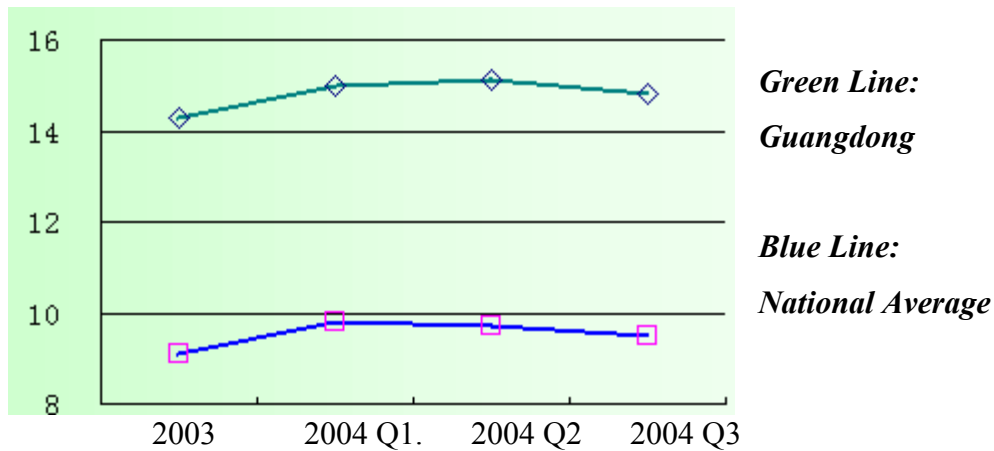
1.2.2 Data Collection: Fieldwork Methodology

When undertaking empirical studies in developing countries like China, it is well known that one of the major difficulties is to gather both sufficient and accurate data. Generally, there are three main methods used in such research, viz. secondary source data, postal questionnaires, and field interviews. With regard to this particular study, the methodology of fieldwork is adopted to collect primary source data, using an administered questionnaire by face-to-face interviews at the first stage in 2004 and follow-up telephone interviews in 2006, when the access to the field was secured.

The fieldwork methodology adopted in this thesis is notable in three aspects. Firstly and most importantly, access to the field is gained by following up on references from a large number of staff and students from Guangdong University of Foreign Studies (GDUFS) in China. Without such references (or referrals) and the implied access to the field, the author otherwise would have found it quite unlikely, if not totally impossible, to gather any data by "cold calls" and remote contacts (i.e. postal questionnaires). In general, Chinese firms have no incentive whatsoever for

---

[9] Source: Guangdong Provincial Statistics Bureau, 2005

information disclosure and the motive to avoid it, whether for tax[10] or jealousy[11] reasons, is tremendously strong. Second, although there are secondary sources for Chinese private firms from multiple government agencies and non-profit organizations in China (e.g. National Development and Reform Commission, NBS of China, State Administration For Industry and Commerce, All-China Federation of Industry and Commerce, China Enterprises Evaluation Association, etc), the data are mostly aggregated, and a large percentage of small and micro firms are normally excluded in such databases, by virtue of not meeting the selection criteria (e.g. >five million Chinese Yuan in terms of sales/turnover). Fieldwork, however, can eliminate such biases and therefore can extend the breadth of research of this kind. Last but not least, the fieldwork methodology can increase the depth of this study, by providing unique and direct information that match the interviewer's exact interests. Careful and full instructions can be given out to interviewees during the real-time process, and the data retrieved should be more stable and credible, provided that the interview techniques are properly devised (Burgess, 1982, 1984; Flaherty, 1984; Lawson, 1985; Reid 1987, 1989). Hence, it is felt that the fieldwork approach is superior to other methods, in terms of this chosen field of research in China.

1.2.3 Research Philosophies

As this study takes an interdisciplinary approach to the growth mechanism of Chinese private firms, growth determinants are regarded as highly diverse, and must be united across the segregated literatures of both economics and management. In the framework of economics, this thesis has put the primary emphasis on the examination of Gibrat's law of proportionate effect and Jovanovic's learning theory, mainly testing

---

[10] It's not a secret that some Chinese firms make several versions of financial statements for different purposes.
[11] The phenomenon of "Chou Fu" (the poor hates the rich) has become a serious social problem in China nowadays.

whether smaller and younger firms grow faster than the larger and older ones. As regards the subject of management, this thesis sets out to examine a variety of growth-related themes (i.e. entrepreneurship, resource-based view and contingency theory).

However, two major philosophical issues need our attention here. One is the philosophy of accidentalism[12] and determinism[13]. While the former believes the business expansion is a random phenomenon (as Gibrat's law indicates), the latter rejects this stochastic view and proposes that firm growth is a process that resulted from various causes. Without confirming the determinism of the business expansion mechanism, there is rather no plausible ground for the further empirical exploration of the determinants of firm growth. This thesis, first of all, needs to address this deterministic assumption prior to the discussion of the empirical growth factors, namely entrepreneurship, resource-base and contingency. Nevertheless, these three growth constructs may seem quite independent and irrelevant and the *raison d'etre* of such a combination of growth determinants may seem perhaps far-fetched. The ancient Chinese wisdom, however, may ease such apprehensions by offering a string of clues that are based on a more than two-thousand-year-old work, namely that of Mencius (372-289 B.C.)[14], who philosophically claimed any form of success should depend on the harmony of three essential elements, that is to say, "the fine weather in the sky, the advantageous position on the ground, the unity and support of people" ("*Tianshi, Dili, Renhe*" in Chinese). Pertaining to this research of firm growth and its

---

[12] Theory that the flow of events is unpredictable, or for Epicureans , that mental events are specifically unpredictable. (The Oxford Dictionary of Philosophy, Oxford University Press, 2005)
[13] It is a philosophical thesis that every event is the necessary result of its causes. Nothing is accidental. It usually involves the denial of free will, though Thomas Hobbes and David Hume struggled to reconcile the two ideas. (World Encyclopedia. Philip's, 2005)
[14] Mencius (372–289 BC) (Mengzi) Chinese philosopher, "The Second Sage" of the Confucian school, He held that human beings are basically good but require cultivation to bring out the goodness. His teachings were recorded in the Book of Mencius, one of the Four Books in the canonical writings of Confucianism. World Encyclopedia. Philip's, 2005. Oxford University Press.

determinants, the trio of sky, ground and people in Menciusian philosophy sagely reflects the combination of environment, resources and entrepreneurs in the firm growth literature in the West. Although this match may seem to be accidental, indeed the success of firm growth may suggest rather that it is not.

1.3 Content and Form of Thesis

This thesis is divided into five Parts. Besides Part I introduction, Part II discusses the theoretical framework of firm growth and its determinants in the empirical literature of economics and management. While Part III outlines the fieldwork methodology and describes the characteristics of primary source data gathered on Chinese private firms, Part IV presents the results of statistical and econometric analyses (viz. Gibrat's law, Jovanovic's learning theory, entrepreneurship, resource-based and contingency approaches). Finally, Part V concludes this thesis by summarizing major findings and making future research recommendations. The more detailed discussion of each part is as follows.

1.3.1 Part II: Theory and Evidence

In Chapter 2, the earliest work on business expansion is addressed by relating it to Adam Smith (1776) in classical economics, which notes that "increasing returns to scale" can motivate firms to grow. Then, the Marshallian (1890) concept of "decreasing returns to scale" and "the life cycle" of neoclassical economics clarifies why firms cannot grow indefinitely. However, Sraffa (1926) and Viner (1931) challenged this view with their new utilisation of the concept of "constant returns to scale", and marked a significant shift, from the supply side to the demand side, in the firm's growth literature. Another challenge for the neoclassical school arose from its

profit-maximization assumption, which is attacked by Baumol's (1959) sale-maximization growth model and Marris's (1969) "non-optimization" growth model. In a different way, Knight (1921) originally proposed the concept of "uncertainty" to, amongst other matters, interpret the growth process. And in later developments, the new institutional economist Coase (1937) argued that transaction cost theory explains the existence and growth of firms, whereas Stigler's (1939) flexibility concept offers an alternative opportunity to verify the driving force of firm performance. In particular, this thesis concentrates on the question of whether the firm growth process is stochastic or deterministic, regarding the debate of Gibrat's (1931) Law of proportionate effect and the later Jovanovic's (1982) learning theory as central. For further exploring the deterministic nature of firm growth, beyond disciplinary confines of economics, the thesis turns, in Chapter 3, to the review of growth determinants in the managerial literature.

Chapter 3 sets out to discuss the Marshallian (1890) root of life cycle theory and its followers, such as Greiner (1972), Churchill and Lewis (1983) and Adizes (1989). However, the focus of this thesis is not on the different stages of growth, but on the mechanism that makes firms grow from one stage to the other. As mentioned earlier, the ancient philosophy of Mencius argues that there are three success elements ("unity and support of people, advantageous position on the ground, fine weather in the sky"), which, broadly interpreted, are people, resources and environment. This philosophical idea seems to coincide with three of the mainstream managerial theories of firm growth in the West – viz. entrepreneurial orientation in entrepreneurship ("People"), resource-based view in strategic management ("Resources"), and contingency theory in organizational behaviour ("Environment"). With respect to this approach of People/Resources/Environment, this thesis does three things. First, it reviews the

effects of Miller's (1983) entrepreneurial orientation (EO) and its lower level abstract attributes (i.e. innovativeness, risk-taking, proactiveness, competitive aggressiveness and autonomy) on business expansion. Second, it discusses Wernerfelt's (1984) resource-based view (RBV), including tangible (i.e. physical and financial assets) and intangible resources (i.e. human capital, enterprise culture, intellectual property, reputation, technical knowledge, network and capability). Third, starting with Burns and Stalker's (1961) contingency theory, the impact of contingency factors on firm growth is considered, not as limited to only the environment, but as also extending to strategy, size and technology, and so forth. Hence, the first stage of "laying the foundation" is accomplished in Part II and now one turns to collecting the "bricks" in Part III.

1.3.2   Part III: Methodology and Data

Chapter 4 describes the collection of primary source data and the fieldwork methodology employed thereof. It firstly illustrates the sample design by comparing and discussing a variety of data collection methods, such as secondary source, postal questionnaires and field interviews, in order to clarify why the fieldwork methodology is adopted. Then, it notes the sampling process, similar to "snowball sampling", and its pros and cons in this regard. The report on the representativeness of the data ensues, in terms of geographical distribution, sectoral composition, ownership and employment, and size distribution, for the justification of the sampling method. Most importantly, on the basis of the literature review made in Part II, this chapter introduces the design of survey instruments which were utilized in the face-to-face interviews in 2004, and the telephone interview in 2006. The interviews involved collecting information on: general company information, entrepreneurship, tangible

and intangible resources, contingency factors, and so forth. Well armed with these survey instruments, the fieldwork was undertaken to interview the Chinese owner-managers. Based on the primary source data collected, the database was designed and constructed for further statistical and econometric analysis.

Prior to such complicated analysis, Chapter 5 comprehensively describes the characteristics of 83 Chinese private firms (mostly small and medium sized enterprises), in terms of basic features, firm operation, human resource management, finance, technology and innovation, enterprise culture, and competitive environment. Descriptive and exploratory statistical techniques are utilized here as a point of departure to allow the data to speak for themselves as far as possible. The cross-site methodology (Reid, 1993, 2007) is also adopted to examine the current status of these firms in the sample. Last, considering the tens of thousands of data points in the dataset, a "typical" firm is illustrated by the average attributes. By doing so, it helps to provide an intuitive, yet quantitative, feel for the sampled firms in the database. As the content in this chapter remains descriptive for the general understanding of the Chinese samples collected in the field, one shall proceed to Part IV for more sophisticated statistical and econometric analysis of the firm growth process.

1.3.3   Part IV: Statistical and Econometric Analyses

Chapter 6 aims to examine whether the firm growth process is stochastic or deterministic by testing Gibrat's law of proportionate effect and Jovanovic's learning theory. The results are highly critical in that it would encourage further research in terms of a deterministic, rather than random, growth process. So the hypothesis supported in this chapter is that firm growth is dependent on two "stylized factors", namely size and age, using the evidence from a sample of 83 Chinese firms

interviewed in both 2004 and 2006. Further, it is also important to scrutinize the effects of variables other than size and age on the firm growth, such as firm-specific factors (i.e. planning, research and development, and business strategy), and environmental variables (i.e. customer price sensitivity, market competition, sector and location). And it is of even greater interest to clarify whether the "stylized facts"(viz. smaller and younger firms grow faster) in the West can be equally valid in the setting of China. To the author's knowledge so far, this chapter provides one of very earlist empirical attempts, if not the first, to investigate growth and its determinants in China. In order to achieve these research goals, a selectivity model of firm survival is tested, to help remove any possible selection bias problem, and a growth model is then estimated to explore the key relationships between size/age and firm growth, along with other firm-specific factors and environmental variables, as mentioned above.

In the context of Chapter 7, first of all, one of the most influential political slogans in contemporary China should be quoted. It goes as follows, "developing national competency and civilization with two legs: spirit and material"[15]. The economy and civilization of China have been developed unprecedentedly fast in the past two decades, under the auspices of "spirit and material"; though unfortunately the "material" seems to become much more important than the "spirit" in reality nowadays. The purpose of this chapter is to explore how this philosophical motto can be applied to the growth process of Chinese firms in the same vein, based on the data from the fieldwork. Thus, this chapter employed two managerial concepts, such as "entrepreneurial orientation (EO)" and "intangible assets (IA)", to correspond to the national slogan of "spirit and material". Each concept is operationalized and validated

---

[15] This slogan was first time proposed by Jianying Ye, one of the Top Ten Marshals, at the 11th Chinese Communist Party Conference for the celebration of 30th anniversary of New China in September, 1979.

by utilizing correlation analysis, exploratory and confirmatory factor analyses, and reliability tests. The EO-IA-Growth Models are established in both parsimonious and comprehensive types, and estimated by OLS regression methods. Thus, two of the Menciusian success factors, viz. "people" and "resource", are empirically examined in relation to firm growth.

In Chapter 8, the last Menciusian success factor, "environment", along with other contingency factors (i.e. strategy, size and technology), is operationalized in the framework of contingency theory. The objective of this chapter is two-fold. One is to test how much aspects of contingency theory can lend themselves to statistical analyses in the context of Chinese private firms (mainly SMEs). Regarding the prior relevant studies of large companies in the West, this chapter aims to not only remedy the neglect of smaller firms, but also expand the research to developing countries like China. The other purpose of this chapter is to depict the morphology of Chinese firms in terms of growth, organizational structure, and the configuration of contingency factors. An ordered logit model is estimated to fulfill the former objective, whereas a hierarchical cluster analysis is undertaken (and a dendrogram is computed and drawn) to serve the latter one. It is hoped, therefore, that structure-configuration-growth relationships can be revealed on such an empirical basis.

1.4 General Conclusions

The growth of privately owned firms as a research topic is due to its importance for all walks of life in the society. In particular, the "gazelle firms" (Birch, 1996) or "ten-percenters" (Storey, 1996) are crucial contributors to the economy of a country. China, as the largest new player in the international arena, has gained increasing power in terms of economics and politics. And more and more scientific attention has

also gradually been turned to this, the world's largest developing country. And Guangdong Province, as the role model for the market economy in China, is taken as my research target. By doing so, the existing literature on the firm growth that, up till now, mainly focused on western economies, may be enriched.

The main purpose of this thesis is to explore the determinants of firm growth in the setting of China. It aims to contribute in an important way to the firm growth literature also by taking an interdisciplinary approach, combining economics and management, regarding the complex nature of the firm growth process. Another significant contribution is to undertake the fieldwork during the periods of 2004 and 2006 in China, getting access to "gatekeepers" and collecting primary source data, with specially designed survey instruments, via both face-to-face interviews and telephone interviews. On the basis of the interdisciplinary literature reviews and first-hand data collection in the field, growth models can be established and empirical results can be obtained and interpreted, which constitutes very early, if not the first, attempts to empirically examine the firm growth theory in P.R.China.

In such a spirit, besides Part I introduction, Part II "lays the foundation" by discussing the theories and evidence on firm growth in the literature of economics and management. "Bricks" and "straws" are collected in Part III by way of outlining the fieldwork methodology and characterizing Chinese private firms in a descriptive sense. The "architecture" is constructed in Part IV, where the results of statistical and econometric analyses (viz. Gibrat's law, Jovanovic's learning theory, entrepreneurship, resource-based view and contingency theory) are estimated and reported. The philosophy of writing this thesis is two-fold. One is to clarify the deterministic nature of the business expansion mechanism in economics. The other is to identify three managerial growth factors in a broad sense, namely people, resource

and environment, which precisely follows the same line of reasoning from the ancient philosopher Mencius (only second in standing to Confucius in China). However, it has remained equivocal whether this is a coincidence rather than a universal principle for growth or success. I shall now proceed to the main text of this thesis: Part II Theory and Evidence.

PART II: THEORY AND EVIDENCE

CHAPTER 2: ECONOMIC PERSPECTIVES ON FIRM DYNAMICS

2.1 Introduction

As Lao Tzu (571-471B.C.), the founder of ancient Chinese Taoism, noted, "a thousand-story pavilion is based on the ground and a thousand-mile journey starts from a single step". In general, this chapter aims to review the basis of firm growth theories in the literature of economics. And in particular, it is concerned with a question that has been much debated in empirical studies, namely how size and age (so called "stylized factors") determine the growth rate of firms.

In Section 2.2, the earliest explanation of business expansion is traced back to the work of Adam Smith in classical economics. The advantage gained from the division of labour was viewed as "increasing returns to scale" that could motivate firms to grow. Then, Alfred Marshall proposed the concept of "decreasing returns to scale" in neoclassical school, which clarified why the firms could not grow indefinitely. Later on, Sraffa (1926) and Viner (1931) challenged this neoclassical theory by coming up with the new concept of "constant returns to scale". Yet their real contribution made to the firm growth literature seemed to make a remarkable shift from the supply side to the demand side when both Minimum Efficient Scale (MES) and market situations were considered thereof. Another challenge for the neoclassical school came from Baumol's (1959) sale-maximization growth model and Marris's (1969) "non-optimization" growth model, both of which strongly questioned the neoclassical assumption of profit-maximization. The later development of firm growth theories was influenced by Knight (1921) in the sense of "uncertainty", although the way to eliminate such uncertainties was unsolved. While Coasian (1937) transaction cost theory primarily set out to explore the existence and growth of firms, Stigler's (1939) flexibility concept offered an alternative way of verifying the driving force of firm performance.

Although all the scholars aforementioned held disparate views of firm growth, it was commonly agreed that there were certain factors that affected the business expansion process. Therefore, Section 2.3 addresses the Gibrat's (1931) Law of proportionate effect, which is most extraordinary in asserting that the growth of firms may be a stochastic process without any cause. It is then not surprising to see how this controversial statement triggered a debate that was later developed specifically into a question about whether the firm growth was dependent on size. Furthermore, Jovanovic's learning theory (1982) brought in a new growth factor, namely age, to be considered in tests of Gibrat's Law. On the basis of various empirical studies, the "stylized facts" appear to be that firm growth is most likely to depend (at least) on size and age, which formulation may account for departures from Gibrat's Law. The recent power-law studies also seem to strengthen such a view, on the relationship between the standardised variance of growth rates and the initial size, over all size classes.

2.2 Early Economic Thoughts of firm dynamics

2.2.1 Increasing, Decreasing and Constant Returns to Scale

"The division of labour is the great cause of the increase of public opulence, which is always proportioned to the industry of the people, and not to the quantity of gold and silver as is foolishly imagined"(Adam Smith, 1776)

In Adam Smith's *"An Inquiry into the Nature and Causes of the Wealth of Nations",* the famous pin-factory example demonstrated that productivity was remarkably enhanced by the division of labour. David Ricardo, Nassau William Senior and John Stuart Mill, along with their less well-known Classical colleagues, declared the principle of increasing returns to scale (or interchangeably called

economies of scale) in manufacturing industries (cf. Stigler, 1951; Reid, 1989). In general, the complex behaviour of a firm may be reduced to a simplified production function as follows (K=Capital, L=Labour):

$$f(\lambda K, \lambda L) = \lambda^r f(K, L) \quad (\lambda > 0) \tag{2.1}$$

where increasing returns are realised when $r > 1$, based on which the firm should continue to grow, as long as it enjoys the benefits generated by specialization and should not cease to expand until this advantage is exhausted. Then the next question is "when". Smith responded that "the division of labour is limited by the extent of market", which meant the firms would grow, internally or externally, till the entire industry became monopolized. Yet this prediction contradicted the reality as there were plenty of competitive industries (Stigler, 1951; Reid, 1989). The downward sloping long-run average total cost (LRATC) may partially explain why the firms have the incentive to expand but its implication for the final size is rather elusive.

This problem remained unsolved until Marshall reformulated Classical thought and established a more systematic Neoclassical School. Even so, "indeed some of the sharpest minds of the twenties and thirties (in the 20th century) simply failed to appreciate what Marshall had done, and construed his caution as hesitancy and his subtlety as confusion" (Loasby, 1971). In Marshall's analysis, before the firm grew into a monopoly by moving downward along the LRATC, it would encounter a major bottleneck, forcing the LRATC to turn around at the bottom and then climb up. Consequently, decreasing returns to scale (or called diseconomies of scale) occurs, for which $r < 1$ (see equation 2.1). Three theories were postulated by Marshall to buttress this view, depending on (a) the concept of external economies[16]; (b) the decay

---

[16] Some influences are out of the firm's reach and determined by the market in which the firm operates.

of the entrepreneurs[17]; (c) the mismatch between supply and demand[18]. As argued by Stigler (1951), however, these three theorems were too "refractory" to be used to explain the growth process. More fundamentally, as Piero Sraffa (1930) put it, "I am trying to find what the assumptions implicit in Marshall's theory are; if Mr. Robertson regards them as extremely unreal, I sympathize with him."

While Loasby (1971) argued that "Marshall was facing methodological difficulties which could not be solved, only lived with", Sraffa (1926) was relentless in alleging that the flatness of the LRATC did not result from a balance of increasing and decreasing returns to scale where $r = 1$ (see equation 2.1), but was merely due to "the absence of causes which tend to cause the cost either to increase or diminish". As this flat LRATC could not articulate the causes of firm dynamics in terms of cost, Sraffa (1926) stated that one needed to refer also to "the group of buyers who constitute a firm's clientele to pay…something extra in order to obtain the goods from a particular firm rather than from any other". It was an important early attempt to shift the focus of firm size analysis away from the supply side (i.e. production cost) towards the demand side (i.e. production differentiation).

Jacob Viner (1931) reassessed the cost theories and provided a more graphical exposition of the firm theory, which stated that the LRATC would decline to the point of the Minimum Efficient Scale (MES) and remain flat, taking the form as "a L-shaped curve" (Hart, 2000). Although it is still a moot point about the final shape of the LRATC, the concept of the MES, combined with the market demand, may help to clarify the firm size distribution. For example, an industry abundant of typical firms with smaller MES may be characterized as a monopolistic competitive market,

---

[17] The limited life time of entrepreneurs and energy of owner-managers prohibit any perennially growing business

[18] The firms may produce more than they can sell as the individual firm's demand curve may be downward sloping instead of being horizontal as implied by the pure competition. Hence, the lowest point (or turning point) of the LRATC indicates the minimum efficiency scale (MES).

whereas an industry which comprises a few firms with larger MES may be regarded as an oligopoly market. And the extreme forms of both above are pure competition and monopoly, respectively.

Unfortunately, such static firm size distributions in general do not contribute to the firm dynamics in particular. Further, the neoclassical assumption can hardly be realistic. As a matter of fact, the demand curves in most industries are not as horizontal as that in a perfectly competitive market, and therefore one cannot guarantee an endless purchase of any product that an individual firm may produce. It seems more realistic to have a downward sloping demand curve in an imperfectly competitive market, where a firm produces at the output level at which marginal cost (MC) crosses marginal revenue (MR) from below, rather than at the point of the MES. Thus, a firm is more likely to achieve the optimal point where MC equals MR, and average revenue is tangential to average cost, namely the point of zero economic profit. As Trau (1996) pointed out, "a displacement from the industry to the firm as the main object of the analysis" and "a shift towards the demand side" initiated by Sraffa and Viner had made the goal of profit maximization a more reasonable growth determinant.

2.2.2 Goals of Maximization and Non-maximization

"Economic theory has suffered in the past from a failure to state clearly its assumption. Economists in building up a theory have often omitted to examine the foundations on which it was erected." (Ronald H. Coase,1937)

It is convenient to assume that any entrepreneur will regard maximizing profits as the ultimate motivation behind running a business. In neoclassical firm theory, however, this specific goal is not tenable without three key assumptions: (a) each firm

behaves as an individual agent so there is no controversy in terms of control; (b) owner-managers must be completely rational so as to be able to maximize their own profit; (c) the market must be competitive enough to drive out firms which do not follow such a profit-maximizing strategy. Nevertheless, these postulates are constantly challenged by the facts. In reality, (a) owners and managers are not necessarily the same people, giving rise to a so called principal-agent problem[19]; (b) if control is in the hands of the agent (manager) rather than in those of the principal (owner), the perfect rationality of managers may lead to maximizing something else, instead of profits; (c) not all the industries are so remorselessly competitive that any deviation of profit-maximization can cause the exit of firms.

Bearing in mind these contradictions, Baumol (1959) attempted to create a firm growth theory based on sales-maximization. Technically, the maximum revenue will be attained when MR equals zero (lies below MC), which means the level of total profits will be reduced correspondingly. Baumol (1959) defended his view by saying that "so long as profits are high enough to keep stockholders satisfied and contribute adequately to the financing of company growth, management will bend its efforts to the augmentation of sales". Nevertheless, the compromise made between profits and sales is hard to resolve and subject to qualification in individual cases. The question remains unanswered about how low a profit level is acceptable to the principal, and how high the sales level should be, to satisfy the agent. Due to such ambiguity, the output size of the firm may not be precisely determined.

Marris (1969) established a more coherent growth model that mathematically and graphically illustrated the exact trade-off between sales growth rate and profitability in the long run. The growth in demand g_D (i.e. sales growth) can be

---

[19] As early as initiated by Berle and Means in 1932, ownership can no longer guarantee the everyday control of business operations by the emergence of non-owner-managed firms.

primarily attributed to the degree of successful diversification ($\hat{d}$) of major products. As Marris believed, the success of diversification depended on more expenditure in advertisements and marketing, more investments in R&D and even lower product price (Hay and Morris, 2001). Yet the return on assets (p) would be diminished by these tactics to a certain extent and therefore was inversely related to the degree of diversification.

$$g_D = f_1\left(\hat{d}\right) = f_1\left[f_2\left(\frac{1}{p}\right)\right] = f_3\left(\frac{1}{p}\right) \tag{2.2}$$

Furthermore, Marris argued that the growth in supply g_S (i.e. asset growth) came from retained profits $(r \times \Pi)$ and external finance (X) and could be transformed roughly as the product of a (approximate profit retention ratio) and p (return on assets K).

$$g_S = \frac{r \times \Pi + X}{K} \approx a \times \frac{\Pi}{K} \approx a \times p \tag{2.3}$$

As g_D and g_S are the functions of p, it is possible to depict both on the same graph, seeing Figure (2.1) as follows. If managers aim at maximizing sales, they will choose the highest profit retention ratio a_H $(0 \le a \le 1)$ that owners and the market can bear, where g_D intersects g_S at the equilibrium point Y. If managers intend to secure the largest returns on assets, they will choose a_L $(0 \le a \le 1)$ to produce at another equilibrium point X. However, the firm may not function so efficiently. So its curve of growth in demand g_D will shift inward to the origin as in g_D', and it will cross g_S or g_S' at Y' or X', respectively. Unlike Baumol, Marris claimed the line segment XY (or X'Y' at a less efficient level) was the main guide to firm size

dynamics. Consequently, the managers will move carefully in a buffer area between two maximization goals.

Figure 2.1 Marris Growth Model[20]
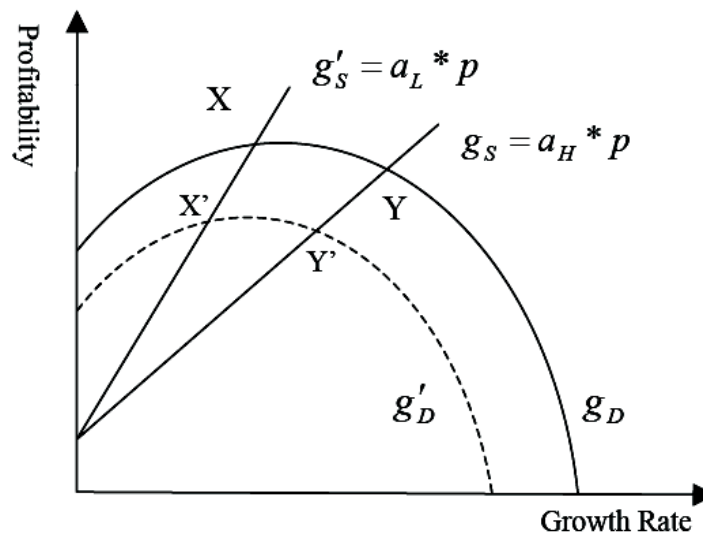
Nonetheless, the shortcomings of the Marris model lie in its nature of a steady-state pattern of growth, which fails to take in account the hypothesis of life-cycle effects (Mueller, 1971), evolutionary elements (Nelsen and Winter, 1982), and innovation effects (Odagiri, 1983), etc. Despite this flaw in steady-state methodology, Marris raised a compelling question about the maximization objectives of firms: "profits or sales". By moving back and forth between two extremes, in fact Marris implied a rather non-optimizing behaviour of firms. This view was extended by Williamson (1964), who emphasized the existence of "expense preference" – managers may seek to minimize certain types of costs but not all of them due to the pursuit of self-interest (e.g. large sums of remuneration, spacious offices and various reimbursements under seemingly legitimate pretexts). Williamson strongly doubted that managers would "pursue the maximization of any firm performance measure whatsoever, whether it is represented by profit or by sales". With such difficulties in

---

[20] The profitability and growth rate will increase at the initial stage and then a trade-off relationship will reveal after a certain point. The figure is adapted from Hay and Morris (2001), P.601

proving the neoclassical profit-maximization goal, I will now turn to the non-neoclassical world characterized by uncertainty.

2.2.3 Uncertainty, Transaction Cost and Flexibility

"It began to be seen that there was something more important than the relations inside each factory or unit captained by an undertaker; there were the relations of the undertaker with the rest of the economic world outside his immediate sphere..." (Maurice H. Dobb, 1925)

Frank Knight (1921) conceptualized the idea of "uncertainty" and this view was adapted later by Audretsch (1999). An entrepreneurial firm may be established largely owing to the uncertainty of concomitant reward, as formulated below.

$$P(e) = f(\Pi - W) \tag{2.4}$$

where $P(e)$ stands for the probability of setting up a firm for the entrepreneur himself/herself, while Π represents the uncertain income by the initiative and W denotes the reward if working for an already-established firm. It seems the more that Π exceeds W, the more likely one will become his/her own boss. However, Knight did not succeed in explaining the firm expansion process but rather oversimplified that the relationship between plant size and market efficiency. To him, it was "largely a matter of personality and historical accident rather than of intelligible general principles", which left him open to criticism from institutional economists, such as Coase.

In Coase's classic article (1937) about "transaction cost"[21], "a firm will tend to expand until the costs of organizing an extra transaction within the firm become equal

---

[21] A catchall for heterogeneous costs that arises in economic activity. In many deals, parties have to find each other, communicate, measure and inspect the goods that are to be purchased, draw up the contract using lawyers, keep records, and so on. In some cases, compliance needs to be enforced through legal action. All these entail costs

to the costs of carrying out the same transaction by means of an exchange on the open market or the costs of organizing in another firm". It gives a static equilibrium size that a firm will reach when internal organizing cost can be commensurate with marketing cost after the entrepreneur's experiment. Moreover, Coase pointed out a "moving equilibrium" in which the firms would get larger, if (a) organizing costs within the firm were less than transaction costs; (b) managers were less likely to make mistakes; (c) the greater the decrease (or the less the rise) in the supply price of productive factors for firms of larger size. Accordingly, Coase proposed two types of expansion: "combination" (horizontal) in which transactions previously organized by two or more entrepreneurs became organized by one; and "integration" (vertical), which involved the transactions previously carried out between entrepreneurs in the same market. However, neither way could be sustained for good by virtue of: diminishing returns to scale; managers' rationality; and the increase in the supply price of productive factors due to the "other advantages" which a smaller firm may have[22]. In summary, Coase not only posited that the existence of firms was conducive to transforming uncertainty outside into certainty inside, but also he argued that the expansion process was itself jointly determined by the combination of forces mentioned above.

Following the seminal work of Coase, more studies on the growth determinants have been undertaken, involving considerations such as bounded rationality (Simon, 1955), information costs and the opportunistic behaviour of agents (Williamson, 1975). The latter creatively proposed a trade-off between transaction efficiency and transaction cost, which suggested that the higher the transaction efficiency, and the

---

in terms of real resources and time, termed transaction costs. Dictionary of the Social Sciences. Craig Calhoun, ed. Oxford University Press 2002.

[22] For a discussion of the variation of the supply price of factors and production to firms of varying size, sec E. A. G. Robinson, The Structure of Competitive Industry (1932). It is sometimes said that the supply price of organizing ability increases as the size of the firm increases because men prefer to be the heads of small independent businesses rather than the heads of departments in a large business.(Coase,1937)

more advanced and specialized the market, the lower the transaction cost. Theoretically, this ought to lead to a monopolized industry, in which transaction costs were reduced to their lowest, as Smithian theory of the division of labour had foreboded. Nonetheless, the reality does not resemble this world that followers of Coase or Williamson may expect to occur. Taking a different path, based on Williamson's efficiency perspective, Liu and Yang (1999) have constructed a general equilibrium model[23] to help to explain such a controversy. As they argued, "given the emergence of the institution of the firm from the development in the division of labour, the average employment increases if the transaction efficiency for labour is higher than that for intermediate goods", and vice versa. While the economies of specialization engender higher transaction efficiency, it will cut down the transaction cost of labour. Yet the consequence can be two-fold. Firms may either grow larger in size by a higher level of labour division within the firm, or downsize for further specialization and tighter cooperation among firms.

A similar thought of cooperation between firms can be traced back to the work of Richardson (1972). He asserted the existence of "a dense network of cooperation and affiliation by which firms are interrelated" that was different from the sharp line between firms and markets that Coase had demarcated. In this view, not only do firm compete, but also they collaborate, on the basis of individual comparative advantages. If inter-firm linkages are nurtured so they become sound and strong, the degree of uncertainty can be diminished without internalizing all the market activities into a single firm. In other words, if the market is highly developed, and the transaction costs are low, it is still quite possible that the firms can remain small and financially independent if they achieve efficient cooperation.

---

[23] See detailed model in Liu and Yang (1999), P.4-6

While Coasian theory tried to internalize market "uncertainty" by using the measure of transaction cost, another significant attempt to alleviate, if not to thoroughly eliminate, this form of "uncertainty" was Stigler's (1939) "flexibility". Central to this new notion is that a firm will have a flat-bottomed average total cost (ATC) in the context of U-shaped cost structure. This occurs if it is more flexible to adjust its variable costs when the market fluctuates. Following Stigler's definition, Mills and Schumann (1985) associated higher flexibility with smaller firms, and lower MES with larger ones, as shown in Figure 2.2 below.

Figure 2.2 Flexibility of Small and Large Firms[24]
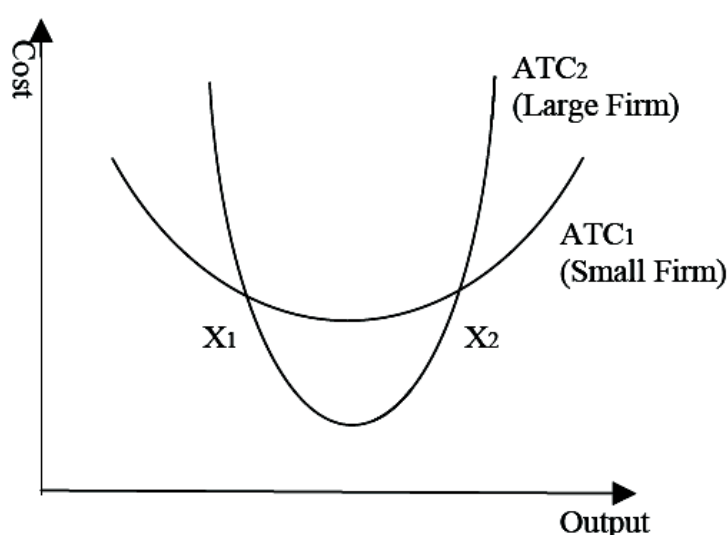
Mills and Schumann (1985) stated that firms of a smaller size enjoyed the benefits of lower ATC_1 at a smaller output level ($<X_1$) due to their flexibility, whilst their larger counterparts "enjoyed economies of scale (ATC_2 between X_1 and X_2)". Carlsson (1989) , however, objected that flexibility was inherent only in small firms, and rather resulted from the capability of firms to alter their variable production factors in response to market uncertainty. In the context of corporates, Ghemawat (1991) argued that the source of flexibility depended on value added, by changing the

---

[24] Source: adapted from Zhang and Ren (2001), P.36

strategies previously adopted by the firm, and its preparedness for such changes. Further, it has been argued that the survival and prosperity of small firms, alongside larger ones, are mainly due to their flexibility in dealing with environmental uncertainty (Brock and Evans, 1989; Piore and Sabel, 1984; Acs *et al.,* 1990; Reid, 1998, 1999). Therefore, the feature of flexibility may not be exclusive for either small or large firms, but rather a reliable predictor for their better performance (Power and Reid, 2005), given the fluctuating and uncertain market situation. It should be noted, however, that firm performance and growth are two different matters and the positive relationship between performance and flexibility cannot be simply translated into one between growth and flexibility. Besides, the sources and definitions of flexibility are so various that its effect on business expansion seems to be very complex. In this regard, more theoretical development, and supporting empirical studies are required.

2.3 Firm Growth: Stochastic or Deterministic

While all the efforts to clarify the causes of firm growth seem to create more complexity than less, it is not unnatural for one to conjecture whether the expansion process may completely rely on chance – viz. that growth arises from a stochastic process.

One of the earliest contributions in this topic was made in *Inégalités économiques* by Richard Gibrat (1931), which was inspired by the work of astronomer Jacobus Kapteyn. Gibrat proposed that the probability of a given proportional change in the size of a firm was the same as that for all firms in a certain industry, regardless of the size and preceding growth rates of a firm[25], which is the so called "Gibrat's Law" (the Law of Proportional Effects). It amounts to saying that the

---

[25] "Gibrat's law"   Dictionary of the Social Sciences. Craig Calhoun, ed. Oxford University Press 2002.

firm's size (x_t) will grow randomly in each period of time $(t, t-1)$ due to various uncertain factors and the incremental value each time $(x_t - x_{t-1})$ will be proportional (ε_t) to its base size, as formulated below.

$$x_t = (1 + \varepsilon_t)x_{t-1} \tag{2.5}$$

Recursively, x_t can be regarded as a function of the initial size x_0 as below.

$$x_t = (1 + \varepsilon_t)(1 + \varepsilon_{t-1}) \cdots (1 + \varepsilon_2)(1 + \varepsilon_1)x_0 \tag{2.6}$$

As developed by Steindl (1965) on the basis of Gibrat's Law, the proportionate growth rate (ε_t), if taking a "very short" time period and assumed to act independently of one another, justified the approximation $\log(1 + \varepsilon_t) = \varepsilon_t$ and the normal distribution of ε_t with mean m and variance σ^2 (by the Central Limit Theorem). To be explicit, the equation (2.6) takes logs as below.

$$\log x_t \approx \log x_0 + \varepsilon_1 + \varepsilon_2 + \cdots + \varepsilon_t \tag{2.7}$$

Assuming that $\log x_0$ is negligibly small compared to $\log x_t$ as $t \to \infty$, the distribution of $\log x_t$ can be approximated as a Gaussian distribution with mean mt and variance $\sigma^2 t$. The firm size (x_t) should thereby demonstrate a lognormal distribution, with its highly positively skewed pattern, as expounded by Hart and Prais (1956), and demonstrated on UK data, as shown by Figure 2.3 below.

[Figure 2.3 near here]

Figure 2.3   Frequency Distribution of Business Units in the UK (1907-1950)[26]
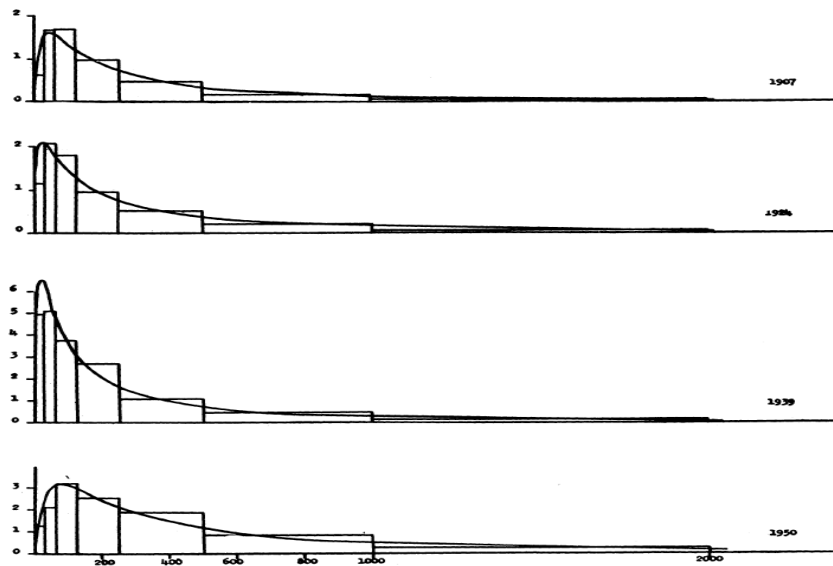
This pioneering work of Hart and Prais (1956) divided quoted British business units (1907-1914, 1924-1939) into three size classes (measured by market valuation): small, medium and large firms. They found that the growth rate of whichever size class had approximate log-normality, as shown by Figure 2.4 below. Even though it was only "fit by eye" (p.170), their purpose was to reveal the independence of growth rates from firm size classes.

Figure 2.4 Growth of Small, Medium & Large Firms during a 16-year Period[27]
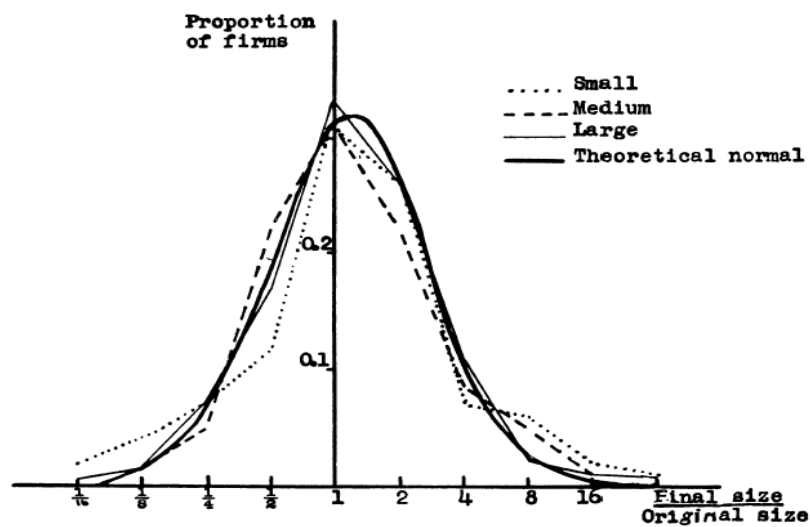
26 Source: Hart and Prais (1956), P.158

27 Source: Hart and Prais (1956), Figure 6, p. 170

Similar evidence from America was reported by Simon and his co-authors (with Bonini 1958, with Yuji Ijiri 1964). A scatter diagram of firm sizes at the beginning and the end of investigation on a logarithmic scale was constructed. No effect of firm size classes on growth rates (measured by assets) was found, taking into account different approaches in research methods and using a dataset of 500 U.S. industrial corporations for the 1954-1955 and 1955-56 period. As Yuji and Simon argued, the size distribution could be generated by "a number of related stochastic processes", such as the "lognormal distribution, the Pareto distribution, the Yule (binomial) distribution, Fisher's log distribution, and others" (Simon, 1955, p.425-427). Yet regardless of any distribution in this family of stochastic mechanism, it is central to stress that there is considerable evidence that individual firms in a specified industry, or even in the whole economy, expand randomly.

As Hymer and Pashigian (1962) suspected, however, that the independence between growth rate and size might be caused by improper industrial classification. They disaggregated firms into three-digit industries, and discovered that positive and negative relations were equally likely. Thus, they alleged that the process of aggregating firms into two-digit industries might result in a counteraction of two opposite trends. Indeed, no connection between size and mean growth rate (measured by assets) was revealed in their study of the 1000 largest American manufacturing corporations from 1946 to 1955. Yet their data suggested an inverse relation existed between firm size and the standard deviation of firm growth rates, which contradicted one of Gibrat's propositions. According to Gibrat's Law, the normal distribution of $\log x_t$ with variance $\sigma^2 t$ suggested that the variance of growth rate increase infinitely as $t \to \infty$. In other words, the larger the firm grows, the less stable it will be, given a certain population of firms. The contradictory evidence found by Hymer

and Pashigian indicated that there must be some "stability condition" to counteract the destructively unstable growing variance at least in the short term, if not on an infinite time horizon (Kalecki, 1945).

The law of proportionate effect has received more criticisms since. Mansfield (1962) argued that, a given population of firms contorted the reality as firms could enter or exit, or both. Hart and Prais had simply omitted this "births and deaths" issue in their analysis[28]. Mansfield counted the firms leaving the industry at the end of the survey period and had constructed a larger database including all firms, both large and small (measured by employment and productive capacity), in American steel, petroleum and rubber tire industries over the period 1916-1957. In order to calibrate the frequency distribution of growth rates in each size class within three industries, Mansfield used χ^2 tests to estimate the similarities among these distributions and obtained the interesting result that: "Smaller firms have relatively high death rates and those that survive tend to have higher and more variable growth rates than larger firms." (p. 1044)

Singh and Whittington (1975) rejected Gibrat's Law as well. They discovered a positive, albeit statistically weak, relationship between size and growth (measured by assets), based on the records of nearly 2000 U.K. quoted companies from 1948 to 1960. This finding also refuted the law of proportionate effects, though in a direction opposite to other challengers. Singh and Whittington attributed this result mainly to "the persistence of growth rates over time" (p. 24).

Hall (1987) seemed more eclectic, and expounded the view that Gibrat's Law was weakly rejected in her sample of smaller firms. Yet it held for larger firms in her

---

[28] Hannah and Key (1977) also criticized the stochastic growth model in the work of Hart and Prais as acquisitions and mergers were mistakenly viewed as a component of "internal growth". More comments on this issue in Prais (1976), as well as Hannah and Key (1981).

studies of 1349 firms (1972-1979) and 1098 firms (1976-1983). As estimated, the coefficient of firm size (measured by employment) in the growth model was significantly negative in the smaller size class, provided that measurement error in employment, sample selection bias and heteroscedasticity were all corrected. In accordance with Mansfield, Hall also observed a substantial disparity in the variance of growth rates among different size classes. As she put it, "smaller firms have a variance at least twice as large" (p.603)

An important model of the evolution of industry was proposed by Jovanovic (1982), who argued that the cost curve of each firm was subject to "randomly distributed, firm-specific shocks", some of which could be favourable for firms to survive, or even grow, and others might be unfavourable enough to damage or even to force an exit. In Jovanovic's model, however, firms can be engaged in learning-by-doing. It aims to comprehend the effects of diverse shocks over time. And it claims that younger firms may either be more likely to fail or to grow faster, with a higher variance, compared with their mature counterparts. In other words, the younger firms that have survived may have more scopes to enhance their efficiency and thus to grow faster than older ones.

This lifecycle mechanism was adopted in Evans (1987a, 1987b) and embodied as two novel variables: "age" (A_t) and "the number of plants" (B_t). In Evans' growth regression equation, S_t and S_{t+n} respectively stand for firm sizes between the time interval n in question (measured by employment)[29].

$$\left(\ln S_{t+n} / \ln S_t \right) / n = \ln g \left(S_t + A_t + B_t \right) + u_t \tag{2.8}$$

In the hope of diminishing the severity of aggregation problem raised by Hymer and Pashigian (1962), Evans disaggregated firms into 4-digit industries (around

---

[29] Adapted from Evans (1987a), Equation (1), p. 571.

42,339 firms after data reduction) over the time 1976-1982. However, he did admit that there was no sufficient information to distinguish a false dissolution (through mergers or acquisitions) from a real failure.The inconsistency between the Small Business Data Base (SBDB) and Census results, and the doubtful accuracy of SIC coding were noticeable. Besides, Evans was cautious enough to control the econometric problems engendered by sample selection and heteroscedasticity. As a result, similarly to Mansfield and Hall, he also detected a departure from Gibrat's Law in the smaller size class, whereas his evidence showed rather weak rejection for larger firms.

The research was further advanced by Reid (1993). In an examination of Scottish small firms through administered questionnaires and intensive interviews in the fieldwork, Reid (1993) gathered in-depth information within a small business framework, and found an the inverse relationship between size and growth as well as age and growth (measured by net assets and sales). Possible sample selection bias was controlled for, but seemed unlikely to be important, given an insignificant inverse Mills ratio generated from a probit model of firm survival.

Support could be also found in Dunne and Hughes (1994). It seemed that Gibrat's Law could hold below certain threshold sizes (measured by net assets), albeit above which it could be tenable. Jovanovic's learning theory was corroborated by consistent evidence collected from 3868 quoted and unquoted large U.K. firms (1975-1985). Younger firms at a given size appeared to grow faster than older ones. Although the very small firms were regretfully "underrepresented", Dunne and Hughes conducted the estimations of firms with and without unquoted firms to confirm the robustness of their results, which was proved not to be "the artefact of sample selection bias" (p.137).

Later on, Hart and Oulton (1996) deployed a database of 87,000 independent British firms over the period 1989-1993 and found that the smallest firms ($employment \leq 8$) grew more quickly than those relatively larger ones. Using the entire database, Hart and Oulton reproduced the same inverse size-growth relationship[30] since the mean of growth rates at different size classes did not exactly lie on the line of 45 degree slope as Gibrat's Law would predict, as shown by Figure 2.5 below.

Figure 2.5 Geometric Mean of Regression on Employment in Year t and t-4[31]

Geometric mean of employment in year $t-4$
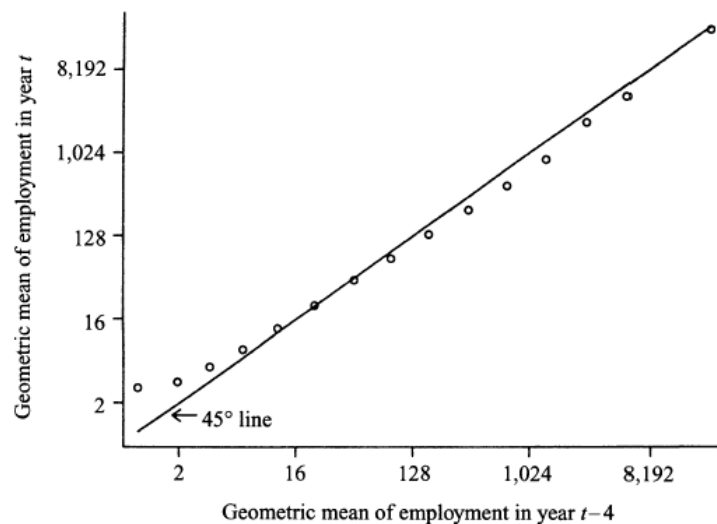
In recent years, the Spanish economists Farinas and Moreno (2000) have demarcated the threshold size and age, below which smaller and younger firms can grow faster, but above which firm growth rates are independent of size and age. Their work is drawn on a dataset of 6,861 observations on a sample of surviving firms in Spanish manufacturing industries. These data came out of 7,265 observations on a sample of both non-failing and failing firms. Again, Gibrat's Law appears

---

[30] They adopted the Galton-Markov model of regression towards the mean first and then being cautious about downward bias of Ordinary Least Square (OLS) that could possibly be caused by "transitory components" or "errors-in-variables", Hart and Oulton also employed the geometric mean of direct and reverse regression to estimate.
[31] Source: Hart and Oulton (1996), Figure I, p. 1248

inapplicable for smaller firms, conditional on survival. Nevertheless, when agglomerating the failing firms to the entire sample, Farinas and Moreno found no significant differences in the mean growth rate across size and age classes. In other words, Gibrat's Law holds in this case.

More recently, Alicia Correa Rodriguez, *et al.* (2003) in Spain extracted 1,092 non-financial small and medium firms between 1990-1996 to test the validity of Gibrat's Law as well as the Jovanovic's learning theory. Although they measured "economic size" by multiple variables (i.e. total net assets, equity, operating income and added value), their empirical results demonstrated a rather similar inverse causality between age and growth, albeit only in the smallest size class (micro-firms). Such "stylized facts" existed as well in a study by Takehiko Yasuda (2005) in Japan, based on a survey of nearly 14,000 Japanese manufacturing firms.

However, the work of Heshmati (2001) argued differently, using a sample of Swedish micro and small firms ($employment \leq 100$) during the period 1993-1998. The growth rates were measured by employment, sales and assets, according to which Heshmati established three growth models, allowing for the entry and exit of firms. As Heshmati observed, size negatively affected employment growth, but had a positive effect on sales growth and almost negligible impact on assets growth. The lifecycle element "age" was inversely related to employment growth, yet surprisingly it had positive influence on both sales and assets growth. Heshmati then declared that those "stylized facts" pertaining to size-age-growth were remarkably sensitive to the definitions of growth and size (by employment, or sales, or assets), the estimation methods (by pooled OLS, or GLS, or Adjustment methods), and the specification of functional forms (by incorporating indebtedness, log profitability, labour market and human capital variables, partial regional support, etc).

Apart from a large amount of empirical studies in size-growth relationship, there also exists a growing interest in the "power-law" relation between size and the variance of growth rates. Sutton (2002) stated that the core of this particular topic was to link initial firm size S_t to the variance of growth rate $\sigma^2(\Delta S)$. The power-law relationship can be formulated as follows[32].

$$\sigma^2(\Delta S) = A S_t^x \qquad (2.9)$$

As growth rate is denoted by $g = \Delta S / S_t$,

$$\sigma(g) = \sigma(\Delta S / S_t) = \sigma(\Delta S)/S_t = A' S_t^r \qquad (2.10)$$

Hence, r can be deduced by combining (2.9) and (2.10)

$$r = x/2 - 1 \qquad (2.11)$$

Researching on over 800 firms in the Compustat Database over the period 1980-1997, Sutton found the slope coefficient r fluctuated in the range $[-0.21, -0.15]$. The similar range of exponent r between -0.17 and -0.15 was discovered by Fabrittis, *et al.* (2003). Gupta and Campanha (2003) also simulated this relationship between $\sigma(\Delta S)$ (on vertical axis) and S_t (on horizontal axis) as in Figure 2.6 below. As Sutton argued, the flatness of size-variance relationship indicated that large firms might be just slightly more stable than smaller ones, albeit that its explanation by some weak "firm level effects" remains "an open question" (p. 587).

[Figure 2.6 near here]

---

[32] Adapted from the formula in Sutton (2002), p.578

Figure 2.6 Standard Deviation of Growth Rates as a Function of Initial Size[33]
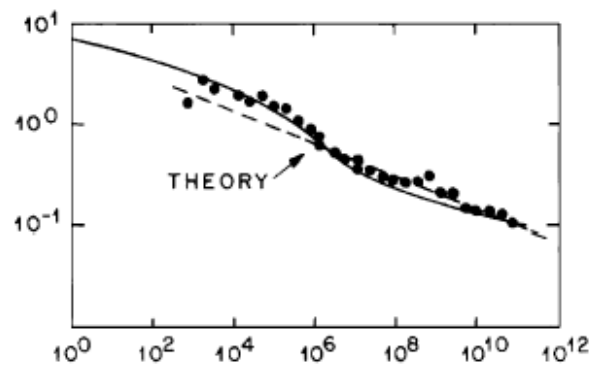
In sum, regarding Gibrat's Law, the empirical studies mainly attempt to test the support for four major regularities: (a) the same mean growth rate across all size categories; (b) the same variance of growth rates across all size classes; (c) no serial correlation in growth rates over time; (d) younger firms grow faster at a given size class. A summary of the main findings of the broad range of literature considered above is provided in Table 2.1. Apparently, two "stylized growth factors", namely thereof size and age, have continued to claim significant popularity in firm growth studies even to the present day.

[Table 2.1 near here]

---

[33] Source: Gupta and Campanha (2003), Figure 3(b), p. 631

Table 2.1 Survey of Gibrat's Law and The Extended Literature[34]

Study	Size Measure	(a)	(b)	(c)	(d)
Hart and Prais (1956)	Market Valuation	+	+	/	/
Simon, et al(1958,1964)	Assets	+	+	/	/
Hymer and Pashigian (1962)	Assets	+	−	/	/
Mansfield (1962)	Employment and Capacity	−	−	/	/
Singh and Whittington (1975)	Net Assets	+	−	−	/
Hall (1987)	Employment	− (Small firms) + (Large firms)	−	/	/
Evans(1987a,1987b)	Employment	− (conditional on survival)	−	/	+
Reid (1993)	Net Assets and Sales	−	−	/	+
Dunne and Hughes (1994)	Net Assets	− (below threshold size) + (above threshold size)	−	+	+
Hart and Oulton (1996)	Employment, Sales and Net Assets	− (Smallest firms) + (Larger firms)	/	/	+
Farinas and Moreno (2000)	Employment	− (below threshold size) + (above threshold size, or the total sample)	/	/	+ (below threshold age) − (above threshold age, or the total sample)
Heshmati (2001)	Employment, Sales, Assets	− (employment model) + (sales model)	/	/	+ (employment model) − (sales/assets models)
Sutton (2002)	Sales	/	− (flat)	/	/
Fabrittis, et al. (2003)	Sales	/	− (flat)	/	/
Gupta and Campanha (2003)	Management Ability	/	− (flat)	/	/
Rodriguez, et al.(2003)	total net assets, equity, income and added value	−	/	/	+ (micro-firms)
Takehiko Yasuda (2005)	Employment	−	/	/	+

---

[34] The symbol "+" stands for acceptance, whereas "-" means rejection. And "/" refers to no relevant information.

2.4 General Conclusions

Firm growth theories have been developed since the period of classical economics. The acclaimed benefits of the division of labour created a strong incentive for firms to expand (Reid, 1989). Subsequently, Smithian growth patterns were supplemented by Neoclassical Marshallian thoughts. It was argued that decreasing returns to scale would occur due to external economies, the decay of able managers and the imbalance between supply and demand. Yet Sraffa relentlessly opposed Marshallian diseconomies of scale and declared constant returns to scale by reference to the flat average total cost. Viner comprehensively reformulated this static cost minimization approach and shifted the subject from the supply side to the demand side. It appeared that earning more profits could become more tempting than merely producing goods cheaper, even though the final shape of the cost structure was still subject to debate.

A variety of firm goals emerged, due to the separation of ownership and daily control within a firm. Baumol set up a sale-maximization model, but the blurred demarcation between low profits and high sales made impractical the clarification of size dynamics. Marris constructed a more consistent equilibrium of firm size, by illustrating the specific intersection point at which the growth of both sales and profitability reached a state of rest. Yet this model actually implied the firm's non-optimizing nature *per se* and furthermore the steady-state growth methodology adopted by Marris diminished its explanatory power. Notwithstanding this, by the contributions of other non-optimizing theory advocates (including Simon), the neoclassical assumption of profit-maximization started to crumble.

Knight conceptualized the term "uncertainty" as the cause of growth in an obscure way, whereas Coase created the theory of transaction cost to delimit the exact

firm size. Although he overlooked the behaviour of coordination among firms, and the equal possibility of firms remaining cooperative but small, Coase virtually constructed one of the vital reasons why firms grew. In another attempt to deal with uncertainty, Stigler's flexibility concept showed how it is possible to generate superior performance for both small and large firms. Despite its positive impact on performance, the strength of its impact on the growth mechanism still remains empirically unclear.

Rather than approach "uncertainty" directly, Gibrat chose to leave it alone. Instead, he dealt with pure risk in the classic *loi de l'effet proportionnel*, asserting that the growth rate of firms would be totally random due to multiplicate uncertain factors, and independent of their original size and prior growth patterns. The lognormal distribution seemed to model well the size distribution of industries studied in the early UK and US work, but the conclusions revealed could be biased due to the neglect of issues, such as smaller size classes, the entry and exit of firms, as well as acquisition and mergers. Moreover, the variance of growth rate, in practice, did not become unlimited as predicted in simple Gibrat's theory when time tends to infinity. This left room for Kalecki (1945) to propose certain "stability condition" in the short run to offset this long run tendency. Empirically, the flatness of power-law relationship suggests that larger firms may be less unstable and volatile than smaller firms.

Another generic growth factor "age" was developed in Jovanovic's learning theory. Along with the growth factor "size" aforementioned, the empirical studies of Evans and many others claimed that the "stylized facts" were that smaller and younger firms actually grow faster. Certainly, these findings do not suit all, especially in some studies, e.g. Hall (1987) and some others. It is believed that there may be

threshold sizes and ages, below which the law of proportionate effect fails, and above which it actually remains valid.

So far, this chapter has provided a relatively rich, albeit not exhaustive, account of why firms grow in the discipline of economics. Considering the interdisciplinary nature of this thesis, I shall now turn to the field of management with the purpose of exploring further how firms grow from a different perspective.

CHAPTER 3

MANAGERIAL FACTORS CONTRIBUTING TO FIRM GROWTH

3.1 Introduction

While economists may explain business expansion, by a production function, or an equilibrium of internal costs and transactional costs, or even a stochastic process, the scholars in management studies regard the firm as a "flesh-and-blood organization" (Penrose, 1959) and interpret its growth process in many different aspects. As the discussion of business expansion is related to, but not limited to, the subject of economics, it is believed that an interdisciplinary approach can convey a more comprehensive sense of what makes a firm grow. As a matter of fact, this is not thoroughly novel since the managerial view of firm growth actually started from a famous metaphor made by the Neoclassical economist Marshall as follows.

"...we may read a lesson from the young trees of the forest as they struggle upwards through the benumbing shade of their older rivals. Many succumb on the way, and a few only survive; those few become stronger with every year, they get a larger share of light and air with every increase of their height, and at last in their turn they tower above their neighbours, and seem as though they would grow on for ever, and for ever become stronger as they grow. But they do not. One tree will last longer in full vigour and attain a greater size than another; but sooner or later age tells on them all. Though the taller ones have a better access to light and air than their rivals, they gradually lose vitality; and one after another they give place to others, which, though of less material strength, have on their side the vigour of youth." *(Marshall, 1920, Bk.IV,Ch.XIII in paragraph IV.XIII.4)*

This Marshallian root of life cycle theory was developed by Chapman and Ashton (1911), who claimed that "the growth of a business and the volume and form which it ultimately assumes are apparently determined in somewhat the same fashion as the development of an organism in the animal or vegetable world". While a firm is

no longer abbreviated as a simple mathematical function or a random statistical distribution, it is now left to "a law of nature". Thus, the entire lifespan of a firm is believed to be predetermined by the nature, and the description of its different life cycle stages becomes the main focus. Representative life cycle theorists[35], such as Greiner (1972), Churchill and Lewis (1983) and Adizes (1989), have identified a wide range of life cycle stages (also called growth stages or development stages) in later developments of this theory. The widely quoted one is Greiner's five stages of growth: (a) growth through creativity; (b) growth through direction; (c) growth through delegation; (d) growth through coordination; and (e) growth through collaboration. As Wiklund (1998) summarized it, each stage consisted of an evolutionary phase ("prolonged periods of growth where no major upheaval occurs in organization practices") and a revolutionary phase ("periods of substantial turmoil in organization life"). As illustrated in Figure 3.1 below, the revolutionary crisis of a preceding stage causes an evolutionary adaptation in the next stage, which in turn triggers another revolutionary event *ex post facto*.

Figure 3.1 Revolution Crisis versus Evolutionary Crisis[36]

---
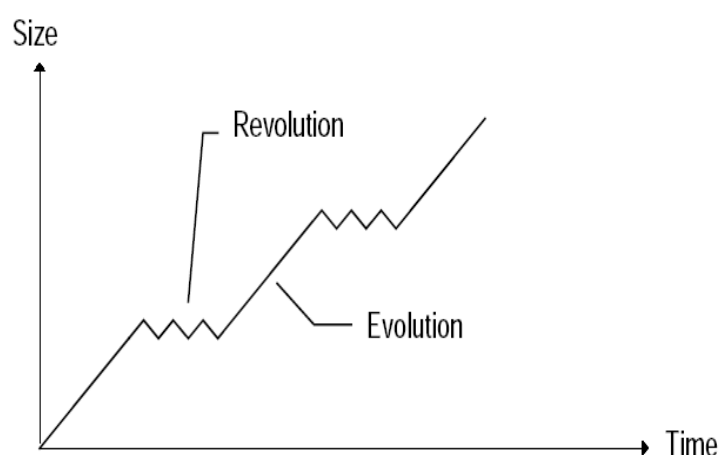
35 Mueller (1972) also proposes a "life cycle theory" but it is rather unconventional by discussing the goals of firms, which gradually alter from profit maximizing to growth maximizing in a firm's life cycle.

36 Source: Wiklund (1998), p. 31

Therefore, the rest of this chapter aims to examine those "revolutionary" factors underlying the growth mechanism. As mentioned in Chapter 1, there are three elements of success in the ancient philosophy of Mencius, namely "the unity and support of people, the advantageous position on the ground, the fine weather in the sky" ("*Renhe, Dili, Tianshi*" in Chinese). In a broad sense, it is about people, resources and environment. Coincidentally, there are also three mainstream managerial theories to explain the success of business expansion in the west – viz. the entrepreneurial orientation (EO) of entrepreneurship theory ("People"), the resource-based view (RBV) in strategic management ("Resources"), and contingency theory of organizational behaviour ("Environment").

Section 3.2 addresses the theory of entrepreneurship. The classic definitions and samples of Say, Knight, Schumpeter and Kirzner are reviewed and the concept of entrepreneurial orientation (EO) and its possible relationship with firm dynamics are explored. In Section 3.3, the resource-based view (RBV) starts from the "Penrose effect" and Slater's mathematical model. While the resource is categorized into tangible and intangible types, the more emphasis is put on the latter, by virtue of its more innovative and less imitable features that can perhaps contribute more to the firm's growth. In Section 3.4, the last element of success, "environment", is examined by contingency theory, which studies the influence of organizational structure, environment, strategy, size and technology on the business expansion process.

3.2 Entrepreneurship and Entrepreneurial Orientation (EO) : "*People*"

"Entrepreneurial discovery represents the alert becoming aware of what has been overlooked. Then (the) essence of entrepreneurship consists in seeing through the fog created by the uncertainty of the future. When the Misesian human agent acts,

he is determining what indeed he 'sees' in the murky future. He is inspired by the prospective pure-profitability of seeing the future more correctly than other do." (Kirzner, 1997, p.51)

Although no explicit "law" has been established to attest the relationship between the entrepreneur and business expansion in the literature, it will not be unnatural to conjecture that the entrepreneur him/herself is the most powerful person who can form and change the course of a firm. As Baumol (1968) asserted, the courage of the entrepreneur was the key to the simulation of growth (although not explicitly referring to firm growth) and the entrepreneurless growth-conscious world was compared to *Hamlet* without the Prince of Denmark in the cast.

Nevertheless, the definition of entrepreneur is far from agreed. After the very first academic usage by Cantillon[37], the word "entrepreneur" was defined as "risk-taking coordinator" by Jean-Baptiste Say, who tried to treat it as a "fourth" factor in the production function. This may be seen as an early attempt to indirectly explain firm size on the cost side, even if this factor appears "non-marketable" and "non-contractual". In a different way, Israel Kirzner (1973) regarded the entrepreneur as the "arbitrager" and noted that "entrepreneurship does not consist of grasping a free ten-dollar bill which one has already discovered to be resting in one's hand; it consists in realizing that it is in one's hand and that it is available for the grasping". And as Kirzner stressed, the ever changing market process might be implicitly fostering the firm dynamics. Another view of the entrepreneur sprang from Frank Knight's famous concept of uncertainty mentioned earlier in Chap 2. As an "uncertainty bearer", the entrepreneur pursues any divergence between the expected and the actual. If this viewpoint only explains, in part, why some set up a firm and the others work for it,

---

[37] source: http://cepa.newschool.edu/het/profiles/say.htm 7th Nov.2005

Joseph Schumpeter provided an additional concept by defining the entrepreneur as a "daring innovator" in his renowned theory of entrepreneurship (1911). As he argued, "those daring spirits, entrepreneurs, created technical and financial innovations in the face of competition and falling profits - and that it was these spurts of activity which generated (irregular) economic growth"[38]. In such a comprehensive way, as Miller (1983) concluded,

"An entrepreneurial firm is one that engages in product-market innovation, undertakes somewhat risky ventures, and is (able) to come up with proactive innovations, beating competitors to the punch." (p. 771)

If the entrepreneur is a mixed concept as such, one has no reason to imagine that the definition of entrepreneurship can be any simpler. It may be reasonable for Baumol (1968) in his time to assert the dissimilarity between entrepreneurship and daily management, but this fine line has been nevertheless crossed by Stevenson (1983), who regarded the entrepreneurship as a continuum of management behaviours based on opportunities. In this spectrum, the promoter is at one extreme, to seek and to exploit opportunities, despite resources presently possessed; whereas the trustee is at the other extreme, to allocate current resources to fulfill fiduciary obligations. While this opportunity-oriented firm approaches the promoter side, entrepreneurial behaviours will take place. This does not rule out that forms of administrative behaviour will occur at the trustee's side. Six key dimensions (i.e. strategic orientation, commitment to opportunity, resource commitment, and control over resources, organizational systems and compensation policy) are employed to gauge

---

[38] http://cepa.newschool.edu/het/profiles/schump.htm 7th Nov.2005

various management behaviours, based on which the concept of entrepreneurship is formulated. As Reid (2002)[39] pertinently put it,

"The entrepreneur is a manager who drives change, pursues opportunity and creates new value in an innovative way. Entrepreneurship is a style of management. Entrepreneurial management is not an oxymoron, focusing on change (driving change and making a difference), opportunity (being more interested in pursuing opportunity than in conserving resources), organization-wide management (benchmarking activities against organizational objectives as well as keep an eye on the entire organization)"

Furthermore, Wiklund (1998) noted that the firms of the promoter type would display an outward focus and would exhibit the tendency to expand towards the end of entrepreneurial behaviours in the spectrum. This growth tendency can be expressly influenced by "the strategic orientation reflecting the willingness of a firm to engage in entrepreneurial behaviour". A new concept was coined as "entrepreneurial orientation (EO)" by Lumpkin and Dess (1996), Brown (1996) and Wiklund (1998). It has been widely agreed that EO is a higher level of abstract construct, consisting of several well-known dimensions, such as innovativeness, risk taking, proactiveness (Miller, 1983; Covin and Slevin, 1986, 1989, 1990; Tan, 1996; Wiklund, 1998; Barringer and Bluedorn, 1999), and additional ones like autonomy and competitive aggressiveness (Chaganti, DeCarolis and Deeds, 1995; Chen and Hambrick, 1995; Zahra and Covin, 1995; Lumpkin and Dess, 1996, 1997, 2001).

When EO is incorporated into a growth/performance equation, the approaches vary. Some presume that all dimensions of EO will affect firm outcomes in a unidirectional way and thus take EO as the sole index of what is at heart

---

[39] Quoted from the notes in the course "Entrepreneurship and Small Businesses" (2002) lectured by Professor Gavin Reid at School of Economics and Finance at University of St. Andrews.

multi-dimensional (Miller, 1983; Zahra and Covin, 1995), whereas others argue that each dimension may function independently to either enhance or impede outcomes (Brown, 1996; Lumpkin and Dess, 1996). Certainly, a simple index of EO and its unidirectional relation with firm outcomes can be practically convenient in terms of modelling. However, such oversimplification may damage the theoretical validity of the approach. An example in the work of Nelson and Winter (1982) showed that imitation might work better for some firms rather than being innovation, *ceteris paribus*. Besides, even though some dimensions of EO intuitively seem to stimulate performance, the dimension like competitive aggressiveness may engender complexity, due to the environment in which firms operate (Lumpkin and Dess, 1997). Thus, "safe elements" may not be completely reliable and "noisy ones" can exacerbate the situation. So it is believed that the disaggregation of EO into multiplicative dimensions can be more efficacious for modelling purposes. Although both methods are actively employed in empirical research, the latter shows higher reliability, and thereby perhaps suggests superiority from a theoretical standpoint (Wiklund, 1998). Considering such, five oft-quoted elements of EO will be addressed separately as follows.

3.2.1 Innovativeness

Innovativeness is defined as novel efforts to obtain technological leadership, create and experiment in multifarious firm processes: production, marketing, management, and so forth. In Miller's scaling (1983), innovativeness encompasses three items, such as R&D emphasis, new lines of products, and changes in existent product lines. Innovativeness can also be operationalized as the number of innovative activities, which is linked positively to firm performance (Lyon & Ferrier, 1998).

Moreover, innovativeness can refer to the ratio of R&D staff/scientists/engineers to the total employment, or R&D intensity, the ratio of R&D expenditure to the total employment, by Hitt, Hoskisson, and Kim (1997).

However, any measurement used alone can be dubious, as innovation itself has multiplicative dimensions (Van de Ven, 1986). For instance, high R&D interests may not generate innovative actions. The number of innovations can be undermined by the press if the action is not newsworthy. And the extent to which R&D expenditure can approximate to innovativeness is still a moot point. It is quite likely that this kind of expenditure become an accounting indicator instead of an innovation indicator. Therefore, as Lyon et al (2000) have suggested, a multi-dimensional approach is used to gauge innovativeness.

3.2.2 Risk-taking

Risk taking commonly relates to activities such as heavy debts, large investments in risky projects with obscure prospects, and audacious entry in uncertain markets or industries. In order to calibrate the degree of risk-taking, Miller (1983) examined two features: (a) whether to explore the market gradually, with discretion, or to undertake wide-ranging bold actions regularly; (b) being predisposed to low risk projects with normal return, or high risk ventures with the chance of receiving gargantuan profits. Nevertheless, the fact is that firms may averse certain risks in some projects, whereas they may take greater chances in others.

Due to this difficulty, information from financial statements is used as complementary evidence. In this approach, financial risk is conventionally defined as financial gearing or leverage (the ratio of debt to equity). Arditti (1967) found that leverage (along with another risk variable, the dividend-earnings ratio) was negatively

related to return on equity (ROE). Reid (1991) also noted that gearing had a significantly negative impact on the survival rates of small firms, and it was suggested that debt might be retired early in small firms' lifecycle, given debt was more costly than equity in his analysis (Reid, 2003). Yet Reid (1996) discovered no empirical effect of capital structure on the overall performance of 150 young micro-firms in Scotland. Besides financial risk[40], business risk is also commonly used as a proxy for risk-taking. Miller and Leiblein (1996) measured business risk by the standard deviation of returns over years and argued that the business risk could "result in improved subsequent performance" (p. 91).

3.2.3 Proactiveness

Proactiveness consists of a mindset, which is forward-thinking and willing to be the very first to exploit the market by introducing new products and services ahead of rivals. In Miller's measurement (1983), proactiveness was featured as being (a) a strong tendency to be successfully ahead of competitors in product novelty and innovation speed, rather than always play as followers; (b) a precise growth, innovation and development orientation instead of only being satisfied with, or surviving in *status quo*; (c) a rather rigid "undo-the-competitors" posture with less intention to collaborate or coexist.

Merz, Weber & Laetz (1994) used the exactly same scaling in their study of 370 CEOs of small business firms in the midwestern state of the U.S., and found that there were different objective-based approaches (first mover or follower) for managing growth. So did Zahra and Covin (1995) deploy Miller's 7-point measurement tool, and revealed a positive impact of corporate entrepreneurship on financial

---

[40] Interestingly, Thornhill,Gellatly,Riding (2000) found that growth actually affected capital culture, rather than the other way around.

performance, using a relatively small sample of large firms. Lumpkin and Dess (1996) modified these three items, albeit with no difference *per se*. Their study also showed that proactiveness had a consistently positive association with firm performance. Notably, Lumpkin and Dess (1997) discovered that one item of proactiveness was located in a different factor with Cronbach's alpha .65 in the factor analysis. And this item was later labelled as competitive aggressiveness. So did Wiklund (1998) find that his proactiveness (item 3) was also separated from the remaining two, with Cronbach's alpha .62, even though the effect of this new EO dimension on firm outcomes is still equivocal.

3.2.4 Competitive Aggressiveness and Autonomy

Competitive aggressiveness, the ambiguous factor separated from proactiveness, can refer to the propensity of firms to exhibit a combative and aggressive posture towards competitors and to utilize a high level of competitive intensity to excel rivals. In the study of Lumpkin and Dess (1997), competitive aggressiveness was embodied as (a) a philosophy of "undo-the-competitors" rather than a posture of "live-and-let-live" (similar to Miller's third proactiveness item), (b) an aggressive attitude and the readiness to compete intensely. Nevertheless, the effects of competitive aggressiveness on performance were not straightforward. It was found to be "negatively related to sales growth and only very weakly associated with profitability, financial strength, and overall performance.[41]"

The contradictory evidence was found in a research project of the U.S. airlines by Chen & MacMillan (1992). Competitive aggressiveness was operationalized as a rapid response to competitors' actions. It was implied that attackers and early

---

[41] Source: http://www.babson.edu/entrep/fer/papers97/lumpkin/lum6.htm#FINDINGS, 26th Nov. 2005

responders could encroach market shares at the expenses of late responders and non-responders. As Chen & Miller (1994) further investigated, however, three factors (i.e. "attack visibility, response constraints and the importance of the ground being contested") would escalate such responses to possible retaliations, which might impair firm performance instead. Therefore, the role of competitive aggressiveness may differ dramatically according to different definitions.

The least quoted dimension of EO is probably autonomy, which relates to actions undertaken by individuals or teams in order to incubate a new business idea, concept or vision. Autonomy was also viewed as a type of "goal orientation" by management who intend to have considerable control over firms (See Chaganti, DeCarolis and Deeds, 1995). And this particular goal would significantly determine the capital structure of the firm by the entrepreneur's preference; and the resultant financial leverage would further influence firm outcomes. Taking a different approach, Lerner, Brush and Hisrich (1997) operationalized autonomy as the independence motives of Israeli women entrepreneurs (along with economic necessity motives) and found a negative impact on firm revenues. Again, autonomy will exert no universally agreed influence on firm outcomes, if the disparity of measurements remains.

In sum, EO is a higher level of abstraction construct that mainly encompasses five dimensions: innovativeness, risk-taking, proactiveness, competitive aggressiveness and autonomy. Although it seems practical to make a sole index of EO by incorporating all dimensions in their own right, complicated effects of individual dimensions on firm growth/performance demand a rather separate form. While a growing body of empirical findings justify the significance of EO, some other evidence rather dissents from this. No impact of entrepreneurship on firm

performance could be found in Smart ands Conant (1994), and Hart (1992) even asserted that entrepreneurial strategies could engender poor performance under certain circumstances. It is indeed possible, if EO is taken as the only sole independent variable to determine firm outcomes, without taking into account additional variables. As Rauch *et al.* (2004) have argued that there might be some other variables intervening and moderating the link between growth and performance[42]. Thus, it commands an inquiry into other covariant elements that can possibly either enhance or hinder firm outcomes, along with the multiplicative dimensions of EO mentioned above.

3.3 Resource-Based View (RBV): "*Resources*"

"A firm is more than an administrative unit; it is also a collection of resources the disposal of which between different uses and over time is determined by administrative decision" (Penrose, 1959, p. 24).

The explicit resource-based perspective of firm growth theory can be found in the seminal works of Penrose (1955, 1959), who described resources as "services". Without rejecting the critical effect of external "fortuitous events", she focused on "the nature of the firm itself" by turning to the limited supply, the release and the growth of managerial services. Not only is the firm's expansion severely constrained by the shortage of suitable managerial services, it is also largely affected by the release of existing management that has been occupied by the previous production function or growth tasks, as well as by the augmentation of new managers trained for taking up new appointments. Therefore, firms are restrained by their inability to acquire such managerial services, in order to keep abreast with their expansion at a

---

[42] Source: http://www.babson.edu/entrep/fer/FER_2004/web-content/Section%20VI/P1/VI-P1.html, 10th Nov.2005

given rate, the so called "Penrose Effect" in the literature. This view has been buttressed by other experts in the field like Richardson (1964), Marris (1964), Demsetz (1973), and so on.

In the same vein, Slater (1980) incorporated into a formal firm growth model this managerial factor (M), which could be partitioned into M_1 (managerial services employed in production at time t) and M_2 (managerial services employed in training at time t).

$$M = M_1 + M_2 = (1-\alpha)M + \alpha M \tag{3.1}$$

Thus, the efficient stock of managerial services (M^E) can be derived from a function of M_1 and M_2 as follows.

$$M^E = f(M_1, M_2) = f[(1-\alpha)M, \alpha M] \tag{3.2}$$

The growth rate of efficient managerial resource can be obtained by dividing M^E by M and rearranged as a function of α alone.

$$\frac{M^E}{M} = \frac{f(M_1, M_2)}{M} = \frac{f[(1-\alpha)M, \alpha M]}{M} = g(\alpha) \tag{3.3}$$

In other words, the availability of enough effective managerial services will depend on how firms separate their training management M_2 from M_1 in the whole pool of M. When α is zero, $g(\alpha)$ is apparently also zero due to the absolute lack of training managerial services. According to Slater, it was assumed that $dg/d\alpha(0) > 0$ and $dg^2/d\alpha^2 \leq 0$ $\alpha \in (0,1)$, which meant $g(\alpha)$ was an increasing function with a possible internal maximum. Based on this assumption, Slater indicated that the firm's growth-oriented managerial services would increase in a gradually decreasing rate as α became larger, which implied that the contribution of

this particular managerial service on the entire firm growth diminished incrementally, if not abruptly vanishing.

The resource-based view (RBV) has been formally established since the work of Wernerfelt (1984), which firstly proposed that the success of firms largely relied on the resources it owned and controlled. As an ancient Chinese maxim goes, "the smartest housewife cannot make dinner without rice." Indeed, the fructification of entrepreneurial decision making must be based on controllable resources possessed by firms. The next question is about what types of resources can make a contribution to superior firm outcomes. While Penrose distinguished resources between productive and managerial services, Hofer and Schendel (1978) divided them into six categories (i.e. financial resources, technological recourses, physical resources, human resources, reputation and organizational resources). More broadly, Collis (1994) and Galbreath (2005) devised two types, such as the tangible and the intangible. In Wernerfelt's (1984) theory, the resources were systematically categorized into either assets (tangible and intangible) or capabilities. And the relationship between the resources and the firm outcomes can be illustrated by Figure 3.2, which is discussed seriatim.

Figure 3.2 The Relationship Between Assets/Capabilities and Firm Outcomes
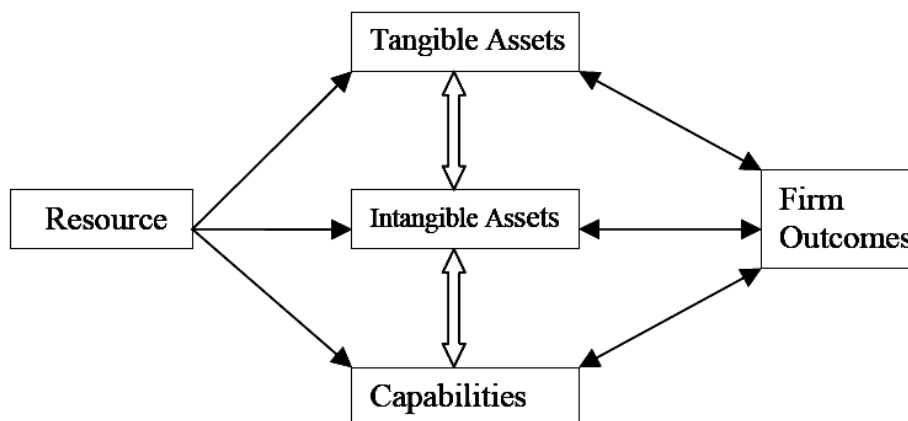
3.3.1 Tangible Assets

In the seminal work of Penrose (1955), tangible assets were viewed as "productive services" and the continuous availability of these assets could be one of the sources to stimulate growth. Chatterjee and Wernerfelt (1991) clarified the tangible resources as "physical and financial resources" and Grant (1997) operationalized the physical assets as (a) cash-in value of fixed assets, (b) workshop scale, (c) life-span of equipments, and (d) the flexibility of workshop and machines. And financial assets in his view could be indicated by (a) gearing (leverage), (b) the ratio of net cash flow to capital expenditure, (c) the bank loan interest, and so forth.

As Foss (1997) and Andersen & Kheam (1998) suggested, future empirical research should take into account the tangible resources that were conventionally perceived to be less important for firm growth/performance in the management literature. In a survey of 56 middle-level managers in Australian firms, Galbreath (2005) operationalized the idea of tangible assets as financial capital raised, cash on hand, financial investments, buildings, and land (with Cronbach's alpha .77) and found that the tangibles had larger impacts on a firm's success than certain types of intangible resources (e.g. intellectual property assets). This recent empirical result has confirmed the explanatory power of tangible assets in a growth model to some extent, even though Galbreath's dataset was admitted as a "convenience sample". Apart from this, one can hardly find more empirical managerial studies concerning tangibles. One major reason may be the easy replication and tradability of those tangible assets in the market, from which comparative advantages are hard to derive. Indeed, it is more common for scholars to emphasize the impact of intangible assets and capabilities on firm outcomes.

3.3.2 Intangible Assets

Although there is an ever-growing stream of knowledge in this field, no such thing as an "all-inclusive" list has been prescribed for what intangibles are, in the last decade. In an extensive review of studies on this topic, it seems that intangible assets generally comprise six major components as follows.

3.3.2.1 Human capital[43]

Grant (1997) operationalized this particular asset as (a) educational, technical, or vocational certificates held by employees; (b) compensation level for loss compared with the average industry level; (c) work dispute records; (d) position changing rate. While these variables covered a large domain, Colombo and Grilli (2005) particularly focused on the educational background and prior working experience of founders in 506 Italian young firms. In their findings, the university education of founders in economic and managerial fields positively affected firm growth, yet to a lesser extent in scientific and technical areas. Moreover, prior experience in the same or related industry was positively associated with growth, albeit there was no evidence for irrelevant experience in other industries.

3.3.2.2 Corporate culture[44]

In a survey of 102 American entrepreneurial firms, Eggers, Leahy and Churchill (1996) disaggregated the concept of corporate culture into a series of factors[45]. Among these were factors such as customer satisfaction, downward communication, job design, performance facilitation and work group performance, which had

---

43 "The skills, general or specific, acquired by an individual in the course of training and work experience". Source: A Dictionary of Business. Oxford University Press, 2002.

44 "The values, beliefs, norms, and traditions within an organization that influence the behaviour of its members. The differences in level of formality, loyalty, respect for long service, etc., may vary between firms, giving each one a distinctive ethos, which often conditions the behaviour of new employees". A Dictionary of Business. Oxford University Press, 2002.

45 Such as Business Marketing Area, Business Age, Development Phase, Industry, CEO's Desired Development Phase, etc.

significant partial correlations with company profit (at a p<.001 level). Nham, Voderembse and Koufteros (2004) contended that organizational culture contributed to the development of firms even more than the application of manufacturing techniques. And the case study of Irani, Beskee and Love (2004) also buttressed the view that firm competitiveness and success would only be accomplished with an appropriate corporate culture.

However, Eggers *et al.*(1996) found unexpected results when employing the same sample to estimate growth, instead of profit. It was revealed that the higher the sales growth rates, the less was the importance of organizational culture factors that were previously conducive to profitability. Merrifield (2005) explained that an obsolescent corporate culture could result in a resistance to change and engender "the pain of growing up". It thus seems possible that corporate culture can not only promise higher profits, but may also thwart the expansion process[46] unfavourably.

3.3.2.3 Intellectual property[47]

Hall (1992) treated copyrights, patents and trademarks as three major types of intellectual property that might help cultivate the competitive advantages of firms. In Galbreath's definition, two more variables should be added to this pool: held-in-secret technology and designs. And his construct of intellectual property attained a fairly high reliability (Cronbach's alpha .92). However, intellectual property on Australian firms in his study tended to influence the firm outcomes in a very limited way. As Daley (2001) explained, "Australians have good knowledge, but relatively little intellectual property"(p.3). The same observation in a cross-industry survey by

---

46 This result indirectly reflects the negative growth-profitability relation discussed earlier in growth models of Marris (1963) and Baumol (1968).

47"Private property rights in ideas. This may take the form of copyright, where material such as books or music can be copied only with permission from the copyright owner, who can charge for this; or patents, where processes or product designs can only be used with permission from the patentee, who can charge a licence fee." Source: A Dictionary of Economics. John Black. Oxford University Press, 2002.

consulting company McKinsey (Dietz and Elton, 2004) showed that the approach to intellectual property management in a majority of firms was regretfully below par. Thus, it is speculated that intellectual property should have exerted more impact on firm outcomes if were being respected and developed to a larger scale.

3.3.2.4 Reputation

Hall (1993) defined organizational reputation as corporate images and brand names. Additionally, Grant (1997) incorporated more reputation-related factors like price difference with competing products, repeated purchasing rate of existing customers, company financial performance over time and product quality perception. In the works of Roberts and Dowling (2002), corporate reputation was found to be positively related to the superior financial performance of dynamic models[48]. More interestingly, Galbreath (2005) claimed that reputation (i.e. company reputation, customer service reputation and product/service reputation) could be even more pivotal to firm outcomes than capabilities, with a higher mean (at a level of p=.096). Considering the self-perception nature of his sample, it seems too soon to regard reputation as the most significant factor for firm success. Nevertheless, its explanatory value is evidently indicative.

3.3.2.5 Knowledge

Like corporate reputation, knowledge is also regarded as "arguably the most important assets that firms possess" (Liebeskind, 1996, p. 93). Yet the earlier concepts of knowledge were developed as ambiguously as "infinite resource" (Halal, 1998), or "that which is known" (Grant, 1996). To be specific, Neck, Welbourne and Meyer

---

48 Corporate reputation is decomposed to be a component predicted by previous financial performance. The similar study is conducted also by Hammond and Slocum Jr..(1996).

(2000) defined it as "knowledge of employees based on scientific or technical training" as well as "technical know-how or organizational competencies and routines".[49] Yet the former sounds familiar as the aforementioned "human capital" and the latter rather resembles "routines" (Nelson and Winter, 1982) as well as the concept of capabilities below. The novel element that may be drawn on this "knowledge-based view" is technical knowledge, so-called "technology". In Grant's (1997) illustration, technology could be reflected in (a) the number of patents, (b) revenues generated by patents, (c) the ratio of R&D staff to the total employment (similar to innovativeness in EO).

Although knowledge is probably the authentic basis of innovation, creation and value-adding processes (Drucker, 1988), Neck *et al.* (2000) found no relationship between firm sales growth/stock prices and intended knowledge-based strategy, such as (a) acquisitions; (b) R&D expenditure; (c) employees hiring, training and development; (d) technical expertise leverage; and (e) various strategic alliances and joint ventures, and so forth. To a certain extent, this "knowledge-based view" overlaps with the other dimensions of RBV as well as EO previously discussed.

3.3.2.6 Network

One of the very entrenched elements in Chinese culture is "guan xi" (so called "network" in the West)[50]. In a society traditionally ruled by "people" rather than "law", it is commonly believed that one may probably accomplish nothing without "guan xi". The increasing development of market-oriented forces and the improving legal systems have been incrementally substituting "guan xi" in recent years, but the power of networks nevertheless remains undauntedly strong.

---

[49] http://www.babson.edu/entrep/fer/XXXIV/XXXIVA/XXXIVA.htm, 1st Dec. 2005
[50] Yang (1994) makes an interesting comparative study in the entry-process into American network and Chinese Guan Xi.

In a research programme of the handicraft industry in Thailand, Butler and Brown (1994) found that broad networks perceived by entrepreneurs had a major impact on firms' superior performance. Rickne (2001) also argued that networks ("connectivity") did matter to the growth of Swedish biomaterial firms (measured by employment). "Network" was operationalized by the extent of connections. In particular, a large number of technological relations and a high amount of technology transfer from the parent organization were associated with better performance. Lechner, Dowling and Welpe (2005) defined network as the range of connections ("relation mix"). They found different types of external relations affected the growth of German-speaking[51] entrepreneurial firms differently, and suggested a dynamic mix of relations should be adopted. In a different approach to defining network, Havnes and Senneseth (2001) were concerned with cooperation with other firms in twelve different potential areas (e.g. product diversification, sales, financing, manufacturing, etc). The analysis on the panel data in seven European countries[52] over five years showed no relations between short-run networking activities and growth in employment or total sales, albeit there remained a strong correlation with high growth in the geographic extension of markets. The possible justification may be the path-dependent nature of the network. After all, the network simply cannot function if not given long enough time to assume its shape.

3.3.3 Capabilities

Apart from tangible and intangible assets (what firms "have"), imponderable weights have been put upon capabilities (what firms "do"), also labelled as "strategic, intangible resources" (Amit and Schoemaker, 1993). Neither tangible nor intangible

---

[51] Data collected from Germany, Switzerland, Austria, Liechtenstein and Luxembourg.
[52] Data collected from Austria, Belgium, Finland, The Netherlands, Norway, Sweden and Switzerland

resources that firms have can automatically create sustainable competitive advantages, if not exercised through certain actions. As defined by Nelson and Winter (1982) in the industrial context, capabilities were intangible bundles of skills and accumulated knowledge practiced through organizational routines. Capabilities are "the teams of resources working together" (Grant, 1991) and thus they become the highest order of all resources. Furthermore, as firm assets alter over time, capabilities should adjust accordingly (Teece, et al, 1997). Due to their tacit, complex and dynamic nature, capabilities may be the most inimitable resources; and they may able to contribute the most to the firm's performance[53].

In empirical studies, capabilities are frequently regarded as kind of people dependent managerial capacities, which (a) manage to render productive and non-productive services (Penrose, 1955; Slater, 1982); (b) manage human resources (Jones and Barringer, 2001; Borchert, Ardichvili and Cardozo, 2001); (c) manage to innovate (Thompson, 2001; Monte and Papagni, 2003); (d) manage to learn (Smith, Spicer and Chaston, 2001); (e) manage to network (Havnes and Senneseth, 2001; Rickne, 2001), and so on. Some authors like Thornhill and Amit (1998) have tested a broad spectrum of skills that were integral to running a business, such as "management, financing, human resource planning and development, production, technological, innovation, marketing, customer service, and supplier relations"[54]. However, in a fragmented field as such, capabilities in the context of RBV should probably refer to a bundle of skills and abilities, whose purposes were (a) to strengthen the extant assets (whether tangible or intangible) and (b) to combine two or more of them to generate new resources for sustainable competitive advantages and for superior firm outcomes.

---

53 Galbreath (2005) embodies capabilities as a trio of management expertise ("human capital"), employee know-how ("knowledge") and external relationships ("network") and finds capabilities top highest for the contribution to firm success. However, this may only be seen as some "intangible assets" outweigh the others.

54 Source: http://www.babson.edu/entrep/fer/papers98/XIII/XIII_B/XIII_B.html 30th Nov. 2005.

In sum, the resource-based view (RBV) encompasses tangible assets, intangible assets and capabilities of firms. The tangibles are physical and financial assets, which are usually embodied in the company balance sheets, and are within the boundary of standard accounting systems. Even though this type of resource is not commonly emphasized in the relation to firm growth in the subject of strategic management, it suggests the need to explore and the possibility of harvesting (Foss, 1997; Andersen and Kheam, 1998). Intangibles have become a continuous focus that helps to understand the causality of resources and firm outcomes. Six major intangible assets can be identified, such as human capital, corporate culture, intellectual property, reputation, knowledge and network. Yet none has an open-and-shut relationship with firm growth so far, as empirically testing goes. Lastly, the concept of capability may refer to the skills of reinforcing the extant assets and the abilities to take advantage of one or more of those tangible or intangible assets for the ultimate purpose of enhancing firm growth/performance. While it is relatively easy to devise a taxonomy of resources, by mechanically grouping together those fragmented empirical constructs, it seems laborious yet exigent to examine their effects on firm outcomes in the next chapters.

3.4 Contingency Theory and the Extended Framework: "*Environment*"

"After all, one of the chief characteristics of man that distinguishes him (her) from other creatures is the remarkable range of his (her) ability to alter his (her) environment or to become independent of it." (Penrose, 1952, p.814)

Although EO and RBV partially mention external environment by "proactiveness" and "network", the greater emphases have been placed upon internal conditions. It is contingency theory in the subject of organizational behaviour that has

formally addressed the organization and its environment (Burns and Stalker, 1961[55]; Woodward, 1965; Lawrence and Lorsch, 1967). In contingency theory, Burns and Stalker firstly argued that firms in markets with rapid changes were better served by "organic structures", whereas firms in relatively stable and less complicated industries should choose "mechanistic structures". It is generally felt that the environment with insufficient capacity, instability and heterogeneity may urge firms to conduct imperative change of its organizational structure in order to maintain or even to enhance the firm's performance. The later developments of contingency theory since 1960s have integrated a series of contingency factors, namely environment, strategy, size and technology. Now I will turn to explore the respective effects of these contingency factors on organizational structure, and ultimately on the firm's growth/performance, as illustrated by Figure 3.3 below.

Figure 3.3 The Extended Contingency Model
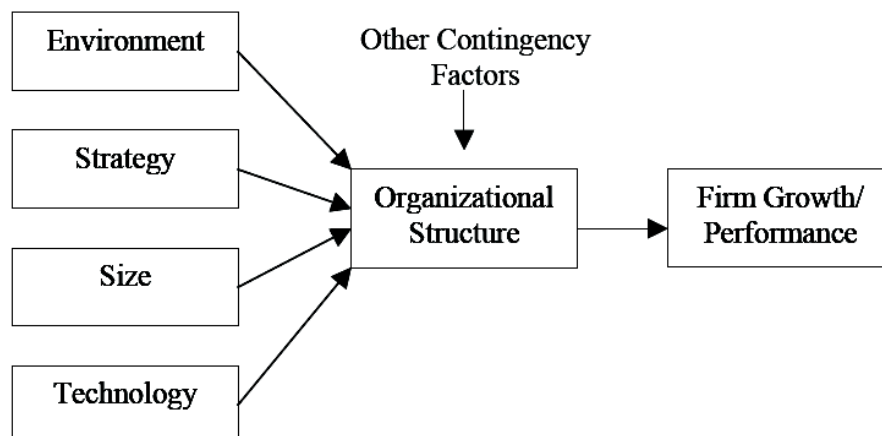
3.4.1 Organizational Structure

Burns and Stalker (1961) formulated a continuum of organizational forms, with its two extremes being "organic" and "mechanistic", in their study of twenty British

---

[55] Their works are enlightened by the sociologist Emile Durkheim (1858–1917)

industrial firms (mainly electronics firms). Organic management systems were characterized by incessant adjustment and redefinition of tasks and functions through the process, flat network of control/authority and communication (both top-down and bottom-up, consultative style [56]), whereas mechanistic management structures displayed a rather tightly controlled standardized framework, in which tasks were precisely defined; functions were strictly designed; control/authority and communication were hierarchical (mostly top-down and command-like style), and so on. Unlike that in scientific management[57], neither of these two structures in the contingency theory is considered optimal, nor is any eclectic form in the continuum between two extremes. As Burns and Stalker (1961) proposed, complicated and changeable conditions would cause unforeseeable problems so that tasks couldn't be tackled in a well-defined and pre-designed structure. Organic structures thus were required. Per contra, more stable technological and market conditions asked for relatively mechanistic structure. Hence, "the best" may be "the fittest". Lawrence and Lorsch (1967) buttressed this view in their study of ten firms in the American plastics, food and containers industries (characterised as high, medium and low growth, respectively). They identified three sub-environments (market, techno-economic and scientific) that were strongly associated with firms' internal management structures. The more labile the sub-environments, the more differentiated were firm departments (i.e. production, sales, and R&D, etc)[58].

Apart from this influential division between "organic" and "mechanistic" structures, there are other taxonomies, such as "simple" [59] (Mintzberg, 1983),

---

[56] More detail in an empirical study of interaction patterns by Courtright, *et al.* (1989)

[57] Scientific management approach states that science can always identify the quickest and best way to perform work-tasks, yet herein is challenged by Burns and Stalker(1961) and their followers like Woodward (1965), Lawrence and Lorsch (1967)

58 However, the higher the degree of internal differentiation, the greater is the need for appropriate mechanisms for integrating and resolving conflicts between the various segments.

59 It is featured as low departmentalization, narrow span of control, high centralization and low formalization.

"bureaucratic"[60] (Robbins, 2005) and "matrix"[61] structures (Knight, 1976; Burns and Wholey, 1993). More innovatively, there arise "team structures"[62] (Ostroff, 1999; Forrester and Drexler, 1999), "virtual structures"[63] (Miles and Snow, 1995; Dess, *et al.*, 1995), and "T-form structures"[64] (Lucas Jr. 1996), and so forth. However, no matter how organizational structure evolves in its form, contingency theory resolutely rejects "one best way" that leads to firm excellence. Instead, organizational structure may be a mediator, through which a variety of other factors contributing to enhancing the firm's performance.

3.4.2 Environment

The very first and critical factor in contingency theory is the "environment", which refers to complicated relations interwoven with firms' suppliers, clients, extant and potential rivals, government agencies and even the public. The concept of the environment herein contains three dimensions in the business context: capacity, stability-instability, and homogeneity-heterogeneity (Dess and Beard, 1989), as demonstrated in Figure 3.4 below. For the ultimate aim of superior performance, firms prefer "mechanistic" structures in a stable and homogeneous market with munificence, whereas they adopt "organic" management systems to adapt to instable and heterogeneous conditions with scarce resources. However, the three abstract dimensions of the environment need operationalizing before they can deliver any empirical value.

---

60 This structure displays characteristics such as high departmentalization, high specialization, high centralization, narrow control span and deploy chain of command, high formalization.

61 Matrix structure is an organic combination of both function specialization and departmentalization.

62 This structure breaks down the walls between different departments and power is decentralized to teams.

63 This type of organization is highly centralized but virtually has few or even no departments, largely depending on outsourcing to function.

64 This organization has the similar structure as "team structure", which replaces all levels of departments by working teams based on technology.

Figure 3.4 Three Dimensions of Environment[65]
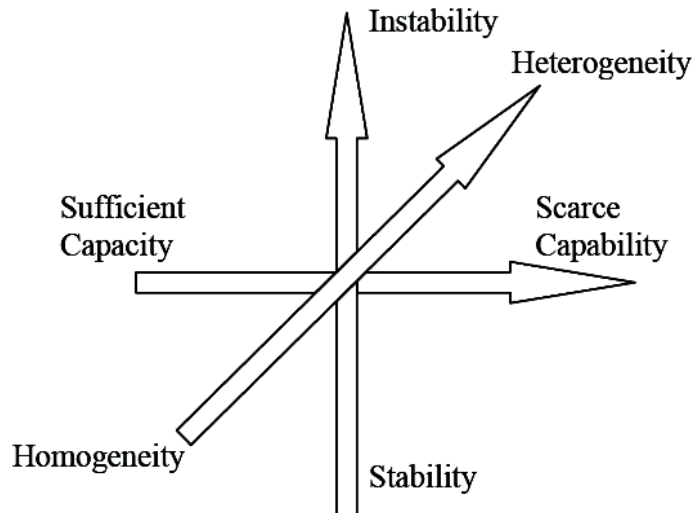
3.4.2.1 Capacity

Capacity relates to the degree of support provided by the environment for organizational health and development, such as external finance, government policies, as well as location. Becchetti and Trovato (2002) noted that the growth of Italian SMEs was largely constrained by the availability of external financing (along with access to foreign markets and state subsidies). Hyytinen and Pajarinen (2005) argued that the voluntary information disclosure of Finnish firms could raise the possibility of external financing, which could possibly lead to "excess growth".

Government policies can be rather "double-edged" swords. In the analysis of six longitudinal case studies of potential and actual young growing firms (two each from Denmark, Ireland, and Scotland) by Levie (1994), the government had specially designed nurturing programmes (e.g. "picking winners"), but they had involuntary negative impacts on early corporate growth; and a concentrated delivery system produced the worse outcomes. Nonetheless, general nurturing (e.g. skills and information enhancement) seemed to affect corporate growth positively. Fischer,

---

[65] Adapted from Figure 15-7, Robbins (2005), p. 484

Reuber and Carter (1998) made a similar point in the case of five rapid-growing Canadian firms[66]. Additional evidence from transition economies like Slovenia confirmed that social support from local development programmes appeared less important for firms to grow but government bureaucracy (along with financial constraints) virtually encumbered the expansion process (Bartlett and Bukvic,2001).

Location is another factor often mentioned in growth theory. Smallbone *et al.* (1993) found that location had a significant impact on firm growth. Storey (1994) argued that British firms, located in accessible rural areas, had higher growth rates than those in urban or remote rural areas. Storey and Wynarczky (1996) related the location to survival of young firms, whereas Littunen (2000) found no support for this proposition. Most recently, Ferguson and Olofsson (2004) discovered that Swedish firms in two science parks greatly improved their survival rates over those off-park ones, though it had a negligible impact on sales/employment growth rates[67]. In a large dataset of 35,000 establishments in the North Netherlands over 1994-1999, Hoogstra and Dijk (2004) characterized the location as "population level and growth", "employment growth", "spatial specialisation and cluster indicators", "type of enterprise zone" and "accessibility"(p. 179). Their findings were not straightforward as the influence of the location varies in terms of economic activities.

3.4.2.2 Stability and Instability

This dimension mainly refers to the extent of environmental uncertainty associating with the growth of firms. Duncan (1972) gauged its impact by what he

---

[66] "The value placed on educational/training initiatives, bench- marking, and funding assistance supported by public policy varies across groups grounded in differing socially constructed realities. There is some convergence on the value of public policy supported initiatives providing assistance with foreign market entries." Fischer et al. (1998)

[67] "The image benefit associated with a science park location is not helpful in explaining growth, whereas a location benefit associated with cooperation with universities is positively associated with growth."(Ferguson and Olofsson, 2004)

called "perceived environment uncertainty (PEU)", using an instrument, which was developed by Milliken (1987) in a factor analysis with significant loadings. Three factors were determined as (a) state uncertainty (the unpredictability of external conditions), (b) effect uncertainty (the inability to forebode the impact of environmental contingencies on organizations) and (c) response uncertainty (the inaptitude for predicting the likely consequence if a particular response is taken).

Contrary to the early theorists who aggregated the environmental uncertainties into a single construct (Lawrence and Lorsch, 1967; Duncan, 1972) and those who argued that the environmental uncertainties as a whole hold a negative relationship with performance (Burns and Stalker, 1961; Thompson, 1967), Milliken (1987) and Gerloff, Muir and Bodensteiner (1991) proposed to disaggregate. The major reason is that each factor may impose its independent impact on the firm's growth. Constructing a dataset in a survey of 140 Navy's R&D project managers (118 usable questionnaires), Gerloff et al. (1991) found that the total PEU and its component "state uncertainty" had significantly negative correlations with performance. Yet extremely low correlations were derived for effect uncertainty (-0.06) and response uncertainty (-0.03). This suggests that more research, based on longitudinal data, should be launched in order to explore the equivocal relation between PEU (and its three components) and the firm's outcomes. This could provide a beneficial complement to current contingency theory.

3.4.2.3 Homogeneity and Heterogeneity

This feature of the environment is largely connected with market structures and their concomitant competition levels. As Robbins (2005) pointed out, homogeneous environments referred to highly concentrated market with few competitors, in which

movements and countermovements could be easily observed, and to which firms might respond accordingly, whereas heterogeneous markets were assumed to be low concentration with fierce competition.

In the work of Reid, Jacobsen and Anderson (1993), not a traditional dichotomy but rather a trichotomy, was devised to categorize market models into (a) low concentration (monopolistic competition); (b) medium concentration (a dominant firm/competitive fringe market model) and (c) high concentration (oligopoly). With regard to Porter's five forces of competition (Porter, 1980), Reid *et al.* (1993) developed a framework of competitive forces in a small business context, including extant rivals, potential entrants, substitutes, suppliers and buyers. The case studies showed that above-average performance was "basically achieved by successfully addressing the five competitive forces" (p.20) in terms of different market models mentioned above.

3.4.3 Strategy

While population ecologists such as Hannan and Freeman (1977) pessimistically denied the role of individuals in reshaping the environment, Child (1972) noteworthily posited that strategic choices could be properly taken to link an organization to its environment. More drastically, Weick (1979) formulated a concept of "enactment", arguing that managers, on behalf of organizations, could modify or even create the environment. It was pointed out that the management perception of the environment could lead to certain strategic choices and actions, affecting the environment itself. In such a process, organizations can choose the environment in which they prefer to operate (Jauch and Kraft, 1986)[68]. This approach has more

---

[68] In a cross-country (Denmark, Ireland and Scotland) study of young growing independent manufacturing firms over a six year period, Levie (1995) found that firms which chose narrow market entry strategy in growth industries

recently led to so-called "co-evolution analysis", in which the firm both influences, and is influenced by its environment (Reid and Smith, 2003). Indeed, a good fit between organizations and their environment can be obtained if the management capacity is built up and appropriate strategies are employed.

3.4.3.1 Strategy and Structure

In contingency theory, strategies should be designed to suit organizational structure in order to pursue more than satisfactory performance. In the case studies of a group of pioneering firms, Chandler (1962) found that firms were more likely to assume product divisional forms, rather than functional structures, as their product range became more diversified. Miller (1987) found that strategies, in terms of marketing differentiation, product innovation, breath of market, and cost control, all have crucial but different associations with organic and bureaucratic structures. Harris and Ruefli (2000) tested the structure-strategy relationship using a survey of 259 firms in a period of 36 years and the evidence also demonstrated the significance of proper strategies for the suitable structures. A similar line of reasoning can be found in Miles and Snow (1978), and Galunic and Eisenhardt (1994).

More specifically, Robbins (2005) generalized three common aspects of strategy in various structures: (a) innovation strategy according to organic structure (decentralized, low formalization, low departmentalization and flexibly controlled); (b) cost-minimization strategy relating to mechanistic structure (highly centralized, high formalization, high departmentalization and tightly controlled); (c) imitation strategy linking to a structure between two extremes (more flexible for innovative activities but rigid for current production). Nevertheless, the "best fit" between

---

manifested the higher probability of achieving sustained growth, whereas firms which pursued broad market entry strategies in mature markets were more possible to fail.

strategy and structure cannot guarantee the best outcome, without considering the external conditions in which firms actually operate and compete.

3.4.3.2 Strategy and Competitive Advantage

Porter (1980, 1985) proposed the theory of competitive advantage and derived three generic strategies: cost leadership, differentiation and focus, which were developed by Reid (1993) in the context of small business enterprises. In his analysis, cost leadership might not result from scale economies but the flexibility to produce "a wide variety of batch sizes according to agreed ('bespoke') specification" (p. 129). Differentiation seemed to take rather low cost forms in an unconventional way, "capitalizing on the inputs of entrepreneurial and managerial effort" (p. 130). Besides, a focus strategy was believed to tie together both cost control and product differentiation, while the latter was more emphasized. The satisfaction ("the personal touch") and localization of customers could encourage market fragmentation and foster competitive advantage. Dean, Day, Reynolds (1997) buttressed this customer focus strategy in an examination of 102 entrepreneurial firms in West Yorkshire in the UK, stating that the firms should deploy their limited resources to retain existing profitable customers. By using this low risk customer focus strategy, firms were able to improve their product/service levels and attain more opportunities for further development.

Apart from competitive strategies, Reid (1993) expounded "defensive strategy" that aimed to "deter or pre-empt potentially damaging moves by rivals" (p.131), such as strong commitment to retaliate, palpable asset advantages, professionalism, trade intelligence, technical advancement, and so forth. Yet Reid (1993) also discovered that competitive strategies were used more often than defensive ones, while the latter

tended to exhibit rather passive forms. Thereby, the maxim of military strategy that "the best defence is to attack" may apply in this case.

3.4.4 Size, Technology and other Contingency Factors

Despite organizational size being a key variable in Gibrat's Law of proportionate effect, it is also regarded as a contingency factor in the field of organizational behaviour. The increase in employment drives organizational structure to be more mechanical. This relationship is nevertheless nonlinear, because the marginal effect of increasing employment on organizational structure will be diminishing. In other words, the increase of employment will have a less significant impact on a considerably large firm than that on a smaller counterpart. After all, large firms may have already been rigid enough (Blau and Schoenherr, 1971; Pugh, 1981).

Bluedorn (1993) made a substantial review of the size-structure relations, and they summarized as follows: (a) as size increases, structural differentiation (the administrative proportion) increases (decreases) at a decreasing rate; (b) the direct effect of size on the administrative proportion is greater than that on structural differentiation; (c) size is negatively related to centralization and positively related to formalization. These propositions had been examined in a contingency framework during the 1980s and early 1990s. It is worth mentioning the meta-analysis of 31 published empirical studies conducted by Gooding and Wagner (1985), who illustrated a "zero to modestly negative" relationship between subgroup size and performance even if the direct connection between size and performance was initially unfruitful. Besides, size was found to be strongly positively related to productivity but there was no evidence for a positive size-efficiency relationship.

Technology is addressed as one aspect of "innovativeness" in EO, as well as a component of "knowledge" in the RBV of the previous sections. Contingency theory also involves technology as a pivotal factor that influences firm performance via the mediation of organizational structure. Woodward (1965) developed a "technological scale" in terms of production techniques, and the complexity of production systems, which recognized: (a) unit or small batch; (b) large batch or mass production; (c) continuous process. It was argued that a large batch/mass production technology related to a more functionalized structure, a larger administrative proportion with a wide span of control, while unit/small batch production technology demanded a more flexible structure and a smaller administrative proportion with a moderate span of control. An extensive meta-analysis of technology-structure relationship was conducted by Miller, Glick, Wang and Huber (1991). Contrary to the stereotype of research models, their examination incorporated more contingency factors rather than one technology variable and one structure variable. It was found that different technology conceptions, organization size variation, professionalism and industry section all had no impact on technology-structure relationship, whereas industry sector heterogeneity and unit sizes in question did affect it, to some extent.

The later development has extended discussion to even wider areas, such as organizational culture (Schein, 1992), EO (Lumpkin and Dess, 1996; Wiklund, 1998), management accounting (Andersen and Lanen, 1999; Mitchell, Reid and Smith, 2000; Lofsten and Lindelof, 2005), organizational learning and management control system (Romme and Dillen, 1997; Kloot, 1997), strategic reward system (Boyd and Salamin, 2001), export venture creation (Ilbeh, 2003), and so on. It should be noted, however, that the extensive model of contingency theory is initially designed to estimate the causality between contingencies and organizational structure and then firm

performance, rather than firm growth. So it provides the opportunity to break the ground least exploited, and may promise a fruitful research outcome, given the appropriate approach.

In sum, traditional contingency theory encompasses four major factors (environment, strategy, size and technology) relating to organizational structures: organic or mechanistic, or somewhere in between. While three dimensions of the environment (capacity, stability and instability, homogeneity and heterogeneity) would require an assortment of organizational structures to fit, they may also be either reshaped or chosen by managers. Within the contingency framework, a wide range of strategies can be implemented to fit structure and environment for the pursuit of superior firm outcomes. Moreover, size and technology may exert different influences on firm performance through the mediator structure variable, which is at variance with their effects discussed earlier in non-contingency approaches.

3.5 General Conclusions

In the subject area of entrepreneurship, EO, as a novel growth factor in response to Mencius' "*People*" element of success, has been demonstrated to have five dimensions, namely innovativeness, risk-taking, proactiveness, competitive aggressiveness and autonomy. Although a sole index of EO, by incorporating all elements, can be used in its own right, the complicated effects of the individual dimensions on firm's outcomes may require separate explanations. While the major findings in the literature of entrepreneurship claim the significance of EO, some find it has no impact (Smart ands Conant, 1994) or even a negative influence (Hart, 1992). This indicates that EO may be defined and measured in different ways. Besides, it also suggests that there may exist other covariant factors that can possibly either

enhance or hinder firm growth/performance, apart from the multiplicative dimensions of EO aforementioned.

With regard to the literature of strategic management, the resource-based view (RBV) provides three growth determinants, namely tangible assets, intangible assets and the capabilities of firms. Tangibles are physical and financial assets, which are usually embodied in the accounting balance sheets but seldom regarded as an important growth propellant in the empirical management studies, due to their tradability and imitability. Intangibles have attracted continuous research attention by their wide range of types, such as human capital, corporate culture, intellectual property, reputation, knowledge and network, though none has an open-and-shut relationship with firm growth empirically speaking. Further, the concept of capability has been clarified as being the skill of developing extant assets, as well as the ability to take advantage of one or more tangible or intangible assets, for the ultimate purpose of achieving superior firm growth/performance. While it is relatively facile to draw the dividing lines between disparate resources, the task of examining their respective effects on the business expansion mechanism is rather labour intensive.

In the literature of organizational behaviour, there is a body of critical theory to address issues of firm growth, so called contingency theory. Traditionally, it encompasses four major factors (i.e. environment, strategy, size and technology) interacting with organizational structures: organic or mechanistic, or somewhere between. Firstly, the environment in terms of capacity, stability/instability and homogeneity/heterogeneity demands varying organizational forms to fit. Multiple strategies then can be selectively implemented to achieve this fit between structure and environment. Besides, at variance with their direct effect on firm growth, size and technology may actually influence the firm outcomes differently, through the

mediator variable "organizational structure". In addition, contingency theory has extended to a much wider range of areas, such as organizational culture, EO, management accounting, organizational learning and management control system, strategic reward system, export venture creation and rhetorical congruence, and so forth.

Finally, this chapter has conveyed how a combination of EO, RBV and contingency theory can be used to comprehensively interpret the firm growth process in the managerial realm. Now I shall turn to first-hand data collection, large database design and construction, basic features of sampled firms in the next Chapters 4 and 5. Based on which, empirical growth models can be specified and estimated, as in the following more complicated statistical and econometric analyses of Chapter 6, 7 and 8.

PART III: METHODOLOGY AND DATA

CHAPTER 4   FIELDWORK

4.1 Introduction

One cannot make brick without straw. While the theoretical literature and empirical studies are reviewed in the previous chapters, this Part III aims to provide the "straw" for further empirical analyses as the major contribution of this thesis. In such a spirit, Chapter 4 describes the first-hand data collection process and the fieldwork methodology employed thereof, and Chapter 5 generalizes the major characteristics of data pertaining to the main theme of firm growth in this thesis.

This chapter sets out to illustrate the sample design. Firstly, the data collection methods, such as secondary source, postal questionnaires and field interviews, are compared and the reasons why the fieldwork methodology was chosen are clarified. Then, it discusses the sampling process which is similar to "snowball sampling" and the cons and pros are also demonstrated. In order to justify such a sampling method used in this study, the representativeness of the data is explored at length, in terms of geographical distribution, sectoral composition, ownership and employment, and size distribution.

When the target firms are determined, the survey instrument, a "weapon" is demanded. Consistent with the intended further statistical and econometric analysis, a survey instrument is accordingly designed to gather the data related to general company information, entrepreneurship, tangible and intangible resources, contingency facts, and so on. Well armed as such, a pilot project is undertaken and then the first-stage and second-stage field interviews commence. The data collection and the database construction are illustrated at last.

This chapter, therefore, is organized as follows. It firstly explains the sample design in Section 4.2 and next elaborates the design of survey instrument in Section

4.3. Then the fieldwork methods are discussed in Section 4.4 and the dispose of data is handled with due care in Section 4.5. The last section draws the conclusion.

4.2 Sample Design

4.2.1 Data Collection Methods

In empirical studies (see Appendix 3), there are three major data collection methods considered, namely secondary source data, postal questionnaires and field interviews. While the secondary source data are most frequently resorted to (44.5%), postal questionnaires come the second (33.3%) and field interviews least used (22.2%). However, the frequency distribution may not necessarily imply the importance of the method employed. It is not that the lowest percent necessarily reveals the inappropriateness of the data source. Instead, proper judgements must depend on the major theme and nature of the study in question.

4.2.1.1 Secondary source Data

The convenience of the secondary source data made the author firstly enquire the National Bureau of Statistics of China (NBS of China), the Development Research Center of the State Council (DRCnet Information), China National Knowledge Infrastructure (CNKI), VIP Information, and WANFANG Data, and so forth. Most of them are able to provide aggregated data at industrial, provincial or national level, but in-depth firm-specific information are simply unavailable. The most promising source could have been a nationwide survey of privately-owned small and medium-sized enterprises (SMEs) in the year of 2003, which was conducted by multiple government agencies and non-profit organizations in China (e.g. National Development and Reform Commission, NBS of China, State Administration For Industry and

Commerce, All-China Federation of Industry and Commerce, China Enterprises Evaluation Association, etc). Due to their government nature, the commercial acquisition of such a database was not offered as an option. Besides, a large percent of small and micro firms were not included in this database since the NBS of China limited the sample into "above-scale firms" (>five million Chinese Yuan in annual sales). Furthermore, without the knowledge of the exact questionnaire this survey employed, the author could form no opinion about the appropriateness of this database, either. On account of these difficulties, the secondary source data seem rather inappropriate for fulfilling the purpose of this thesis in any sense.

4.2.1.2 Postal Questionnaires

The postal questionnaire is another widely adopted research tool in social science. Due to the particular economic and social situations in China, the author finds this method notoriously difficult to succeed with, which coincides with the view expressed in a similar study in Russia by Bruton and Rubanik (2002). As they argued, mail or telephone surveys were largely unknown and badly received in Russia. To the author's knowledge, this is also true of this method in China. As a Chinese epigram warns, "Gold should not be seen and exposed under the sun." Chinese business people generally choose not to respond at all for any unsolicited questionnaire, and this is even more so for those private business owner-managers who have a strong desire for secrecy in order to evade tax at the brim of the not-so-well-developed taxation systems in China. Unless the questionnaires are sent by government agencies, no firm would otherwise reply. Even when it is on official obligation, to the author's knowledge of the family business in China, entrepreneurs would rarely take pains to fill out any unwanted form in a responsible manner. Undoubtedly, disappointing

response rates or dubious data could be more than sufficient to impair the quality of any serious research.

4.2.1.3 Field Interviews

Under such circumstances, the face-to-face structured interview seems more reliable than any other alternative. It can suit the specially designed research purpose and directly gather the information by interviewers that are exactly of interest. More instructions can be given out to interviewees during the process and the data are likely to be more stable and trustworthy if the interview techniques are properly devised (Burgess,1982, 1984; Flaherty, 1984; Lawson, 1985; Reid 1987, 1989)[69].

Nevertheless, these advantages cannot be gained without the access granted to those interviewees. As noted in a comparative study of Anglo-Saxon American and Chinese American firms by Yang (1994), it is more likely for the former to accept an invitation to a structured interview without any previously established connection. Nonetheless, "guan xi" in China (or the network in the West) has always been the crux of the matter. As Reid (1993) stated, in a Scottish context, firms would have no such enthusiasm to accept any interview were it not for the respect held for the Enterprise Trust or Federation of Small Business in Scotland. Power (2005) buttressed this view with a high response rate of 70% (63 out 90 in total) when employing the contacts previously established in the early works of Reid and his co-workers (Reid, 1993; Reid et al, 1993; Reid and Andersen, 1992; Reid, 1996; Reid, 1999; Reid and Smith, 2000; Reid, 2007). Yang (1994) resorted to personal contacts at the Wharton School at the University of Pennsylvania. And Bruton and Rubanik (2002) utilized an influential figure in the Moscow Federal Institute of Electronic Technology.

---

[69] The recent adoption of the fieldwork methodology at the University of St. Andrews can be found in other PhD works of Salavrkos (1996), Smith (2000); Power (2003), and Stewart (2004), etc.

It is hardly practical, if not totally impossible, to contact a firm cold and make its owner-managers spend one to two hours discussing their businesses with someone in whatever high-minded academic purpose. "Guan xi" must be established to get the possible access to the filed. As Reid[70] pointed out, early access to the field would be crucial for research. Not only does it assist to locate research objectives of interest, but also to establish the contacts with key players. After all, "guan xi" needs to grow via the accumulation of familiarity and credibility over time rather than overnight.

4.2.2 Sampling Process

Excluding the practicality of mailing the questionnaires and acquiring the secondary source data, this study conducted structured interviews face-to-face with a group of sampled firms in Guangdong Province of China. These were referred by a large student body (nearly 180 undergraduate students majoring in English, International Business or Finance) as well as the teaching staff (nearly 80 at that time) at the faculty of School of English for International Business (SEIB) at Guangdong University of Foreign Studies (GDUFS), at which the author once had been teaching as a lecturer during the year 2004-2005.

The selection criteria of the sampled firms are: (a) privately owned firms, (b) financially independent (not a subsidiary), (c) located in the territory of Guangdong Province. First of all, the basic information of 110 firms (i.e. the name of the firm, the name(s) of owner-manager(s), the premise and the contact telephone number) was provided by those "gatekeepers" (i.e. my colleagues and students). As the firm was typically operated by their family or friends, the low response rates usually associated

---

[70] Prof. Reid is my supervisor at University of St Andrews, who encouraged me to establish contacts and conduct field visits at the early stage of my PhD studies.

with cold contacts were effectively avoided. Above all, the most important starting point is to gain the access to the field before anything else can happen.

Among these 110 firms, twelve firms were directly purged from the sample due to the location in other provinces of China. Among the remaining firms, 9 firms politely turned down the interview invitations giving the reasons like business turmoil, tendency for secrecy, and even children medical problems. At the end, a final sample of 89 firms (including six SOEs) accepted the invitations and the equivalent response rate was 90.8%. In this regard, "Guan xi" seemed well recognized.

Critically speaking, this non-probabilistic approach to some extent resembles "snowball sampling" as it largely depends on references rather than random selections[71]. Of course, it is ideally convenient to select firm names randomly from yellow pages and thus make a perfectly probabilistic sample on its own right. Nonetheless, as discussed earlier, most owner-managers of Chinese firms would simply ignore postal questionnaires were it not officially compulsory. It is also unrealistic to expect any chief executive officer (CEO) or his/her equivalent to talk for at least one hour and a half whether face-to-face or on the telephone. As "guan xi" must be pre-existing in research of this kind, the randomness of the sample must be compromised, albeit it is theoretically supreme. As Scott and Marshall (2005) argued, "studies of (for example) members of a religious sect rarely require probability sampling: a selection of the membership (not necessarily statistically representative) is usually considered to be sufficient for most sociological purposes." It is certainly improper to regard Chinese business communities as religious groups. Yet they can just appear equally mysterious and unapproachable, providing no justified *ex ante* connections.

---

[71] However, it is not a strict "snowball sampling" as the sampled firms do not know each other.

One may suggest that a government body be utilized to circumvent the formidable "guan xi" trap. Indeed, this approach can be workable if hiring the NBS of China or the provincial statistical bureau. But this sort of service would charge about 3,000 Chinese Yuan (around 192.83 British Pounds)[72] per firm in the market, which seems a rather lavish option beyond the author's financial means even though this study has received two generous grants from Russell Trust Award (University of St Andrews, UK) and Young Teacher Research Fellowship (Guangdong University of Foreign Studies, China). Bearing in mind that funding is an undeniable issue, the author visited 29 firms in person and trained 30 student teams at GDUFS (at the size of three to five students each team) for visits to the rest of 60 firms at the average cost of 100 Chinese Yuan (around 6.43 British Pounds) per firm, which is nearly 1/30 of the cost if a government body is used.

Although this sample is not perfectly probabilistic, the references were made from a large faculty of staff and a large student body, who represent almost all walks of life in the region of research interest. It is hoped that this demographic diversity can make the sample less subject to sample selection bias. A further discussion pertaining to the representatives of the sample will ensue below.

4.2.3 The Representatives of the Sample

4.2.3.1 Geographic Distribution

As the earliest region implementing market economy in China, Guangdong Province has enjoyed strong economic linkages with Hong Kong and Macau due to its strategic location. The sampled firms of this study come from the 10 most

---

[72] 1GBP=15.5575CNY, according to monthly average currency rate in January, 2005.

economically influential cities (Code 1-10) in this province (except Zhuhai)[73], as illustrated by Table 4.1 below.

Table 4.1 Geographic Distribution

Code	City/County	Sampled Firms	Sample Percent	GD Firms	GD Percent
1	Guangzhou	48	57.8	3541	28.3
2	Shenzhen	8	9.6	2134	17.1
3	Foshan	7	8.4	2861	22.9
4	Jiangmen	4	4.8	975	7.8
5	Dongguan	4	4.8	1805	14.4
6	Huizhou	3	3.6	353	2.8
7	Yangjiang	3	3.6	131	1.1
8	Qingyuan	2	2.4	67	0.5
9	Jieyang	2	2.4	141	1.1
10	Shantou	2	2.4	506	4.0
	Total	**83**	**100**	**12514**	**100**

(Note: The sample here refers to 83 private firms interviewed in the fieldwork -"SAMPLE A", whereas GD firms refer to the population of manufacturing firms in cities from code 1 to 10 in Guangdong Province – "GD A") [74]

As the capital city of Guangdong Province and the largest economic centre in Southern China, Guangzhou firms have the highest percent (57.8%) in the *SAMPLE A* and 28.3% in the population of *GD A*. This overrepresentation of Guangzhou firms in the *SAMPLE A* may be due to the exclusion of non-manufacturing Guangzhou firms in the *GD A*. More possibly, each "gatekeeper" was asked to recommend only one or two owner-managers so that he/she might be more predisposed to introduce one in Guangzhou where the university locates. In total, Guangzhou and five other major

---

[73] Probably it is because Zhuhai has more developed as a resort for old retired people, rather an industrial city.
[74] Source: Guandong Statistics Bureau. http://www.gdstats.gov.cn/tjnj/table/21_c.htm

industrial cities (Code 1-6) consist of nearly 89% of firms in the *SAMPLE A* in response to 93% in the *GD A*, which shows a high correlation: Kendall's tau_b .754 and Spearman's rho .877 at the significant level of 0.01 (2-tailed), and Pearson correlation .734 at the significant level of 0.05 (2-tailed). The *SAMPLE A* hereby seems to present a reasonable geographic distribution.

4.2.3.2 Sectoral Composition

With regard to sectoral composition, this study concentrates on a wide spectrum of industries within Guangdong Province. China's National Standard of Industrial Classification (CNSIC)[75] is deployed and the sampled firms are characterised by frequency and percentage on Table 4.2 as follows.

Table 4.2 Sectoral Distribution (one-digit CNSIC)

CNSIC	Category	Frequency	Percent
C (13-43)	Manufacturing	33	39.8
H (63-65)	Wholesale & Retailing	22	26.5
L (73-74)	Leasing & Commercial Services	5	6.0
F (51-59)	Transportation & Logistics	4	4.8
G (60-62)	Information Technology	4	4.8
I (66-67)	Food & Accommodation	4	4.8
M (75-78)	Engineering & Research	4	4.8
K (72)	Real Estate	3	3.6
O (82-83)	Residential Services & others	2	2.4
E (47-50)	Building	1	1.2
R (88-92)	Media	1	1.2
Total		**83**	**100**

(Note: See more details about CNSIC in Appendix 4)

---

[75] CNSIC (GB/T 4754-2002) were updated by NBS of China on 14th May, 2003.

Concerning the one-digit CNSIC, the sample of this study covers 11 industry categories (55%) out of 20 in total. There are 9 industrial categories without representation in this sample but it is not entirely inexplicable. For instance, the categories of education (P84), sanitation and social welfare (Q85-87), and government and organizations (S93-97, T98) are of little interest in this privately-owned firm research. Moreover, Mining (B6-11), Electricity, Gas and Water Supply (D44-46), Financing (J68-71), and Water, Environment and Public facilities (N79-81) are heavily populated by public owned firms. As this study focuses on the secondary and third sectors of industries, the primary sector (A1-5, e.g. agriculture, forestry and fishery, etc) is left out as well. Therefore, it may be safe to say that the remaining 11 industry categories have generally served the research interest of this thesis.

Table 4.3 Sectoral Composition (two-digit CNSIC)

CNSIC	Category	Frequency	Percent
C (13-43)	Manufacturing	33	39.8
H (63-65)	Wholesale & Retailing	22	26.5
L (73-74)	Leasing & Commercial Services	5	6.0
F (51-59)	Transportation & Logistics	4	4.8
G (60-62)	Information Technology	4	4.8
I (66-67)	Food & Accommodation	4	4.8
M (75-78)	Engineering & Research	4	4.8
K (72)	Real Estate	3	3.6
O (82-83)	Residential Services & others	2	2.4
E (47-50)	Building	1	1.2
R (88-92)	Media	1	1.2
Total		83	100

Disaggregating these 11 industry categories in terms of two-digit CNSIC, it is found that there are 66 industries, 33 among which are included in the sample

(54.5%), as shown on Table 4.3 above. While four industries (E, H, K, M) are fully represented, 17 out of 31 (54.8%) manufacturing industries and 1 out of 2 (50%) information technology industries are covered, probably due to the limitation of sample size and sampling methods. The obvious underrepresentation in the categories like transportation and logistics (F51-59, 44.4% represented) and media (R88-92, 20% represented) may be attributed by the state ownership in such industries. Besides, the low percent in service sectors (44.4% in L, 25% in O) may suggest the smallness of these service firms which can be conveniently neglected by the referees. Although it is somehow underrepresent all sectors at a two-digit scale, this sectoral composition does reflect the general perception of the Guangdong province as "world workshop" (two fifths in manufacturing) and "international trade centre" in Southern China (more than one quarter in wholesale and retailing).

4.2.3.3 Ownership and Employment

According to the classification of ownership enacted by the NBS of China on 2nd September, 1998, there were 29 types in total. With China's entry into the WTO, this overly perplexing division of ownership became obsolete and was replaced on 24th August, 2005. The new ownership typology consists of two broad categories: public owned (by state or collectively) and non-public owned (by domestic private, Hong Kong/Macau/Taiwan owners, or other foreigners). This thesis will specifically focus on domestic private firms. With regard to the population of manufacturing firms in 14 cities and counties of Guangdong Province (*GD B*), 92.7% of manufacturing firms in this special economic zone are non-public owned firms and contributing 90.5% of full-time equivalent employment. Correspondingly, 93.3% of firms are non-public owned in the sample (*SAMPLE B*) and creating 87.6% of jobs, as shown by Table 4.4

below. The correlation between the sample and the *GD B* population are as high as one, whether Kendall's tau_b, Spearman's rho, or Pearson methods are used.

Table4.4 Frequencies of Ownership and Job Creation

	Sample Firms	GD Firms	Sample Employment	GD Employment
Public Owned	6 (6.7%)	1269 (7.3%)	2492 (12.4%)	508,300 (9.5%)
Non-public Owned	83 (93.3%)	16219 (92.7%)	17600 (87.6%)	4848,100 (90.5%)
Total	89 (100%)	17488 (100%)	20092 (100%)	5356,400 (100%)

(Note: The sample here refers to "SAMPLE B": SAMPLE A plus six additional public owned firms, whereas GD firms refer to the "above-scale" manufacturing firms in 14 cities and counties in Guangdong Province – "GD B".) [76]

4.2.3.4 Size Distribution

Prior to the discussion of firm size distribution, the size itself should be defined first. The NBS of China declared temporary size measurements for "above-scale firms" in only six industry categories (i.e. manufacturing, building, transportation and logistics, wholesale and retailing, food and accommodation, and postal service) on 22nd May, 2003. And within the same category, the size may be measured by multiple variables, namely employment, sales, or total assets. As the firms interviewed in this study scatter beyond those six sectors, the makeshift method of China NBS cannot suffice, but does imply in a significant way that in whichever industry that a firm operates, it will be considered as a small firm if employment is below 600 or sales are below 30 million Chinese Yuan (equal to 1.93 million British Pounds)[77]. Most medium sized firms have sales between 30 and 300 million Chinese Yuan, or employ

---

[76] Source: Guangdong Statistics Bureau. http://www.gdstats.gov.cn/tjnj/table/20_c.htm
[77] Exchange rate is set at the average level in January, 2005.

less than 3,000 full-time workers. As total assets are only used in manufacturing and building industries, in this study only sales and employment are respectively utilized to define the size, as shown on Table 4.5 below.

Table 4.5 Division of Size Classes

	Sampled firms divided by Sales	Sampled firms divided by Employment	GD Firms
Small	21	77	15409
	(28.4%)	(92.8%)	(88.1%)
Medium	31	5	1285
	(41.9%)	(6.0%)	(7.3%)
Large	22	1	794
	(29.7%)	(1.2%)	(4.5%)
Total	74	83	17488
	(100%)	(100%)	(100%)

(Note: The sampled firms are exacted from "SAMPLE A" and GD firms are drawn from "GD B" due to the availability of data.)

According to the table above, size division by employment in the sample is highly correlated with the population "*GD B*" with Kendall's tau_b 1.000 at the significant level of 0.01 (2-tailed), whereas sales measurement does not correlate so highly. The main reason to engender such a large percent (29.7%) of large sized firms in terms of sales may be in part attributed to the large percent (26.5%) of trading companies in the sample that tend to generate high volume of sales but hire much fewer employees disproportionately. Whilst these firms fall into the small-size category by employment, they are probably qualified to enter the medium or even large size classes in terms of sales. It also indicates that the upper and lower bounds for each size class by sales should be altered to be compatible with ever growing Chinese economy, as the firms with smaller workforce now apparently can sell more

products/services. Hence, more comprehensive and scientific size division standards should be developed for either industries in general or just a specific one, considering the nature of research in question.

4.3 SURVEY INSTRUMENT DESIGN

4.3.1 Introduction

After the target firms are determined in the sampling process, the survey instrument, "the weapon", should be designed and polished for the purpose of (a) depicting the general characteristics of private firms in the Guangdong Province, (b) calibrating the growth of these firms, and (c) exploring the causality between multiple attributes and firm growth. In such a manner, an administered questionnaire is adopted and consists of eight sections:

1. background

2. firm operation

3. human resource management

4. finance

5. technology and innovation

6. enterprise culture

7. competition

8. macro environment

These sections provide the primary data from private firms in the region (section 1 and 2), and factors that may foster the firm growth (Section 1-8), such as entrepreneurship, resources, environment and other contingency factors, and so forth. Besides, six show cards are incorporated to demonstrate six different types of cost

structures in response to question 2.5 in the firm operation section. Brief explanation under each diagram on the show card is given out and interviewers are depended on for further clarification, where appropriate (see Appendix 1 and 2: Administered Questionnaire 2004 in English as well as its short form in Chinese).

The administered questionnaire contains 106 numbered questions in qualitative and quantitative forms. Whilst the former type enables respondents to provide the qualitative information in his/her particular situation, the latter supplies the numerical data in a relatively more objective way. It is hoped that maximum information can be gathered by employing the evidence in both qualitative and quantitative nature (Tashakkori and Teddlie, 1998). Besides, questions are organized in a variety of formats, such as blank-filling, multiple-choices (which allows either a single answer or multiple answers), and true or false.

Targeting Chinese privately owned firms, the original questionnaire adopted a version in simplified Chinese[78]. As all interviewees are native Chinese and not necessarily English speaking, questionnaires in a Chinese version are believed to be indispensable. Responses to questions are also written down in Chinese, which ensures that nothing would be missed out during the interview, at least in terms of language.

It is also felt to be crucial to regard previous successful question designs as the pertinent point of departure. In keeping with the empirical literature, the guidelines of questionnaire design are extracted from the works of Wied-Nebbeling (1975), Nowotny and Walther (1978), Converse and Presser (1986), Jacobsen (1986), Reid (1987a, 1988, 1992, 1993), Fowler (1995), and Power (2004), and so forth. Now the

---

[78] Simplified Chinese is widely used in Mainland China now, while traditional Chinese is used mainly in Hong Kong, Macau and Taiwan.

effort will be made to elaborate each section of the survey instrument AQ2004 (English version) as follows.

4.3.2 General Information

4.3.2.1 Basic Information

The objective of this section of the survey instrument is to characterize Chinese private firms in the sample and in their market environment in general. It involves discovering firm age, industry, major business and products, market extent and market share, considered seriatim.

In order to explore Jovanovic's learning theory and related empirical works (Evans, 1987a, 1987b; Reid, 1993, 2007; Dunne and Hughes, 1994; Hart and Oulton, 1996;Takehiko Yasuda, 2005), the year of firm establishment is recorded in order to calculate age (question 1.1).

Basic registry information on the business license issued by the State Administration for Industry and Commerce (SAIC) is selectively acquired, such as start-up capital (question 1.1), registered firm ownership (question 1.3) and major business extent (question 1.4). Start-up capital is the initial capital in cash that must be deposited in a bank account for the registry with the SAIC, which is commonly viewed as a proof of financial capability. Firm ownership is rather sophisticated regarding the mixed central-planned and market-driven economy in China (question 1.3). The extent of major business describes the specific business a firm is allowed to operate, which helps to identify the CNSIC code. Major products are also listed by owner-managers to highlight the principal market in which these firms function (question 1.4.1).

Firm market environment is primarily explored by the geographical extent of major markets (question 1.4.2) and the market share in owner-managers' knowledge (question 1.4.3), as shown in Table 4.6 below. The former is divided up to five levels: worldwide, Asia, mainland China, Guangdong Province and the capital city Guangzhou (or local). The latter adopted a percent range to probe the market shares perceived by owner-managers.

Table 4.6 Survey Instrument – Questions 1.4.2-1.4.3

1.4.2 What are your major markets?	
A. Guangzhou City (or local city)	☐
B. Guangdong Province	☐
C. China	☐
D. Asia	☐
E. Worldwide	☐
1.4.3 What is the approximate range for your firm's market share? (pertaining to main products)	
A. <1%	☐
B. 1-5%	☐
C.6-10%	☐
D. 11-20%	☐
E. 21-30%	☐
F. 31-50%	☐
G.>50%	☐
H. Don't know	☐

4.3.2.2 Firm Operation

The function of this subsection was to examine more aspects of firm operation, such as planning, pricing, costs, sales and marketing, and customer services, etc.

As Penrose (1955) argued, "successful expansion must, in the usual case, be preceded by planning on the part of the firm."(p. 532) Penrose stressed the matter of planning as an "obvious fact" of central importance for the growth of firms. A wide range of planning options are available in question 2.12 for respondents to choose in

terms of sales, new product, organizational structure, cost, finance, and strategic development, and so on. If additional plans are not included in this list, respondents are encouraged to supplement in the open-ended question 2.12.1. Moreover, the most difficult plan among all is required to report in question 2.12.2.

The questions about pricing are designed along the line of Wied-Nebbeling (1975), Nowotny and Walther (1978) and Reid (1993). Interviewees are asked to choose their pricing methods among options (question 2.1), such as "the cost of each product plus a fixed percentage of profit", "the cost of each product plus a flexible percentage of profit", "the highest price the market can bear", "mainly depend on big clients to quote", "set by government agencies", "regulated by law", or "others". Furthermore, it is concerned why firms alter their product prices in question 2.3 with possible reasons like "the start of new production cycle", "the beginning of new tax year", "the change of cost structure", "the shift of market demand", "new government regulations", "competitors' price change", etc. Concerning the price elasticity of demand, the questions 2.7.1/2.7.2 investigate the impact of decrease/increase in price on firm's sales and the question 2.8 further asks whether there is an elbow room in which firm's price change will exert no influence on sales and in what percent if the answer is affirmative.

Cost structure analysis has long been centred on the classic works of Smith, Marshall, Sraffa, Viner, and so on. While there is no consensus on the form of a standard cost curve in theory, interviewees are offered six show cards from A to F (see table 4.7 as an example below), on which six types of possible cost structures are drawn to approximate the real situation of firms. A brief note is provided under each diagram and further demotic explanation is available from interviewers (the author and his trained co-fieldworkers), where appropriate. In terms of firm growth, it is

interesting to know whether extra cost brought about by expansion should be also taken into account by firm owner/managers (question 2.6).

In the modern management literature, marketing is of crucial significance. Market surveys and advertisements are addressed in the questionnaire (question 2.6, 2.6.1, 2.10). The respondents are asked whether their firms take any form of market survey and to what purpose (e.g. "to know the customers' sensitivity to price change", "to know how customers think of the new products", "to know better about the competitors", "to know the market trend", etc). The interviewees are also surveyed about the medium of advertisement their firms employed in the past, such as television, newspaper, radio station, magazines/journals, Internet, outdoor ads, and so on.

Table 4.7 Cost Structure on Show Card 2.5 (D)[79]
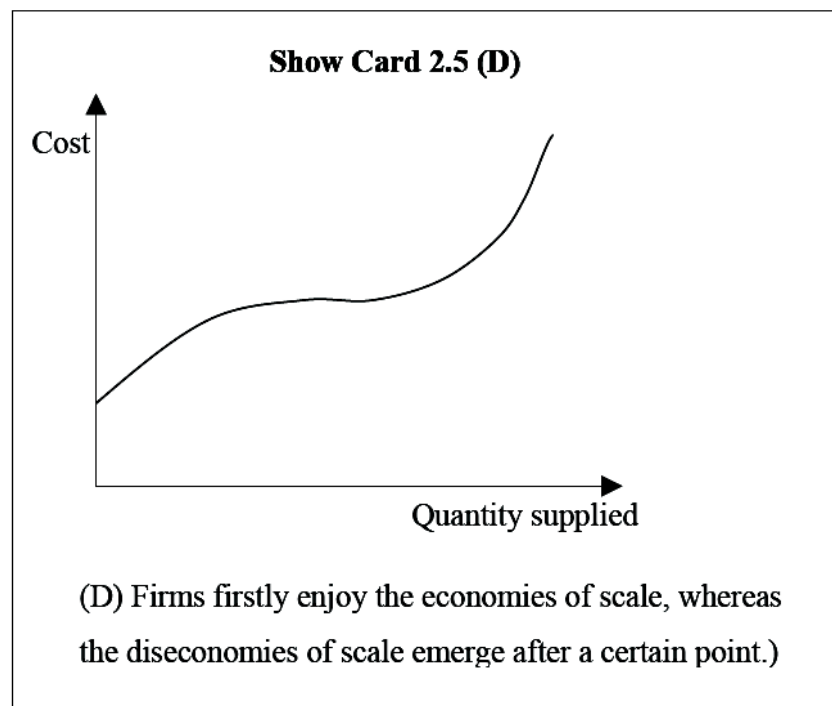
With the growing customer-oriented business culture (Reid, 1993, 2007), after-sales service can be the pivotal strategy to win over new clients as well as to

---

[79] Refer to Appendix 1 to see more show cards.

keep old ones. Considering customer service (question 2.11), firms are divided into those with such a specific department, those that plan to build up one, those that depend on different departments to deal with different clients' problems, or those that believe no need in their particular industry.

4.3.3 Entrepreneurship

In the literature, the concept of entrepreneur can be as varied as "coordinator" by Say, "innovator" by Schumpeter, "uncertainty bearer" by Knight, "arbitrageur" by Kirzner, and "a manager to drive change, pursue opportunity and create new value in an innovative way" by Reid (see Section 2.3). Owner-managers are provided the options above for selecting their own definition of the entrepreneur and an open-ended blank to supplement if needed (question 6.1-6.1.1), as shown in Table 4.8 as follows.

Table 4.8   Entrepreneur

6.1 Which concept of entrepreneur below is closest to your definition?	
A. Daring Innovator	☐
B. Profit-seeking Arbitrageur	☐
C. Recourse coordinator	☐
D. Uncertainty Bearer	☐
E. Manager of Changes	☐
F. Other	☐
6.1.1 If *F*, can you specify? _____	

As argued by Stevenson (1983) and Reid (2002), entrepreneurship may under certain circumstances be conceptualized as "entrepreneurial management". And the core of this seeming oxymoron can be embodied as "entrepreneurial orientation (EO)" (Lumpkin and Dess, 1996; Brown, 1996). In practice, EO is operationalized as three

major elements: innovativeness, risk-taking and proactiveness (Miller, 1983; Covin and Slevin, 1986, 1989, 1990; Tan, 1996; Wiklund, 1998; Barringer and Bluedorn, 1999). Some other scholars add two more factors: competitive aggressiveness and autonomy (Chaganti, DeCarolis and Deeds, 1995; Chen and Hambrick, 1995; Zahra and Covin, 1995; Lumpkin and Dess, 1996, 1997, 2001). In this survey instrument, these five dimensions are considered seriatim.

4.3.3.1 Innovativeness

As innovativeness is operationalized differently in empirical studies, such as R&D emphasis, new lines of products, and changes in existent product lines (Miller, 1983), the number of innovative activities (Lyon & Ferrier, 1998), and R&D expenditure to the total employment (Hitt, Hoskisson, and Kim, 1997), this questionnaire AQ2004 conveys this concept rather selectively.

R&D emphasis (Miller, 1983) is embodied in question 5.1 by asking whether this particular firm has its own R&D department already, or is planning to establish one, or feels no use according to the industry in which the firm operated. Question 5.2 further gives out six possible range of R&D expenditure in 2003, whereas question 5.9.2 offers the percent range of total profit that would be used for R&D in the future. New products (Miller, 1983) are investigated for the year of 2003 in question 5.5, which offers six options including none, 1-3, 4-6, 7-10, 10-20, and above 20. It is believed that the more spending on R&D activities, the higher ratio of R&D expenditure to profit, the more new products, the higher degree of innovativeness a firm will present.

4.3.3.2 Risk-taking

The degree of risk-taking is measured either by financial risks (Arditti, 1967; Reid, 1991, 1996, 2003) or by business risks (Miller and Leiblein, 1996). While the former usually refers to financial gearing/leverage (debt/equity ratio) and dividend-earnings ratio, the latter relates to the standard deviation of returns over years. Due to the Chinese owner-managers' desire for secrecy about sensitive earnings/returns figure, this survey instrument employs the financial gearing/leverage (question 4.5) as the proxy of risk-taking item in the EO.

4.3.3.3 Proactiveness and Competitive Aggressiveness

Proactiveness is featured by Miller (1983), Merz, Weber & Laetz (1994), and Zahra and Covin (1995) as (a) a strong tendency to be successfully ahead of competitors in product novelty and innovation speed, (b) a precise growth, innovation and development orientation, and (c) a rather rigid "undo-the-competitors" posture. The item of competitive aggressiveness is also added into the EO as (d) an aggressive attitude and the readiness to compete intensely (Lumpkin and Dess, 1997).

The factor (a) is reflected in question 5.4, which demonstrates the technological level of the firm in question (highly advanced, moderately advanced, moderate, less advanced, laggard). The factor (b) can be answered by whether a firm has developed its concrete strategic development plan (question 2.12) or by whether this firm has a growth ambition of being listed on the stock exchange (Shenzhen Second Board for SMEs, question 4.8). The factor (c) can be illustrated in question 7.7 by asking whether a firm would defend if attacked. Along with question 7.7.1, the same question (7.7) also reveals the number of defensive strategies to "undo the competitors" and thus shows the extent of competitive aggressiveness.

4.3.3.4 Autonomy

Chaganti, DeCarolis and Deeds (1995) associated autonomy with considerable control in the management of firms, whereas Lerner, Brush and Hisrich (1997) operationalized autonomy as the independence motives. In Chinese language, autonomy means "self-control" without interference from outside. Also regarding the aim of this thesis, the AQ2004 accepts the former point of view and examines the firm's authority styles and top management election methods. Question 3.3 tests whether an entrepreneur is willing to decentralize his/her authority to subordinates who are capable and trustworthy, whereas question 3.6 probes whether the director of the board and CEO are the same person and if not, how the CEO is elected (question 3.6.1). Thereby, the tight control of firms by management itself can be viewed as displaying a relatively high degree of autonomy.

4.3.4 Resources: Tangible and Intangible

No matter how differently resources have been characterized, such as "services" by Penrose (1955), "core competence" by Hamel and Prahalad (1990), "skills" by Hall (1992), or "capabilities" by Nelson and Winter (1982) and Grant (1991), Wernerfelt (1984) proposed that the success of firms largely relied on the resources a firm owned and controlled.

In AQ2004, resources are addressed in tangible and intangible types. While the tangible relates to tangible assets, the intangible refers to human capital, corporate culture, intellectual property, reputation, knowledge (technological), network, and the relevant capabilities to achieve and maintain these resources.

4.3.4.1 Tangible Assets

Chatterjee and Wernerfelt (1991) clarified the tangible resources as "physical and financial resources". More specifically, Grant (1997) operationalized the physical assets as (a) cash-in value of fixed assets, (b) workshop scale, (c) life-span of equipments, (d) the flexibility of workshop and machines. And financial assets were rather indirectly indicated by a number of variables, such as (a) financial gearing/leverage; (b) the ratio of net cash flow to capital expenditure; (c) bank loan interest.

As the collection of sensitive financial data from Chinese firms was forbiddingly difficult, the author adopted as the proxies of tangible assets: (a) register start-up capital (question 1.1); (b) the sources of start-up capital (question 4.4); (c) the number of the extra investments after establishment (question 4.7-4.7.1).

4.3.4.2 Human Capital

Human capital is operationalized in question 3.2 as the percent of employees with college diplomas or higher academic degrees (Grant, 1997). Compensation level compared with the average industry level in question 3.1 is also believed to be able to reflect the quality of human capital (Grant, 1997), presuming that higher salaries would attract more qualified employees. The quality of human resource is hoped to be enhanced by regular or irregular training programmes (question 3.4). And the employees of high calibre can be maintained by a wide range of incentive schemes, such as end-of-year bonus, better welfare plans, training opportunities, promotion, paid holidays/sick leave, and stock options, and so on (question 3.8).

Despite the large domain covered above, Colombo and Grilli (2005) particularly focused on the educational background and prior working experience of founders as a good proxy of human capital. Without much information about the founders'

portraits, this survey questions whether the directors of the board attend any training programmes and seminars, and how often, if the answer is positive (question 6.6).

4.3.4.3 Corporate Culture

Nham, Voderembse and Koufteros (2004) contended that organizational culture contributed to the development of firms even more than the application of manufacturing techniques. And Eggers, Leahy and Churchill (1996) disaggregated the concept of corporate culture as customer satisfaction, downward communication, job design, performance facilitation and work group performance.

As the aforementioned corporate culture is commonly designed for larger firms, enterprise culture in this particular sample is embodied as (a) the development of specific company codes and regulations in question 6.4 (too perfectly developed to change, or update regularly, or only change when problems arise), (b) company tenet/slogan in question 6.5 and 6.5.1 (see table 4.3.4 below), (c) the frequency of company social activities in question 6.7 (once a year, several times a year, once in a few years, never), (d) working place conditions in question 6.3 (cleanness, comfort, convenience and safety, etc), (e) the source of enterprise culture in question 6.2 (entrepreneur's personal charisma, personality and virtues), and so forth.

Table 4.9 Company Tenet/Slogan

6.5 Is there any company tenet/slogan?	
Yes	☐
No	☐
6.5.1 If *yes*, can you specify? _____	

4.3.4.4 Intellectual Property

Intellectual property generally encompasses copyrights, patents and trade marks (Hall, 1992). Although intellectual property management is frequently neglected in firms reported by McKinsey (Dietz and Elton, 2004) and Chinese firms have even poorer performance in this regard, it is intriguing to find out whether the intellectual property contributes to the firm growth in this particular country. The interviewees are asked whether their companies have any patent in product or technology and how many if the answer is affirmative (question 5.9 and 5.9.1).

4.3.4.5 Reputation

Mr. Ruiming Zhang, the founder of the Haier Group[80], declared that "we don't sell products; we only sell reputation". Organizational reputation is defined as corporate image and brand name (Hall, 1993). Additionally, Grant (1997) incorporated more reputation-related factors like the price difference with competing products, the repeated purchasing rate of existing customers, company financial performance over time and product quality perception.

Bearing in mind the smallness of most firms in this sample, reputation here is examined by the comparative market positioning in question 7.5 and 7.5.1 (respondents' own products would be inferior, or equivalent, or superior compared with competitors'). Besides, with the emergence of internet, the fact is that having a company website is certainly reputable for Chinese owner-managers (question 5.6).

4.3.4.6 Technology

---

[80] Haier Group is one of the largest electronic alliance producers in China, now even in the world.

Knowledge can be a too broad theoretical concept to capture precisely in reality. Spender (1996) argued that knowledge was both implicit and explicit. Neck, Welbourne and Meyer (2000) adopted the explicit idea and defined the knowledge as "the knowledge of employees based on scientific or technical training" and "technical know-how or organizational competencies and routines". As the former resembled the characteristics of human capital discussed above and the latter mirrored the "routines" of Nelson and Winter (1982), Grant (1997) simplified the knowledge as "technical knowledge", which could be operationalized as (a) the number of patents, (b) revenues generated by patents, (c) the ratio of R&D staff to total employment (similar to innovativeness in the EO).

In this survey instrument, the technology concept is conveyed by both self-perceived and legitimately certified technological level, R&D and the application of information technology. The self-perceived technological level compared with the average industry (question 5.4) can be a reasonable indicator of technology as owner-managers know their technical know-how the best. Interviewees are also asked if their firms have passed ISO9000 or any other international standard set by International Organization for Standardization (ISO). The options available to choose (e.g. we already have, we are in the process of application, we have no such plan) can not only answer the primary enquiry, but can also reflect the general attitude of owner-managers towards technology.

In terms of R&D, Grant's ratio of R&D staff to total employment can be calculated from the number of R&D staff (question 5.1.1) divided by the current employment (question 1.2), provided there is an established R&D department. Besides, the number of R&D staff who have a master's degree or above (question 5.1.1.1) shows the quality and potential of innovation. Furthermore, nowadays a

marked feature of technology can be the application of information technology, such as the use of email and internet meetings for communication (question 5.8 and 5.8.1), the use of internet for "e-commerce" (question 5.7), the type and number of computer software installed (question 5.11 and 5.11.1), the application of management information system (MIS) as well as the major difficulty in use (question 5.12 and 5.12.1).

4.3.4.7 Network

It is commonly felt that "guan xi" in China exerts vital influence on firms' superior performance (Butler and Brown, 1994). Rickne (2001) operationalized this network concept as the number of technological relations and the amount of technology transfer. Lechner, Dowling and Welpe (2005) defined network as the different types of external relations. Havnes and Senneseth (2001) were concerned with the cooperation with other firms in twelve different potential areas (e.g. product diversification, sales, financing, manufacturing, etc).

In the AQ2004, the major contacts for advice when entrepreneurs start their firms can reflect the range of connections to certain extent (question 4.1), whereas the major sources of innovation reveal the size of technological relations (question 5.3). Moreover, other external relations can be embodied by the type and number of suppliers (question 7.1 and 7.2) and the financial connections with family/friends, banks, venture capital, other firms, and stock market, and so on (question 4.4).

4.3.5 Contingency Factors

Although the EO concept and resource-based view (RBV) mention environment by "proactiveness" and "network" respectively, it is the contingency theory that

formally addressed the organization and its environment (Burns and Stalker, 1961; Woodward, 1965; Lawrence and Lorsch, 1967). The development of the contingency theory since 1960s has integrated a series of contingency factors (e.g. environment, strategy, size, technology, etc) to affect organizational structure and further influence firm outcomes. As the size and technology have been discussed at length above, this subsection will concentrate on the remaining yet indispensable contingency factors: structure, environment and strategy.

4.3.5.1 Structure

With regard to contingency theory, organizational forms can be formulated as a continuum with two extremes: "organic" and "mechanistic" (Burns and Stalker, 1961). The organizational structure is characterized as the design of tasks and functions, the type of control, authority and communication. In keeping with the literature, the development of firms' codes and regulations is examined in question 6.4 and the specific question (3.7) about recruitment also indirectly reveals the design of firm functions. The type of control is scrutinised by questioning the willingness of entrepreneurs to delegate their authority (question 3.3). The variety of communication methods can also be conducive to judge whether the structure is rigid or flexible (question 5.8).

4.3.5.2 Environment

A firm usually builds up sophisticated relations with suppliers, clients, extant and potential rivals, government agencies and even the public. Dess and Beard (1989) devised three dimensions of the business environment: capacity, stability-instability, and homogeneity-heterogeneity.

(1)Capacity

Capacity related to the degree of the support provided by the environment for organizational health and development, such as external finance (Becchetti and Trovato, 2002), government policies (Levie, 1994; Fischer, Reuber and Carter, 1998; Bartlett and Bukvic, 2001), as well as location (Smallbone et al., 1993; Storey, 1994; Hoogstra and Dijk, 2004).

External financing difficulties are caused by multiple factors (question 4.3), such as high loan interest rates, no qualified collateral, the discrimination against small firms from financial institutes, the lack of financial support from family/friends, no professional SME supporting systems, less developed auditing/accounting systems, no convincing business plans, difficulty in being listed in the stock exchange, little personal wealth, the lack of government support, and so on. It is believed that the more factors a firm ticks, the less munificent the business environment is.

Government support can be financial sponsorship (question 8.1), such as "Township Enterprise Development Fund", "SME credit guarantee scheme", "High-tech SME Innovation Fund", etc. It also can be nurturing policies (question 8.2), like high-tech companies income tax reduction policy, technology innovation subsidy policy, subsidy for the acquisition of equipments made-in-China, township enterprise income tax reduction, income tax reduction by creating jobs for urban laid-offs, export drawback, income tax reduction for university factories and welfare factories, small firm income tax reduction, and income tax reduction for firms in minority regions, and so on. It is felt that the more diverse the support received from government, the more benevolent the business environment is.

With regard to serious social problems "San Luan"[81] in China since 1990s, interviewees evaluate the current business environment after the renovation action in 1999 (question 8.3). The "San Luan" problem may be perceived to be eradicated, or alleviated, or unchanged, or even worse. Further, owner-managers express the expectation of assistance from government SME support centre, local SME credit guarantee agencies, industry associations, professional consulting companies, venture capital, and so forth (question 8.4). The establishment and development of any organization that entrepreneurs want the most would be supposed to improve the business environment the greatest.

The last-named dimension of environment is location, which is operationalized as "population level and GDP growth per capital", "employment growth", and "accessibility". This survey instrument does not cover such data but the year book of Guangdong Province can supply the reference.

(2) Stability and Instability

Duncan (1972) firstly gauged the perceived environment uncertainty, which was later developed by Milliken (1987) into three major factors: (a) state uncertainty (the unpredictability of external conditions), (b) effect uncertainty (the inability to foretell the impact of environmental contingencies on organizations) and (c) response uncertainty (the poor aptitude for predicting the likely consequence if a particular response is taken).

Rather than separately evaluate three elements, this survey instrument probes the respondents' general expectation of next year employment, profit, sales and assets along with their overall perception of legal, economic, political and social

---

[81] "San Luan" means three unjustified arbitrary government behaviours: fine, levy and raise money.

circumstances. A three point scale is devised as "increase/remain the same/decrease". The higher score implies a relatively stable and favourable environment, and vice versa.

(3)   Homogeneity and Heterogeneity

Robbins (2005) pointed out that the homogeneous environment was associated with highly concentrated market with few major competitors; and heterogeneous markets were assumed to be low concentration with fierce competition. As Reid, *et al.* (1993) noted, market models could be categorized extensively as (a) low concentration (monopolistic competition), (b) medium concentration (a dominant firm/competitive fringe market model) and (c) high concentration (oligopoly).

Not fully, but however partially, the percent range of market share (question 1.4.2) and the market extent (question 1.4.3) can hint at the degree of the market concentration. However, the core of the question is to examine the competitive environment by owner-managers' self-perception in the industry (question 7.3). The industry can be at the emerging stage, or just about to mature, or may have already been saturated, or about to shrink as an sunset industry, or rather may have encountered the reconstruction and even insolvency. The ease of entry into the industry can be very hard, slightly hard, slightly easy, or very easy (question 7.3.1), and the ease of the exit from the industry can also be calibrated on a four-point scale (question 7.3.2). Moreover, owner-managers can illustrate the self-perceived obstacles that will prevent potential competitors from entering the market (question 7.4), such as narrow product range, high average total cost, high start-up capital needs, the lack of raw material suppliers, government restriction, existing fierce competition, the shortage of experienced employees, and so forth. The number and nature of these

barriers would have a marked bearing on the market concentration, and would eventually influence the firm growth.

4.3.5.3 Strategy

Opposed to the pessimistic view in Hannan and Freeman (1977) that human beings were unable to influence the environment, Child (1972) asserted the strong possibility of linking an organization to its environment, by taking appropriate strategies. Porter (1980) contended five forces of competition and Reid *et al.* (1993) developed a framework of competitive forces in a small business context, including extant rivals, potential entrants, substitutes, suppliers and buyers. Despite successful strategies implemented by addressing five competitive forces, Reid (1993) proposed "defensive strategies" as a complement, though it was found that "the best form of defence is attack" (p.133).

In accordance with the literature above, a good number of actions are considered to be undertaken to deal with *existent rivals*. For instance, a firm would cooperate or even acquire competitors in the case of excess demand (question 2.2). A price hike/cut would occur according to rivals' pricing (question 2.3). It may be equally likely for a firm to compete as well as collaborate in terms of innovation (question 5.3). Apart from other entry barriers, *potential rivals* would be also kept out if existing firms have already competed intensely (question 7.4). The superiority over *substitutes* can guarantee an advantageous position in the market (question 7.5.1). And the precise definition of *buyers* (question 7.1) not only shows the firm's customer orientation, but also forebodes the likelihood of winning over new buyers while maintaining the old ones. Lastly, the bargaining power between the firm and its *suppliers* can directly affect growth and performance (question 7.2.1). In order to

strengthen the core competence, firms can choose cost leadership, or product differentiation, or both (question 7.6).

In spite of the competitive strategy, firms are supposed to defend when attacked. For example, the firms may defend by increasing the entry barriers, or by declarations to retaliate, or by keeping low key to avoid possible attack, or rather by taking no defensive actions (question 7.7). With quite few empirical tests having been undertaken up to this point (except in Reid, 1993, 2007), it would be even more intriguing to explore the relatedness of this type of strategy to the firm outcomes in this particular sample.

4.4 Fieldwork Methods

Without any "guan xi" (network) or sufficient funding, the author's fieldwork aspiration in China might remain no more than wishful thinking. Further, the author had never been to Guangdong Province in Southern China prior to this project – not to mention having any pre-established networks. The successful gaining of a teaching post in economics at the Guangdong University of Foreign Studies (GDUFS) offset the author's disadvantages above. As well as offering precious teaching opportunities, the GDUFS became an invaluable platform on which the author built up connections with the enterprises in the region from the filed contacts referred by the university faculty and student bodies. They also helped in securing the research funding, in part.

During the time from September 2004 to December 2004, the author and his trained co-fieldworkers conducted first-stage face-to-face interview with 89 firms[82] at ten major cities in Guangdong Province. Exceptionally, three firms were approached by post, through a provincial government office, and two were telephone interviewed

---

[82] The author interviewed 29 firms and the co-fieldworkers interviewed the remaining 60 firms.

by co-fieldworkers whose parents virtually owned the companies. By the time of February 2006 (right after the Chinese Lunar New Year), the second-stage telephone interviews were undertaken to check the survivability of the firms previously interviewed and its employment by then. Seven firms were considered out of business as informed by the contact person, or because the contact address was changed and no way to locate again, or because the contact number had become an invalid record at the local Telecom Company. In other words, 76 firms out of 83 in total have survived by the year of 2006.

This section firstly outlines the pilot project, first-stage and second stage interviews. Then the training programme for co-fieldworkers is introduced. Attention is also paid to the process of data collection and countercheck, and database construction.

4.4.1 Pilots

The importance of pilot work was stressed as "a dress rehearsal" by Converse and Presser (1984). Concerning the survey instrument in such a scope (106 questions), a pilot project seemed essential before the instrument was deployed more widely. Eight firms were selected due to their proximity to the author and his referees[83]. Meanwhile, the survey instrument was tested and amended accordingly while the interview techniques were improved.

4.4.1.1 Pilot Questionnaires

Table 4.10 below illustrates the age and size information of the pilot sample, which can at least highlights three major problems. First of all, some interviewees

---

[83] Six firms were recommended by the author's academic colleagues and the other two came from private friends' references.

tended to provide a range for size measures (firm 1) for their own convenience, rather than a precise figure, which caused ambiguity. Sometimes, respondents were simply unwilling to offer any information that they believed should be confidential (firm 4). More seriously, it was possible to encounter an interviewee who did not have enough knowledge of the firm to be able to answer all the questions (firm 1). Therefore, an eligible interviewee should be the person who knows the firm well and it would be desirable to contact top management (owners or general managers). When he/she provides sales/assets data, financial statement should be accompanied at the same time for reference, in order to avoid imprecision as well as inaccuracy.

Table 4.10 Age and Size of Pilot Firms

Code	Company Type	Age	Employment	Sales	Assets
1	Plastics manufacturer	22	>1500	>10000	8000
2	Electronics manufacturer	9	33	5000	1000
3	Home appliance dealer	2	1	496	60
4	Hardware manufacturer	2	20	2000	N/A
5	Security services	18	812	850	250
6	Leather manufacturer	21	80	1000	1000
7	Handicraft dealer	8	45	100	500
8	Advertisement company	5	16	2000	200
		10.88	143.86	1635.14	1527.86
Mean		(n=8)	(n=7)	(n=7)	(n=7)
Std. Deviation		8.29	295.71	1646.34	2858.87

(Note: Age is calculated by the number of years. Employment refers only to the full-time equivalent employment at the time of interviews. Sales and assets relate to

the nominal figures in Chinese Yuan [ten thousand[84]] in 2003 without CPI adjustment.)

Besides, there was a general impression that respondents had a preference for choosing answers from available options. The suggestion is to make options as comprehensive as possible. Most interviewees rarely would like to elaborate a question too deeply, knowing that more than 100 questions in total need answering. However, the option "other" should not be deleted and the additional blank for respondents to specify should always be reserved in that some interviewees do take pains to supplement the data. If so, the opinions most often can be either mistakenly ignored, or totally unconsidered before.

The proper ordering of certain questions can also make a difference. It is found too obvious to put these two questions together in terms of R&D expenditure and last year profit, shown in Table 4.11 as follows. Hence, they are separated in some distance under different main headings. It was observed that none of respondents was reluctant to confide in a way as they usually would. A possible range of profit earned last year can be thereby calculated.

[Table 4.11 near here]

---

[84] Chinese people traditionally count big numbers by the first threshold "Wan" (ten thousand), rather than one thousand.

Table 4.11 R&D Expenditure and Profit

5.2 How much is approximately spent on R&D last year? (RMB)	
A. <50,000	☐
B. 50,000 – 99,000	☐
C. 100,000 – 199,000	☐
D. 200,000 – 499,000	☐
E. 0.5 – 1 million	☐
F. > 1 million	☐
…	
…	
5.9.2 How many percent of profits the company has used to do research and development last year?	
A. <5%	☐
B. 6-9%	☐
C. 10-19%	☐
D. 20-29%	☐
E. 30-39%	☐
F. 40-49%	☐
G. 50-59%	☐
H. 60-80%	☐
I. >80%	☐

As an old Chinese saying goes, "it will be too late if the rice has been already cooked."[85] This pilot project offers a final chance to amend the flaws of the questionnaire. While some are unintentional minor typing mistakes, some can be crucially misleading. For instance, a seller's market should never have "excess supply" (question 2.2). And the percent ranges of "20-39%" and "30-39%" should not coexist for selection (question 5.9.2). Apparently, there is no best questionnaire as it can always be improved.

4.4.1.2 Interview Techniques

Before contacting the company to set a date for an interview, one would automatically presume that interviewees want to answer questions in their offices, but

---

[85] A similar phrase in English is "don't bolt the stable door after the horse is gone".

it is not always the case in practice. Three out of eight interviewees chose to meet at other locations when they were actually off work (e.g. a coffee shop, a restaurant VIP room, at home, etc). To the author's surprise, some interviewees expressed a certain interest in the research topic as well the author's British doctoral candidacy, which helped establishing trust more quickly and smoothing out the communication to certain extent. It suggested that entrepreneurs may not be as difficult to approach as imagined before, providing good rationalization and reliable credentials accompanied.

The control of interview process can be personal. While some are reserved and require the interviewers/author to encourage and slightly prod, some can be excessively talkative. As for the former, it is expected to explain in detail and ask more questions to train and inspire. Considering the latter, time control is critical, as this type of respondents tend to overwhelm the interviewer with irrelevant information. Nevertheless, the interviewer should read out each question and record each response for both types of interviewees. Thus, the interviews seem more conversational and interactive in the hope that any confusion can be clarified timely and misunderstanding can be reduced to the minimum. Admittedly, interviewees do not always have the full knowledge about all the enquiries. If this is the case, the interviewer can leave it for the moment and call back later to check the availability of further evidence.

Above all, the pilot project in real world considerably assists to enhance the author's interview techniques. As Chairman Mao[86] famously put it, "true knowledge comes from practice." More interview skills can be found in the "Guide to Interviewer" (Reid, 1993, 2007; Power, 2004). It is felt that the questionnaire AQ2004

---

[86] Mr. Mao, Zhedong, the first chairman of the People's Republic of China since the liberation in 1949.

is reasonably applicable and the interview techniques are well rounded after such a pilot program.

4.4.2 Training Interviewees

As 89 firms in the sample are scattered across Guangdong Province (nearly three quarters of the Great Britain in terms of acreage), time, money, and full-time teaching obligations would prevent the author travelling to interview all. With the generous patronage from both the University of St. Andrews and GDUFS, the author was able to train a large number of students (nearly 180 from six third-year classes in related majors) as potential co-fieldworkers and eventually one third proceeded to conduct the first-stage face-to-face interviews in the field.

The training program consisted of various elements, such as the purpose of the interview, the detailed instruction of each question in the questionnaire AQ2004 and the questions that might arise during the procedure, the management of interview process, and interview techniques. Last but not least, co-fieldworkers were reminded of academic ethics and well informed that data countercheck would be conducted afterward.

For the sake of efficiency, co-workers were divided up into teams and at least one team leader would be responsible for the project progress. Meanwhile, useful instructions and the standard questionnaire AQ2004 were printed off as handouts as well as uploaded as electronic copies at the author's university website[87]. The two-way communication was ensured to be smooth via emails and regular weekly meetings during the data collection process.

---

[87] http://www.st-and.ac.uk/~zx

4.4.3 Data Collection and Countercheck

With the experience gained from the pilot program, properly trained co-fieldworkers, and reliable references, the first-stage large scale data collection in the field occurred between October and December in 2004. And the second-stage telephone interviews were conducted nearly one year and a half later in February, 2006.

4.4.3.1 First-Stage Data Collection

In the first-stage, a preletter for AQ2004 was sent to owner-managers via the author's referees so the interview could save the time and begin straightforwardly as follows.

"Thank you for agreeing to accept our interview. As you know, this interview is a part of an academic project sponsored by Guangdong University of Foreign Studies and University of St. Andrews. Thereby, it is assured that any information you provide here will be kept highly confidential and only used for academic purposes (passing on a duplicate of AQ2004 to the interviewee for reference and keeping another one to record answers). This questionnaire consists of eight sections: basic information, firm operation, human capital, finance, technology and innovation, enterprise culture, competition, and environment, etc. Shall we start with the basic information?"

The interviewer would then read out each question under different sections in a consultative way and wait patiently for response. Once the answer was given, the interviewer was supposed to repeat it quickly for confirmation and record on file. If observing the confusion expressed by the respondent, the interviewer should initiate an explanation, where appropriate. The extra information provided by the interviewee

should also be written down. The principle was to gather the data that owner-managers would like to share as complete as possible.

An interview could last from at least one hour to as long as two hours. As the average time spent on the interview was longer than one hour, time control skills would be critical for both parties. It was not unusual for the interviewee to be interrupted by phone calls and even visitors. It was the interviewer's major principle to keep the whole process in the right rhythm or get it back swiftly to the track if being interrupted.

At the end of the interview, the interviewer would acknowledge the appreciation for the respondent's assistance and reassure the confidentiality of the data with an end statement as follows.

"Thank you very much again for the precious time and cooperation. The administered questionnaire 2004 is successfully completed herein. Your company will simply appear anonymously in the database for the sake of strict confidentiality. Certainly, once the research project has been accomplished, the findings will be made available to you if you so desire. We wish you all the best with your business."

4.4.3.2 Data Countercheck

In order to guarantee the quality and reliability of data collected by co-fieldworkers, the follow-up countercheck was undertaken shortly before Chinese Spring Festival in 2005. A traditional Chinese new year card was posted to respondents to thank them for completing the AQ2004, and a phone call was made a week later to enquire the receipt of the card, as well as ask the process of the interview. The conversation usually was concerned with the manner of the interviewer and the suggestions about how to make such an interview better. Most

owner-managers had positive opinions towards our co-fieldworkers (e.g. politeness, the readiness to clarify, etc) whilst suggesting the minor shortcomings (e.g. not so punctual, bookish explanation, etc). The most frequently complaint was the length of the interview, which was apparently longer than expected.

As all the firms were personally recommended and the co-fieldworkers were specially trained, the forgery of questionnaires would be highly unlikely. However, it was found that five firms were not exactly interviewed by face-to-face, three of which were through a provincial government office and two of which were telephone interviewed. With regard to the government connections of the former and the family business background of the latter, the non-face-to-face method was felt to be understandable and still acceptable at this point.

4.4.3.3 Second-Stage Data Collection

With the purpose of checking the survivability and growth of firms in the sample, the second-stage data collection was undertaken in February 2006. It was right after Chinese Lunar New Year (Spring Festival) so that the most of interviewees were still in the festival mood and easier to approach after nearly one year and a half. As the major aim of this interview was just to find out whether the firm was still in the business and what the current employment was if so, the method of telephone interview was adopted. A typical conversation usually proceeds as follows.

"Mr./Mrs./Ms. Manager, happy Spring Festival! I am Zhibin, the lecturer from GDUFS. Today I am calling to specially thank you for the cooperation in our private firm research project nearly one year and a half ago. And from the record your

company employed 'N'[88] staff by that time. Do you mind me asking what the current employment now?"

With the pre-existing relationship, most of owner-managers found it not difficult to respond, though the answers might vary. For instance, some would give out a new figure directly, whereas the other would provide a percentage increase/decrease. In some cases, some respondents also enquired the progress of this project and the author's recent news. Lastly, all the conversations ended in a blissful tone to wish all the interviewees a successful start of 2006.

While 76 firms accepted the telephone interviews, it was believed that 7 firms exit the market as none of them could be contacted by the contact person, or the office number left previously, or the contact business address. Therefore, based on this second-stage interview, the survival firms can be identified for the later purpose of correcting the sample selection bias and the employment growth rate between two interviews can be calculated for the further statistical and econometric analyses.

4.5 Database Construction

4.5.1 Data Storage

Concerning the scale and nature of data gathered in a thick pile of questionnaires, the Microsoft Excel spreadsheet turned out to be an easy starting point to store both qualitative and quantitative data prior to any further analysis.

Two stages of data input were implemented. On the first stage, data were exactly entered as they appeared on 89 questionnaires, either qualitative or quantitative. An original Excel file and two back-up files were saved on separate computer devices (a laptop hard disk, a flash memory disk and a portable USB hard disk), considering that

---

[88] N stands for any possible number that was recorded under the variable of employment 2004 in the database.

computer crash caused by virus is rather not unusual nowadays. In the second round, five external inspectors (three with bachelors' degree and two with masters' degree) were employed to check the correctness of the original input. It was hoped that unnecessary mistakes could be reduced to the minimum by doing so, if not none.

4.5.2 Database Design

In order to facilitate the following statistical analysis and econometric inferences, quantitative data were coded in a systematic format and entered in SPSS. For instance, the cities where firms were located were coded from 1 to 10 (e.g. the code for Guangzhou was 1). The two-digit CNSIC code was implemented to match each firm's industry type (e.g. a leather producer was coded 19). And true or false questions were coded as 1 for yes and 0 for no. It was slightly more complicated to deal with questions that allowed multiple answers. In this case, each available option would be designed as a variable that had the value of 1 (chosen) and 0 (not chosen). Therefore, a multiple-answer question with eight options could be broken down into eight variables in the database.

As most data were collected at the time of interview, a cross-sectional database of 83 firms (excluding 6 public owned firms) was constructed with more than 250 variables and over 20,000 data points. Likewise, the database files were saved as the original and the backup files separately. As seen above, a number of steps were taken to ensure the applicability, credibility and safety of the data and to facilitate the data manipulation in next chapters.

4.6 General Conclusions

This chapter has described the sampling process, survey instrument design, fieldwork methodology and process and database construction. The conclusion will be drawn upon hereby.

First of all, although secondary source data and postalquestionnaires may provide a larger-sized random sample, they are not well received in China due to unique business culture and historical heritage. According to the specific research aim of this thesis and limited financial means, face-to-face administered interviews were conducted through the instrument of structured questionnaires. A sample of 89 firms was interviewed, including six SOEs. Considering the breadth and depth of each interview, such a number of firms were believed to be able to construct a decent sample.

The representatives of the sample were described by geographic distribution, sectoral composition, ownership and employment, and size distribution. The population of 21 major cities economic data (*GD A*) and the population of manufacturing firms in 14 cities/counties of Guangdong Province (*GD B*) were employed to attest the representation of the sample (*SAMPLE A*, 83 firms excluding six SOEs; *SAMPLE B,* including six SOEs). Geographically, the correlation between *SAMPLE A* and *GD A* was found strong and significant (i.e. Kendall's tau_b .754 at the significant level of 0.01). In terms of industry sectors, the sample comprised all the categories of interest (one digit CNSIC) and more than half (two-digit CNSIC). The ownership structure and the employment of firms (*SAMPLE B*) also corresponded fairly well to the population of *GD B*. And it was found that firm size classes could be more properly separated by employment than by sales, which might be owed to the temporariness and obsoleteness of the division standard enacted by China NBS. Thereby, despite the constrained sampling methods and the limited source of funding,

SAMPLE A (83 firms) is believed to be a decent sample which represents the privately owned firms in Guangdong Province, to the reasonable extent.

Next, in keeping with a wide range of literature, the survey instrument of 2004AQ was particularly designed. The general information was provided in terms of firm basic registry data, market environment, and firm operations. The growth indicators were defined and examined as employment, sales and assets. The factors that foster the growth also were probed in terms of EO (i.e. innovativeness, risk-taking, proactiveness, competitive aggressiveness and autonomy), RBV (i.e. physical and financial tangible assets, human capital, corporate culture, intellectual property, reputation, technology, network), contingency theory and its extended framework (i.e. organizational structure, environment and strategy). With the readiness of this survey instrument, it was felt that the data collection could commence in the field.

Then, a pilot program was undertaken in a small sample of 8 firms to test the applicability of this research tool and the relevant amendments were made thereof. A number of co-fieldworkers were selected and trained in terms of the AQ2004 itself and the interview techniques. Lastly, two-stage large scale investigations were launched to collect data respectively in 2004 and 2006. Therefore, the fieldwork process was completed by pilots, co-fieldworker training, first stage face-to-face administered interviews, second-stage telephone interviews, and data countercheck. When the data were fully collected, the database was constructed in the formats of both Excel spreadsheet and SPSS. By doing so, it will not only secure the storage of the data, but also guarantee the descriptive analysis of the firm's general characteristics that Chapter 5 will be turning to next.

CHAPTER 5: CHARACTERISTICS OF CHINESE PRIVATE FIRMS

5.1 Introduction

This chapter comprehensively explores the characteristics of 83 private firms, a sample collected via administered questionnaires at face-to-face interviews in Guangdong Province of China during September – December 2004. The structure of this chapter is formally divided up into seven sections, namely basic features, firm operation, human resource management, finance, technology and innovation, enterprise culture, and competitive environment. Once the illustration of the entire sample is complete, drawing upon tens of thousands of data points, a "typical" private enterprise will be characterized as a general conclusion.

Prior to more sophisticated statistical and econometric analyses in the next chapters, descriptive and exploratory statistical techniques are implemented here as a point of departure to allow the data to speak for themselves as far as possible. The cross-site methodology (Reid, 1993, 2007) is adopted to examine the status of privately owned sampled firms. Although the sample size is not very large, the depth of a study of this kind and the use of the fieldwork methods are new in this context. They have not been attempted so far in similar studies of Chinese private firms, at least to the author's knowledge.

5.2 Basic Features

The function of this section is to characterize the sampled firms in a variety of aspects. First, geographical distribution, sectoral composition and size will be briefly considered (also see Chapter 4, Section 4.2). Second, age, market extent and market share will be explored. Naturally, ownership information is omitted since the focus is only privately owned firms from this point on.

5.2.1 Geographical Distribution

These 83 sampled firms were scattered across ten major cities within the Province of Guangdong. Cities were coded from 1 to 10 according to the number of firms in the sample in a descending order. For instance, the city of Guangzhou was coded as 1 as it contained most firms (57.8% of the sample), whereas Shantou was coded as 10 with the lowest frequency (2 out 83 in total), as shown below in Figure 5.1. The sample covers almost all economically important cities (except Zhuhai[89]) and its representativeness can be referred to in the full discussion of the sample design in Chapter 4, Subsection 4.2.3.

Figure 5.1 Map of Guangdong Province[90]

5.2.2 Sectoral Composition

China's National Standard of Industrial Classification (CNSIC)[91] was adopted as a reference point for industry sectors. Similar to many other works in the field (50.4%, see Appendix 3), this sample also tended to incorporate a wide spectrum of

---

[89] See the Chapter 4, Subsection 4.2.3.1 for the explanation why the city of Zhuhai was excluded.
[90] Source: http://www.gd.chinaunicom.com/campus/images/map.jpg,2006-12-25
[91] CNSIC (GB/T 4754-2002) were updated by NBS of China on 14th May, 2003. See Appendix 4.

industries. According to one-digit CNSIC, 11 industries were encompassed out of 20 in total. The industries excluded were either those which were saturated with non-profit organizations and institutions, or those which were largely dominated by state-owned enterprises. These present little research interest on this occasion. Thus, it was felt that sectoral composition of this sort was reasonable and acceptable (also see Chapter 4, Subsection 4.2.3).

In this sample, 39.8% of firms operated in manufacturing industries and 60.2% of businesses were in the non-manufacturing sector, as demonstrated in Figure 5.2 below. More details can be referred to Table 4.2 Sectoral Distribution (one-digit CNSIC) and Table 4.3 Sectoral Composition (two-digit CNSIC) in the Chapter 4, Subsection 4.2.3. In other words, the local economy was largely service-based, as is typical in advanced market economies (e.g. the percentage of manufacturing and services firms registered for V.A.T. in the U.K. were 28% and 72% respectively, *Small Business Service, 2001*)

Figure 5.2 Sectoral Composition of Private Firms
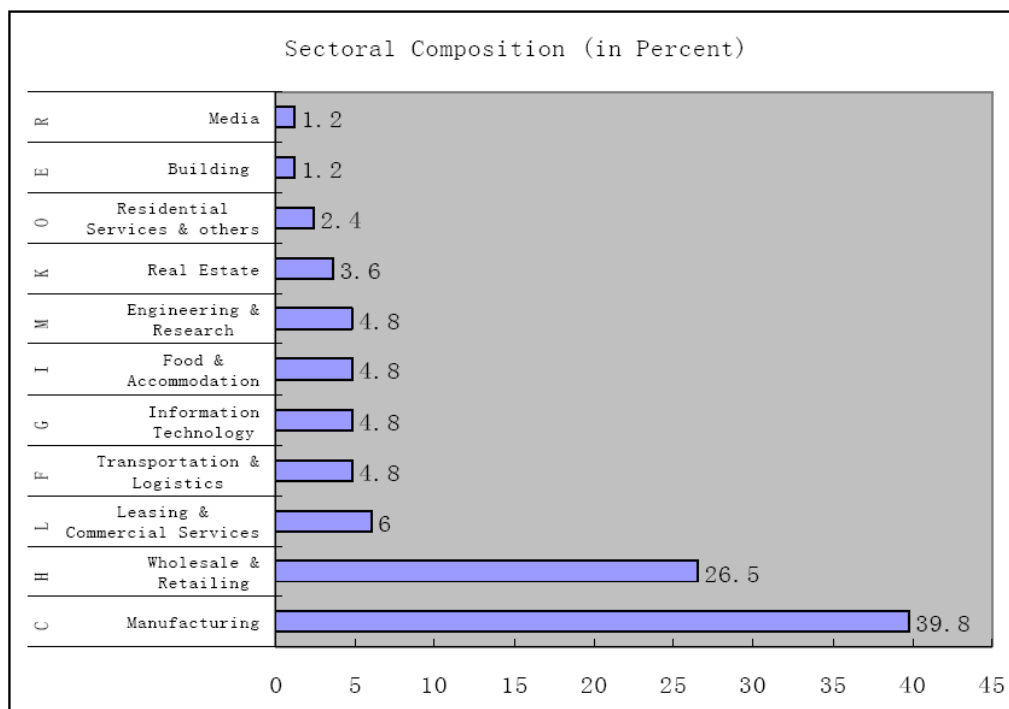
5.2.3 Size and Age

The size of firms was measured in three ways: by employment, sales and assets, respectively. The employment variable was measured at the firm's inception as well as at the time of face-to-face interview in 2004; whereas the latter two were measured in the establishing year and the year of 2003. The descriptive statistics for 83 private firms in terms of employment, sales and total assets are shown in table 5.1 below.

[Table 5.1 near here]

By using different size variables, it was evident that firm size varied widely. For instance, the mean of Employ1 was 56.85 (Std. Dev. =116.222) and that of Employ2 was nearly fourfold as 212.05 (Std. Dev. = 458.195). The same growth rates could be found when measuring the size by the sales and assets. Moreover, it was observed from the box plots of each size measure that both median sizes and inter-quartile ranges increased over time (see Figure 5.3 below), which represented the growth process by the wider dispersion of the size distribution in the sample. Outliers were checked and were indeed found to be the result of firm growth rather than data input mistakes. However, the high skewness ranging from 2.48 to 6.27 and the kurtosis above zero suggested that the size distribution process was of non-standard normality, which implied that the transformation of the growth indicator would be required in the growth models in the next chapters.

[Figure 5.3 near here]

Table 5.1 Descriptive Statistics of Firm Size

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std.	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Employ1	82	2	680	56.85	116.222	3.750	.266	14.981	.526
Employ2	83	5	3000	212.05	458.195	4.046	.264	18.959	.523
Asset1_85	75	6.05	115163.12	4210.0355	14938.40	6.277	.277	43.509	.548
Asset2_85	75	15.00	281650.64	17757.40	41964.67	4.174	.277	21.623	.548
Sales1_85	69	7.36	21466.31	2785.6294	4611.128	2.612	.289	6.764	.570
Sales2_85	74	14.94	111856.82	13391.80	20781.87	2.480	.279	7.104	.552
Valid N (listwise)	65								

Note:

1．Employ1 means the employment at the inception of the firm, whereas Employ2 means the figure at the time of interview.

2．Likewise, Sales1_85 and Asset1_85 stand for the values at the inception, whilst Sales2_85 and Asset2_85 refer to the value in 2003. "85" means that all the values have been adjusted to the 1985 price level.

3．The monetary values of sales and total assets are measured in ten thousand Chinese Yuan (RMB 10,000) due to the Chinese tradition that accounts the large number in the unit of ten thousand, rather than one thousand.

Figure 5.3 Box Plots of Employment (a), Sales (b) and Assets (c)[92]

(a)

(b)

(c)
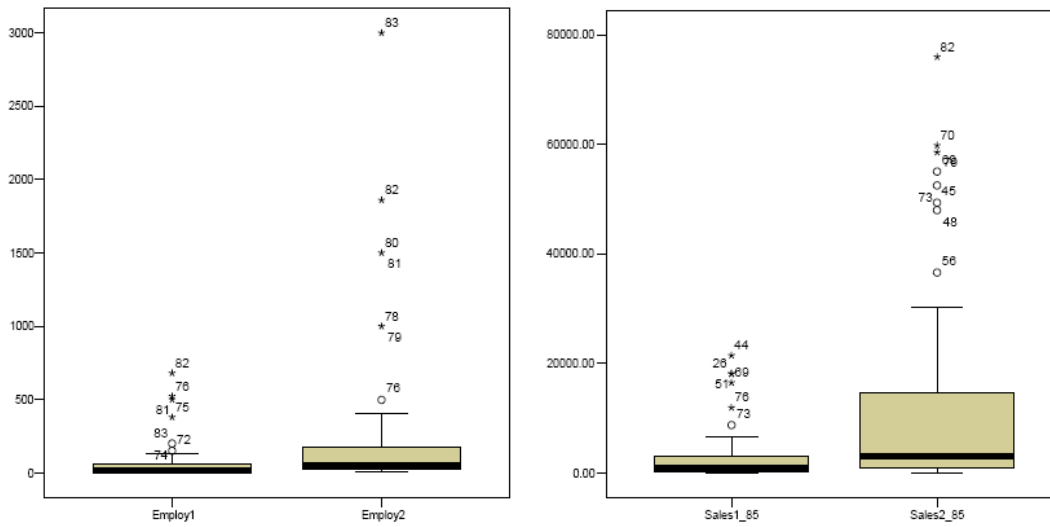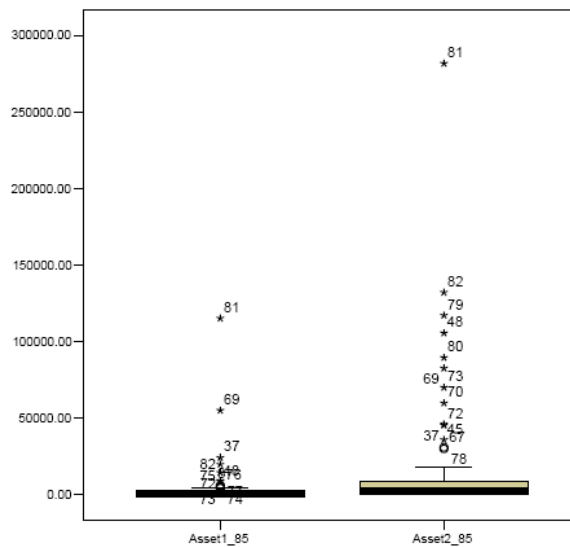
Knowing the size distribution of the entire sample was one thing, yet categorizing each firm into a size class was another. The National Bureau of Statistics in China (NBS) has used a size division for six industrial categories only (i.e. manufacturing, building, transportation and logistics, wholesale and retailing, food and accommodation, and postal service) since 2003. Unfortunately, there is not any

---

[92] Sales and Assets values were adjusted to the 1985 price level.

sort of official size division standard for other industries. Even within those six industry categories, the total asset as one of the size variables has been applied merely in manufacturing and building industries, whereas the sales variable has appeared to be based on data, which did not keep up with China's rapid economic growth in the last two decades[93]. With much wider recognition, the employment variable becomes a less problematic candidate for separating firm size classes effectively, considering a cross-industry sample at hand. A firm is therefore statistically called "small" if hiring less than 600 full time employees, or regarded as "medium" if employing between 600 and 3,000, or thought of as "large" if the employment is equal to or larger than 3,000. Keeping to this provisional size division standard, 92.8% of the sampled firms were small, 6.0% medium and 1.2% large. In other words, nearly 99% of firms in the sample were small and medium sized enterprises, which naturally put this study into a SME context. In a comparative sense, it generally resembled the size distribution of British firms, for which 99.9% were small (99.3%, 0-49 employees) and medium-sized (0.6%, 50-249 employees) and only 0.1% were large, according to the statistics from Small Business Service (2005) in the U.K.

Age is a less perplexing variable than size. It was measured by the number of years after the establishment, shown by the statistics in Table 5.2 below.

[Table 5.2 near here]

---

[93] China in December 2005 revised its GDP (gross domestic product) for 2004 to 15.9878 trillion yuan (about 2 trillion U.S. dollars), up 2.3 trillion yuan, or 16.8 percent from the preliminary figures, after a national economic survey. More detail on http://english.people.com.cn/200512/20/eng20051220_229454.html

Table 5.2 Descriptive Statistics of Firm Age

	Series: AGE
Sample 1 83	
Observations 83	
Mean	6.337349
Median	5.000000
Maximum	21.00000
Minimum	1.000000
Std. Dev.	4.809232
Skewness	0.981640
Kurtosis	3.327577
Jarque-Bera	13.70114
Probability	0.001059
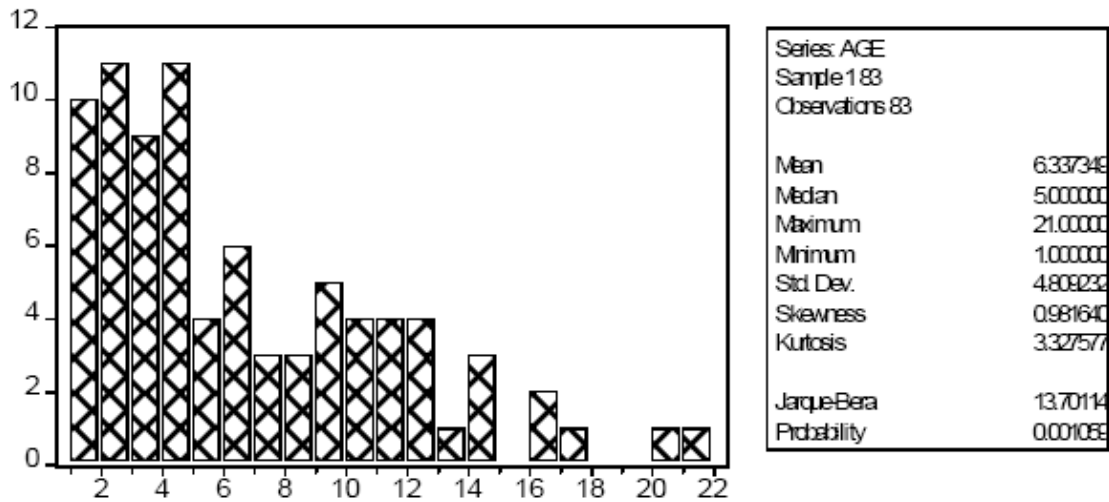
As China suffered its notorious "Cultural Revolution" in the 60s and 70s and did not substantially reform its economy until the beginning of 1980s, it was not surprising to find the longest-lived sampled firm being only 22 years old at the time of first-time interview in 2004. With the continuous extraordinary GDP growth each year after the "open-the-door" policy[94], China unprecedentedly allowed its people to run their own businesses, which were previously deemed to be "vicious capitalist tails" that must be eradicated. Especially when the privatization process was launched in 1997, the large scale restructuring of state-owned enterprises (SOEs) and the burgeoning new private firms were evident across the country. This is reflected by the statistics that showed the mean of 6.34 (std. dev.=4.38), whilst the multiple modes are 3 and 5, respectively. Lastly, the high values of skewness and kurtosis also suggested the need to transform the age variable when being encompassed in growth models later.

5.2.4 Market Extent and Market Share

---

[94] This policy was initiated at the very beginning of 1980s by Mr. Deng Xiaoping, the second generation leader of Chinese Communist Party.

The market environment in which firms operated was primarily characterized by the geographical extent of major markets and the market share in the perception of owner-managers.

The extent of major markets was divided into five divisions: (1) local city, (2) Guangdong Province, (3) China, (4) Asia, (5) Worldwide. It was discovered that 27.7% of firms only operated in local markets; 16.9% expanded to the provincial domain; and 24.1% did business nationwide. While 68.7% of the sampled firms dealt with domestic customers only, the remaining firms had stepped into international markets (i.e. Asia 10.8% and worldwide 20.5%). In other words, one out of three firms were running international businesses, which to some extent confirmed the popular title of this region, the so-called "workshop of the world".

Market shares were obtained from self-assessment on a five-point scale (apart from the option "don't know"), such as very small (<1%), small (1-5%), medium (6-20%), large (21-50%), and very large (>50%). As the market share is only meaningful when relating to the major market, a market-specific analysis will ensue.

Figure 5.4 Market Shares in Major Markets

Market Shares in Percent

	1	2	3	4	5
Unknown	26.1	14.3	40	33.4	29.3
Very Large	8.7	7.1	5	11.1	0
Large	8.7	14.3	20	11.1	11.8
Medium	13	35.7	10	22.2	11.8
Small	17.4	14.3	10	0	0
Very Small	26.1	14.3	15	22.2	47.1
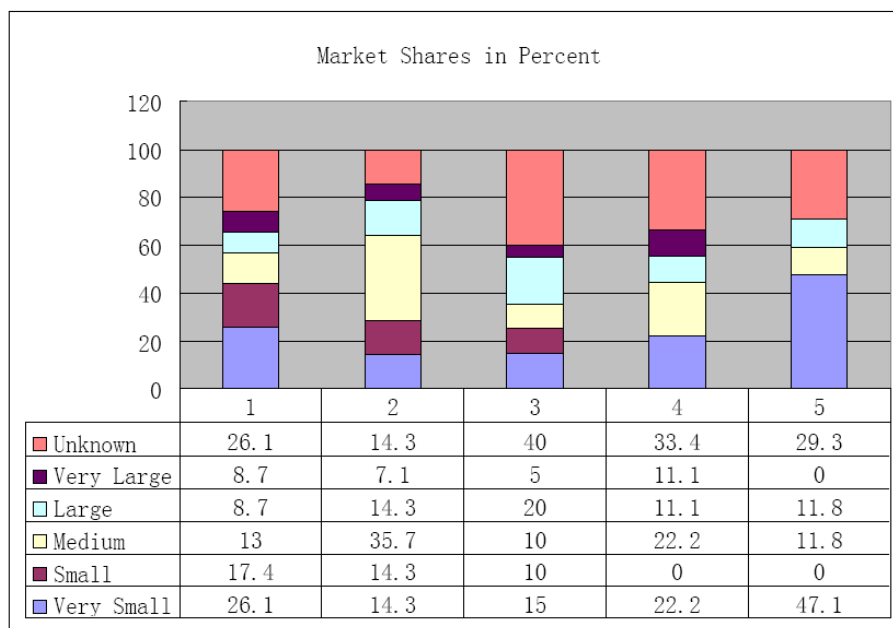
As observed, the typical local firms (coded as 1) had a small or very small market share (43.5%), while only 17.4% believed they were large or very large. So it is generally perceived that local firms are mostly likely to be SMEs. For firms operating provincially (coded as 2), they were generally perceived to have medium market shares (35.7%) and more firms felt to be market dominant (21.4%). As for the national players (coded as 3), the impression was that they could either lead the market (25%) or be rather insignificant (25%). Regarding the firms that flexed their muscles in Asia (coded as 4), the odds of having small, medium or large market shares was strikingly equal (22.2%). Yet the majority of worldwide competitors (coded as 5) had a thin slice of the market share and none could claim "very large" on the battleground. This certainly coincides with the usual perception that China is extremely lacking in world-class large firms, contrasting with its ranking as the 6th biggest economy in the world[95] in 2005.

It should be noted that 24 out of 83 firms chose "don't know" as their answer. According to statistics, it seemed that owner-managers from the firms with national or international markets were more likely to be ignorant about their market shares than those from provincial or local ones. One possible explanation would be the practical difficulty for Chinese owner-managers in estimating the size of an Asian or world market.

5.3 Firm Operation

The function of this section is to present general information on overall firm operations, in terms of pricing, the price elasticity of demand, cost structure, marketing, customer service and planning, and so forth.

---

[95] Source: China People's Daily Online http://english.people.com.cn/200512/20/eng20051220_229454.html

5.3.1 Pricing

Concerning the firms' pricing strategies, this study adopted a viewpoint advanced by Reid (1981) that subjective evidence on price conjectures could be used. For instance, the mostly common self-perceived answer (66.3%) to the question of pricing (allowing multiple answers) was that price was based on the cost of each product plus a flexible percent of profit, whereas the least (2.4%) was to follow a price regulated by law. In between, the options, such as that price was set at the highest price that the market could bear (36.1%) and that price was determined by key account customers (32.5%), were frequently chosen. However, other options such as price being based on the cost plus a fixed percent of profit (9.6%) and being set by the government (10.8%) were less favoured. Evidently, any pricing being set in a rigid and non-market way (i.e. by law, government, or a fixed percent) was not preferred. And the real price setting mechanism seemed to be highly market oriented (i.e. market-borne price, key account clients' decision). In a country previously labelled as "planned economy", Chinese firms now appear to move towards to an economic system that is much more similar to "market economy", if not yet completely identical.

It should be noted that 10.8% of the sampled firms also added their own pricing tactics to the given choices. For example, prices in some firms were set by negotiating with the customers on a mutual basis, rather than simply decided by key account clients in one way. For new customers, a reference price may be prescribed by firms. Moreover, the cost would be subject to changes in the price of raw materials and the profit should be made flexible according to the market price of competitors' products and that of other substitutes. In some particular cases, the price would be either highly volatile because of bidding, or firmly stable on account of franchising. To sum up,

pricing must be associated with various parties of interest, such as buyers, suppliers, competitors, substitutes, and so on.

5.3.2 Price Elasticity of Demand

While price is set, it is equally important to know why the price would change and how this change of the price would cause a change in quantity demanded. The answers for the first query, in a descending frequency, are listed as follows: the change of cost structure (75.9%), the change of market demand (66.3%), the change of competitor's product price (53%), new production cycle (21.7%), new tax year (18.1%), new government regulations (12%). In one case, an interviewee added that inventory clearance could cause the relevant price reduction. As a whole, the three most influential factors of the price change were suppliers, buyers and competitors, respectively. In a broad sense, it is genuinely about the market supply, demand and competition.

Now I turn to the question of the price elasticity of demand. Interviewees were asked about the possible effect on sales, of a 5% increase or decrease of the major product price, *ceteris paribus*. However, the results were far from straightforward for either of scenarios.

In response to a price increase of 5%, the most likely change perceived in sales (19.6%) was a decrease of more than 5%, which indicated the elasticity of price in demand ($|E_d|>1$). Besides, the possibility of being unit elastic, inelastic or perfectly inelastic would be 16.9%, 12.0%, 16.9%, respectively. There were also 34.9% of respondents who found it "hard to tell". With regard to a price cut by 5%, other things being equal, the most popular belief (21.7%), albeit slightly pessimistic, was no change in sales, which implied perfectly inelasticity ($|E_d|=0$). And the odds in a

descending order were 16.9% (elastic), 13.3% (unit elastic) and 9.6% (inelastic). However, about 38.6% of firms found difficult to predict. In general, it seems for a "typical" firm, instead of any specific one in the sample, that a certain percent of the price increase would trigger a larger decrease in sales, whilst some price cut may not generate any additional volume, see Figure 5.5 below (out of scale, for illustration purpose only).

Figure 5.5 Demand Curve of a Typical Firm
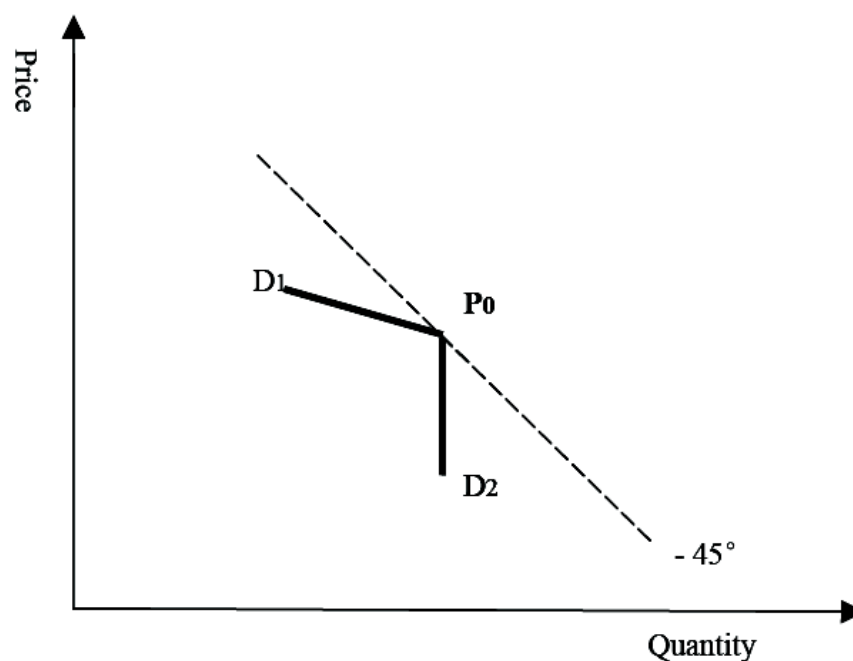
Nonetheless, this problem can be approached in a different way. Rather than observe only single direction of price change at one time (increase or decrease), the analysis can combine both. After excluding the cases with the option of "hard to tell", there are 20 types of combinations, among which the most frequently chosen (13.3%, diagram a below) was found to be no change in sales whether increasing or decreasing price by 5% ($|E_d|=0$), which confirmed the existence of an elbow room for price change[96]. The second most popular conjecture (8.4%, diagram b below) was unit elastic for either way of the price change ($|E_d|=1$), which indicated that the effect of

---

[96] A latter question confirmed that 75.6% of respondents believed there was an elbow room in a certain percent of price.

price change was irrelative to its direction. However, two different opinions emerged thereafter and tied in frequency (4.8% for each, diagram c and d below). The pessimistic firms feared of price elasticity if the price were to increase and lamented price inelasticity if the price were to drop, whereas some buoyant firms expected just the opposite, as shown in Table 5.6 below.

Figure 5.6 Preliminary Analytics of Price Elasticity of Demand
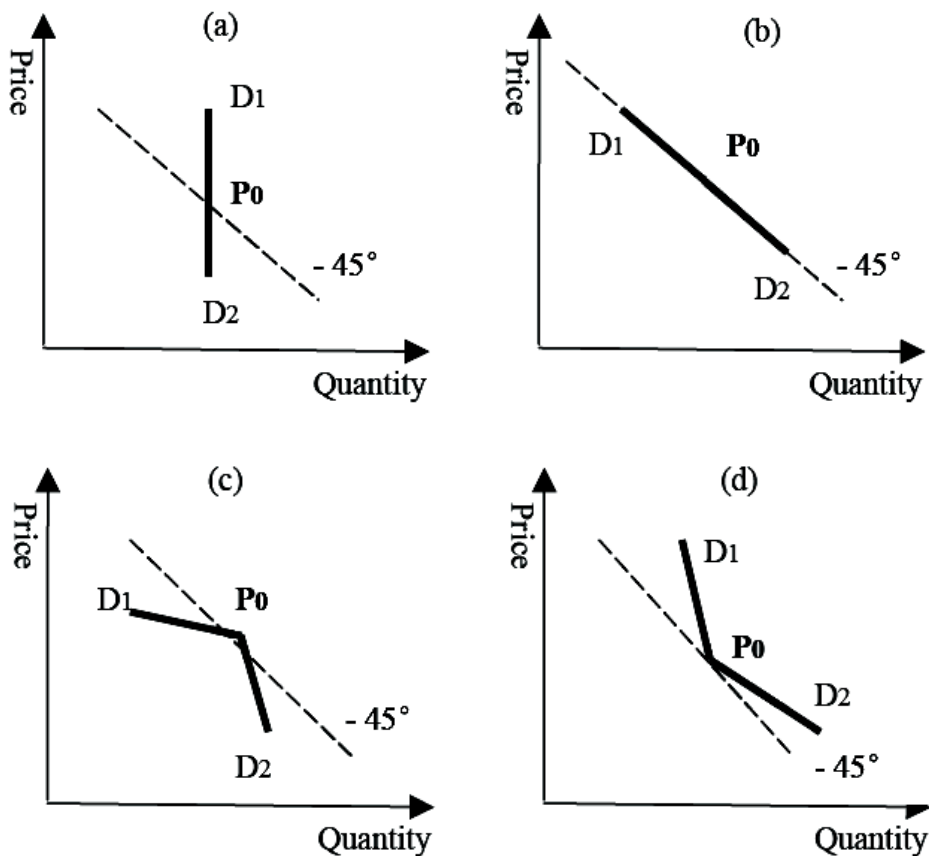
Even so, it was felt that the majority of respondents in the interviews were not particularly optimistic about the sales in terms of different price strategies. The existence of the elbow room that accommodated price fluctuations (up and down by 5%) was widely accepted. And this may even make the price change less attractive to owner-managers for the purpose of increasing sales revenues.

5.3.3 Cost Structure

A bold but innovative way of discovering the cost structure of enterprises was simply to ask entrepreneurs or owner-managers themselves. This much-debated method was used in the United States by Eiteman and Guthrie (1952), in West Germany by Wied-Nebbeling (1975), in Austria by Nowotny and Walther (1978), and in Scotland by Reid and his co-workers (1985, 1988, and 1993). In keeping with the literature above, this questionnaire devised six types of cost structures for interviewees to approximate with their real practices. Six show cards were instrumented and brief explanations of diagrams was attached (see Appendix 1).

The most dominant answer to the cost structure (47%) was "economies of scale" (see the diagram on show card b), which illustrated that total cost increased at a gradually slower rate whilst average total cost fell as output expanded. The other available choices seemed to have much less attraction. For instance, the neoclassical U-shaped average total cost curve that was reflected on show card (d) had a humble 12%. And the critics of this paradigm Marshallian viewpoint (i.e. Sraffa, 1926) received merely 9.6% for constant returns to scale on show card (a). Viner (1931) proposed "L-shaped cost curve" that demonstrated a non-turning-up unit cost curve on show card (f), which obtained 7.2%. Regarding the options as diseconomies of scale on show card (c) and constant returns followed by diseconomies of scale on show card (e), no more than 4% in total were represented. [97]

These findings coincided with those in Eiteman and Guthrie (1952) and Reid (1993), in which the clear favourite was the increasing return to scale (61% for the former and 55% for the latter). One may be careful about the interpretation here as it can depend on the industry in which a firm functioned, the major product range that an interviewee was referring to, and the particular period of the business cycle at

---

[97] It should be noted that nearly four fifths of firms estimated their cost curves, whereas 20.5% of respondents chose not to comment.

which a firm was operating, etc. With the least confusion, what seemed overwhelming among the sampled firms was the fall of average total cost when producing a greater outputs in a certain period of time. In other words, the benefits of "economies of scale" are not yet exhausted for a "typical" Chinese privately owned firm.

5.3.4 Marketing and Customer Service

The iron-handed central planning and the extreme paucity of necessities (not to mention the luxuries) had made China a paradise for producers before the 90s of last century. The seller's market in an absolute sense made unnecessary any type of marketing. And any customer service was simply unheard of. Instead, one would be exceptionally lucky to get a "sugar ticket" (similar to "ration token" in the U.K.) for such goods and would have to resort to "guan xi" (network in the West) for an amount beyond the ticket face value. However, market situations now are completely reversed.

It was found that 88.9% of firms (n=81) did some type of market research. And among those marketing firms, 73.5% stated that the purpose was to grasp general market trends; 59% were to probe the clients' particular interest on certain products; 55.4% tried to pry into competitors; 50.6% tested the customers' sensitivity of product prices. Four firms chose "other" and added more points, such as the possibility of covering total cost if launching a new product, the expectations that customers would like producers to live up to, the likes and dislikes of buyers, and so on. What seemed crystal clear was the substantial attention paid to the market where the buyers have the final say now.

As the major media of marketing, advertisements were used by nearly 70% of the interviewed firms and purchased from magazines (37.3%), outdoors (36.1%),

newspapers (32.5%), Internet (32.5%), television stations (14.5%), radio (8.4%), etc. The radio turned out to be the least used media, on account of the dramatically reduced audience (e.g. probably only taxi drivers left now[98]). The second lowest percentage of TV advertisement reflected the fact that giant corporations (e.g. P&G in particular) usually bought up all the ads time, which practically excluded small firms, like those in the sample, to use this type of media. The traditional media, such as newspapers and magazines, seemed more likely for small firms to advertise their products, while the newly emerged media, like outdoors and Internet, also started to be utilized.

Customer services were provided at 72.2% of firms by an established department (37.3%) or on an *ad hoc* basis (34.9%). Additionally, 7.2% of respondents declared that they were preparing to set up a customer service department soon after the time of interview. Surprisingly, 16 firms out of 83 in total who asserted that no such services were necessary in their particular industries. It was unfolded that these firms came from 5 industry sectors out of 11 in the sample (Wholesales and Retails, 43.8%; Manufacturing, 37.5%; Transportation, Storage and Postal Service, 6.3%; Leasing and Commercial Service, 6.3%; and Food Accommodation, 6.3%). Although these non-customer-service-providing firms were only slightly younger than the average age (5.94 vs. 6.34), the mean sizes in employment (48.81 vs. 212.05), or sales (5956.727 vs. 13391.8), or total assets (8123.83 vs. 17757.4) were much smaller than those of a typical firm. Hence, while the customer service has become an entrenched concept for the majority in the sample, still a small number of micro firms across sectors thought it dispensable.

---

[98] If one turns on the radio after 10PM in the city of Guangzhou, the capital of Guangdong Province, the only advertisements are the treatments for hepatitis or sexually transmitted diseases.

5.3.5 Planning

As argued by Penrose (1955), planning was early on a matter of central importance for the growth of firms. Among the different plans, the most often designed plan was undoubtedly for sales (86.7%). Strategic development plan came as the second (71.1%) and was followed by the financial plan (65.1%). The new production plan (61.4%) was slightly more favoured than the capital expenditure plan (56.6%), whilst the corporate governance plan seemed to be least important (37.3%). In the implementation of these plans, the strategic development plan was considered the most difficult (34.9%), ensued by the sales plan (22.9%) and the new product plan (12%).

It could be argued that firms aimed to maximize sales and firm growth but found both plans notoriously difficult to achieve. Expenditure control, financial planning and new product launching were equally crucial and difficult to execute. As the sample mainly contained small private businesses, corporate governance presented little relevance and significance here.

5.4 Human Resource Management

This section aims to describe the human resource management of private firms in terms of recruitment, salary and incentive systems, education and training, and authority control, and so forth.

5.4.1 Recruitment

There were 47% of firms in the sample conducting the recruitment officially by human resource managers. In a small business context, however, this talent hunting task could become the general manager's obligation (38.6%), too. Other high profile

staff may also be involved in this, but the percentages were extremely low (general secretary in the office, 8.4%; workshop leader, 2.4%; vice general manager, 1.2%; the head of branch, 1.2%; and professionals in the department, 1.2%). Apparently, HR managers and general managers were regarded as those mainly responsible for recruitment.

As China is a country where "guan xi" (network) plays an extremely crucial role in people's life[99], it was felt of interest to know how owner-managers thought of nepotism. Five-point scale was devised ranging from one to five as no good, more of a disadvantage than an advantage, half-half, more of an advantage than a disadvantage, and good. The mean value for nepotism was 2.53, which implied a general unfavourable attitude. However, the mode was 3, which reflected the Chinese Confucian philosophy as "Zhong Yong" (golden mean or *juste-milieu* in the West). The positive voice (value larger than 3) was hardly heard (only at a percent of 7.2), which suggested that most of private businesses were determined to move away from the conventional family workshop mode toward a modern corporate governance style.

5.4.2 Salary and Incentive Systems

Adam Smith defined self-interest as the basis of human nature, and it has always been the driving force behind exchange. One may declare as many high-minded motives as one pleases but it is undeniable that people naturally work for financial reward. Salaries were compared to the average industry level in the country and divided up to five scales from five to one: relatively high, somehow above average, average, somehow below average and relatively low. The average mean of salary value was as high as 3.50, which revealed a higher payment in this region than that in

---

[99] More explanations of "guan xi" can be found in the Subsection 3.3.3 about network.

the rest of China. In the perception of owner-managers, 43.9% made the average payment and 47.6% provided even more competitive emoluments. Only 8.5% of firms confessed to pay less than the average (one admitted relatively low). This salary level matched the image of Guangdong province as one of the largest employment provider for young "farmer workers[100]" from other poorer inland provinces. Linguistically, the common phrase "going to Guangdong" has become a synonym for "making money".

Apart from salary, incentive schemes included bonuses, better welfare provision, training opportunities, promotion, paid holidays/sick leave, stock options, and so on. Bonuses in monetary terms were ranked the highest (94%) and followed by better welfares (61.4%) and then by promotion (54.2%). While the training (30.1%) and paid holiday/sick leave (24.1%) were less commonly used as incentives, stock options were simply foreign (6%). Other incentive schemes were suggested in the blank for the option "other", such as the raising of the base salary, certificates for excellent performance[101], etc. In a country with the remarkably low GDP per capita[102] like China, direct monetary incentives still seemed to work the best. Non-monetary welfares (i.e. medical care, pension schemes, etc) appeared also critically complementary. Promotion genuinely helped one to move up the social ladders. As for the three less commonly used incentives, their use was on the increase, but the change was not happening overnight.

5.4.3 Higher Education and Training

It is believed that the employees with higher education are precious assets for any firm. As Colombo and Grilli (2005) particularly noted, the educational

---

[100] "Ming Gong" (farmer workers) is a very special yet large emerging class in China. Their official residence is in the country but most of them leave the land and work in the cities, which has become the major social issue recently.
[101] This incentive was used to have more political bearings.
[102] GDP per capita in China was $1490 US dollars in 2004, only ranking 109th in the world.

background and prior working experience of the founder(s) of a company, as a good proxy of human capital, could contribute substantially to the firm outcomes. It was found that more than one third (34.9%) of firms in the sample had at least 50% of their employees who actually had college diplomas or above, and nearly one tenth (10.8%) of firms had even more than 90% of staff with higher education, as illustrated in Figure 5.7 below.

Figure 5.7 Higher Education Distribution

	1	2	3	4	5	6
	<10%	10-30%	31-50%	51-70%	70-90%	>90%
■ Diploma	26.5	26.5	12	18.1	6	10.8
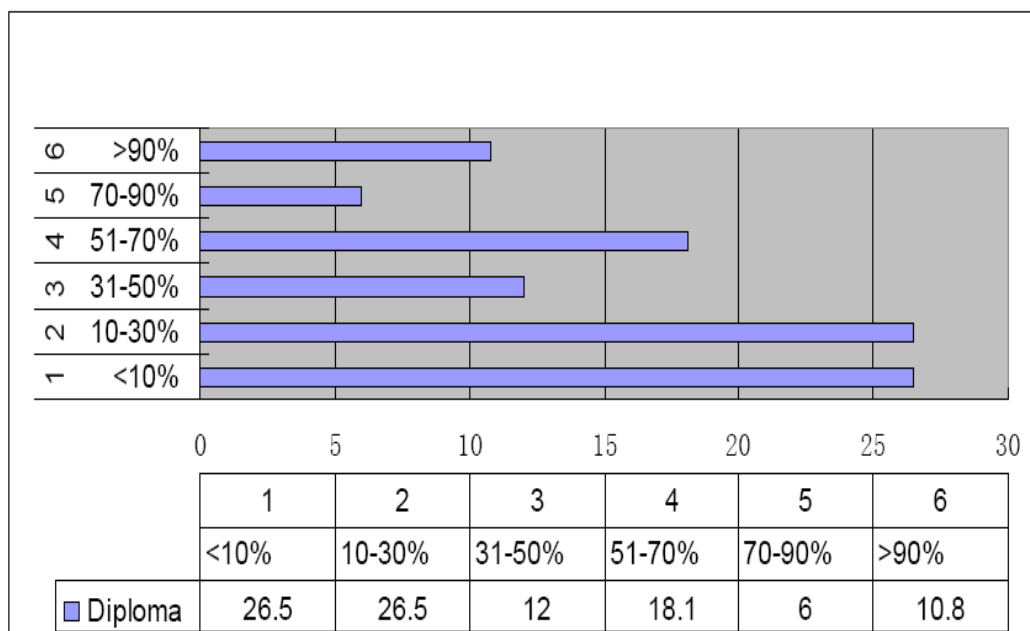
Regular or occasional training sessions were believed to be indispensable by 88% of firms interviewed. The most frequently trained employees were found to be middle-level management (69.9%) and low-rank workers/staff (60.2%). Only 37.3% of top management received training, among which 54% of high profile managers would have one or more training sessions in one year, 33% confessed once a year and 13% once in a few years. The explanation given was that the majority felt too busy to have any updating training programmes.

5.4.4 Authority Control

As the sample contained nearly 99% of SMEs, it was felt interesting to know the management styles in these firms. It was observed that more than half of the firms had only one person to act as both board director and general manager, whilst the rest of the firms usually had different persons in charge of these two important positions. As for those general managers who didn't hold both posts, most often they were directly appointed by board directors (45.8%), or internally promoted (37.5%). It was quite rare for these firms to recruit external candidates (12.5%) or through the professional head-hunters (4.2%) at such levels. It indicated that professional recruitment agencies were seldom used, but these could represent a potential market for the future. It also indirectly reflected the fact that head-hunters in China at this stage paid more attention to middle-level management than to the top.

It is argued that the increase in employment drives organizational structure to be more mechanic (Blau and Schoenherr, 1971; Pugh, 1981). Bluedorn (1993) made a substantial review on the size-structure relation and stated that size was negatively related to centralization and positively related to formalization. Due to the smallness of the firms in this sample, the authority control appeared rather less rigid than that of large counterparts. When there were high quality personnel with sufficient credentials, 91.6% of owner-managers would like to decentralize their control and delegate power. Only 2.4% believed in "taking care of everything by oneself" and 6% were sceptical about the existence of such "swift horses". Among the entrepreneurs who preferred delegation, 70.1% would choose an *ad hoc* style that was subject to specific circumstances, whereas 28.9% believed in full implementation. Whether the authorization was implemented in part or in full, private firms in the sample clearly presented a flexible organizational structure.

5.5 Finance

In this section, the aim is to describe the scale of start-up capital and its major sources, and debt/equity ratio (financial gearing or leverage). Financing difficulties and cash flow problems in sampled firms will also be addressed.

5.5.1 Start-up Capital and Gearing

The start-up capital was the initial capital in cash that had to be deposited in a bank account for the registry with the SAIC, and was normally viewed as a proof of financial credibility. In this sample, the average mean of start-up capital was 3.24 million (Chinese Yuan in 1985 price) and the median was 0.45 million (Std. Dev. =9.19 million, n=82). There were 55 out of 82 valid observations with an initial capital below 1 million and 14 with an initial capital between 1 and 3.3 million, except 13 extremes. Again, the data here corresponded with the SME concept, as shown in the Stem-and-Leaf plot below.

Figure 5.8 Stem-and-Leaf Plot of Start-up Capital

```
Frequency       Stem &  Leaf

   43.00        0 .   000000000000111111111111111222333333334444
   12.00        0 .   566788999999
    4.00        1 .   0344
    6.00        1 .   555558
    1.00        2 .   4
    2.00        2 .   79
    1.00        3 .   3
   13.00 Extremes    (>=380)

 Stem width:    100.00
 Each leaf:       1 case(s)
```

The major sources of initial capital, in a descending frequency, were self-finance (85.5%), money borrowed from family and friends (41%), loans from banks or other financial institutes (20.5%), investment from joint venture (20.5%), investment from shareholders (13.3%), leasing (6%), installment (4.8%), venture capital (2.4%) and corporate bonds (1.2%). It should be noted that the SMEs financed themselves to a large extent, while the joint venture and bank loans were the second choice. The other sources of start-up capital seemed rather unusual.

Considering such a high ratio of self-financing, it was interesting to probe the ratio of debt/equity (gearing or leverage) in the sample. According to the data, the gearing of the sampled firms in 2003 had a mean of 0.327 (Std. Dev. =0.407, n=66), a median of 0.200 and the mode of zero. In comparison, the proxy gearing in 2004 had a slightly higher mean of 0.355 (Std. Dev. =0.420, n = 59) and a higher median of 0.250, yet the exact same mode, as shown in Figure 5.9 below. Apparently, the strong self-financing tendency may make owner-managers reluctant to borrow. Yet it could also be because of the financing difficulties that will be addressed below.

Figure 5.9 Histograms of Gearing

155
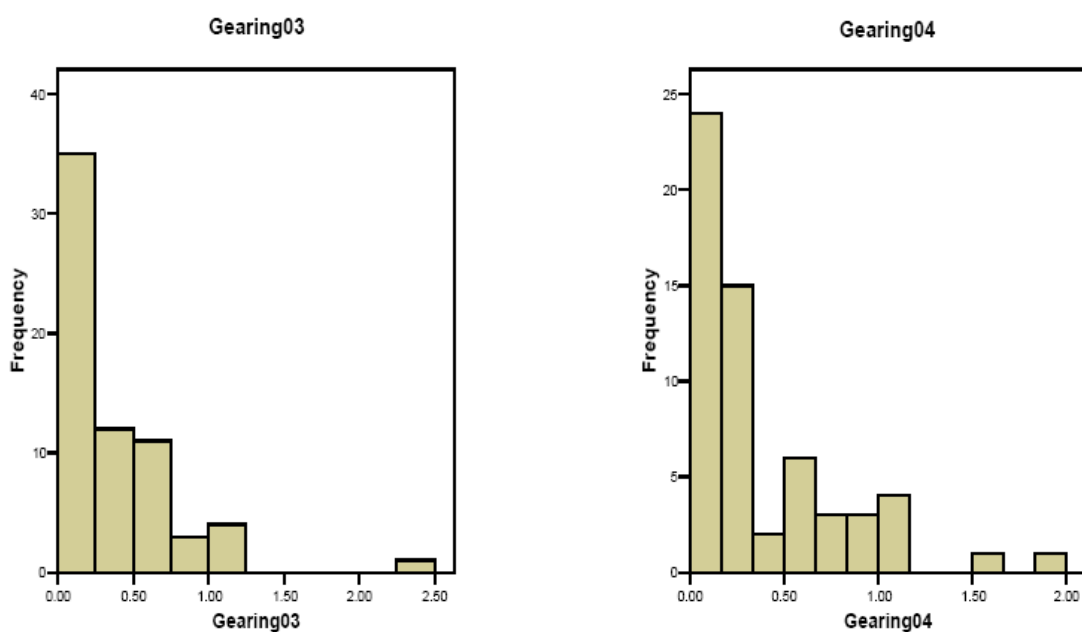
5.5.2 Financing Difficulties

It was found that 75.9% of the sampled firms encountered financing difficulties at the inception, whereas 24.1% operated smoothly from the start. As the private firms in the sample largely depended on self-financing, the major constraint of getting external capital was the smallness of the firm (39.8%) and little personal wealth (32.5%). In addition, the lack of both qualified collaterals (18.1%) and convincing business plans (16.9%) was believed to impede external financing as well. Curiously, family and friends (12%), who were previously regarded as the principle patrons/patronesses, were rarely blamed in this regard. It might be simply the reality, or rather because interviewees felt it wrong to attribute the financial difficulties to the family or friends who did not have the financial means to support them.

According to external sources, the insufficient support from banks (27.7%), the lack of professional auditing and accounting services (22.9%) and high loan interest being paid (19.3%) were accused of leading to one disaster after another. However, the lack of both government support and professional SME support systems were rarely blamed (12% for each). It was generally felt that the advocacy from such agencies had just newly emerged in recent years, and so they could not be held responsible for the financing bottleneck of sampled firms of an average age of 6.34 years. Of least relevance, the SME board (or second board) in stock exchanges seemed simply too remote to reach. In all, 50.6% of firms interviewed gave an absolute no to the thought of being listed on the stock market and 37.3% hesitated with an answer of "maybe", while only 9.6% confirmed positively (n=81).

5.6 Technology and Innovation

This section sets out to depict the current technological level of private firms in general and their product innovation, research and development (R&D) as well as information technology in particular.

5.6.1 Technical Innovation

Self-assessment with regard to technology was measured on a five-point scale as follows: highly advanced, somewhat above average, average, somewhat below average, and less advanced. While 51% of respondents thought themselves as highly advanced (3.6%) or somewhat above average (47.4%), 27.7% of firms followed the golden mean and chose "average". Only 17.9% of firms confessed that they were somewhat below the average and one extreme case admitted that it lagged behind technologically. Evidently, the general view of these sampled firms was that their level of technology was satisfactory.

However, only 26.6% of firms passed ISO9000 or any similar international standard assessment. Although 32.9% of interviewees expressed the desire to apply for such international certificates, 40.5% appeared rather indifferent (probably because most of them do not compete in an international market). Moreover, only 36.6% of firms held patents for products or technology, among which the majority (73.1%) had no more than 3 patents. It was rare to find more than 10 patents in one firm, except four outliers (11, 15, 30 and 45 patents, respectively).

The frequency of new production innovation in the year of 2003 seemed to concentrate at the two extremes of the scale. While 22.7% of owner-managers announced that they had launched no new products, 22.7% claimed 1-3 new products and another 22.7% of firms produced more than 20 new ones. In between, the percentages were 17.3% for 3-6 new products, 12% for 7-10 and 2.7% for 10-20

(n=75). What seemed clear was that a majority of firms did innovate in some form and launch a few new products or more in 2003. However, as there was no further specification of these new products, it was difficult to distinguish "radical" from "incremental" innovation at this point.

Technological innovation was found mostly from a firm's own technology branch/department (67.5%). The second largest source was from the inter-firm technological cooperation (21.7%). Universities, SME support centres and government technology centres played a really minor role in this regard (8.4%, 7.2% and 7.2%, respectively). While relying heavily on their own and their technical partners within the industry, the firms in the sample argued that more technical support probably should be sought by involving professional agencies.

5.6.2 R&D Activities

Among 83 firms interviewed, 48.2% had established R&D departments while 15.7% intended to build one up. For those with R&D facilities, the largest scale was 200 staff, whereas the smallest was 1 (mean=15.29, median=5, mode=3, n=41). The number of R&D staff with a master's degree or above ranged from 0 to 26 (mean=2.39, median=1, mode=0, n=38). The general impression was that the staff with advanced degrees seemed rather disproportionately insufficient.

There were 36.1% of firms who declared no need for such a department. The binary correlation between the choice of establishing a R&D department and the industry sector seemed strong in either one-digit or two-digit CNSIC codes (labelled as CNSIC1 and CNSIC2). Significant correlation also could be found with the employment size at the time of interview (labelled as employ2). It appeared that

smaller sized firms within higher CNSIC coding industries (non-manufacturing sectors) were less likely to setup any R&D department (see Table 5.3 below).

Table 5.3 Correlates of R&D with CNSIC and Employment Size

Correlations

			CNSIC1	CNSIC2	Employ2	R&D
Kendall's tau_b	CNSIC1	Correlation Coefficient	1.000	.910**	-.343**	.256**
		Sig. (2-tailed)	.	.000	.000	.007
		N	83	83	83	83
	CNSIC2	Correlation Coefficient	.910**	1.000	-.326**	.202*
		Sig. (2-tailed)	.000	.	.000	.024
		N	83	83	83	83
	Employ2	Correlation Coefficient	-.343**	-.326**	1.000	-.406**
		Sig. (2-tailed)	.000	.000	.	.000
		N	83	83	83	83
		Correlation Coefficient	.256**	.202*	-.406**	1.000
		Sig. (2-tailed)	.007	.024	.000	.
		N	83	83	83	83
Spearman's rho	CNSIC1	Correlation Coefficient	1.000	.966**	-.459**	.315**
		Sig. (2-tailed)	.	.000	.000	.004
		N	83	83	83	83
	CNSIC2	Correlation Coefficient	.966**	1.000	-.466**	.273*
		Sig. (2-tailed)	.000	.	.000	.012
		N	83	83	83	83
	Employ2	Correlation Coefficient	-.459**	-.466**	1.000	-.502**
		Sig. (2-tailed)	.000	.000	.	.000
		N	83	83	83	83
	R&D	Correlation Coefficient	.315**	.273*	-.502**	1.000
		Sig. (2-tailed)	.004	.012	.000	.
		N	83	83	83	83

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

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

Looking into the future, a dominantly majority of firms planned to invest up to 30% of overall profits on R&D. Among these firms, 42.9% chose less than 5%, 26% pitched between 6-10%, 14.3% selected the range of 11-20% and 11.7% decided to invest 21-30%. There were four firms who opted for the upper range, two selecting 31%-40% (an arts and crafts manufacturer and a footwear trading firm), one choosing 41-50% (a software company) and the most generous one spending at a massive scale by 61-80% of profit (a halobios research and development company).

5.6.3 Information Technology

In an era of information technology (IT), companies need to keep up with developments so as to enhance the efficiency as well as the overall performance. It

was found that 45.7% of firms had their own website, while 18.5% were constructing one and 13.6% planned to do so. It was noted that having website was correlated strongly with the employment size (Spearman's rho= - 0.431 at the 0.01 significant level, 2-tailed) and the age (Spearman's rho= - 0.257 at the 0.05 significant level, 2-tailed). In other words, the relatively larger and older firms were more likely to have their own websites. This category of firms also intended to use the internet for e-commerce (The Spearman's rho was - 0.240 with the employment size and -0.225 with the age, at the 0.05 significant level, 2-tailed).

Regarding the methods of communication, traditional telephone and fax had the highest usage (86.7%) with email coming the second (47%). Conventional mails dropped to 13.3% but the new method of telephone conferencing emerged also at 13.3%. Video conferencing still seemed little used with a percent of 4.8. In addition, face-to-face meetings were substantially used. And short text messaging on mobile phones seemed to be becoming popular as well.

The types of software used by the firms are listed in a descending frequency: office (78.3%), accounting (77.1%), customer service (44.6%), logistics management (26.5%), communication (24.1%), and human resource management (14.5%). In addition, a few professional firms (such as the architectural design, art and crafts) used additional designing software, whereas some extreme cases (like a small local restaurant) did not even have a computer.

Referring to management information systems (MIS), nearly three quarters of owner-managers felt it unnecessary to install any complex MIS due to the small size (45.8%) or the enduring applicability of a traditional management style (27.7%). Around one third of interviewees complained of the lack of MIS professionals and nearly one fifth were more concerned about the capital investment on equipments.

One extreme case (a multimedia equipment manufacturer) declared no difficulty at all, which could be explained by its high tech background.

5.7 Enterprise Culture

The objectives of this section are to illustrate the self-perception of the enterprise culture. Just as the concept of the entrepreneur has been defined in many ways in academia, the viewpoints among real-world entrepreneurs also differed on the subject. The most favoured one (63.9%) was to envisage an entrepreneur as the mixture of a manager undertaking particular activities, an agent of economic change and an individual with a unique personality (Reid, 2002). Kirzner's concept of the arbitrageur was preferred by the second highest percentage (57.8%), which indirectly reflected the deep-rooted desire of business people for maximum margin. Nearly half of owner-managers interviewed also agreed with Say's coordinator idea (49.4%) and Schumpeter's innovator notion (44.6%). However, Knight's definition of the entrepreneur as the bearer of uncertainty was rather surprisingly ignored more or less. The traditional Chinese culture stresses that the individual should conform to collective values and maintain the golden mean without moving to either left or right. This conservative philosophy may help explain why most of entrepreneurs (72.3%) preferred not to bear uncertainty and take risks. Apart from the choices given, some respondents added that an entrepreneur should be hardworking, resilient and responsible, all highly ranked virtues

Turning to the enterprise culture, it was widely agreed by 80% of interviewees that the source originated from the entrepreneur himself/herself (i.e. personal charisma and virtues). It should be noted that a certain number of owner-managers only agreed with this statement in part. It was felt that the enterprise culture was

enormously influenced by the entrepreneur only in the early period of the business life cycle. When a firm matured, it was believed to form its own characters through "learning by doing". The quality of entrepreneurs seemed essential at the inception but Jovanovic's learning theory would incrementally kick in as firms were aging.

Carrots and sticks are both necessary for governing an enterprise. Very few firms boasted that they had well-established behavioural codes and company regulations that required no amendment. On the contrary, 91.6% of firms claimed the need to update the rules regularly (10.8%) or occasionally (80.8%). It certainly stressed the importance of management and also indicated the potential market for consulting businesses in this area.

As to the social aspect, 90.4% of firms mentioned that they organized parties/gatherings or similar purpose activities while only 9.6% seemed very dull employers. As a majority of firms valued the socializing activities among staff, most of them created such events several times per year. In contrast with the previous centrally-planned economic culture, when such activities would have been designed merely for the inspection of some influential government officials to act as hard evidence of development along correct political lines, now it was suggested by entrepreneurs that such events served to enhance the smooth running of communications at the different levels of a firm and to reward and refresh employees after highly pressured working hours. After all, the market economy now indisputably prevails.

China is probably one of countries that make the most political slogans in the world. Although the modernization process has demolished most slogans that once served for political propaganda, more than half of firms interviewed (60.4%) retained their business slogan for various purposes, shown in Figure 5.10 below. It was found

that customer orientation, quality and credibility were three key elements that enterprises most often promoted with the frequency of 14, 13 and 12 respectively. Hardworking, innovativeness and efficiency followed in the second tier with less frequency, whereas more ideological slogans such as collectivism and individualism were much less likely to be used than before. Apparently, these slogans indicated that enterprises were more concerned about what their customers would feel, and then what they could offer by themselves, and lastly how employees might make their personal value judgements upon their work.

Figure 5.10 Enterprise Slogan
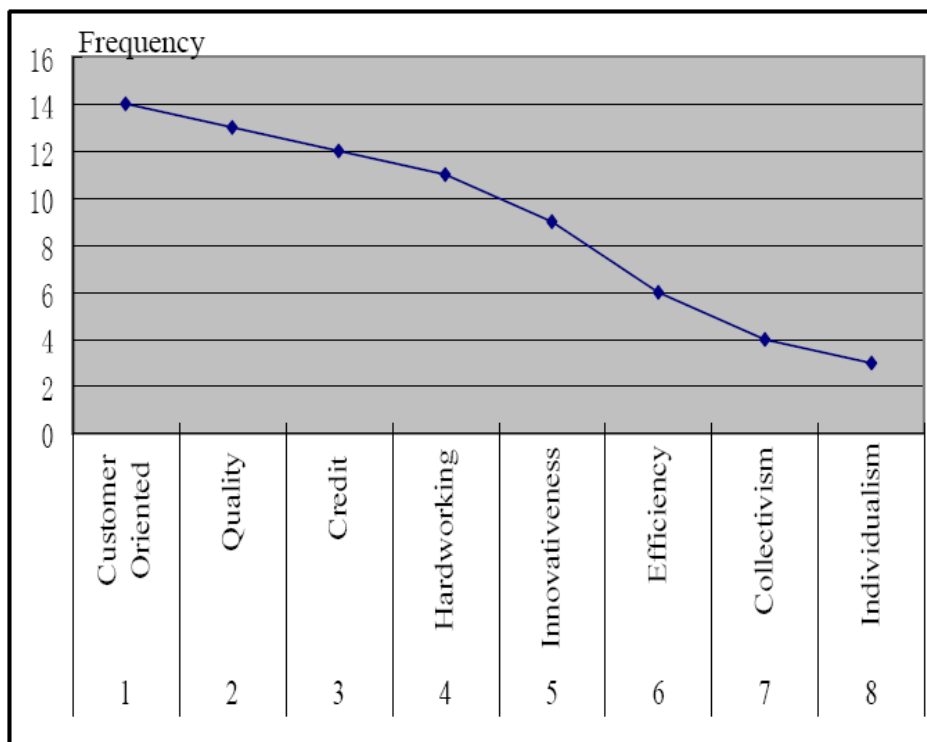
5.8 Competitive Environment

The function of this section is to describe the Porter's (1980, 1985) five competitive forces as well as the macro environment where the sampled firms operate.

5.8.1 Competitive Forces

As Porter argued (1980, 1985), there are five competitive forces that a firm should address, namely buyers, suppliers, competitors, substitutes, and potential entrants. And the interactions between the firm and these forces construct sophisticated market competitive situations. Such a complexity was expressed by the sampled firms, 69.5% of which used the strongest words to describe the fierceness of the competition; 21.7% of which perceived that the market was close to saturation but still proffered untapped margins; 7.2% of which located themselves in a rising industry with a promising prospect; only one firm (an electronics factory) was encountering a difficult time and preparing to change to other business.

According to the statistics, it was likely for firms in nearly all industries (except the building industry) to face brutally intense competition, whereas some particular firms (i.e. software, real estates, and the geological prospecting industry) sensed the increasing competition but still could foresee the opportunities unexploited. Bearing the least pressure, some firms featured their industries as new and promising (e.g. housing and civil engineering industry, commercial service, and technology application and transmission service, etc). Furthermore, it was found that competition was significantly correlated with the employment size (Spearman's rho=0.244, at the 0.05 significant level, 2-tailed), which implied larger firms tended to confront more competitive market situations. The means of age and employment in terms of competition level are compared in detail below (except one extreme case planning to change business). Although age is not statistically correlated with competition levels, rising industries evidently seemed to have younger and smaller players.

[Table 5.4 near here]

Table 5.4 Competition-dependent Mean Comparison of Age and Employment

Report

		Age in years	Employ2
1	Mean	3.00	22.00
	N	6	6
	Std. Deviation	1.414	15.799
	% of Total Sum	3.0%	.8%
2	Mean	8.56	225.61
	N	18	18
	Std. Deviation	5.469	696.091
	% of Total Sum	26.1%	23.7%
3	Mean	7.22	222.53
	N	58	58
	Std. Deviation	4.615	389.951
	% of Total Sum	70.9%	75.5%
Total	Mean	7.21	208.54
	N	82	82
	Std. Deviation	4.807	459.890
	% of Total Sum	100.0%	100.0%

(Note: The number 1 stands for the least competitive industry perceived by interviewees, while 2 and 3 refer to the medium and the fiercest competition, respectively.)

Competing with **rivals**, the sampled firms found both competitive and defensive strategies to be vital. More than half of firms expressed the willingness to compete by adopting both cost leadership and product differentiation, while some firms would only take one or other of them (22.9% for cost leadership only and 12% for product differentiation only). The correlation between competitive strategy and employment size was significant (Spearman's rho=0.247, at the 0.05 significant level, 2-tailed), suggesting that SMEs might focus on either reducing the cost or expanding product range while the larger companies possibly would do both.

Furthermore, nearly 90% of interviewees intended to take defensive strategies, whether this was stated as an active policy (e.g. creating entry barriers to prevent the entry of industries, 27.7%; declaring clearly that they would retaliate if threatened, 12%), or as a more passive response (e.g. remaining low key to avoid any possible attack, 48.2%). However, individual cases came up with individual actions, such as

reducing the profitability to avoid the unwanted attention, ensuring the retention of at least key account customers, and even retreating if the market was too hostile to do business. Although only in a small percentage (10.2%), some firms actually urged the adoption of the competitive approach as the best defensive strategy. As Reid (1993) quoted from military tactics, "the best form of defence may be attack".

Concerning future competition from *potential entrants*, nearly two thirds of firms regarded the industry entry barriers as "somewhat difficult" (54.2%) and "very difficult" (8.4%), whilst one third answered "somewhat easy" (33.7%) and "very easy" (3.6%). For instance, the information technology industry and technology application and transmission services were believed to have the highest entry standards, and furniture manufacturing, metalwork making and wholesale industries were received as having the lowest. Interestingly, a majority of firms (72.8%) believed the industry exit barriers to be easy or very easy, whereas 27.2% found it to the contrary. As observed, a firm in the arts and crafts manufacturing industry and another firm in technology application and transmission service felt it was extremely difficult to exit the market.

With regard to possible market entry barriers, the shortage of experienced staff/workers came as the first reason (48.2%) and the minimum requirement of start-up capital followed (41%). In addition, the elbowing-out of existing firms could be difficult (32.5%) as defensive action might be taken. In terms of production, potential entrants would not be able to produce a variety of products (25.3%) and the unit cost would be too high to compete (25.3%). It was also conjectured that raw material supplies could be less than sufficient (20.5%). Yet it was quite rare that a potential entrant was prevented from entering the market by any government policy (13.3%), which revealed to a certain extent that in China market forces rather than

government policy ruled. There was one frequently mentioned factor submitted by a good number of respondents, which was the substantial difficulty in establishing a sales and distribution network.

The **substitutes** existed for most of the interviewed firms (85.4%) and it was speculated that those with negative answers would overly narrow down the definition of a substitute in their cases. Around half of firms conceived that both superior and inferior substitutes existed, while the other half had clear positioning of their own products: superior (27.3%), or the same level (14.5%), or inferior (7.3%). However, this question could be comprehended in a critically different way due to the scale and scope of substitutes being defined. Thereby, any interpretation of this question should be taken with caution.

As the customer-oriented concept becomes more and more ingrained in business, getting to know one's **buyers** better certainly improves the changes of success. 46.3% of interviewees believed that the average customer was mainly influenced by price, brand, advertisement, design, customer service, etc, despite the differences in the quality of products. Around one fifth of firms felt that their buyers would enquire about the detailed functions of a particular product before purchasing. Nearly 15% of firms had buyers who, as keen amateurs, would have a considerable amount of knowledge about the products. And another 15.7% of firms targeted at very technical customers, who could evaluate the products professionally. The conclusion here is that the more professional the buyers, the narrower the target market and the less advantageous to the producers technically in the competition.

Last but not least, the **supplier** is another key competitive force in Porter's theory. Very few firms either had only one supplier (6.1%) or coped with more than 20 suppliers (7.3%). The most frequent range (43.9%) was 11-20 suppliers, then 6-10

(22%) and 2-5 (20.7%). The larger the base of suppliers, the more manoeuvring space would be created to and the more bargaining power would be gained by the sampled firms. While no single firm felt incapable of dealing with the suppliers, 10% experienced limited bargaining power, 76.3% recognized their own superior position and 13.8% even alleged an absolute dominance. It was generally perceived that dealing with suppliers was relatively easy and the role of suppliers was actually a difficult one.

5.8.2 Macro Environment

As the Chinese government didn't begin to pay special attention to the development of SMEs until recent years, it was not surprising to find that merely 20 firms out of 83 in total had received some form of financial subsidies from the local or central government (e.g. township enterprise development funds, 3 cases; SME credit guarantee scheme, 9 cases; high-tech SME innovation funds, 7 cases; ISO certification fee reimbursement, 1 case). Apart from financial sponsorship, a variety of government supportive policies were also available as follows.

[Table 5.5 near here]

Table 5.5 Government "Winner Policies" for Business Development

	Support Policy	No. of Receiver (n=83)
1	Export drawback	24
2	Small firm income tax reduction/exemption	12
3	High-tech firm income tax reduction/exemption	9
4	Subsidy policy for buying equipments made-in-China	9
5	Income tax reduction/exemption by hiring city laid-offs	8
6	Township enterprise income tax reduction/exemption	5
7	Technology innovation subsidy policy	4
8	University/welfare factories income tax reduction	2
9	Foreign investment income tax reduction/exemption	2
10	Import drawback	2
11	Joint venture income tax reduction/exemption	1
12	SARS tax reduction/exemption	1
13	Software firm tax reduction/exemption	1
14	Government purchasing	1
15	Minority region income tax reduction/exemption	0

(*Note: there were only 20 firms that ever received some type of financial subsidies and one firm could possible be subsidized by a couple of relevant policies.*)

Despite the financial and policy support from government, the three most helpful organizations were ranked in descending order as industry associations, local SME credit guarantee agencies, and government SME support centres. Few firms mentioned the assistance from a professional consulting company and even fewer from venture capital. As one entrepreneur suggested, however, banks may play an important role here.

Furthermore, in an evaluation of serious social problems "San Luan: unfair and unjustified levy, fine and money-raising" (see Subsection 4.3.6), more than half of owner-managers felt that the situation had been alleviated and about 10% applauded

even more positively by asserting the eradication of the problem. Only 17.1% saw no change and less than 5% said it was worse, while 17.1% could not tell. The general feeling was that the serious crises engendered by "San Luan" seemed to have been brought under control by the Chinese central government after the reform and renovation of 1997.

Under such circumstances overall mentioned above, respondents estimated the growth in employment, sales, total assets and profit for the year of 2005. The outcome was clearly optimistic as growth was expected by the majority whichever growth variable was measured (51.2% for growth, 47.6% for profit, 72.3% for sales, and 64.6% for total assets). Before further statistical and econometric analyses in the next chapters, the economic prospect for the sampled firms seemed promising under the auspices of an ever-growing Chinese economy.

5.9 General Conclusions

Just as Graham Bannock opened his book *The Economics of Small Firms* (1981) with a novel description of a small business and its owner-manager, and Gavin Reid depicted the silhouette of a typical small business enterprise in his book *Small Business Enterprise* (1993), I would borrow this memorable device to form the conclusion to this chapter. It should be noted that a typical private firm here does not refer to any specific firm in the sample but is draw from a composite of the whole, and, as it is hoped, will reflect the general characteristics of all the sampled firms described in the main body of this chapter.

The typical private firm of this study is a relatively mature manufacturer (slightly older than 7 years in one of the manufacturing industries), established in Guangzhou, the capital city of Guangdong province. It had a workforce at the size of

57 at the inception and 212 at the time of interview. Over that time, the sales have increased nearly fivefold and the total assets have been enlarged more than fourfold. While mainly doing business in the local market, it usually has less than 1% of market share. Hence, a typical private firm is also a growing small local firm.

In setting prices, the policy is to add a flexible percentage of profit to the cost. However, the changes in the cost structure, the market demand and the competitors' prices would significantly influence the price setting. In making a price rise of 5%, the firm would expect a larger than 5% drop in sales. Yet for a price cut of 5%, sales might remain unchanged. Thereby, the price elasticity of demand in terms of a price hike (or cut) is most likely to be elastic (or perfectly inelastic). However, this firm believes in the existence of an elbow room (smaller than 5%), within which the price in the demand side presents perfectly inelasticity.

Marketing research is conducted to grasp market trends and attract customers. Advertisements are purchased mainly from magazines and outdoors ads companies, while the television and the radio stations seem rather off the agenda. For the typical firm, customer service is dealt with by a specialised department rather than on an *ad hoc* basis. This firm has good, long-term plans in terms of sales, strategic development and finance, with the strategic development plans being perceived as the most difficult one to implement.

The human resources manager or sometimes the general manager would undertake the duty of personnel recruitment and mostly they believe that "nepotism" brings more disadvantages than advantages. Among the workforce, less than 30% have college diplomas or higher degrees. However, training is usually organized for middle-level managers and lower-rank workers. As for the salary level, this typical firm claims to offer better than average remuneration. Bonuses are believed to be the

best incentive for employees, followed by welfares and promotion. However, paid holidays and stock options are less likely. In such a "typical firm", the post of general manager and board director are most often held by the same person, who however would prefer to delegate rather than take on all responsibilities, provided that an agent is capable and trustworthy.

In the matter of finance, the typical firm relies heavily on self-financing and the fraction of debt/equity is relatively low (gearing2003=0.327, gearing2004=0.355). For such a small "typical" firm, the second board in the stock exchange (especially designed for SMEs) does not appear to be a practical option. Business plans, government SME support programmes also seem of very little help in securing the start-up capital, whilst the smallness of the firm size and the lack of personal funds are genuinely serious concerns. Cash flow problems are a harsh reality as well, mainly due to the long delays in receiving payment due or even non-payment of debts. Limited overdraft quotas and poor overdraft facilities are also believed to aggravate the typical firm's financial health.

With regard to technology and innovation, a typical firm claims to be somewhat above average in its use of technology. Yet this may only be its self-perception as it is most likely for this firm to have no ISO9000 or any equivalent international certificate. Nor does it have any patent for products or technologies. Even though the technology is not ideal, this typical firm launches new products with the aid of its own R&D department that had 15 staff (3 with masters' degree or higher), spending less than 5% of profit on the R&D activities.

AS to information technology, this typical firm has a website and attempts to do e-commerce via the internet. While the majority of communications are done by traditional telephone/fax and meetings, emails have become popular as well. Office

and accounting software are used widely but HRM software appears the least used. Because of the small size, there has been no take up as yet of the MIS construction.

Among different concepts of entrepreneur, the mixture of a manager undertaking particular activities, an agent of economic change and an individual with unique personality is firmly believed by the owner-manager of this typical firm. And the enterprise culture seems to be affected largely by this owner-manager's personal qualities and charisma, especially in the early stages of the enterprise. This firm updates its behavioural codes and regulations irregularly as and when appropriate. Company slogans are customer-oriented, emphasizing quality and trustworthiness. As another feature of the enterprise culture, socializing activities are organized several times a year within the firm.

According to Porter's five forces, this typical firm encounters fierce competition and regards both cost leadership and product differentiation as the imperative competitive strategies in an already saturated market. In addition, it would keep a low profile in business with a passive defensive posture in order to avoid unsolicited attention or even an attack. Market entry is seen as somewhat difficulty for potential entrants, yet the exit seems easy. The lack of experienced workers, the scarce initial capital and the current competitive environment can be three major barriers making the setting-up in business a daunting task. This typical firm has both superior and inferior substitutes and its buyers are neither amateur technicians nor professionals, but a group of customers largely influenced by non-technical elements, such as price, brand, advertisement, design, customer service, and so on. The average number of suppliers is 15 for this firm feels in a strong position when negotiating with them.

Government financial or policy support seems to need improving. It is quite likely for this typical firm not to receive any type of financial aid. Export tax

drawback policy and small firm income tax reduction/exemption may be the most readily available policies that can benefit this firm. Seeking assistance in different aspects, it will firstly resort to an industry association, then a local SME credit guarantee scheme, and lastly government SME support centres. While the overall macro environment is perceived as better than ever, this typical firm predicts that its sales, total assets, employment, and profits will all increase, albeit in a descending order of growth rates.

In sum, this chapter has primarily introduced information from a sample of 83 private firms collected in face-to-face interviews in Guangdong province in China during September-December 2004, as well as in the follow-up interviews in 2006. Their characteristics are illustrated at length in terms of firm operation, human resource management, finance, technology and innovation, enterprise culture and competitive environment. However, the developments in this chapter have largely been by a preliminary way of description and illustration. Now I shall turn to more substantial analyses in statistical and econometric methods.

PART IV: STATISTICAL AND ECONOMETRIC ANALYSES

CHATER 6: SIZE, AGE AND GROWTH OF CHINESE PRIVATE FIRMS

6.1 Introduction

The main purpose of this chapter is to probe whether the case in China is consistent with Gibrat's law of proportionate effect and Jovanovic's learning theory, on the basis of evidence from a sample of 83 Chinese private firms collected by face-to-face interviews during September-December 2004 and follow-up telephone interviews in February 2006. Moreover, it is felt to be important to scrutinize the effect of other selected variables other than size and age on the growth of Chinese firms (mainly SMEs) in private sectors. By doing so, this chapter aims to provide one of the very early empirical attempts, if not the first, to investigate the growth and its determinants in the setting of China. Although the sample size is relatively small (n=83), it is usually considered to be satisfactory in a fieldwork setting. The advantage of this database is that it contains many more variables (>250) than most large datasets that may have tens of thousands of sampled firms but less than a handful of variables involved[103]. This may thereby help to mitigate the criticism objected at the smallness of the sample.

Further, as the studies of very high firm growth have been carried out extensively in the West ("gazelles" by David Birch in the U.S., "ten percenter" by David Storey in the U.K.), it seems strategically important for China to also develop this type of research especially on the topic of small and medium-sized enterprises (SMEs)[104], in order to alleviate social problems (e.g. a large number of laid-off city workers) and maintain its rapid economic growth. The first Chinese National SME conference was held in Beijing in 2002 and the attention was first time turned to the

---

[103] Although only a small number of variables are used in this chapter, the key point is that the author has the much wider range of factors to choose in order to well specify the growth model.
[104] As shown by the statistics from National Statistics Bureau of China, 99% of enterprises are SMEs.

development of SMEs, especially in the private sectors[105]. Meanwhile, this concern was formally legalized and enacted as China's SME Promotion Law in 2003. Despite the augmenting support for SMEs growth, it remains questionable whether the benefits reaped by fostering the SMEs in the West can be also applied to China, a country with such seemingly disparate ideology and economic systems. To understand this big issue, one may start from enquiring into the very fundamental size-age-growth relationship and the question of what else makes a firm grow in the first place. After all, "the journey of a thousand miles commenced with a single step", said by Lao Tzu[106].

The remainder of this chapter is organized as follows. In the next section, a brief literature review is conducted and Section 6.3 describes the data and variables. Section 6.4 is devoted to present the specification of the growth model as well as the selection model, whereas section 6.5 undertakes the estimations and reports empirical results. Overall conclusions are made in the final section.

6.2 Literature Review of Firm Growth

As the long run average total cost (LRATC) and minimum efficient scale (MES) encountered theoretical difficulties in fully expatiating the market concentration problem (see Chapter 2, Subsection 2.2.1), the relationship between firm size and growth, summarized as the renowned "Gibrat's law of proportionate effect", had been discussed extensively in the West since 1950s. Gibrat's law declared that the probability of a given proportional change in a firm's size is the same as that for all firms in a specific industry, regardless of size and preceding growth rates. This view was empirically buttressed by the pioneering works of Hart and Prais (1956),

---

[105] As proposed by Chinese Communist Party's 16th representative conference, a majority of state-owned SMEs have been privatised since 1997.
[106] Lao Tzu (BC571-471), the founder of Taoism in China.

Simon and his co-authors (with Bonini, 1958; with Ijiri, 1964), Hymer and Pashigian (1962), especially regarding large firms. However, when Mansfield (1962) incorporated small firms into the picture, it was found that "smaller firms have relatively high death rates and those that survive tend to have higher and more variable growth rates than larger firms"(p. 1044). This negative relationship between growth and size was also indicated by other empirical studies[107] (Du Reitz, 1975; Evans, 1987a, b; Reid, 1993, 2007; Mata, 1994; Rodriguez, *et al.,* 2003; Yasuda, 2005). Some scholars have adopted an eclectic stance and have suggested that Gibrat's law can hold for firms above certain threshold size, below which it would otherwise fail[108] (Hall, 1987; Dunne and Hughes, 1994; Hart and Oulton, 1996; Farinas and Moreno, 2000).

While the negative relationship between growth and size was recognized conditionally, Singh and Whittington (1975) proposed a positive one, albeit statistically weak. They ascribed this result to "the persistence of growth rates over time" (p. 24). This "time" factor was formally taken into account in Jovanovic's (1982) learning theory, which stated that a firm could improve the performance and unfold its efficiency by learning over time. The efficient firms survive and grow, whereas the less competent ones decline and dissolute. Thus, the younger firms tend to grow faster than the older ones, given the same size class (Evans, 1987a, 1987b; Variyam and Kraybill, 1992; Reid, 1993, 2007; Audretsch 1995a, 1995b; Rodriguez, et al. 2003; Yasuda, 2005). Yet some argued that this learning theory was only tenable for firms below threshold age (Farinas and Moreno, 2000) or when the firm growth was measured by employment (Heshmati, 2001). And it may simply fail to hold in a

---

[107] It should be noted that some of these studies implied this negative relationship between growth and size on certain conditions. See more details in Table 2.1 in Chapter 2, Section 2.3.
[108] In the work of Heshmati (2001), Gibrat's law holds if the growth variable is employment, yet it fails if sales are measured.

certain industry[109] (Das, 1995). Although the effects of size and age on the firm growth are not unanimously agreed, what appears clear is that these two variables have become the major determinants of firm growth.

Besides, varying factors other than size and age have been proposed in the economic literature of growth. Without deviating from the main focus on the key determinants (size and age) in this chapter, a few important, albeit not exhaustive, firm-specific elements are incorporated into the growth model, such as planning (Penrose, 1955), research and development activities (Miller, 1983; Hall, 1987), and business strategy (Porter, 1980, 1985, 1996; Reid, 1993, 2000, 2007). Besides, environmental control variables (i.e. customer price sensitivity, market competition, sector and location) are also considered (see a more detailed literature review of firm growth in economics in Chapter 2, Section 2.2).

6.3 Data and Variables

6.3.1 Database

The data used in this study was obtained from two stages of fieldworks in ten major cities in Guangdong Province of China. At the first stage between September-December 2004, the owner-managers of 83 privately owned firms were interviewed fact-to-face by the author and his co-fieldworkers[110] using an administered questionnaire. The sampling criteria of firms were that they should be: (a) privately owned firms, (b) financially independent (not subsidiaries), and (c) located in the territory of Guangdong Province. The second stage of fieldwork took place approximately one year later (February 2006) via telephone interviews with the purpose of identifying survivals (76 out of 83) and collecting data on full-time

---

[109] For instance, hardware manufacturing industry in India.
[110] See detailed sampling process in subsection 4.2.2.

employment, by which annual growth rates between 2004 and 2006 could be calculated.

This approach to identifying the survival and growth of firms is felt to be advantageous in a few ways. First of all, Chinese official agencies so far have only collected the data of "above scale firms" (annual sales more than 5 million Chinese Yuan), which largely overlooks small firms in the population. Further, the data available most often is aggregative and therefore inappropriate for microeconometric analyses of this kind. Secondly, independent commercial data providers in China are emerging, yet their credibility is far from established. They usually claim to hold a large dataset of tens of thousands of firms but the variables involved can be dangerously superficial and inadequate[111]. Nonetheless, this study avoids the latter providers, and instead gathers more than 250 variables for each of 83 private firms at the first stage interviews and then obtains employment information for the same sample at the second stage follow-up interviews. Proceeding in this way, it allows an examination of the growth determinants of interest and also the identification of the non-survivors that can be thus deployed to correct for sample selection bias in estimating growth equation later.

The main data restriction that had to be asserted was the adoption of a "snowball sampling method" on which this study is based. The firms in the sample were obtained by referrals from the faculty of School of English in International Business, using a large student body (nearly 180 students majoring in English, International Business or Finance) at Guangdong University of Foreign Studies (GDUFS) in China. Essentially, students (often from family business background) acted as "gatekeepers" to the field. While it would be convenient to select firm names

---

[111] For example, it may only contain the name of legal person, the telephone and fax numbers, and the post address. There is literally nothing more than a yellow page that can actually provide.

randomly (e.g. from the yellow pages), such firms would often be completely inaccessible. Most Chinese owner-managers would simply turn down such "cold contacts" before one could even contemplate undertaking a one hour and half interview. In the context of China, a "guan xi" (network) must be prerequisite to the research of this kind. Thus, pure random sampling will be compromised, in order to get access to the field. As Scott and Marshall (2005) argued in a related social science context, "studies of (for example) members of a religious sect rarely require probability sampling: a selection of the membership (not necessarily statistically representative) is usually considered to be sufficient." It would be improper to describe Chinese business communities as religious groups. Yet they can just appear equally mysterious and unapproachable without suitable *ex ante* connections.

Fortunately, the representativeness of the sample seems encouragingly satisfactory. Geographically, the correlation between the sample and the population of major cities economic data in Guangdong Province is found to be strong and significant (i.e. Kendall's tau_b .754 at the significant level of 0.01, two tailed). Concerning industry sectors, the sample comprises all the categories of interest in one-digit China's National Standard of Industrial Classification (CNSIC) and more than half if two-digit CNSIC used. The ones that are not included in two-digit CNSIC conventionally are the rare, if not absent, private firms (see Subsection 4.2). In spite of the constrained sampling method, the sample in this study is thereby believed to be decent enough to represent reasonably the private firms in Guangdong Province of China (see a more detailed discussion of the representativeness in Chapter 4, Subsection 4.2.3).

6.3.2 Variables

Growth measurements in empirical literatures are commonly defined by employment, sales, assets, or multiple ones (see Appendix 3). In keeping with the availability of data, the dependent variable of the growth model is defined as the growth in employment[112] (in natural logarithm) and employment is measured by the number of full-time employees[113].

The independent variables include generic variables (size and age) and other ones of research interest. Size is gauged by the number of full-time employees, while age is measured by the number of years from business inception to the time of first-stage interview. Other explanatory factors can be categorized into two groups: firm-specific factors (i.e. planning, research and development, and business strategy), and "environmental"[114] variables (i.e. customer price sensitivity, market competition, sector and location). In the first group, planning (*planning*) is defined by the number of plans undertaken by firms. Research and development refers to the degree of R&D orientation (*RDorien*). Business strategy includes the customer orientation (*CSorien*). The second group of environmental factors contains the customers' sensitivity to price cut (*DwEd*), the degree of market competition *(Descomp)*, sector and location (see the detailed definitions of variables in Appendix 6 behind this thesis). In Table 6.1 below, the statistics of key variables in the growth model are reported and will be utilized in the econometric modelling in section 6.5.

[Table 6.1 near here]

---

[112] For instance, employment growth rate is defined as [Ln(employment2006)-Ln(employment2004)]/1.5. The interval between two interviews are approximated by 1.5 years.

[113] Yet part-time workers are not adjusted to full-time equivalent and the expansion and contraction of working hours are not taken into account due to the constraints of data.

[114] In the sense of industrial, commercial and business environment.

Table 6.1 Summary Statistics in the Growth Model (n=76)

Variables	Mean	Std. Dev.	Min	Max
Ge	1.1263	0.374	0.41	3.54
Size	211.050	458.323	5	3000
Age	6.400	4.802	1	21
Planning	3.820	1.515	1	7
RDorien	2.120	0.916	1	3
CSorien	2.315	1.113	1	3
DwEd	2.407	1.174	1	4
Descomp	2.634	0.619	1	3
Sector	0.398	0.492	0	1
Location	0.578	0.497	0	1

According to the table above, a "typical" firm has the annual growth rate of around 1.13 (in natural logarithm), established for 6.4 years with nearly 211 employees in a non-manufacturing industry in the capital city Guangzhou. In terms of firm specific variables, its planning capability (*planning*), R&D orientation (*RDorien*) and customer orientation (*CSorien*) are all slightly above average. With regard to "environmental" variables, the price cut by this "typical" firm will not increase much of its sales due to the inelasticity of price in demand (*DwEd*), which means the market situation is not particularly favourable. This is also confirmed by the very strong competition perceived (*Descomp*).

6.4 The Model

In this section, the firm growth model is built up with particular reference to Gibrat's Law and the later eminent works of Jovanovic (1982), Evans (1987a, b) and Brock and Evans (1986).

As Gibrat's Law stated, the probability of a given proportional change in the size of a firm was the same as that for all firms in this specific industry, regardless of the size and preceding growth rates of a firm. It amounts to saying that the firm's size (S_t) will grow randomly in each period of time $(t, t-1)$ due to various uncertain factors, and the incremental change in size in each time period $(S_t - S_{t-1})$ will be proportional (ε_t) to its base size, formulated as follows.

$$S_t = (1 + \varepsilon_t) S_{t-1} \tag{6.1}$$

Deductively, S_t can be extended to a function of the initial size S_0.

$$S_t = (1 + \varepsilon_t)(1 + \varepsilon_{t-1}) \cdots (1 + \varepsilon_2)(1 + \varepsilon_1) S_0 \tag{6.2}$$

As developed by Steindl (1965) on the basis of Gibrat's theorem, the proportionate growth rate (ε_t) was considered to be small if taking a "very short" time period, and was assumed to be statistically independent of one another. This justifies the approximation $\log(1 + \varepsilon_t) = \varepsilon_t$ and the normal distribution of ε_t with mean m and variance σ^2. The equation (6.2) can be equalized in natural logs as below.

$$\log S_t \approx \log S_0 + \varepsilon_1 + \varepsilon_2 + \cdots + \varepsilon_t \tag{6.3}$$

Assuming that $\log S_0$ is negligibly small compared to $\log S_t$ as $t \to \infty$, the distribution of $\log S_t$ can be approximated as a Gaussian distribution with mean mt and variance $\sigma^2 t$. And the firm size (S_t) should display a lognormal distribution with a highly skewed pattern. This form of model suggests that the growth itself is a stochastic rather than deterministic process.

In later developments, Jovanovic (1982), Evans (1987a, b) and Brock and Evans (1986) have incorporated "age" as a new variable into the growth model. This may be expressed in a preliminary way as follows.

$$\ln G_{it+\tau} = \ln f(S_{it}, A_{it}) + u_{it} \tag{6.4}$$

where S_{it} and A_{it} are the size and age of firm i at time t and u_{it} is the error term. $G_{it+\tau}$ refers to the growth rate of firm i ($i=1,2,...,N$) in terms of growth variables of research interest (i.e. employment) in period $t+\tau$ ($t=1,2,...,T$; τ is the time period over which the growth is measured) and is calculated as:

$$G_{it+\tau} = (S_{it+\tau}/S_{it})^{\frac{1}{\tau}} \tag{6.5}$$

The size-age-growth relationship is described below by putting (6.5) into (6.4) and adding other firm-specific, environmental, and sample selection bias variables at the right hand side of growth equation:

$$\begin{aligned}(\ln S_{it+\tau} - \ln S_{it})/\tau &= \alpha_0 + \alpha_1 \ln S_{it} + \alpha_2 \ln A_{it} + \\ \alpha_3(\ln S_{it})^2 &+ \alpha_4(\ln A_{it})^2 + \alpha_5(\ln S_{it} \ln A_{it}) + \beta X_{it} + u_{it}\end{aligned} \tag{6.6}$$

where $f(.)$ is expressed as size and age and their squares and interactions in natural logarithms, similar to the specification in preceding studies. And X_{it} is a matrix of (FS_{it}, EN_{it}, IMR_{it}), encompassing a vector of variables firm-specific (FS_{itt}), environmental (EN_{it}), and selection bias (IMR_{it}). As the sample selection bias may exist, IMR_{it} is the inverse Mill's ratio ("hazard rate") obtained from a binary probit model of survival, which is written below:

$$SUR_{it+\tau} = \beta' X'_{it} + u'_{it} \tag{6.7}$$

where $SUR_{it+\tau}$ is a binary variable ("survival") and equal to unity if the firm has survived till the second-stage interview. X'_{it} is a matrix containing the factors thought to affect the survival of Chinese private firms in the sample (i.e. preceding

growth rate, gearing, cash flow problems, customer orientation, size in terms of sales and employment and sector). β' is a vector of unknown parameter coefficients and u'_{it} is the error term.

6.5 Estimates and Results

First of all, a simple pilot growth model is deployed to examine the relationship between size and growth, using the data on the inception and the year of 2004. Then, Heckman's (1979) two-step selection model is employed to test the causality between size/age and growth between 2004 and 2006. Proceeding in this more sophisticated way, the probit estimation of survival is used in the selection model (n=83) and the growth model is estimated by generalized least squares (GLS) on the data of survivors (n=76). Last but not least, an comprehensive growth model is examined by incorporating firm-specific factors (i.e. Planning, RDorien, CSorien) and environmental ones (i.e. DwEd, Descomp, Location). Now the discussion will turn to the estimates and results of each model mentioned above in detail.

6.5.1 The Simple Size-Growth Pilot Model

Based on the simple expression of growth equations in terms of different size measures (*Se, Ss, Sa*), OLS estimation with the correction of White heteroscedasticity-consistent standard errors and covariance are conducted and reported in Table 6.2 below, using the data from the inception year and the year of 2004 as a pilot and sector and location as control variables.

Table 6.2 The Simplest Size-Growth Pilot Models Parameter Estimates (n=83)

Growth	Size	Sector	Location	R^2	Adj.R^2	F-statistic
Ge0	-0.11496**	-0.10925	-0.10925	0.24638	0.217761	8.609096**
Gs0	-0.04452*	0.04126	-.0.08768	0.08667	0.04452	2.05613
Ga0	-0.12638**	-0.00084	-0.04725	0.21249	0.17874	6.29593**

Note: Significant at less than 1%(**),1-5%(*).

It is found that no matter which size measure (i.e. employment, sales, assets) is adopted, the size seems to have a significantly negative relationship with the growth in all these pilot growth models (employment and assets growth models at the significant level of 0.01 while the sales growth model at the significant level of 0.05). However, the sales growth model is insignificant overall and there are no significant relationship found between sector/location and growth. These results are broadly similar in nature to those in the work of Heshmati (2001). He measured the growth rate also by by employment, sales and assets, using a sample of Swedish micro and small firms ($employment \leq 100$) during the period 1993-1998. As Heshmati observed, size was negatively affected employment growth but had positive effect on sales growth and almost negligible impact on assets growth. On the basis of evidence from this recent sample of 83 Chinese private firms in this thesis, Gibrat's Law seems to be rejected in general. This means that the smaller the firms (measured by employment and assets but not sales), the faster the firms grow.

6.5.2 The Two-Step Growth Model

6.5.2.1 The Survival Model

The selection model (the probit model of survival) is estimated by the binary probit maximum likelihood method with QML (Huber/White) standard errors and

covariance, using the data: previous annual growth rate since inception (*Ge0*); gearing (*Gearing*); cash flow problem since inception (*Cfp*); customer orientation (*Csorien*); full-time employment at the time of first-stage interview (*Size*); total net sales in 2003 (*sales03*); and sector (see Table 6.3 below)[115].

Table 6.3 The Selection Model Parameter Estimates (n=83)

Variable	Coeff.	Std. Error	z-Statistic	Prob.
Constant	-60.56697	17.50224	-3.460526	0.0005**
Ge0	59.11104	17.08315	3.460196	0.0005**
Gearing	-26.72840	9.046256	-2.954637	0.0031**
Cfp	-46.01499	16.29223	-2.824351	0.0047**
Csorien	6.574335	1.939475	3.389750	0.0007**
Size	0.291014	0.102591	2.836641	0.0046**
Sales03	-0.000879	0.000682	-1.287594	0.1979
Sector	15.65227	7.572838	2.066896	0.0387*
Log likelihood		-2.574152		
Restr. Log likelihood		-19.71208		
McFadden R-squared		0.869412		
LR statistic (6 df)		34.27586		
Probability (LR stat)		0.0000		

Note: Significant at less than 1%(**),1-5%(*).

It is observed that gearing at the first-stage interview has the significantly negative relationship with the probability of survival, which implies the higher debt/equity ratio the lower survival rates of Chinese private firms. The similar result was found by Reid (1991), who noted that gearing had a significant negative impact on the survival rates of Scottish small firms. This negative relationship is also reinforced by the negative sign of cash flow problem, which means that it is more

---

[115] Using Expectation-Prediction Table, the % Correct is as high as 96.92% and Percent Gain from default (constant probability) specification reaches 66.67%, which suggests the specification of the selection model is statistically satisfactory (Yi, 2002).

likely for the firms to survive till the second-stage interview if maintaining the financial health with less cash flow problems.

Apart from financial issues, customer orientation, which was emphasized in Porter (1980, 1985) and Reid (1993) for better firm performance, is found to be critically positive for surviving. Besides, Penrose (1955) suggested that former growth could generate future ones. Similarly, Abouzeedan (2001) indicated that the answer of survival might lie on prior growth rates. It is explored and confirmed in this study by discovering the positive sign of previous annual employment growth rate. The industry sector also appears influential by having a positive sign, which implies the firms in the manufacturing industries may have the higher probability to survive than those in the non-manufacturing sectors. Nonetheless, the effect of size on the survivability is more complicated. When the size is measured by full-time employment, it confirms the idea of Mansfield (1962) that the smaller a company the more likely it will fail. However, this rationale doesn't seem to hold if the size measure is total net sales. The sign of sales is positive, albeit statistically insignificant. This may be because of the notorious difficulty in collecting the receivables for Chinese private firms. The larger sum of sales may bring about the larger amount of the receivables, which thereby increases the possibility of causing cash flow problems and the consequent lower chance of survival.

Above all, the main purpose of the selection equation here is not to elaborate a sophisticated and complex survival model but to act as the statistical device to remove the latent sample selection bias. In this regard, the inverse Mill's ratio is calculated from the probit estimation and thus added to the matrix of regressors (X_{it}) in the growth equation (6.6). By doing so, it is hoped to take into consideration the possible effect of sample selection bias due to the non-survivors that exited the market at the

time of second-stage interview. I can now turn to the core of Heckman's two-step selection model, namely the growth equation.

6.5.2.2 The Size-Age-Growth Model

The size-age-growth model is estimated by OLS regression, using the data of 76 survivors at the second-stage interview. Initially, the independent variables include the size in employment (*Size*), age (*Age*), second order and interaction terms of size and age (*SizeSq, AgeSq, SizeAge*), sector and location, as well as inverse Mill's ratio (*IMR*). In a correlation analysis, nevertheless, the first order of size and age are found highly correlated with their second order and interaction terms as shown in Table 6.4 below.

Table 6.4 Correlation Matrix of Size and Age (n=83)

	LnSize	LnAge	LnSizeSq	LnAgeSq	LnSizeAge
LnSize	1				
LnAge	0.440**	1			
LnSizeSq	0.979**	0.423**	1		
LnAgeSq	0.409**	0.956**	0.411**	1	
LnSizeAge	0.794**	0.843**	0.806**	0.839**	1

Note: Pearson correlation is significant at 1% level(**).

Due to the significant correlations above, the size-age-growth model is restricted in a form without the second order and cross terms of size and age. The estimates are reported in Table 6.5 below.

[Table 6.5 near here]

Table 6.5 The Size-Age-Growth Model with IMR (n=76)

Variable	Coeff.	Std. Error	t-Statistic	Prob.
Constant	0.389637	0.121241	3.213751	0.0023**
LnSize	-0.037688	0.017542	-2.148398	0.0365**
LnAge	-0.074516	0.036232	-2.056657	0.0449**
Sector	0.047748	0.063494	0.752007	0.4555
Location	-0.116156	0.055736	-2.084032	0.0422*
IMR	-0.003322	0.003372	-0.985083	0.3292
R-squared	0.255826		F-statistic	3.506479
Adjusted R-squared	0.182868		Prob (F-statistic)	0.008437

Note: Significant at less than 1%(**),1-5%(*).

Evidently, the smaller and younger the firms, the faster they appear to grow. Gibrat's Law again fails to hold here, whereas Jovanovic's learning theory is supported. The inverse Mill's rate is insignificant in the estimation, which shows the sample selection bias problem may be not so serious as to overthrow the conclusion made earlier. However, it is interesting to see the negative significance of location here, which means that a firm can grow faster if it is located out of the capital city of Guangzhou. Smallbone *et al.* (1993) found that the location influenced the growth significantly. Storey (1994) argued that British firms located in accessible rural areas had higher growth rates than those in urban or remote rural areas. The same reasons may be applied here. Firstly, running business in Guangzhou, the political and economic centre, has the highest operating cost. For instance, the land is so expensive that most manufacturing firms have moved out of the city. Besides, the small and medium sized cities around Guangzhou have successfully developed industry clusters. For example, the city of Shenzhen is the financial centre in the southern China and the city of Dong Guan is the manufacturing centre for electronics in China. As such, it

may not be so surprising to see firms outside Guangzhou enjoy the advantages brought about by the cheaper operating costs and strong cluster effects and thus grow faster.

In the size-age-growth model without IMR, the estimates resemble the results shown above, which further reinforces that the sample selection bias problem is not a genuine grave concern. In general, the departure from Gibrat's Law is clear as usual even though Jovanovic's learning theory here holds in a slight weak sense. The Table 6.6 demonstrates as follows.

Table 6.6 The Size-Age-Growth Model without IMR (n=76)

Variable	Coeff.	Std. Error	t-Statistic	Prob.
Constant	0.337393	0.108779	3.101640	0.0028*
LnSize	-0.027530	0.013778	-1.998162	0.0495*
LnAge	-0.060223	0.033168	-1.815687	0.0736
Sector	0.007266	0.061313	0.118508	0.9060
Location	-0.087837	0.056077	-1.566362	0.1217
R-squared	0.128054		F-statistic	2.606774
Adjusted R-squared	0.078931		Prob (F-statistic)	0.042791

Note: Significant at less than 1%(**),1-5%(*).

6.5.3 The Comprehensive Growth Model

Comprehensively, a more extended growth model is estimated by OLS regression method, incorporating not only size and age, but also firm-specific factors like planning (*planning*), the degree of R&D orientation (*RDorien*), and the degree of customer orientation (*CSorien*), as well as environmental factors like the customers' sensitivity to price cut (*DwEd*), the degree of market competition *(Descomp)*, sector and location, and lastly inverse Mill's ratio (*IMR*). These additional independent

variables can be characterized as X_{it} in general and the function can be specified as follows.

$$\left(\ln S_{it+\tau} - \ln S_{it}\right)/\tau = \alpha_0 + \alpha_1 \ln S_{it} + \alpha_2 \ln A_{it} + \beta X_{it} + u_{it} \qquad (6.8)$$

However, as a good number of other predictors (X_{it}) are estimated in the growth equation using a relatively not so large sample, one may still suspect the issue of multicollinearity. A common approach is to regress each of the regressors on the remaining explanatory variables and obtain the values of R square to calculate variance inflation factor (VIF)[116] as a measure of the degree of multicollinearity. The values of VIF for each predictor are as follows: *size* (3.9669), *age* (2.6008), *planning* (2.4669), *RDorien* (1.6963), *CSorien* (2.4257), *DwEd* (1.3536), *Descomp* (3.0947), *Sector* (1.3837), *Location* (1.7820), and *IMR* (1.6397). As the predictors' VIF values are well below 10 (Yi, 2002), the multicollinearity is not viewed as a major problem here to bring down such a function specification.

Removing the worries that may be caused by multicollinearity, the comprehensive growth model is estimated by OLS with White heteroscedasticity-consistent standard errors and covariance. The summary statistics of estimates are shown in Table 6.7 below and a more detailed discussion will be followed in next subsections.

[Table 6.7 near here]

---

[116] Variance inflation factor (VIF) for the regressor X_i is $1/(1 - R2_i)$, where i equals to 1,2,…N. When X_i is highly correlated with the remaining predictors, its variance inflation factor will be very large. When Xj is orthogonal to the remaining predictors, its variance inflation factor will be 1.

Table 6.7 The Comprehensive Growth Model Parameter Estimates (n=76)

Variable	Coeff.	Std. Error	t-Statistic	Prob.
Constant	0.257076	0.178894	1.437034	0.1618
LnSize	-0.068296	0.032753	-2.085180	0.0463*
LnAge	-0.101422	0.036811	-2.755230	0.0102*
Ln(Planning)	0.109521	0.089215	1.227599	0.2298
Ln(RDorien)	-0.144505	0.121573	-1.188623	0.2446
Ln(CSorien)	0.249887	0.101248	2.468070	0.0200*
Ln(Descomp)	0.185013	0.167496	1.104586	0.2787
Ln(DwEd)	-0.079272	0.058516	-1.354702	0.1863
Location	-0.168935	0.069107	-2.444555	0.0211*
IMR	-0.000799	0.004175	-0.191259	0.8497
R-squared	0.510816	F-statistic		3.248684
Adjusted R-squared	0.353578	Prob (F-statistic)		0.007970

Note: Significant at less than 1%(**),1-5%(*).

6.5.3.1 Growth and Size

The Gibrat's law of proportionate effect is again not found consistent with the evidence in this study. The growth rate has a negative relationship with the size, which suggests that the smaller the firm the faster it grows if other things being equal. This finding confronts the much early empirical studies (i.e. Hart and Prais, 1956; Pashigian and Hymer, 1962; Simon and Bonini, 1958) that claimed the independence of growth rate on firm size classes, yet sustains the latter "stylized fact" (e.g. Mansfield, 1962; Evans, 1987a,b; Brock and Evans, 1986; and Reid, 1993, 2007) that declared the departure from Gibrat's law (1% smaller in size, 0.07% faster a firm grows).

The explanation of this irrelevance between growth and size may lie on the size itself. As it is argued conventionally, Gibrat's law may hold for large firms above

certain threshold size (Hall, 1987; Dunne and Hughes, 1994; Hart and Oulton, 1996; Farinas and Moreno, 2000). In other words, the departure from Gibrat's law will decrease while the size increases. This hypothesis may be difficult to verify since the sample of this study mainly contains small firms (92.8%)[117] with the mean size of 212 employees. Nevertheless, in the other way around, at least it is proved by the results of size-growth pilot models (see Subsection 6.4.1) that Gibrat's Law cannot possibly hold when using the sample of firms in even smaller size classes (from the inception to the year of 2004). Thus, the exploration of the genuine threshold size may be left for further studies, providing more sampled firms at the larger size.

6.5.3.2 Growth and Age

Another "stylized fact" is that the younger firms grow faster, *ceteris paribus*. Originally, Jovanovic (1982) incorporated "age" into the growth equation to corroborate the proportional effect law even in "a weak form" (p.656). Jovanovic noted that the growth rate would be independent of size within a single age cohort. As age is incorporated in this study, it is not observed that Gibrat's law becomes tenable, even when the sample selection bias and heteroscedasticity are considered. However, Jovanovic's learning theory itself seems to hold since the growth-age relationship is significantly negative here, which suggests that the younger firms rather than older ones may grow faster (1% younger the firm, 0.10% higher the growth rate), given the same size class.

Although this learning theory encounters the conflicting evidence in some recent empirical studies (Das, 1995; Farinas and Moreno, 2000; Heshmati, 2001), the

---

[117] The National Bureau of Statistics in China (NBS) has practised a temporary size division in six industry categories only (i.e. manufacturing, building, transportation and logistics, wholesale and retailing, food and accommodation, and postal service) since 2003. A firm thereby is statistically called "small" if hiring less than 600 full time equivalent employees, or regarded as "medium" if employing between 600 and 3,000, or thought of as "large" if the employment is equal to or larger than 3,000.

result of this Chinese sample has been in accordance with those of renowned works (i.e. Evans, 1987a, b; Variyam and Kraybill, 1992; Reid, 1993, 2007; Audretsch 1995a, b; Rodriguez, et al. 2003; Yasuda, 2005). The traditional explanation for this negative growth-age relationship emphasizes the bounded efficiency of firms. As Jovanovic argues, the efficient grow and survive, whereas the inefficient decline and fail. When the firm becomes older, the learning process demonstrates the diminishing returns. Thus, old firms would have less scope for learning to become efficient than those young ones. Based on this rationale, the negative relationship between growth and age can be justified.

Another reason why the impact of age on growth is negative may be the age itself. As Farinas and Moreno (2000) state, there exists a threshold age below which the younger firms can grow faster. Nonetheless, this negative relationship may not be valid within a group of mature firms as their efficiency levels learned during the process can be considerably close to one another. Due to the diminishing returns to learning, little of efficiency can be gained after the operation of years. According to the evidence collected in Spanish manufacturing industries, Farinas and Moreno (2000) found that the relationship between growth and age was not monotonically negative but resembled a U-shape curve. Above a threshold age, older firms actually became high-growth players in the field.

With regard to this study, it should be noted that the sampled firms have the mean age of 7.30 but with mode of 3 (tie 5), which implies a sample of fairly young firms[118], compared with the western counterparts. One may argue that the negative

---

[118] As China suffered "Cultural Revolution" in its 60s and 70s and didn't substantially reform its economy until the beginning of 1980s, it was logical to find the longest-lived sample firm only 22 years old at the time of first-stage interview in 2004. With the continuous extraordinary GDP growth each year after the "open-the-door" policy[118], China unprecedentedly allowed its people to run their own businesses, which were previously deemed as "vicious capitalist tails" that must be eradicated. Especially when the privatization process was launched in 1997, the large scale restructuring of old state-owned enterprises (SOEs) and the burgeoning of new private firms were witnessed across the country, so were reflected by the data.

growth-age correlation can be dubious if enlarging the current sample size by including more mature firms that exceed certain threshold age. Nevertheless, it may equally increase the number of emerging firms in the sample if strictly following the probabilistic sampling method. The counteracting effect of mature firms on the growth-age relation, compared with the reinforcing effect of young firms, may be highly questionable. Above all, the fact is that China has the comparatively short history of market economy, which allows a very slim chance of firms being as mature as their western counterparts. Therefore, the enlargement of current sample size may not seriously undermine the support for Jovanovic's learning theory applied to Chinese private firms and it is reasonable to believe that the firms in current sample will keep being benefited from revealing their efficiency via the learning mechanism. One should, however, bear in mind that it will be also possible to observe an opposite growth-age relationship if China remains on its favourable market-oriented economic track that can allow Chinese firms to grow well and long enough to reach maturity.

6.5.3.3 Growth and Planning

In the seminar work of Penrose (1955), the problem of planning is "an obvious fact of central importance for the growth of firms" (p.532). Unlike organism in the nature, firms do not expand automatically, or magically. As Penrose argues, the growth process depends on human decisions, especially those of owner-managers, and must be preceded by planning. In other words, the planning process will bring about the future expansion. Even though this study finds a positive sign before the variable of planning, it is highly insignificant. A few points can be argued in this regard.

To name the first, the definition of planning is not quite clearly conceptualized. One may speculate that Penrose's "planning" refers to the making of

growth oriented plans. Nonetheless, planning in this study is defined as the number of plans a firm undertook at the first-stage interview, in terms of sales, organizational structure, cost, financing, new product and strategic development. While the last two plans may be posing positive impact on the growth, the first four may act just to the opposite. As the number of plans is of aggregative nature, the interaction of these plans is hard to distinguish and thereby the influence on the growth is arguable. Then one may suggest that the growth-oriented plans be separated from the others in order to winnow wheat from chaff. Notwithstanding, this may lead to the second point of argument, which is the effectiveness of planning.

Ideas can be great only when they are made come true. The owner-managers must have a certain amount of confidence on their expansion plans prior to the implementation. However, this confidence is subject to perfect knowledge and absent uncertainty, neither of which can be facile to obtain. As a matter of fact, uncertainty is a consciousness of lack of knowledge about present facts or future possibilities (Black, 2002) and should be distinguished from risk that can be calculated and then perhaps avoided (Knight, 1921). If the presumption of growth plans can be never perfectly based, the odds of successful expansion will be questionable.

Therefore, without clearly knowing the interaction of different plans and the effectiveness of the certain plan, a simplistic aggregation of all plans into a single number may not reveal much inference to the clarification of the firm growth process.

6.5.3.4 Growth and Research & Development

Research and development (R&D) has been conceptualized in three major dimensions in the empirical firm growth literature, such as the R&D/Sales ratio (Rothwell, 1979; Nolan et al., 1980; Hall, 1987; Singh, 1994; O'Mahony, 1998),

patents (Sherer, 1965; Geroski, 1995; Geroski, et al., 1997; Cosh et al.,1996; Ernst, 2001), and propensity to innovation (Cesaratto and Stirati, 1996; Roper, 1997; Tether and Massini, 1998). Due to the limitation of data, the R&D expenditure is not recorded at the firm level. The number of patents is also just available for less than one third of the sampled firms. Therefore, the propensity to innovation is adopted and defined as the willingness to establish an R&D department/branch, which works as a proxy of R&D emphasis (Miller, 1983). To the author's surprise, the R&D-Growth relationship is negative, albeit insignificant.

As Dasgupta (1985) argued, the larger scale of R&D investment, the higher innovative the production process, the more superior cost structure of production a firm would sustain. With such a cost advantage, the firm with R&D activities is more likely to expand and succeed than those with few or none such investment. Unfortunately, it is quite unlikely to know whether the willingness of innovation that owner-managers expressed here can be successfully transferred to real-life investments and concomitant superior performance.

Even though such R&D emphases can be translated into the large scale of R&D expenditure, as Phillips (1971) pointed out, these R&D activities must be concentrating on not only lowering the average cost but also creating the market barriers for potential entrants. It is felt that only when it gets increasingly difficult to enter the market, the incumbent innovative firms can safely guard or even expand their market shares and thereby change firm size and market concentration. However, the current dataset is quite limited to help distinguish incremental innovations from drastic ones. Hence, the propensity of innovation alone seems incapable of rendering the myth of firm growth and the future study should focus on more dimensions of R&D activities, providing the data availability.

6.5.3.5 Growth and Business Strategy

To deal with the competition and achieve better performance, firms should take into account "five competitive forces": competitors, customers, suppliers, potential entrants and the substitutes (Porter, 1980, 1985). While a wide range of business strategies can be used to explain firm growth, the interest of this chapter will mainly focus on one strategy dealing with customers, so called customer orientation strategy, since the ultimate purpose of dealing with all other competitive forces is to gain the hearts of customers. While the demand curve shifts rightward to achieve a higher price, other things being equal, more profits can be obtained. Thereby, it is not surprising to find the degree of customer orientation significantly affects the growth in a positive way. The high-growth firms tend to render well developed professional customer services or at least provide *ad hoc* team to handle after-sale problems, whereas the firms in the low-growth class are simply lack of such facilities. Besides, customer orientation is also found positively related to the survivability in the selection model (see Subsection 6.5.2.1). After two decades of rapid economic development accompanied by mass production, many industry sectors in China have turned from "sellers' market" to "buyers' market", competing more intensively in terms of brand and service rather than simply technology now. In such increasingly competitive market conditions, customer-oriented strategy is indisputably vital to not only the process of growth but also as a matter of survival.

6.5.3.6 Growth and Market Conditions

As estimated, location again has a significantly negative relationship with firm growth, which reinforces the findings in the size-age-growth model with the sample selection bias correction. The firms located outside of the capital city in Guangdong

Province seem to grow faster, due to operating costs and cluster effects aforementioned.

Nonetheless, the price elasticity of demand in the market exerts no impact on firm growth. However, it should be noted that the price elasticity here is narrowly defined as the percentage change of the quantity demanded in response to the five percent decrease of major product price. What seems clear is that consumers' sensitivity to price cut imposes no influence on the chance of firm growth.

The relationship between competition and growth is also insignificant. The result that the fierceness of market competition is irrelevant to firm growth contradicts the general perception that emerging (or sunrise) industries would promise a larger scope for firms to expand. One may look upon with suspicion the small number of firms (6 out 76 in total) in the self-rated least competitive market, which may less proportionally represent the "buyers' market" reality. And it is noticed that one of the mode age of the sampled firms is three (tie five). The owner-mangers, especially those from the firms shortly after the inception, may not be always necessarily insightful to make an accurate judgement due to relatively short experience in the market (Jovanovic, 1982; Frank, 1988). Thus, both estimates of growth-elasticity and growth-competition relationships that are based on the self-rating method should be rather critically appraised and selectively taken[119].

6.6 General Conclusions

This chapter examines the effects of two key factors size and age, along with a vector of firm-specific, environmental and selection bias variables, on the growth of

---

[119] In this study, industry sector and location as control variables do not appear econometrically significant. Due to the sample size, sectors are only defined as manufacturing and non-manufacturing (11 sectors originally), whereas locations are only Guangzhou and non-Guangzhou (10 cities originally). It is speculated that the oversimplification of the variables may result in the insignificant estimates.

Chinese private firms. The data was collected in the fieldwork of China by the intensive face-to-face interviews using an administered questionnaire during September-December 2004 and the follow-up telephone interviews in February 2006. Firstly, a simplest pilot growth model is deployed to examine the relationship between size and growth, using the data on the inception and the year of 2004. Then, Heckman's (1979) two-step selection model is employed to test the causality between size/age and growth between 2004 and 2006. Lastly, an comprehensive growth model is examined by incorporating firm-specific factors (i.e. Planning, RDorien, CSorien) and environmental ones (i.e. DwEd, Descomp, Location).

Proceeding in this way, the main focus of this chapter is to verify Gibrat's law of proportionate effect and Jovanovic's learning theory in Chinese private firm context, which is one of very early empirical attempts, if not the first, in this field. When the growth is measured respectively by employment, sales and assets, between financial inception and the first-stage interview in 2004, Gibrat's law does not tend to hold in any of these simple size-growth pilot models. In an extended size-age-growth model with the correction of sample selection bias and heteroscedasticity, the "stylized facts" that the smaller and younger firms grow faster are also supported in the case of China. However, concerning the sample size in this study, neither the threshold size nor the threshold age can be effectively demarcated. The future research may continue in this regard.

Further, a comprehensive growth model identifies more growth determinants in terms of planning, R&D, business strategy, and market conditions. First of all, the planning activities do not seem to promise higher growth as expected. This may result from the definition of planning and the effectiveness of planning. The second growth factor is R&D emphasis, which is found unrelated to the expansion process, either.

The higher R&D expenditure appears to increase the number of valid patents and thus possibly lower the average cost of product. But the innovation propensity seems to unable to be automatically transformed into these advantages. Nor can it generate market entry barriers if the innovation itself is merely incremental. However, the degree of customer orientation does help to gain firms the impetus to grow in a significant way. The better customer service, the higher probability of expansion is expected. The location seems also highly related to the firm expansion mechanism by the advantages of lower operating costs and strong industry cluster effects. Nonetheless, the effect of market conditions on growth is rather less straightforward. While the price inelasticity of customers in response to a price cut seems to promote no chance of growth, the competitiveness of market situations appears to have no effect on the firm growth, either. According to learning theory (Jovanovic, 1982), the self-rating of owner-managers, especially those with short market experience, is not always suggestive in the correct way. Thus, while the major results are largely revealing, certain estimates should be rather taken with selection and caution.

CHAPTER 7

ENTREPRENEURIAL ORIENTATION, INTANGIBLE ASSETS AND FIRM

GROWTH: "SPIRIT AND MATERIAL" OF CHINESE PRIVATE FIRMS

7.1 Introduction

Inspired by Marshall's famous trees of the forest metaphor of "firm growth", the followers of life cycle theory regarded the business expansion as analogous to "the development of an organism in the animal or vegetable world" (Ashton, 1911), which will be driven towards the equilibrium of death by "an inexorable and irreversible movement" (Boulding, 1950). Although life cycle theorists (Greiner, 1972; Churchill and Lewis, 1983; Miller and Friesen, 1984; Smith et al., 1985; Kazanjian, 1988; Adizes, 1989) may correctly demarcate various growth stages (or life cycle stages, or development stages), the growth mechanism itself is left rather unexplained.

Quoting one of the most influential political slogans in contemporary China that "developing national competency and civilization with two legs: spirit and material"[120], this study sets out to verify whether the growth of Chinese private firms at the microeconomic level broadly pursue the same philosophy. In other words, superior firm performance may depend on the entrepreneur's spirit and the resources he or she owns and controls. This exactly corresponds to entrepreneurship and resource-based view in the mainstream managerial literature of firm growth in the west. While the economy and civilization of China has been developed unprecedentedly in recent years under the auspices of "spirit and material" (though "material" has always been superior to "spirit" in reality) , it is felt to be of interest to explore how this philosophical motto can be applied to Chinese firms' growth in the same vein, based on the data from 83 private firms collected by face-to-face interviews using an administered questionnaire in the fieldwork of China during September-December 2004 and follow-up telephone interviews in February 2006.

---

[120] This slogan was first time proposed by Jianying Ye, one of Top Ten Marshals, at the 11th Chinese Communist Party Conference for the celebration of 30th anniversary of New China in September, 1979.

First of all, a firm cannot grow without the willingness of entrepreneurs (or owner-managers), who actually create organizations to satisfy their aspirations and other purposes. However, the concept of entrepreneur is still far from agreed[121] and the development of entrepreneurship has implied an accumulation of a rich yet fragmented body of knowledge (Stevenson, 1983; Miller, 1983; Miller and Toulouse, 1988; Davidsson, 1989; Macrae, 1992; Bird, 1993; Box et al., 1994; Begley, 1995; Chandler, 1996). As Reid (2002)[122] proposed in a comprehensive way, "entrepreneur is a manager who drives change, pursues opportunity and creates new value in an innovative way." The willingness to engage in such entrepreneurial behaviour is thereby defined as entrepreneurial orientation (EO) or "the spirit of entrepreneurs" to put it in a Chinese way, which forms the core of entrepreneurship (Lumpkin and Dess, 1996; Brown, 1996; Wiklund, 1998). Nonetheless, the relationship between this core part of entrepreneurship (i.e. EO) and firm growth/performance is not straightforward in prior research in the west. Some pointed out a positive influence (Zahra, 1991; Zahra and Covin, 1995; Wiklund, 1998), or at least partially (Rauch, et al. 2004), whereas others found no impact (Smart and Conant, 1994; Auger, et al., 2003) or even asserted a negative effect (Hart, 1992). Thus, the first key purpose of this chapter is to conceptualize EO in the setting of the Chinese economy and then to examine its relationship with the growth of Chinese firms.

Another leg for successfully advancing into the civilized society is "material", which is called "resource" in the resource-based view (Wernerfelt, 1984; Barney, 1991; Peteraf, 1993; Teece, Pisano & Shuen, 1997). If entrepreneurship "represents the alert becoming aware of what has been overlooked" (Kirzner, 1977), resource-based view reminds one of what has been possessed and can be attributed to

---

[121] i.e. Say's "coordinator", Knight's "uncertainty bearer", Kirzner's "arbitrager" and Schumpeter's "innovator"
[122] Quoted from the notes in the course "Entrepreneurship and Small Businesses" (2002) lectured by Professor Gavin Reid at School of Economics and Finance at University of St. Andrews.

firm outcomes. The seminal works of Penrose (1955, 1959) particularly referred to resources as "productive services" (tangibles) and "managerial services" (intangibles)[123]. Although the continuous availability of the former and the supply, release and growth of the latter were both perceived to influence directly the business expansion, the lack of managerial services were taken as the principal constraint. This renowned "Penrose effect" was then modelled by Slater (1980) who mathematically confirmed the positive relationship between "managerial services" and firm growth[124]. In the later extensive development in this field, the intangible resources were also characterized as "core competences" by Hamel and Prahalad (1990), or "skills" by Hall (1992), or "capabilities" by Nelson and Winter (1982) and Grant (1991). Regardless of these disparate labels, it is felt that firm success may largely rely on the intangible assets (IA) it owns and controls. After more than two decades, involving rapid economic development that greatly cementing the infrastructure of the nation, it becomes not a mere concern but an urgent call for the Chinese economy to realize the "intangible materials". These are rare, heterogeneous and difficult to create, imitate or substitute (Wiklund, 1998; Lockett, A., Thompson, S., 2001, 2004a,b), and now should be given priority. In such a spirit, another major aim of this chapter is to identify the intangible assets (IA) that are owned by Chinese private firms, as well as validate their role in causing the expansion process, in the transition of Chinese economy.

The remainder of this chapter is organized as follows. In the next section 7.2, it sets out to discuss the concepts and preliminary operationalization of entrepreneurial orientation (EO) and intangible assets (IA), and outlines the EO-growth and

---

[123] Other categorizations of resources are also available. While Hofer and Schendel (1978) suggested six types, such as financial resources, technological resources, physical resources, human resources, reputation, and organizational resources, Collis (1994) and Galbreath (2005) made a simple dichotomy as tangible and intangible resources.

[124] Slater's model (1980) also argued that growth-oriented firms may start with a lower output level, which equally amounts to saying that smaller sized firms may grow faster, a departure from Gibrat's law as it is found in pervious chapter of this thesis.

IA-growth relationships in the literature. Section 7.3 validates the attributes of EO and IA by correlation analysis, exploratory and confirmatory factor analyses and reliability tests. Section 7.4 describes the specification of growth models, and reports estimates and results by OLS regression method. The final section summarises the principal findings and draws the conclusion.

7.2 Entrepreneurial Orientation, Intangible Assets and Firm Growth

This section mainly aims to address three issues. First, it addresses the concepts of EO and IA ("spirit and material") and their operationalization in the preceding research in the west. Second, it describes the empirical difficulty in, and the preliminary plan of, operationalization in this study, which leaves the explicit measurement of EO and IA as explanatory variables to the next section. Third, it generalizes the impacts of EO and IA on firm growth.

7.2.1 Entrepreneurial Orientation (EO)

Since Stevenson (1983) introduced a seeming oxymoron "entrepreneurial management" to define entrepreneurship, this concept has been labelled quite differently, yet it varies rather little in essence[125]. Miller (1983) commenced with the term "the correlates of entrepreneurship", and one of the recent variants coined by Lumpkin and Dess (1996) and Brown (1996), was "entrepreneurial orientation" (EO). It is basically agreed that EO is a higher level of abstract construction, which consists of three major dimensions: innovativeness, risk taking, proactiveness (Miller, 1983; Covin and Slevin, 1986, 1989, 1990; Tan, 1996; Wiklund, 1998; Barringer and Bluedorn, 1999). More arguably, two additional dimensions are also emphasized,

---

[125] Such as "entrepreneurial behaviour", "strategic posture", "entrepreneurial posture", "corporate entrepreneurship" and "strategic orientation", and so forth.

such as competitive aggressiveness and autonomy (Chaganti, DeCarolis and Deeds, 1995; Chen and Hambrick, 1995; Zahra and Covin, 1995; Lumpkin and Dess, 1996, 1997, 2001). Five elements are thus considered seriatim.

First of all, innovativeness is defined in terms of novel efforts to obtain technological advancement or even leadership, and to create and to experiment in multifarious firm processes: production, marketing, management, and so forth. Miller (1983) broke down this concept into three items, such as R&D emphasis, new lines of products, and changes in existent product lines, whereas Lyon and Ferrier (1998) stressed simply the number of innovative activities. More specifically, Hitt, Hoskisson, and Kim (1997) calibrated R&D intensity (the ratio of R&D expenditure to the total employment) as a proxy for innovativeness. However, any measurement used alone can be dubious as innovation itself has multiplicative dimensions (Van de Ven, 1986). As Lyon et al (2000) suggest, this study adopts a "triangulation of methods" to gauge innovativeness in terms of R&D emphasis (*RDorien*), R&D expenditure (*RDexpend*), the ratio of R&D to total profit (*RDprofit*), and E-commerce (*Ebiz*), and so forth. (A list of detailed definitions is in Appendix 7 at the end of this thesis, similarly for other explanatory variables mentioned hereinafter.)

The second element of risk-taking commonly refers to activities such as borrowing heavy debts, making large investments on risky projects with obscure prospects, or undertaking audacious entry into uncertain markets or industries. Miller (1983) designated two forms: (a) whether to explore the market gradually, with discretion, or to undertake wide-ranging bold actions as routine practices; (b) being predisposed to low risk projects with normal return, or high risk ventures with the chance of receiving gargantuan profits. However, the reality is that a firm usually embarks on a few projects simultaneously. While the firm takes a posture of

risk-aversion in some projects, it may take the chance in others. Thus, Miller and Leiblein (1996) devised the standard deviation of returns over years as the measurement of the degree of risk-taking. Given that extreme discretion is the better part of a Chinese owner-manager's valour, however, it is very unlikely that one can collect sensitive data of this sort, if not entirely impossible[126]. Therefore, capital structure may need to be a proper proxy for evaluating the risk-taking orientation (Modigliani and Miller, 1958, 1963; Arditti, 1967; Reid, 1991, 1996, 2003). The higher debts (*risktaking*), the follow-up investments (*exinvest*) and the number of extra investment per year after the financial inception (*Investage*) may suggest a strong posture of risk-taking.

Thirdly, proactiveness consists of a mindset that is forward-thinking, and entails very first attempts to exploit the market, by introducing new products and services ahead of rivals. In empirical studies, proactiveness is characterized as (a) a strong tendency to be successfully ahead of competitors in product novelty and innovation speed, rather than always playing the role of followers; (b) a precise growth, innovation and development orientation instead of only being satisfied with, or surviving in the *status quo*; (c) a rather strict "undo-the-competitors" posture with less willingness to collaborate or coexist (Miller, 1983; Merz, Weber & Laetz, 1994; Zahra and Covin, 1995). In this study, it is intended to deploy the usage of marketing research (*Msurvey*), the purposes of survey (*Psurvey*), the design of strategic growth plan (*Stgyplan*), the ambition to be listed on Chinese stock exchange (*Stockex*), and the number of the "undo-the-competitors" defensive strategies (*Defestgy*), in order comprehensively to reflect proactiveness.

---

[126] A firm would reveal its profit figures only upon the official request from the government, which is beyond the scope of this study. Even getting the data of this sort, one should always bear in mind that this figure is prepared for tax purpose, which thus should be taken with great caution.

Nonetheless, it remains equivocal whether these items are correlated strongly enough to render the same concept of proactiveness. Some found that one of the items was actually separated from the remaining ones, and could be located into another factor with relatively noteworthy reliability (Cronbach's alpha 0.65 in Lumpkin and Dess, 1997; Cronbach's alpha 0.62 in Wiklund, 1998). Due to the existence of this extra factor, Lumpkin and Dess (1997) introduced the fourth element of EO as "competitive aggressiveness". This related to the propensity of firms to exhibit a combative and aggressive posture towards competitors, and to utilize a high level of competitive intensity to excel rivals. And it was regarded as (a) a philosophy of "undo-the-competitors", rather than a posture of "live-and-let-live" (similar to Miller's third proactiveness item), (b) an aggressive attitude and the readiness to compete intensely. In a different way, Chen and MacMillan (1992) operationalized this new item of EO as being the rapid response to competitors' actions. Without resorting to the self-perception of entrepreneurs and the recorded response speed, this study uses the market extent (*Mmkt*) and the new products launched in the year before the first-stage interview (*Newpro*) to indicate the firm's aggressiveness in the market. In general, aggressiveness ranks rather low on the Chinese virtue list, so one needs to be cautious in incorporating this element into the concept of EO in the case of China, leaving alone its arguable impact on firm outcomes.

The least quoted dimension of EO is probably autonomy, which refers to actions undertaken by individuals or teams in order to incubate a new business idea, concept or vision. Chaganti, DeCarolis and Deeds (1995) proposed that autonomy was a type of "goal orientation" that encouraged control over a firm. The desire of autonomy is supposed to influence the entrepreneur's preference for internal equity over external equity and the resultant capital structure. Constrained by the data at hand, the

distinction between external and internal equity is not clearly demarcated and therefore the gearing ratio may be inadequate to demonstrate the degree of control. The typical Chinese mentality is to put officials utterly first, as they are empowered to allocate far more societal resources than they should (Wu, 2006)[127]. Chinese owner-managers in the business, in another sense, are equivalent to officials in the government, who crave for such power and control. Hence, the power of the CEO (*CEO*) and the extent to which owner-managers would like to delegate their power (*Delegate*) to subordinates may reflect the degree of autonomy and control.

7.2.2 Intangible Assets (IA)

As with the multiple dimensions of "spirit", the diversity of the "material" side is its equal, if not more so. Although there is an ever-growing stream of knowledge in this field, an "all-inclusive" list has not been handily prescribed, especially for the intangible assets ((IA). After a survey of quite fragmented and limited studies on the resource-based view (see Subsection 3.3), six major components of IA, such as human capital, enterprise culture, intellectual property, technological knowledge, reputation and network, can be drawn as follows.

Firstly, human capital is conceptualized as "the skills, general or specific, acquired by an individual in the course of training and work experience"[128] and can be operationalized as (a) educational, technical, or vocational certificates held by employees; (b) compensation levels for loss compared with the average industry level; (c) work dispute records; (d) average period of job incumbency (Grant, 1997). While the first two items are designed in this study as the degree of higher education among employees (*Diploma*) and the compensation level compared with the industry average

---

[127] Professor Wu, Jinglian, one of most eminent market-economy advocates in contemporary China, made a public speech at the 10th Conference of People's Congress Council in China (March, 2006).
[128] Source: A Dictionary of Business. Oxford University Press, 2002.

(*Salary*), data on the latter two are not available from most Chinese owner-managers. Yet the number of stimulation schemes (*Nstimula*) is reported, since it is felt that the more the stimulation, the less the work disputes and job changing. Furthermore, Colombo and Grilli (2005) particularly focused on the educational background, and prior working experience of founders, in the context of Italian young firms. Although the interviewees are unnecessary all founders, the implementation of training programmes (*Training*), and especially the frequency of top management training (*Toptrain*), are recorded for evaluating the quality of human capital.

The second component is enterprise culture, which is defined as "the values, beliefs, norms, and traditions within an organization that influence the behaviour of its members"[129] and can be disaggregated as communication, openness to change, job design and job pressure, organizational integration, leadership, vision, and so forth (Eggers, Leahy and Churchill, 1996). In the same vein, the number of communication channels (*Communi*) is operationalized into enterprise culture as a tool for assessing the smoothness of two-directional communication. The flexibility of changing firm codes and regulations (*Codes*) reflects the basic attitude towards the change of management. Moreover, the frequency of company socializing activities (*Social*) is felt to help release job pressures and to reinforce organizational integration. The influence of entrepreneurs on their enterprise culture (*Leader*) and company slogan (*Slogan*), respectively, reveal the leadership and firm vision to a certain extent. Finally, the standard of working conditions (*Workcon*) is also believed to be a part of

---

[129] The differences in level of formality, loyalty, respect for long service, etc., may vary between firms, giving each one a distinctive ethos, which often conditions the behaviour of new employees.   Source: A Dictionary of Business. Oxford University Press, 2002.

enterprise culture, especially when this standard virtually benefits the employees now rather than catering to political inspections in the past[130].

Intellectual property is probably the least complex concept so far, which is usually defined by reference to copyrights, patents and trademarks (Hall, 1992). Although a majority of Chinese firms in the sample do not hold any type of copyrights or patents, it can be informative to ask if they do (*Patent*) and how many they hold (*Npatent*). Besides, Galbreath (2005) added two variables into the IP pool, such as trade secrecy ("held-in-secrecy" techniques or designs). Considering the sensitive nature of these intellectual properties, one may doubt any outspoken answer from Chinese entrepreneurs, who are well-known for business discretion. A detour is conducted to probe the establishment of R&D branch or technical centre (*RDbranch*), where the trade secrecy virtually comes from.

While the intellectual property seems to be the least complicated concept to operationalize, the technological knowledge (or "technology") is the most troublesome, as it largely overlaps with the other aspects of EO perspective and resource-based view. In Grant's (1997) illustration, technology was embodied in (a) the number of patents, (b) the ratio of R&D staff to the total employment, and (c) the revenues generated by patents. The first two resemble the item of innovativeness in EO and *Npatent* in terms of intellectual property, whereas the third one is rather hard to measure. With such difficulties, this study adopts the methodology of Spender (1996), as later developed by Neck, Welbourne and Meyer (2000), and utilises conscious technological know-how (self-rated technology level, *Tech*) and objectified technology (the implementation of international quality standard, *ISO*; the types of

---

[130] The good working conditions were usually important for winning hygiene competitions organized by local governments in 1980s and 1990s, especially before the large scale privatisation in 1997

computer software used, *Software*). The higher the value of any of the variables above, the higher is the level of technical know-how estimated.

Reputation, "face" in Chinese metaphor, is by all accounts a very critical intangible asset. While Hall (1993) simplified organizational reputation as being corporate image and brand name, Grant (1997) operationalized the idea by adding the price difference with competing products, the repeated purchasing rate of existing customers, company financial performance over time and product quality perception. In a SME context, the latter approach seems more appropriate, and the major indicator of reputation in this study is originally designed as the product quality perception in relation to its substitutes (better, equal or lower). Yet the data revealed that a large percent of respondents did not report this variable, due to the varying individual interpretation of the scope of substitutes. Hence, the missing data force an alternative approach that measures the promotion of firm reputation by advertisement (*Ads*), the media types of advertisement (*Adsmedia*), and the launch of a company website (*Website*). Although the reputation is not gauged directly, it is hoped that these efforts to measure the "face" may be also revealing.

Last but not least, network ("guan xi" in Chinese) plays a pivotal role among all components of IA. "Guan xi", an alias for personal network in China, has been long rooted in its ancient culture. In the empirical literature, this extraordinary intangible asset is labelled as "broad network" (Butler and Brown, 1994), or "connectivity" (Rickne, 2001), or "relation mix" (Lechner, Dowling and Welpe, 2005), or "inter-firm relations" (Havnes and Senneseth, 2001). Concerned with such complexity of networks, this work combines a variety of relationships based on the available dataset collected in the fieldwork. For instance, the sources of initial financing (*Knet*) reflect a firm's external financial relationship, whereas the sources of advice (*Advinet*) for

founding the firm show the firm's "relation mix" at business inception. Besides, the number of technological partners (*Technet*) and the number of suppliers (*Supnet*) describe the specific relations in terms of technology and the supply chain, respectively. It is hypothesized that the value-adding process of IA can thereby be facilitated by a broader network or wider "guan xi".

7.2.3 EO, IA and Firm Growth

The theoretical conceptualization and empirical operationalization of both EO and IA seem to be anything but open-and-shut, and so are their relationships with firm growth. Certainly, it is practically feasible to combine all attributes of EO (or IA) into a sole index and interpret its impact on the expansion process, in an almost intuitively unidirectional way (Miller, 1983; Zahra and Covin, 1995). Yet such a simplification may overlook the disparate influence of each attribute of EO on the overall firm outcomes and therefore endanger the theoretical validity, which can be shown by the selected evidence in Table 7.1 below (please also kindly refer to Chapter 3, Section 3.2 for a detailed literature review).

[Table 7.1 near here]

Table 7.1 The Impact of EO attributes on Firm Outcomes

Study	Item	Definition	Outcome	Impact
Miller (1983)	EO	A sole index	Performance	＋
Zahra and Covin (1995)	EO	A sole index	Performance	＋
Smart and Conant (1994)	EO	As a whole	Performance	/
Hart (1992)	EO	As a whole	Performance	―
Wiklund (1998, 2004)	EO	As a whole	Performance	＋
Lyon & Ferrier (1998)	Innovativeness	Innovative activities	Performance	＋
Nelson and Winter(1982)	Innovativeness	Innovative actions	Performance	―
Reid (1991)	Risk-taking	Gearing	Survival	―
Arditti (1967)	Risk-taking	Gearing	ROE	―
Chittenden et al.(1996)	Risk-taking	Gearing	Growth	―
Miller and Leiblein (1996)	Risk-taking	Std. Dev. Of Returns	Performance	＋
Merz, et al.(1994)	Proactiveness	Miller's measure, 1983	Growth	/
Zahra and Covin (1995)	Proactiveness	Miller's measure, 1983	Performance	＋
Lumpkin and Dess (1996)	Proactiveness	Modified Miller's measure, 1983	Performance	＋
Lumpkin and Dess (1997)	Competitive Aggressiveness	Combative and aggressive posture	Performance	＋
Chen & MacMillan (1992)	Competitive Aggressiveness	Rapid responds to Competitors' actions	Performance	＋
Chen & MacMillan (1994)	Competitive Aggressiveness	Three factors added[131]	Performance	―
Lumpkin and Dess (1997)	Competitive Aggressiveness	Combative and aggressive posture	Growth	―
Chaganti, et al. (1995)	Autonomy	Goal orientation	Performance	/
Lerner, et al.(1997)	Autonomy	Independence motives	Revenue	―

Note: The symbol "+" stands for a positive relationship, whereas "-" refers to a negative one. And "/" relates to no deterministic impact found.

---

[131] See more details in Subsection 3.3.2

It is evident that the relationship between EO attributes and firm outcomes is as complicated as their definitions. While the single index of EO may exert a positive influence on firm performance (Miller, 1983; Zahra and Covin, 1995), this is not completely uncontested. Smart and Conant (1994) found no significant relationship and Hart (1992) even noted that EO might bring about poor firm outcomes. The impacts of EO attributes at a lower level are equally ambiguous, if not more so. For instance, Lyon and Ferrier (1998) argued that one of EO attributes, namely "innovativeness", positively influenced performance, whereas Nelson and Winter (1982) believed there was a negative impact. Yet it is hard to judge whether one is correct and the other is not, since the definitions of "innovativeness" are variant, and so are the concepts of performance. It is likewise for other attributes of EO in relation to firm outcomes. Further, the firm performance is more often the research focus, instead of the firm growth. And it is unfortunate that these two concepts are not identical in nature, nor can they be alternatively utilised in practise. Therefore, it is felt to be valuable in this chapter to define and operationalise the EO and its attributes, and to further explore their roles in affecting the firm growth, which is much less studied in the existent literature.

Unlike the studies on the EO, no approach in the literature, to the author's knowledge, has been taken to make a single index of IA. This is probably because of more fragmented definitions and unsystematic operationalization pertaining to IA. Six major components and their relations to firm outcomes are illustrated on a selective basis in Table 7.2 below (please also kindly refer to Chapter 3, Section 3.3 for a detailed literature review).

Table 7.2 The Impact of IA attributes on Firm Outcomes

Study	Item	Definition	Outcome	Impact
Wernerfelt (1984)	Resource	All resources owned and controlled	Success	+
Barney (1991)	Resource	Resource with certain features	Performance	+
Peteraf (1993)	Resource	*Ibid.*	Performance	+
Brown & Kirchhoff (1997)	Resource	Resource munificence	Growth	+
Colombo and Grilli (2005)	Human Capital	University education & prior relevant Experience	Growth	+
Eggers, et al.(1996)	Enterprise Culture	communication, openness to change, leadership, vision, etc	Growth	−
Eggers, et al.(1996)	Enterprise Culture	*Ibid.*	Profitability	+
Merrifield (2005)	Enterprise Culture	Corporate culture	Growth	−
Nham, et al.(2004)	Enterprise Culture	Organizational culture	Performance	+
Irani, et al.(2004)	Enterprise Culture	Corporate culture	Success	+
Galbreath (2005)	Intellectual Property	Patents, Copyrights	Performance	/
Hall (1992)	Intellectual Property	Patents, copyrights, & trademarks	Competitive advantage	+
Drucker (1988)	Knowledge	A driving force of Innovation	Value-adding	+
Neck et al. (2000)	Technical knowledge	Technical expertise	Growth	/
Roberts and Dowling (2002)	Reputation	Corporate reputation	Performance	+
Galbreath (2005)	Reputation	Reputation of firm, customer service & product/service	Performance	+
Butler and Brown (1994)	Network	Entrepreneurs' broad network	Performance	+
Rickne (2001)	Network	Connectivity: the size of connections	Growth	+
Lechner, et al.(2005)	Network	Relation mix: the range of connections	Growth	/
Havnes & Senneseth (2001)	Network	Short-run networking	Growth	/

Note: The symbol "+" stands for a positive relationship, whereas "-" refers to a negative one. And "/" relates to no deterministic impact found.

It seems that resources as a whole can enhance the firm performance (Barney, 1991; Peteraf, 1993), stimulate the firm growth (Brown and Kirchhoff, 1997), and lead to success (Wernerfelt, 1984). However, when it comes to the individual effect of any single IA attribute on firm outcomes, it varies dramatically. For example, Drucker (1988) noted that knowledge was a driving force of innovation and thus could add great values to businesses, yet Neck et al. (2000) found technical knowledge insignificantly related to growth. Besides, enterprise culture was claimed by Eggers, et al., (1996) and Merrifield (2005) to put a negative impact on growth, it seemed opposite in relation to profitability (Eggers, at al., 1996) and firm performance (Nham, et al., 2004; Irani, et al., 2004). Again, this is a matter about the conceptualization and operationalization of both dependent variable and explanatory variables. Therefore, each study should be treated individually with due care. In this chapter, the focus will be on the relationship between IA (as a whole and as separate attributes) and firm growth.

In such a spirit, this work now turns to explicitly gauge the concepts of EO and IA, based on the preliminary operationalization in this section.

7.3 Measuring "Spirit" and "Material"

This section is developed in a four-step statistical procedure (Joreskog, 1974; Hair et al. 1995; Gerbing and Andersen, 1998; Su, 2004; Shen, 2005). First of all, correlation analysis is undertaken to winnow away the most irrelevant items, in order to achieve the high reliability of factors. Then exploratory factor analysis is devised to seek, under general assumptions, a latent structure of attributes that accounts for the inter-item correlations of the variables gathered in the database. Next, reliability tests are conducted to verify the items that form an internally consistent scale and to

remove those that do not. And confirmatory factor analysis is made finally to validate

the attributes of EO and IA, which leads to the econometrical modelling in next

section.

7.3.1 Measuring "Spirit" (EO)

The preliminary operationalization of EO in the previous section has derived

16 variables (Innovativeness, 4; risk-taking, 3; proactiveness, 5; competitive

aggressiveness, 2; autonomy, 2), which all comply with the general rules regarding

sample size (N≥50; N=83) and the ratio between sample size and the number of

items to be factor analysed (≥5 cases; 83/16≥5). However, the overall Cronbach's

alpha based on standardized items is 0.42, which is far below the recommended level

0.7 (Nunnally, 1978). Then, an analysis of inter-item correlation is conducted to

detect the most relevant scaling items, as shown in Table 7.3 below.

[Table 7.3 near here]

Table 7.3 Inter-item Correlations of Preliminary EO attributes

	Risktaking	RDorien	Newpro	RDprofit	Stgyplan	Stockex	CEO	Delegate	RDexpend	Exinvest	Ebiz	Mmkt	Msurvey	Psurvey	Defestgy	Investage
Risktaking	1															
RDorien	-0.125	1														
Newpro	-.253*	.326**	1													
RDprofit	-0.091	.326**	.167	1												
Stgyplan	0.012	.336**	-.011	-.009	1											
Stockex	0.02	-.035	-.135	-.086	.015	1										
CEO	0.106	-.061	-.074	-.213*	-.168	-.063	1									
Delegate	-0.024	-.208*	-.188*	-.188*	-.299**	.131	.121	1								
RDexpend	0.014	.477**	.275**	.430**	.161	.028	-.232*	-.078	1							
Exinvest	-.249*	.040	.334**	.087	.046	-.058	.017	-.151	.103	1						
Ebiz	-0.118	.233*	.206*	.151	.199*	-.041	-.298**	-.141	.345**	.054	1					
Mmkt	-.227*	.311**	.368**	.124	.164	-.101	-.072	-.045	.077	.254*	.307**	1				
Msurvey	0.047	.058	.046	.043	.201*	.028	-.158	-.115	.197*	.150	.264**	-.018	1			
Psurvey	0.167	.179	.087	-.014	.371**	.087	-.004	-.235*	.244*	.107	.298**	.064	.664**	1		
Defestgy	-0.011	.104	-.037	-.004	.292**	.112	-.311**	-.227*	.053	-.124	.169	.066	.129	.153	1	
Investage	-.234*	.094	.406**	.079	.049	-.059	-.035	-.035	-.032	.485**	.004	.322**	.014	.012	.003	1

** Pearson Correlation is significant at the 0.01 level 1-tailed.

* Pearson Correlation is significant at the 0.05 level 1-tailed.

According to the inter-item correlations between 16 variables, the item, namely the ambition to be listed in the stock exchange (*Stockex*), seems to be the least relevant item. And the gearing (*Risktaking*), the power of the CEO (*CEO*) and the willingness to delegate (*Delegate*) are significantly negatively related to the remaining variables, which suggests incongruence with the concept that the other items may have. Hence, these four variables are dropped and the Cronbach's alpha based on 12 remaining standardized items increases significantly to 0.72, which allows the next step of exploratory factor analysis to verify the possible attributes of EO.

By setting the cut off eigenvalue at 1, four factors are extracted by principal components method and have explained 62.8% of the total variance, which is above the suggested threshold of 60% for social science studies (Hair et al., 1995). The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy is 0.665 and Bartlett's test of Sphericity with approximate Chi-square 216.9 (d.f. 66 at the significant level of 0.01), which implies the applicability and validity of factor analysis for the current sample size (Su, 2004; Shen, 2005). Table 7.4 below reports the statistics after a varimax (orthogonal) rotation and a direct oblimin (non-orthogonal) rotation, which is to maximize the number of non-zero factor loadings and to strengthen the explanatory power of the data.

[Table 7.4 near here]

The factor of *proactiveness I* extracted reports the Cronbach's alpha 0.80, whereas the others' coefficient alpha vary from 0.45 to 0.69, which is close to, albeit

below the Nunnally's recommended level 0.7[132] (Nunnally, 1978). As found above, however, the Cronbach's alpha on standardized items is 0.72 for 12 items overall. Instead of overthrowing the tentative results, it is therefore felt that the analysis could be enhanced by increasing the sample size and thus reducing sample variability, or increasing the ratio of the number of items to the number of attributes (i.e. the more items per factor the more informative the analysis) in order to reduce selection bias.

Table 7.4   Exploratory Factor Analysis of EO

Factor	Item	Varimax	Oblimin	Eigenvalue	Cronbach's alpha
	Investage	.819	.839		
Adventurousness	*Exinvest*	.744	.758	2.956	0.69
	Newpro	.663	.639		
	Mmkt	.607	.592		
	RDexpend	.815	.824		
Innovativeness	*RDprofit*	.741	.770	1.912	0.66
	RDorien	.681	.655		
	Ebiz	.406	.366		
Proactiveness I	*Msurvey*	.894	.899	1.471	0.80
	Psurvey	.850	.838		
Proactiveness II	*Defestgy*	.720	.734	1.192	0.45
	Stgyplan	.711	.698		
		5 iterations	*10 iterations*		

Note: Cronbach's alpha based on 12 standardized items: 0.72

The four factors exacted account for 62.8% of the total variance.

---

[132] Although the factor of proactiveness II has the lowest alpha 0.45, it helps to achieve the overall coefficient alpha above the recommended level 0.7. The exclusion of the items consisting of this factor would cause the overall alpha (the remaining 10 items) to drop below 0.7.

While exploratory factor analysis provides the latent structure of EO attributes, confirmatory factor analysis is deployed to validate these constructs (Gerbing and Andersen, 1998; Hair et al., 1995). The methodology is similar, but the extraction method now is maximum likelihood, after both varimax and oblimin rotations. As shown in Table 7.5 below, 12 items are extracted into four factors and grouped into the same construct indicated by exploratory factor analysis. Regarding convergent validity, the path loadings of all items are significant at the level of 0.05 and the majority of items are at the level of 0.01 (except only the loading of *Ebiz* after a direct oblimin rotation)[133]. Discriminant validity is also demonstrated by the low and insignificant correlations between the EO attributes exacted (e.g. the highest Pearson's correlation 0.037 between the factor of *Innovativeness* and the factor of *adventurousness*, the highest Kendall's tau_b correlation 0.052 or the highest Spearman's rho correlation 0.072 between the factor of *adventurousness* and the factor of *proactiveness II*). Furthermore, a Chi-square test is devised to measure the overall fit of the model to the data by measuring the distance (difference, discrepancy, deviance) between the sample covariance (correlation) matrix and the fitted covariance (correlation) matrix[134]. The chi-square value of 17.413 (d.f. 24 at a p-value of 0.831) also suggests that the correlations indicated by the factors extracted so far constitute an adequate account of the original correlations. A further discussion of EO components, based on such statistical procedures, can be therefore made.

[Table 7.5 near here]

---

[133] The critical value for salient factor loadings are +/-0.24 at the level of 0.05 and +/-0.318 at the level of 0.01, in accordance with critical values for Pearson's moment correlation coefficients (Child, 1970).

[134] A small Chi-square corresponds to good fit to the data and zero chi-square corresponds to perfect fit.

Table 7.5   Confirmatory Factor Analysis of EO

Factor	Item	Varimax Path Loading	Oblimin Path Loading
Adventurousness	*Investage*	.738	.762
	Exinvest	.626	.638
	Newpro	.564	.533
	Mmkt	.494	.481
Innovativeness	*RDexpend*	.815	.838
	RDprofit	.561	.553
	RDorien	.533	.520
	Ebiz	.318	.283
Proactiveness I	*Msurvey*	.793	.800
	Psurvey	.789	.770
Proactiveness II	*Defestgy*	.593	.580
	Stgyplan	.368	.372
		5 iterations	*9 iterations*

Note: All path loadings are significant (p-value<0.01) except Ebiz at the 0.05 level

Goodness-o- fit test: Chi-square=17.413 d.f. 24 at a p-value of 0.831

Out of 12 items, four factors are extracted under the following headings: *adventurousness, innovativeness* and *proactiveness I and II*. The results broadly fit into the prior theoretical framework, albeit with some new features. First, apart from traditional variables standing for innovation (e.g. the R&D expenditure, the ratio of R&D expenditure to profit, the R&D emphasis), the conducting of E-commerce seems to show innovativeness, too. Second, the factor of proactiveness is divided into two attributes, which confirms the separation found also in the work of Lumpkin and Dess (1997) and Wiklund (1998). The factor of *proactiveness I* relates to the strong

tendency to understand market trends and thus to go ahead of competitors, whereas the factor of *proactiveness II* is associated with a growth and development orientation, as well as a rather defensive posture. Third, the risk-taking construct in Miller's measurement, and competitive aggressiveness in Lumpkin and Dess (1997) seem to converge into a single attribute of EO, which implies the "adventurous spirit" of taking the risk of more reinvestment after the financial inception, and readily competing in terms of new products and larger market extent. Hence, the concept of EO, using Chinese evidence, is operationalized as four constructs in this study: *adventurousness, innovativeness, proactiveness I* and *II.*

7.3.2 Measuring "Material" (IA)

In like manner, the operationalization of IA follows a similar statistical procedure. Although the total of 26 items derived from the preceding empirical studies present a high Cronbach's alpha 0.76, the factor analysis of the current sample cannot use all of them since it violates the ratio between sample size and the number of items to be factor analysed (≥ 5 cases; $83/26 \leq 5$). An inter-item correlation analysis is thus conducted in order to filter the items that are less relevant to a universal concept, as shown in Table 7.6 below.

[Table 7.6 near here]

Table 7.6 Inter-item Correlations of Preliminary IA attributes

	Substi	Ads	Ads-media	Knet	Tech-net	Sup-net	Advi-Net	Ebiz	Com-muni	Npatent	Website	Iso	Soft-ware	Codes	Slogan	Social	Work-con	CultureS	Dip-loma	Salary	Train-ing	Stimula	Top-train	Patent	RD-branch	Tech
Substi	1																									
Ads	.010	1																								
Adsmedia	.133	.639**	1																							
Knet	-.091	.093	.154	1																						
Technet	.015	-.041	.012	-.097	1																					
Supnet	.009	.004	.005	-.033	.344**	1																				
Advinet	.055	.104	.144	.032	.097	-.094	1																			
Ebiz	.119	.261**	.103	.079	.032	.176	-.056	1																		
Communi	-.051	.291**	.182*	-.153	.090	.125	-.092	.364**	1																	
Npatent	.462**	-.004	.058	-.033	.001	.061	-.124	.280**	.020	1																
Website	.042	.294**	.444**	.128	.118	.095	-.145	.421**	.163	.269**	1															
Iso	.175	.146	.216*	-.014	.238*	.182	.074	.484**	.374**	.344**	.333**	1														
Software	.150	.070	.147	-.055	.102	.101	-.053	.207*	.127	-.022	.394**	.175	1													
Codes	-.012	.033	.082	.039	-.041	-.194*	-.078	.008	.010	.077	.109	.142	.003	1												
Slogan	.003	.061	.129	.162	.222*	.092	.018	.071	.081	.109	.236*	.165	.069	-.137	1											
Social	.032	.213*	.226*	.177	-.073	.283**	-.075	.154	.163	.070	.408**	.079	.309**	.241*	.191*	1										
Workcon	.172	-.070	-.022	.170	.079	.069	-.147	.174	.018	.155	.214*	.159	.265**	-.027	.017	.229*	1									
CultureS	-.165	-.082	-.127	.293**	-.184	-.056	-.043	.045	-.008	.007	-.018	-.043	-.096	.359**	.053	.030	-.056	1								
Diploma	.118	.237*	.244*	-.180	-.088	-.056	.276**	.120	.143	-.087	.197*	.070	.314**	-.053	.034	.231*	.035	-.163	1							
Salary	-.026	-.063	-.056	-.192*	.000	.075	.132	.102	.039	.220*	-.012	.186*	.156	.034	.102	.076	.014	-.026	.203*	1						
Training	.112	.241*	.100	.024	.123	.055	.071	.305**	.213*	.088	.280**	.283**	.201*	-.040	.274**	.220*	.146	.175	.057	.000	1					
Stimula	.095	.097	.155	.060	.168	.266**	.015	.272**	.317**	.195*	.198*	.239*	.199*	.170	.056	.278**	.162	-.001	.186*	.217*	.102	1				
Toptrain	-.018	.214*	.138	.230*	.043	.181	-.050	.189*	.200*	.072	.241*	.051	.246*	-.018	.319**	.441**	.194*	-.042	.087	.053	.140	.343**	1			
Patent	.073	.053	.036	-.002	.026	-.010	-.003	.335**	.117	.528**	.293**	.427**	-.082	.030	.270**	-.024	.022	.030	.011	.244*	.014	.048	.092	1		
RD-branch	.286**	-.011	.109	-.007	.268**	.277**	-.079	.233*	.107	.299**	.303**	.479**	.251*	.196*	.247*	.173	.345**	-.016	.067	.120	.222*	.232*	.251*	.390**	1	
tech	.141	.036	.210*	.024	-.040	.056	.017	.126	.071	.040	.229*	.211*	.290**	.002	.166	.097	.027	-.064	.203*	.180	.144	.124	-.131	.002	.192*	1

** *Pearson's Correlation is significant at the 0.01 level 1-tailed.*

* *Pearson's Correlation is significant at the 0.05 level 1-tailed.*

By observing the table of inter-item correlations above, 16 of the most relevant variables selected not only comply with the ratio being larger than 5 (83/16≥5), but also present a coefficient alpha 0.703 slightly larger than the recommended level. Explanatory factor analysis preliminarily extracts six factors of IA by the principal components method, after the rotations of varimax and direct oblimin, which explains 67.6% of the total variance, as shown in Table 7.7 below. The KMO measure of sampling adequacy is 0.627 and Bartlett's test of sphericity is also significant at the 0.01 level (approx. chi-square 295.174 and d.f. 120). Although some IA constructs extracted report close to yet smaller Cronbach's alpha than Nunnally's recommended level, the overall coefficient alpha (0.703 for 16 items) seems generally acceptable.

[Table 7.7 near here]

Furthermore, Table 7.8 below illustrates the statistics of confirmatory factor analysis. Convergent validity is shown by the significant path loadings of all items at the level of 0.01. Concerning discriminant validity, none of IA attributes is significantly correlated with the other (e.g. the highest Pearson's correlation -0.072 between the factor of *Intellectual property* and the factor of *reputation*, the highest Kendall's tau_b correlation -0.100 or the highest Spearman's rho correlation -0.161 between the factor of *Intellectual property* and the factor of *enterprise culture*). The goodness of fit to the data is not too small, yet still reasonable with a chi-square value of 27.468 (d.f. 39 at a p-value of 0.917).

[Table 7.8 near here]

Table 7.7   Exploratory Factor Analysis of IA

Factor	Item	Varimax	Oblimin	Eigenvalue	Cronbach's Alpha
Intellectual Property	*Patent*	.878	.908		
	Npatent	.798	.823	3.457	0.74
	ISO	.589	.519		
	RDbranch	.531	.469		
Human Capital	*Toptrain*	.822	-.834		
	Social	.760	-.723	1.880	0.62
	Stimula	.459	-.389		
Reputation	*Ads*	.879	.905	1.662	0.78
	Adsmedia	.878	.886		
Network	*Technet*	.841	-.873	1.493	0.51
	Supnet	.654	-.653		
Technology	*Tech*	.823	.845	1.270	0.57
	Software	.697	.721		
	Website	.420	.373		
Enterprise Culture	*Codes*	.870	.878	1.057	0.53
	CultureS	.734	.737		
		6 iterations	*15 iterations*		

Note: Cronbach's alpha based on 16 standardized items: 0.703

The six factors exacted account for 67.6% of the total variance.

Table 7.8   Confirmatory Factor Analysis of IA

Factor	Item	Varimax Path Loading	Oblimin Path Loading
Intellectual Property	*Patent*	.929	.973
	Npatent	.579	.586
	ISO	.501	.434
	RDbranch	.464	.393
Human Capital	*Toptrain*	.722	.698
	Social	.666	.680
	Stimula	.364	.307
Reputation	*Ads*	.876	.891
	Adsmedia	.721	.744
Network	*Technet*	.651	.682
	Supnet	.462	.429
Technological Knowledge	*Tech*	.627	.649
	Software	.515	.527
	Website	.385	.336
Enterprise Culture	*Codes*	.988	1.011
	CultureS	.383	.373
		6 iterations	*13 iterations*

Note: All path loadings are significant (p-value<0.01)

  Goodness-o- fit test: Chi-square=27.468 d.f.39 at a p-value of 0.917

  With regard to 16 items of IA, six factors are extracted with high reliability, and are broadly consistent with the prior knowledge of IA in the empirical studies, albeit with

some new characteristics. *Intellectual property* relates to not only patents, but also international certificates (e.g. ISO9000) and the establishment of specific R&D branch or technical centre. *Human capital* is reflected by the training of high profile managers and effective enterprise stimulation schemes. It is statistically interesting that socializing activity is not regarded as a part of enterprise culture, but more of an activity relating to HR management. The more frequent the socializing activities, the more efficacious for reducing work disputes and increasing the average period of job incumbency, which is expected to enhance the quality of *human capital*. Unsurprisingly, advertisements and a variety of channels facilitate gains in the firm's reputation. And the network mainly refers to the relationship with technical partners and suppliers. While the self-perceived technological level compared with the industry average is adopted, the use of software and the launch of a firm's own website are also believed to reveal the level of *technological knowledge*. And last, it is felt that a firm's openness to change and its leadership are two vital elements embodied in the *enterprise culture.* Although some of items fall into the different categories from the preliminary operationalization, six principal factors exacted are generally congruent with the previous framework.

7.4 Estimates and Results

While it is politically correct to incorporate both "spirit" and "material" into the development of national competency in China, it remains unclear how to apply the same concepts in firm growth equations. In general, this section devises the multiple regression method, which is similar to that of the previous chapter (i.e. Chapter 6), in order to answer two major questions. The first is whether the abstract concept of EO and IA can

effectively act together in relation to growth. It is also undecided how differently the disaggregated attributes of EO and IA can influence the employment growth. In response to these questions, therefore, the development of the thoughts may unfold in two steps, as follows.

7.4.1 The Parsimonious EO-IA-Growth Model

First, EO and IA as abstract concepts are indexed, based on their lower level attributes produced by factor analysis. The process of indexation is the formula written below.

$$Index = \sum_{1}^{n} weight_n * attribute_n \tag{7.1}$$

Where *attribute* refers to the component factor score[135] by the principal components method after varimax rotation, and weights relate to the contribution that each factor makes to the total variance (n = the number of factors extracted). The factor scores of EO and IA attributes as well as their overall indices are reported in Table 7.9 below.

[Table 7.9 near here]

---

[135] The factor analysis scores are saved as new variables for each factor in the final solution, using SPSS 12.0. Factor scores are produced by regression method, having mean of 0 and a variance equal to the squared multiple correlation between the estimated factor scores and the true factor values.

Table 7.9 Statistics of EO and IA Attributes and Indices

	Min.	Max.	Mean	Dev.	Skewness	Error	Kurtosis	Error
Adventurousness	-2.284	2.579	0.019	0.997	-0.123	0.267	0.108	0.529
Innovativeness	-1.590	2.203	-0.008	0.981	0.531	0.267	-0.593	0.529
Proactiveness I	-2.881	1.254	0.006	1.002	-1.671	0.267	2.122	0.529
Proactiveness II	-1.879	3.222	-0.008	1.011	0.350	0.267	0.383	0.529
EOdex	-0.913	0.641	0.003	0.336	-0.388	0.267	-0.168	0.529
IA								
Intellectual Property	-1.188	4.141	-0.022	0.999	1.604	0.281	3.012	0.555
Human Capital	-2.420	1.514	0.024	0.982	-0.699	0.281	-0.165	0.555
Reputation	-1.781	1.761	-0.034	1.020	-0.232	0.281	-1.137	0.555
Network	-2.204	2.753	-0.061	0.982	0.402	0.281	0.115	0.555
Technological	-1.938	2.097	0.000	0.967	-0.018	0.281	-0.587	0.555
Enterprise Culture	-3.099	0.990	-0.048	1.023	-1.500	0.281	1.509	0.555
IAdex	-0.722	0.809	-0.014	0.294	0.018	0.281	0.410	0.555

In order to explore an exploratory relationship between EO/IA and the firm growth, the index of EO (*EOdex*) and the index of IA (*IAdex*) are taken as explanatory variables along with a survival selection bias correction variable *IMR* (i.e. the"inverse Mill's ratio", see Subsection 6.4.1), whereas the dependent variable is defined as the employment growth rate between two interviews during 2004-2006 (in natural logarithm). This may be expressed:

$$Ge = \alpha_0 + \alpha_1 Size + \alpha_2 Age + \alpha_3 IMR + \beta_1 EOdex + \beta_2 IAdex + \mu_1 \qquad (7.2)$$

This parsimonious growth equation is estimated by the OLS regression method, with White's heteroscedasticity-consistent standard errors and covariance. The estimates are reported in Table 7.10 as follows.

Table 7.10   The Parsimonious EO-IA-Growth Model (n=76)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.473998	0.141389	3.352443	0.0023***
Log(Size)	-0.086187	0.034131	-2.525161	0.0175**
Log(Age)	-0.115844	0.045163	-2.565023	0.0160**
EOdex	-0.036237	0.132667	-0.273140	0.7868
IAdex	0.304439	0.173349	1.756221	0.0900*
IMR	-0.013137	0.005428	-2.420404	0.0222**
R-squared	0.427423	F-statistic		4.180340
Adjusted R-squared	0.325177	Prob(F-statistic)		0.005804***

Note: Significant at less than 1%(***),1-5%(**),5-10%(*).

As it was proven in Chapter 6, "stylized facts" that the smaller and younger firms can grow faster also remain valid here (1% decreases in size and age, 0.08% and 0.11% respectively increases in growth). The coefficient of the inverse Mill's ratio appears significant in this model, which implies the sample selection bias has been taken in account.

The effects of EO and IA seem to be different on business expansion mechanism. In contrast with the positive impact of EO (Miller, 1983; Zahra, 1991; Zahra and Covin, 1995; Wiklund, 1998, 2004; Rauch, et al. 2004), or the negative effect of EO (Hart, 1992), in relation to firm performance, this study finds no impact of EO on firm growth. To some extent, this is consistent with the work of Smart and Conant (1994) and Auger, et al. (2003), which claimed no relationship between EO and firm outcomes, either. The inherent reasons can be at least three-fold. Theoretically, performance is not a concept

same as growth and some simply view the firm growth as one of the variables for evaluating performance. Although the "spirit" of entrepreneurship may enhance the performance overall as some argued (see Subsection 7.2.3), it seems unnecessary that the similar effect can been observed in terms of employment growth. In reality, the firms with the higher EO are largely due to their talents with entrepreneurial spirits. Yet this type of human capital is extremely hard to retain, as they may take the chance to set up their own businesses with some old colleagues or new followers when a good market opportunity emerges. Therefore, the EO may possibly encourage an increase in the number of new SMEs, instead of a remarkable increase in the employment of a particular existing SME. This also explains the fact that Guangdong Province, where the first hand data of this thesis were collected, is a most typical region in China that is abundant in the clusters of SMEs, such as Dong Guan (the centre of electronics companies), Jie Yang (the centre of plastic goods manufacturers), Fo Shan (the centre of sanitary ware factories), and so on. Last but not least, as the EO construct includes four disaggregated attributes (i.e. *adventurousness, innovativeness, proactiveness I & II*), the possible interaction among these lower level factors may cancel out the individual influence on growth, which should be further examined in next subsection.

In a different way, the role of IA in affecting the firm growth is significantly positive at the 0.1 level (i.e. one unit increase leading to 0.30% increase in employment growth rate). This generally agrees with the proposition of resource-based view (e.g. Wernerfelt, 1984; Barney, 1991; Peteraf, 1993; Teece et al, 1997), which claims that the more IA held, the faster the firm seems to grow. As Guangdong Province is one of two most prosperous regions in China (the other one is Shanghai region), the economy has

been fairly well developed in the past more than two decades. This result reveals that the firm growth now no longer only depends on tangible assets, but also from the possession of intangibles that are "rare, heterogeneous and difficult to create, imitate or substitute" (Wiklund, 1998; Lockett, A., Thompson, S., 2001, 2004a,b). This may clarify that some Chinese firms find increasingly difficult to survive in the *status quo* by simply adopting the form of OEM (Original Equipment Manufacturer)[136], whereas those who make efforts to build up brands and establish a broader network can expand the businesses further[137]. And last, while the IA overall positively influences the firm growth, it is felt to be of interest to explore what the individual role of its each and every one attribute is played. Hence, a comprehensive EO-IA-Growth model is examined next.

7.4.2 The Comprehensive EO-IA-Growth Model

This subsection is to disaggregate EO and IA to their lower level attributes with the purpose of examining their individual effect on the growth of firm. With caution, *IMR* is added to each growth equation to correct the possible sample selection bias and White's heteroscedasticity-consistent standard errors and covariance is also employed in order to remove the possible heteroscedasticity problem. Thus, a more comprehensive growth model of EO and IA is built up as follows.

$$Ge = \chi + \alpha_1 \, 'Size + \alpha_2 \, 'Age + \alpha_3 \, 'IMR + \varphi X + \gamma Y + \mu_2 \qquad (7.3)$$

Where X is a vector of EO attributes with a matrix of coefficients φ, Y is a vector of IA attributes with a matrix of coefficients γ, *Size* is the employment in 2004 and *Age* is the number of years from business inception to 2004. *IMR* is the sample selection bias

---

[136] These firms are lack of their own intangible assets and related capabilities and therefore can hardly compete when the market competition gets fierce and the profit margin keeps decreasing.
[137] As stated by the Ministry of Commerce in China, 2006 is "the year of China Brand" nationwide.

variable and μ_2 is the error term. The OLS estimation is undertaken with White's heteroscedasticity-consistent standard errors and covariance. The estimates are reported in Table 7.11 as follows.

Table 7.11 The Comprehensive EO-IA-Growth Model (n=66)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.509309	0.134192	3.795369	0.0011***
Log(Size)	-0.103250	0.035170	-2.935784	0.0082***
Log(Age)	-0.093811	0.053437	-1.755542	0.0945*
EO				
Adventurousness	0.016765	0.042967	0.390182	0.7005
Innovativeness	-0.060585	0.044927	-1.348513	0.1926
Proactiveness I	-0.037086	0.063192	-0.586877	0.5639
Proactiveness II	-0.057162	0.039361	-1.452254	0.1619
IA				
Intellectual Property	0.071864	0.051546	1.394171	0.1786
Human Capital	0.053340	0.049912	1.068695	0.2979
Reputation	0.124765	0.063221	1.973487	0.0624*
Network	-0.004762	0.051152	-0.093095	0.9268
Technological Knowledge	0.098752	0.044643	2.212063	0.0388**
Enterprise Culture	0.084543	0.035000	2.415510	0.0254**
IMR	-0.014194	0.005701	-2.489942	0.0217**
R-squared	0.641739	F-statistic		2.755781
Adjusted R-squared	0.408869	Prob(F-statistic)		0.020329**

Note: Significant at less than 1%(***),1-5%(**),5-10%(*).

Here again Gibrat's Law is strongly rejected and Jovanovic's learning theory holds in a slightly weak sense (significant at the level of 0.1), which is congruent with the parsimonious EO-IA-Growth model previously estimated and reported.

In terms of EO-Growth relationship, the coefficients of *adventurousness* and *proactiveness I* are highly insignificant. However, *innovativeness* and *proactiveness II* are related to the employment growth rate in a negative way, albeit quite weakly[138]. As Nelson and Winter (1982) argued, sometimes imitation can be more effective than innovation for the enhancement of firm performance. Regarding Guangdong Province being the "world factory" instead of "silicon valley", this is even more so for firms in this region that can excel by imitation. The results of this study show that the heavier R&D emphasis, larger R&D expenditure, the higher ratio of R&D to total profit, or even the launch of E-commerce, may perhaps make a firm to hire fewer employees. With regard to proactiveness II being defined in terms of defensive strategy and strategic planning, the adoption of the former and the uncertainty of the effectiveness of the latter may actually cast the shadow on growth. As Reid (1996) noted, one of the successful military tactic is to attack as the best defence. And such defensive strategy adopters may put on a combative and aggressive posture, which can possibly enhance the performance, yet not the growth (Lumpkin and Dess, 1997). Besides, the proactiveness to make strategic planning may absorb the resource that could have been used for growth and therefore impede the expansion in the short term, were it helpful in the long run.

In general, neither the index of EO nor the disaggregated attributes of EO seem to influence the firm growth significantly. It may be because of the interactions among EO

---

[138] Considering the sample size in this study, these results can be indicative, even though they are not so statistically significant.

lower level attributes, some of which exert positive effects while the rest of which impose negative influences (i.e. positive sign of *adventurousness* and negative sign for the rest). While it remains equivocal how effectively and successfully the willingness of entrepreneurs can be transformed into the real growth rate, it now turns to the discussion of IA, the other growth determinant, in a more materialistic way.

Three attributes of IA (i.e. *network, technological knowledge, enterprise culture*) demonstrate the significant positive relationship with growth and the other two attributes of IA (i.e. *intellectual property, human capital*) seem to exert slightly weaker influence, whereas *reputation* appears highly insignificant. This result is broadly congruous with the parsimonious growth model (7.10).

It comes no surprise that *network* is important for the growth of firms as "guan xi" to a large extent speaks louder than anything else in business (Butler and Brown, 1994; Rickne, 2001). Especially in a developing country like China, this entrenched culture of "guan xi" is so overwhelmingly powerful that in many occasions, firms are competing for opportunities brought about by "guan xi" mainly with suppliers and buyers, rather than their professionalism. Besides, successful high-growth cases also seem to arise from the advanced *technological knowledge*, which is embodied in self-perceived technological level, the usage of varying software and the running of their own website. As Drucker (1988) argued, this sort of knowledge can be the driving force for lowering the cost structure and enhancing the management skills and therefore lead to better firm outcomes. Further, although Eggers, et al.(1996) and Merrifield (2005) asserted that the obsolete enterprise culture could actually check a firm's expansion, the current healthy *enterprise culture* in this study seems to actually boost the growth, which resembles the

findings in the works of Nham, et al.(2004) and Irani, et al.(2004). The results reveal that the more flexible a firm changes its company regulations/codes according to the environment, the more influences of an owner-manager/entrepreneur has, the more likely this firm will grow.

Another attribute of IA, *intellectual property,* here also shows a positive relation to growth, albeit slightly weak (prob. = 0.1786). This may be largely because of the considerable lack of respect to patents, copyrights and trademarks in China. And due to such an unfavourable situation, the true power of intellectual property cannot be transformed into "competitive advantage" (Hall, 1992) and therefore cause a much less promising growth outlook. *Human capital* appears to impose a positive influence on firm growth as well, yet it is highly insignificant. Trainings for top management, socializing activities, and enterprise stimulation schemes, seem quite irrelevant to firm growth. It is thus speculated that this IA attribute may be more significantly related to growth were it being defined as founders' education background and relative prior work experiences, as supported by the study of Colombo and Grilli (2005). *Reputation* is surprisingly insignificant in a strongest sense, which contradicts the works of Roberts and Dowling (2002) and Galbreath (2005). Due to the availability of the data collected, the variable of reputation is limitedly defined in terms of the number of advertisements and the type of advertisement channels. So it is somehow understandable why this IA attribute cannot directly affect the growth outcome. After all, advertisements do not automatically create fame, at least unnecessary for good ones. Therefore, it should be noted that the relationship between reputation and growth may be different if the concept of reputation

is defined differently (e.g. corporate brand value, company image, customer service and product service, etc).

7.5 General Conclusions

This chapter has examined two major themes (i.e. the entrepreneurship and resource-based view) in the managerial literature of firm growth. It does so by operationalizing two widely discussed concepts, namely entrepreneurial orientation (EO) and intangible assets (IA) and exploring their influences on the business expansion process, using the data of 83 private firms collected by face-to-face interviews in the fieldwork of Guangdong Province in China during the period September-December 2004, and by follow-up telephone interviews in February 2006. Three points can be made to conclude this chapter.

First, despite the well-known discretion characteristic of the Chinese business culture, a novelty of this work is to use the first-hand firm-level evidence collected by interviewing 83 Chinese entrepreneurs (or owner-managers) in the field in 2004 and 2006. Second, on the basis of such in-depth data, a variety of statistical methods are utilized to operationalize EO and IA. For instance, correlation analysis is employed to select the most relevant items while the sample size is not large enough to accommodate all (i.e. the ratio of observations to variables must be equal to or larger than 5) and a reliability test is to validate such a selection. Due to the multiplicative nature of both EO and IA, exploratory factor analysis sets out to discover the latent structure of constructs and confirmatory factor analysis is to confirm the results obtained. Third, and last, EO and IA, in the form of a sole index as well as a disaggregated expression of all attributes,

are incorporated into the parsimonious growth model (7.10) and the comprehensive growth model (7.11).

The principal findings may be three-fold. First of all, while EO and IA are defined as two abstract constructs at a higher level, IA seems to be more capable of facilitating the growth mechanism than EO. Secondly, if these two concepts are disaggregated into more specific attributes, the capacity of enhancing the growth seems to vary accordingly. In general, none of EO attributes has the significant relationship with the firm growth. However, speaking less strictly in terms of the sample size, *innovativeness* and *proactiveness II* are related to the employment growth rate in a negative way, albeit quite weakly. With respect to disaggregated IA attributes, *network*, *enterprise culture* and *technological knowledge* present a significantly positive relationship with the business expansion, whereas *intellectual property* and *human capital* impose a lesser significant influence. As *reputation* is defined in terms of advertisements, its relation to the firm growth is highly insignificant. Lastly, Gibrat's Law here is again rejected and Jovanovic's learning theory prevails, providing the correction of sample selection bias and heteroscedasticity.

Therefore, the scientific results in this empirical study closely correspond to what is in reality pertaining to oft-quoted national slogan in China: "spirit and material". While China's miraculously growing economy is rather not much attributed to this "spirit" propaganda but really by the materialistic pursuit[139], this chapter also finds that Intangible Assets (material) appears far more significant than Entrepreneurial Orientation (spirit), at least regarding the sampled firms for the current stage. Further, it should be noted that some scholars have begun to discuss the entrepreneurial orientation by encompassing the

---

[139] As a matter of fact, China is becoming more and more materialistic than ever when the economy rapidly grows.

resource-based view (Brown and Kirchhoff, 1997; Wiklund, 1998; Gasse, 1998) and it seems that even more attention needs turning to the complex interactions between EO and IA. Such extensions have been beyond the scope of this study, in terms of firm growth determinants, but nevertheless can provide promising ground for future research.

CHAPTER 8

ORGANIZATIONAL FORM, CONFIGUATION AND FIRM GROWTH

8.1 Introduction

A firm cannot grow to become Birch's "gazelles", or Storey's "ten-percenters" without considering "the market, technology, competitors' behaviours, or buyer needs", in that these advantages can be "enhanced or eliminated by changes (in the wild world)" (Porter, 1991). However, the extent to which the environment affects the business expansion is not yet clear. "Population ecologists" (Hannan and Freeman, 1979, 1984; Aldrich, 1979) argue that the impact of the environment on firm performance is simply unidirectional regardless of the strategy selected by firms. The similar viewpoint of "viability analysis" (Alchian, 1950; Enke, 1951) also assumes the incapability of firms to force the environment to adopt, even though it admits the space for firms to take some intelligent choices that nevertheless is still constrained by the environmental contingencies (Child, 1972; Miles and Cameron, 1982). In other words, the environment may directly enhance or impede the firm growth performance.

In a quite different route, the approach of "strategic adaptation" (Tsai et al., 1991) emphasizes the strategy, based on which firms can actually outperform in different external conditions. This equally amounts to saying that the firm growth is determined not only by its surroundings but also by the strategy it adopts accordingly. It is the contingency theory that formally addresses the organization and the environment in which it operates (Burns and Stalker, 1961; Emery and Trist, 1965; Lawrence and Lorsch, 1967, Yasai-Ardekani, 1986), the strategies it adopts (Chandler, 1962; Miles and Snow, 1978; Galunic and Eisenhardt, 1994; Harris and Ruefli, 2000), the organizational size it presents (Gooding and Wagner III, 1985; Miller, 1987; Bluedom, 1993; Shenhar, 2001) and the technology it holds (Woodward, 1965; Thompson, 1967; Miller, Glick, Wang and

Huber, 1991; Roberts and Grabowski, 1999). The later development of the contingency theory has extended to even much wider areas, such as organizational culture (Schein, 1992), EO (Lumpkin and Dess, 1996; Wiklund, 1998), management accounting (Andersen and Lanen, 1999; Mitchell, Reid and Smith, 2000; Lofsten and Lindelof, 2005), organizational learning and management control system (Romme and Dillen, 1997; Kloot, 1997), strategic reward system (Boyd and Salamin, 2001), export venture creation (Ilbeh, 2003) and rhetorical congruence (Sillince, 2005), and so on. Limited by the scope of this work, this chapter will concentrate on the relationship between four major contingency factors (i.e. environment, strategy, organizational size and technology) and organizational structure (see Chapter 3, Section 3.4, and Emmanuel *et al.,* 1990).

As Reid and Smith (2000) proposed, a set of contingencies govern the conditions for a particular organizational form and thus there may be no ideal structure due to greatly varying contingencies. In other words, there is no perfect organizational form as any change of a single contingency can alter the configuration or system and force the firm to strive for another new configuration. With such complexity, it is felt that firm outcomes are not decided alone by any single contingency, but rather depend on the configuration of all major contingencies involved. Whilst Darwinian Theory proposes "the survival of the fittest", here it is argued that superior firm performance may result from the best configuration of all contingencies. Yet it is still not clear whether the best or fittest configuration can also enhance the growth rate, as high growth firms are not identical to high performance businesses, and in some empirical studies growth and performance are even negatively related (Cubbin and Leech, 1986; Dobson and Gerrard; Reid, 1993, 1995, 1998, 2007). Following this line of reasoning, it is of interest to explore

whether the growth rate of firms is dependent on the configuration of all contingencies and to what extent.

In such a spirit, the contributions of this chapter may be three-fold. First, it sets out to operationalize organizational structure and contingency factors, and to test those aspects of contingency theory which lend themselves to statistical analysis in a Chinese SME context. As the prior research in this field basically focuses on the large corporations in the west (except a few studies like Reid and Smith, 1999, 2000), this work makes an effort to not only remedy this neglect of smaller firms, but also to extend the field to the developing countries like China. Second, it is of some innovation to cluster contingencies into different systems and to design a scoring method to measure the goodness or badness of the fit among contingency factors within the system, based on which the structure-configuration-growth relation can be tested by multiple regression analysis. The third aim is to employ the data that relate to a sample of Chinese firms and were collected by face-to-face interviews using an administered questionnaire in the fieldwork of China during 2004-2006, part of which was specially oriented towards an investigation of contingency factors and firm growth theory.

The structure of this chapter is organized as follows. The next section outlines and operationalizes the major elements of contingency theory and tests its applicability and validity in an ordered probit/logit model using the Chinese evidence. With such knowledge, Section 8.3 depicts the morphology of Chinese private firms by grouping a variety of contingency factors, as well as organizational form, in cluster analysis. Then Section 8.4 discusses the effects of both organizational structure and the configuration of contingencies on the firm growth. The last section states the general conclusions.

8.2 Contingency Theory

This section begins to operationalize the concept of organizational structure and four major contingency factors (i.e. environment, strategy, size and technology). Then the complexity of the expected impact of contingencies on organizational forms is demonstrated by an analysis of evidence in the literature of contingency theory. Last, contingency theory is empirically tested by an ordered probit/logit model based on the data gathered in the fieldwork of China.

8.2.1 Measuring Organizational Structure

Theoretically, organizational forms can be formulated as a continuum between two extremes of "organic" and "mechanistic" and may be operationalized as the design of tasks and functions, the type of control, authority and communication (Burns and Stalker, 1961). Organic management systems are characterized by incessant adjustment and redefinition of tasks and functions through the process, flat network of control, authority and communication (both top-down and bottom-up, consultative style[140]), whereas mechanistic management structures display a rather tightly controlled standardized framework, in which tasks were precisely defined; functions were strictly designed; control, authority and communication were hierarchical (mostly top-down and command-like style)[141]. In like manner, this study calibrates the flexibility of adjusting firms' codes and regulations on a three-point scale (*codes*), and the level of control is measured by the willingness of entrepreneurs to delegate their power (*delegate*). The

---

[140] More detail in an empirical study of interaction patterns by Courtright, et al. (1989)
[141] Apart from this influential typology of "organic" and "mechanistic" structures, there are other taxonomies, such as "simple"(Mintzberg, 1983), "bureaucracy" (Robbins, 2005) and "matrix" structures (Knight, 1976; Burns and Wholey, 1993). More innovatively, there arise "team structure" (Ostroff, 1999; Forrester and Drexler, 1999), "virtual structure" (Miles and Snow, 1995; Dess, et al., 1995), and "T-form structure" (Lucas Jr. 1996)

issue of autonomy is represented by the joint position of both CEO and the director of the board for one person (*CEO*), and the communicative methods are recorded to show the smoothness of the communication within the firm (*Communi*). It is found that *codes* and *delegate* are positively correlated (Pearson's correlation 0.214, significant at the 0.05 level, one tailed), which means that the flexible adjustment of firm's codes and the flatter network of control can reflect more organic management style, and vice versa. However, no significant correlations are found with the other two variables (i.e. *CEO* and *Communi*). Hence, organizational structure in this study is defined as a weighted measure, equal weight to *codes* (50%) and *delegate* (50%). According to the weighted score[142], firms' structure (*Struture*) is categorized as mechanistic (0), moderate (1) and organic (2). A list of definitions of variables in this chapter can be found in the Appendix 8 at the end of this thesis, and similarly for other variables mentioned hereinafter.

8.2.2 Measuring Environment, Strategy, Size and Technology

8.2.2.1 Environment

The word "environment" literally suggests a set of sophisticated relations all around the small firms. Due to this nature of multiple dimensions, this chapter adopts the division of Dess and Beard (1989), who recognizes three aspects of the business environment: capacity/scarcity, stability/instability, and homogeneity/heterogeneity.

Under the heading of capacity, environment is regarded as munificent if a firm experiences fewer external financing difficulties (Becchetti and Trovato, 2002), more supportive government policies (Levie, 1994; Fischer, Reuber and Carter, 1998; Bartlett

---

[142] For instance, the score below or equal to 1.5 is defined as mechanistic taking the value 0, the range between 1.5 and 2.5 is moderate (1), and the score above or equal to 2.5 is organic (2).

and Bukvic, 2001), as well as more advantageous locations (Smallbone et al., 1993; Storey, 1994; Hoogstra and Dijk, 2004). In a preliminary form, the capacity of the environment is defined as the number of external financing difficulties at the financial inception (*Nfdiff*), the cash flow problems during operation (*Cfp*), the number of government financial sponsorship (*Nsponsor*), the number of government nurturing policies (*Npolicy*), the perceived business environment after government's tackling "San Luan" problems (*Sanluan*), the GDP per capital of the city (*GDPpc*)[143], and the location accessibility (*Access*), and so on (see more details in Chapter 4, Section 4.3).

With respect to stability, Duncan (1972) gauged the perceived environment uncertainty as a sole factor while Milliken (1987) disaggregated this concept into three aspects, such as state uncertainty, effect uncertainty and response uncertainty[144]. Constrained by the data gathered, this study adopts Duncan's (1972) single solution and deploys a three-point scale to calibrate the self-perceived business prospect in terms of employment, profit, net sales and net assets (i.e. *Eexpect, Pexpect, Sexpect, Aexpect*). If respondents choose the option "increase" or "decrease", it is taken that the environment may be unstable even though the former is auspicious, while the latter refers to the opposite. And the option "remain the same" reveals the interviewees' perception of a relatively stable environment from now on. Thus, four binary variables of stability can be utilized in the sense of future employment, profit, sales and assets.

The third aspect of the environment is homogeneity/heterogeneity. As Robbins (2005) proposed, a homogeneous environment was associated with highly concentrated

---

[143] Source: China National Statistic Bureau (NBS). See Appendix 5 behind this chapter.
[144] state uncertainty (the unpredictability of external conditions), effect uncertainty (the inability to forebode the impact of environmental contingencies on organizations), and response uncertainty (the inaptitude for predicting the likely consequence if a particular response is taken).

market with a few major competitors, whereas a heterogeneous environment related to low market concentration with fierce competition. Although the market extent and the market share in the database can partially reflect the market position where a firm stands, it fails to depict the entire market situation. Thus, a three-point scale is used to describe the self-perceived intensity of market competition (*Descomp*). Besides, the degree of difficulty in entering the market (*Entrdiff*), and exiting the market (*Exitdiff*), also indicates that higher entry/exit barriers may result in more homogeneous environment while the easier market entry may demonstrate the heterogeneity of the environment.

8.2.2.2 Strategy

Although Hannan and Freeman (1977) stated that human beings were incapable of influencing the environment, Child (1972) asserted the good prospect of linking an organization to its environment by adopting a proper strategy. This study adopts Porter's (1980, 1985) competitive advantage theory and utilizes his three generic strategies in a binary form, namely cost leadership (*costlead*) and focus (*focus*).

Furthermore, regarding Porter's (1980) forces of competition developed later by Reid et al. (1993) in a small business context, a variety of strategies are addressed in terms of extant rivals, potential entrants, substitutes, suppliers and buyers. For instance, a firm may reinvestment every year after business inception (*Investage*) in order to compete against existing opponents. Concerning the number of market entry barriers (*nbarrier*), potential rivals would be effectively kept out of the target market, whereas the superiority over substitutes can guarantee an advantageous position in the market (*substi*). While the establishment of a customer service branch may reveal the degree of customer

orientation (*csorien*) to maintain the old customers, the number of new products (*newpro*) launched may well forebode the likelihood of winning over new buyers. Lastly, the bargaining power between the firm and its suppliers can be approximated by the number of suppliers (*supplier*) as a proxy. Despite the competitive strategy, firms are also believed to "undo-the-competitors" by taking defensive postures and therefore the number of defensive strategies (*defestgy*) is deployed to demonstrate that "another form of attack is defence" (Sun Tzu, 500B.C.)[145].

8.2.2.3 Size and Technology

While organizational size is a key variable in Gibrat's law of proportionate effect, it is also regarded as a contingency factor in organization theory (see Gooding and Wagner, 1985). In keeping up with the literature, size can be operationalized as the number of employees (*SizeE*), total net assets *(SizeA)* or total net sales (*SizeS*) in 2003 price. The second order term of size measure (i.e. *SizeEsq, SizeAsq, SizeSsq*) is also employed to gauge the impact of the increase in size on the structural differentiation (Blau and Schoenherr, 1971; Pugh, 1981).

In terms of technology, Woodward (1965) developed a technological scale in terms of production techniques and the complexity of production systems: (a) unit or small batch, (b) large batch or mass production, (c) continuous process. While entrepreneurs accept the "bespoke" orders for some products, they admit that mass production for others is also possible. Constrained by such complexity, this study devises three proxy

---

[145] (c.500 B.C.) Chinese military strategist and reputed author of The Art of War (Ping-fa). The book is a guide for military strategists; it emphasizes the importance of accurate intelligence about the enemy, the importance of flexibility, and an understanding of the relationship between political goals and military operations. The Oxford Essential Dictionary of the U.S. Military. Berkley Books, 2001

variables under the heading of technology, which are self-perceived technological level compared with the industry average (*tech*), the R&D expenditure (*RDexpend*) and the ratio of R&D expenditure to total profit (*RDprofit*), the implementation of international quality control standard (*ISO*), and the number of valid patents held by the firm (*npatent*).

In sum, the statistics of organizational structure variables and other contingency variables under the headings of environment, strategy, size and technology are reported in Table 8.1 below and brief comments can be made on a "typical" firm from this dataset as follows.

[Table 8.1 near here]

According to the statistics below, although the "typical" firm does not have many communication methods, it has the considerably high flexibility of changing the company codes where appropriate. The organizational structure of such a "typical" firm is thus quite organic.

The capacity of the environment seems satisfactory since this "typical" firm starts with very few financial difficulties at the business inception (*Nfdiff*) and encounters almost no cash flow problem (*Cfp*) during the operation, locating in a generally wealthy city (*GDPpc*) with good geographical accessibility (*Access*). Although the government supportive policies (*Npolicy*) and financial sponsorship (*Nsponsor*) are commonly perceived to be deficient, the entire business environment after the renovation action of "san luan" (*Sanluan*) is felt much improved. However, the stability of the environment seems poor as sales (*Sexpect*), assets (*Aexpect*), profits (*Pexpect*) are all expected to increase, except employment (*Eexpect*). And the environment appears rather

heterogeneous by demonstrating strong competition (*Descomp*) with the easy market

entry (*Entrdiff*) and exit (*Exitdiff*).

Table 8.1 The Statistics of Variables in a Contingency Framework

Variable	N	Min.	Max.	Mean	Std. Dev.	Skewness	Std.	Kurtosis	Std.
Struture	80	0.000	2.000	1.688	0.648	-1.881	0.269	2.105	0.532
Codes	80	1.000	3.000	2.740	0.590	-2.145	0.269	3.387	0.532
Communi	83	1.000	5.000	1.720	0.915	1.368	0.264	1.679	0.523
Capacity									
Access	83	2.000	3.000	2.770	0.423	-1.314	0.264	-0.280	0.523
GDPpc	83	4416.0	46388.0	35545.9	12820.3	-1.502	0.264	0.692	0.523
Cfp	83	0.000	1.000	0.100	0.297	2.786	0.264	5.903	0.523
Nfdiff	83	0.000	9.000	2.220	1.988	1.076	0.264	1.643	0.523
Npolicy	83	1.000	3.000	1.250	0.514	1.947	0.264	3.055	0.523
Nsponsor	83	0.000	6.000	0.900	1.055	2.177	0.264	7.676	0.523
Sanluan	83	1.000	4.000	2.650	0.723	-0.150	0.264	-0.134	0.523
Stability									
Aexpect	82	0.000	1.000	0.700	0.463	-0.864	0.266	-1.286	0.526
Eexpext	82	0.000	1.000	0.570	0.498	-0.301	0.266	-1.958	0.526
Pexpect	82	0.000	1.000	0.780	0.416	-1.381	0.266	-0.097	0.526
Sexpect	83	0.000	1.000	0.820	0.387	-1.690	0.264	0.877	0.523
Homogeneity									
Descomp	82	1.000	3.000	2.630	0.619	-1.491	0.266	1.121	0.526
Entrdiff	83	1.000	4.000	2.330	0.683	0.190	0.264	-0.002	0.523
Exitdiff	81	1.000	4.000	3.010	0.814	-0.308	0.267	-0.733	0.529
Strategy									
Costlead	83	0.000	1.000	0.229	0.423	1.314	0.264	-0.280	0.523
Focus	83	0.000	1.000	0.651	0.480	-0.643	0.264	-1.626	0.523
Investage	83	0.000	2.000	0.500	0.455	1.275	0.264	1.786	0.523
Nbarrier	83	0.000	5.000	2.120	1.017	0.609	0.264	0.199	0.523
Substi	83	0.000	1.000	0.080	0.280	3.047	0.264	7.463	0.523
Supplier	82	1.000	5.000	3.260	1.064	-0.471	0.266	-0.637	0.526
Csorien	82	1.000	4.000	2.090	1.113	0.708	0.266	-0.845	0.526
Newpro	83	1.000	5.000	3.140	1.241	0.072	0.264	-0.867	0.523
Defestgy	83	0.000	3.000	1.110	0.605	0.966	0.264	2.509	0.523
Size									
SizeA	75	5.000	58696.0	4045.8	9159.6	4.062	0.277	19.505	0.548
SizeE	83	4.000	3000.0	205.4	449.2	4.176	0.264	20.449	0.523
SizeS	74	5.000	23000.0	3328.7	4771.9	2.183	0.279	5.066	0.552
Technology									
Tech	83	1.000	5.000	3.330	0.843	-0.432	0.264	-0.406	0.523
RDprofit	82	1.000	5.000	2.020	1.220	0.987	0.264	-0.124	0.523
RDexpend	83	1.000	5.000	1.950	1.306	1.270	0.264	0.361	0.523
Npatent	83	0.000	30.000	1.490	4.206	4.731	0.264	26.977	0.523
Iso	83	1.000	3.000	1.820	0.814	0.346	0.264	-1.405	0.523

With regard to strategy adopted by this "typical" firm, cost leadership (*costlead*) seems to be less utilized, yet the combination of cost leadership and product differentiation (*focus*) seems rather popular. Further, this "typical" firm has not made much frequent reinvestment (*Investage*) in a market with low entry barriers (*Nbarrier*). While its customer orientation (*Csorien*) is to the medium extent, its supplier base (*Supplier*) is slightly larger than average. Even though the innovation of new products (*Newpro*) is statistically above the medium level, this "typical" firm admits that its products are rather not superior to their substitutes (*Sbusti*). Last, it seems occasional that this firm takes defensive strategy (*Defestgy*).

Considering size, whichever measure is employed (*SizeA, SizeE, SizeS*), the "typical" firm is most likely to fall into the category of SME. As for technology (*Tech*), even though it is claimed to be at the moderate level, this firm's R&D expenditure (*RDprofit, RDexpend*) is rather somehow below medium, with little willingness to adopt ISO (*ISO*) and extremely rare patents at hand (*Npatent*).

With such knowledge of the data, now I shall turn to more sophisticated analyses by testing the contingency theory in the next section.

8.2.3 Testing Contingency Theory

8.2.3.1 Empirical Evidence

Concerning the aforementioned contingency factors in relation to organizational structure, a summary of key factors of the empirical literature is given in Table 8.2 as follows. As the main purpose is to devise a statistical tool to examine the effect of the configuration of organizational structure and four relevant contingencies on the final firm

growth, the discussion of contingency theory but will be kept relatively brief in this study

(See a more detailed literature review in Chapter 3, Subsection 3.4.2, 3.4.3, 3.4.4)

Table 8.2 The Impact of Contingencies on Firm Structures

Study	Heading	Organic	Mechanistic
Burns and Stalker (1961)	Environment	Complicated and changeable conditions	More stable technological and market conditions
Lawrence and Lorsch (1967)	Environment	The more labile market, techno-economic and scientific sub-environments	The more stable sub-environments
Chandler (1962)	Strategy	Taking product divisional form as product ranges increase	Taking functional structure as product ranges decrease
Miller (1987)	Strategy	marketing differentiation, product innovation	breath of market, cost control
Robbins (2005)	Strategy	innovation strategy	cost-minimization strategy
Blau & Schoenherr (1971)	Size	Smaller size	Larger firms
Pugh (1981)	Size	Smaller size	Larger firms
Bluedom (1993)	Size	When size decreases, the structure gets organic in an increasing rate	When size increases, the structure gets mechanistic in a decreasing rate
Woodward (1965)	Technology	Unit/small batch production technology	A large batch/mass production technology
Miller, et al. (1991)	Technology	Industry sector heterogeneity	Industry sector homogeneity
Miller, et al. (1991)	Technology	The smaller unit sizes	The larger unit sizes

This brief summary of the empirical evidence gives the primary perception that organic forms may be implemented by relatively smaller firms who adopt more flexible and innovative production technology, and take more product differentiation in a more

competitive and changeable environment. On the other hand, mechanistic structures may be deployed by larger firms who possess large/mass production technology and usually prefer the cost leadership strategy. Under such expectations, one turns to test the contingency theory in a Chinese setting.

8.2.3.2 Ordered Probit/Logit Model of Contingency Theory

Since organizational structure is to be defined as an ordered dependent variable, the statistical model appropriate is the ordered probit or logit model, which has the following form:

$$Z = \beta' X + \varepsilon \tag{8.1}$$

where Z is not observed but rather y, which assumes the values 0, 1, 2 and X relates to a vector of control variables under the headings of environment, strategy, organizational size and technology. Here β' refers to a vector of coefficients, and ε is a random variable (unit normal). In the current context, Z ("true" organizational structure) is unobserved and y is the dependent variable, *Structure*, which takes on values of 0 for mechanistic, 1 for moderate, and 2 for organic organizational structures (See the detailed operationalization of organizational structure in Subsection 8.2.1). Further, in the variant of this model which we shall use, the ordered logit model, ε has a standard logistic rather than standard normal distribution. Initially, 38 explanatory variables, measured under the guidance of prior research, are involved in a pilot equation. Due to such a large number of regressors, the estimation[146] is impeded by the problem of serious multicollinearity (nearly singular matrix), and the resulting overflow of variables. By

---

[146] The ordered probit/logit estimation was undertaken using Eviews software.

excluding the redundant predictors [147] yet maintaining the major constructs, 17 independent variables are incorporated into the ordered logit model to test the contingency theory. Examples of estimates are given in Table 8.3 below. The coefficients are reported along with standard errors, standard normal (z) values, and probability values. The log likelihood for the full model is reported, as is the LR statistic and the probability value.

[Table 8.3 near here]

According to the statistics below, the LR statistic (16 df) is significant at the 0.0001 level and the expectation-prediction table shows that the error between actual observation and the predicted count for the dependent values (i.e. 0, 1 and 2) are 1, 0 and -1, respectively, which is reasonably small (see Appendix 9 at the end of this thesis). The goodness of fit, in terms of LR index, is also generally acceptable for the study of social science. While the results seem to broadly correspond to what contingency theory proposes, a few new features should be noted based on Chinese evidence.

---

[147] This downsizing procedure was conducted by the command "testdrop" using Eviews.

Table 8.3 The Ordered Probit/Logit Model of Contingency Theory (n=64)

Variable	Coeff.	Std. Error	z-Statistic	Prob.
Environment				
Cfp	6.836985	2.835056	2.411587	0.0159**
Npolicy	1.264171	0.768261	1.645496	0.0999*
Nsponsor	3.335760	2.038718	1.636205	0.1018
Pexpect	3.635892	1.659541	2.190902	0.0285**
Sexpect	-1.997619	1.762769	-1.133228	0.2571
Eexpect	-0.299309	1.135711	-0.263543	0.7921
Aexpect	-0.215788	1.412786	-0.152739	0.8786
Descomp	0.675978	1.043724	0.647659	0.5172
Entrdiff	0.285176	0.882853	0.323017	0.7467
Strategy				
Investage	7.028901	3.499938	2.008293	0.0446**
Costlead	7.774308	2.697623	2.881910	0.0040***
Focus	8.730274	2.559543	3.410872	0.0006***
Size				
SizeA	-0.000371	0.000188	-1.971143	0.0487**
SizeS	0.000881	0.000359	2.451712	0.0142**
SizeE	0.849830	0.665835	1.276336	0.2018
Technology				
RDexpend	-2.399301	1.126810	-2.129287	0.0332**
RDprofit	1.086169	0.808270	1.343819	0.1790
Limit Points				
LIMIT_1:C(18)	12.57916	5.571300	2.257849	0.0240**
LIMIT_2:C(19)	15.03142	5.751293	2.613572	0.0090***
Log likelihood		-22.67032		
Restr. Log likelihood		-46.95448		
LR Index (Pseudo-R2)		0.517185		
LR statistic (16 df)		48.56831		
Probability (LR stat)		0.0000		

Note: Significant at less than 1%(***),1-5%(**), 5-10%(*).

First, a majority of variables under the environment heading appear rather insignificant and irrelevant except the cash flow problems during the past operation (*Cfp*), the number of supportive government policies received by a firm (*Npolicy*), and the stability of environment in the prospect of total profit (*Pexpect*). If a firm suffered

financing problems in the past, or was benefited from more government supportive policies, or expected rather changing margin, it would be more likely to adjust its organizational structure towards the organic style. In other words, harsh financial situations in the past, or favorable government policies at present, or more dynamic profit prospect in future, can make the firm more organic and flexible in its organizational form, to a certain extent.

Second, three variables (*Investage, focus, costlead*) under the heading of strategy all appear significant but the signs are somehow unconventional. The least inexplicable variable is *Investage* that is positively related to the structure, which means the more adventurous entrepreneurs would prefer to the more organic and flexible organizational form. It is also understandable that organic management style demands the constant adjustment and the combination of product differentiation and cost leadership, namely the *focus* strategy (Reid, 1993), may indeed meet such requirements. Nonetheless, the variable *costlead* shows a significantly positive sign, which is contradictory to the preceding empirical studies noting that cost leadership is more of a strategy for comparatively mechanistic structure. It is, therefore, puzzling that cost leadership strategy can promote an organic structure as well in this case. The analysis on the elasticity of price in demand in Chapter 5[148] may help to explain this mystery. With regard to the statistics, the demand curve of a typical firm would become elastic ($|E_d|>1$) in the case of price hike and appear perfectly inelastic ($|E_d|=0$) when cutting the price. It equally amounts to saying that the prospect of sales is rather pessimistic in either way of price change for a typical Chinese private firm in the sample. If the price is not allowed for much discretion, Chinese owner-managers may be left no other choice but must be

---

[148] See Chapter 5, figure 5.2.5 Demand curve of a typical firm.

flexible enough to constantly seek varying methods to control the cost, given the ultimate purpose of profit-maximization. On a heavier note, however, this flexibility also engenders the serious product quality crisis across the country[149], which can be addressed in a wider scope beyond this study.

Third, the relationship between size and organizational structure seems more complex than expected. The general impression is that the firms of smaller size tend to be more organic and the larger counterparts may be more mechanistic. Three size measures are deployed and the results are disparate. While size is measured by employment (*SizeE*), no significant impact on organizational structure can be found. Yet size measured by total net assets (*SizeA*) does achieve the accordance with the prior research that the firms with smaller amount of assets present more flexible organizational forms. The result is however opposite if the size is measured by total net sales (*SizeS*). The larger revenues a firm generates, the more organic management style this firm may demonstrate. One explanation of this phenomenon may be that the larger assets can put more bureaucratic pressure on "administration portion" of organizational form, whereas the larger sales can allow firms more discretion and stimulate more flexibility in the "productive portion" of firms' structure (Blau & Schoenherr, 1971; Pugh, 1981). These results also buttress the view of Heshmati (2001) stating that the different size measures can lead to varying results (see Chapter 2, Section 2.3). The second order terms of all firm size measures are not estimated due to the nearly singular matrix of coefficients and the resulting overflow of variables.

---

[149] When Chinese choose a foreign goods instead of a domestic one, the major reason is usually not exoticism but quality. The quality crisis is increasingly serious especially when food security becomes a big social issue in China. For instance, people realise that not only Louis Vuitton bags can be fake, but also the eggs in the supermarket can be false.

Last but not least, the variable *RDexpend* under the heading of technology is found to be negatively related to structure, while the other variables (i.e *RDprofit* and the ones dropped earlier) are largely insignificant. As the R&D expenditure can be usually taken as the proxy of innovativeness, it seems perplexing that the more innovative firm would reveal the more mechanistic structure. However, the variable *RDexpend* here is designed for those firms with established R&D departments and the lowest value is given to those without. As a matter of fact, only 48.2% of the sampled firms have special R&D departments whereas more than the majority of the rest claim no need for such an establishment (see Chapter 5, Section 5.6). So the variable *RDexpend* reflects more in terms of R&D emphasis but less in terms of innovation. And the deficient R&D input made by Chinese privately owned SMEs can actually be attributed to the informality of organizational structure. In China, while firms are formally equipped with full-set research teams/branches and spending the larger sum of capital on such activities, their production scales are usually large and well established, which leaves small batch of "bespoke" orders to relatively flexible and organic competitors. Furthermore, the majority of small batch production requires no breakthrough technology but the light or moderate modification of current products or productive processes, which however may not fall into the interest category of firms that have highly invested in R&D activities and aimed rather large and high.

In sum, environment, strategy, size and technology as the four most oft-quoted contingency constructs seem to be broadly supportive of contingency theory by exerting statistically significant impact on the organizational structure based on the evidence of

Chinese firms. However, it should be noted that the specific results under each heading are close but not all identical to those in the preceding studies.

8.3 Morphology of Chinese Private Firms

As the contingency theory argues that contingency factors can affect firms' structure and therefore their ultimate growth, it suggests that certain types of configuration may be the determinant of growth. Before any serious attempt to verify this relationship, however, it is of note that all the significant elements should be technically grouped into systems and labelled first.

The statistical technique used in this section for developing an ordinal ranking of the firm types is of specific research interest, namely hierarchical cluster analysis (Manly, 1986). The data for clustering can be considered to be an M x N matrix of measurements X with typical element x_{ij}, which is the magnitude of the j'th variable ($j=1,…N$) on the i'th firm ($i=1,…M$). The distance d_{ab} between two firms a and b is the Euclidean metric written as follows:

$$d_{ab} = \left\{ \sum_{j=1}^{N} (x_{aj} - x_{bj})^2 \right\}^{\frac{1}{2}} \tag{8.2}$$

Where x_{aj} is the value of j'th variable for the firm a and x_{bj} is the same variable for the firm b. Based on the results in the previous section 8.2, eight significant contingency variables (i.e. *Cfp, Pexpect, Investage, Costlead, Focus, SizeA, SizeS* and *RDexpend*)[150] are concerned along with the variable of organizational structure (i.e. *Structure*) for 83 Chinese sampled firms ($M=83$, $N=9$). Hence, cluster analysis is conducted by measuring

---

[150] The variable Npolicy is not included due to its significance level only at 0.1.

Euclidean distances in Ward's (1963) method with variables standardized to z-score[151].

The clustering process treats every firm as a single cluster first and then proceeds by merging those contributing the least to the overall sum of the squared within-cluster distance. While the number of firms in each cluster increases, the size of clusters augments and the number of clusters decreases till the final two clusters are combined as one. Running on 9 variables, hierarchical cluster analysis generates a dendrogram of Table 8.4 below, where the top three levels of clusters have been identified as cluster 1, cluster 2 and cluster 3.

[Table 8.4 near here]

As observed, the dendrogram shows the primary split among three broad clusters at the top three levels and cluster names are denoted in the right hand column and individual case numbers in the left. Among 69 valid observations (14 missing values), 37.7% of firms (26) belong to cluster 1, 18.8% (13) in cluster 2 and 43.5% (30) in cluster 3. A new variable, namely *Cluster*, is thus created to store the value for cluster membership (i.e. 1, 2, 3). Two steps are undertaken to obtain a deeper understanding of these three clusters as follows.

Primarily, the statistics of employment growth rate between 2004 and 2006 (*Ge*), the annual growth rate from inception to the first-stage interview (*Ge0*), age (*age*) and the binary variable for survival (*Sur*) are reported for each cluster in Table 8.5 below.

[Table 8.5 near here]

---

[151] Due to the sensitivity of Euclidean distances to scales of measurement, variables are standardized by using the quotient $z_{ij} = x_{ij}/\sigma_j$ where σ_j is the standard deviation of the j'th variable.

Table 8.4 Dendrogram of Hierarchical Cluster Analysis

```
C A S E      0      5      10     15     20     25
Label    Num +---------+---------+---------+---------+---------+

Case 19   18
Case 28   25
Case 22   21
Case 72   60

Case 8     7
Case 25   23
Case 40   34
Case 58   51
Case 12   11
Case 57   50
Case 17   16
Case 80   68
Case 5     4
Case 54   47
Case 78   66
Case 46   40
Case 55   48
Case 44   38
Case 56   49
Case 69   59
Case 67   57
Case 13   12
Case 52   45
Case 62   53
Case 74   62
Case 23   22

Case 68   58
Case 21   20
Case 83   69
Case 31   28
Case 42   36
Case 47   41
Case 7     6
Case 16   15
Case 36   32
Case 41   35
Case 18   17
Case 73   61
Case 77   65
Case 48   42
Case 53   46
Case 63   54
Case 6     5
Case 10    9
Case 33   29
Case 3     3
Case 26   24
Case 61   52
Case 76   64
Case 34   30
Case 35   31
Case 11   10
Case 29   26
Case 20   19
Case 43   37
Case 30   27
Case 64   55

Case 14   13
Case 79   67
Case 39   33
Case 51   44
Case 15   14
Case 75   63
Case 65   56
Case 9     8
Case 45   39
Case 1     1
Case 2     2
Case 50   43
```

Cluster 3

Cluster 2

Cluster 1

Table 8.5 The Preliminary Statistics of Three Clusters

		Age	*Sur*	*Ge0*	*Ge*
Cluster 1	Mean	7.31	.85	1.414157	.9539
	Std.Err.	1.007	.072	.1033562	.08655
	Median	5.50	1.00	1.320249	1.0604
	Min.	2	0	.5274	.00
	Max.	22	1	2.9155	1.63
Cluster 2	Mean	9.54	.85	1.166300	1.0606
	Std.Err.	1.399	.104	.0539558	.23559
	Median	9.00	1.00	1.096807	1.0328
	Min.	2	0	.9749	.00
	Max.	18	1	1.6818	3.54
Cluster 3	Mean	6.60	1.00	1.289369	1.1082
	Std.Err.	.831	.000	.1098746	.05836
	Median	5.00	1.00	1.140739	1.0701
	Min.	2	1	.5200	.41
	Max.	21	1	4.0000	2.58

As the difference of means between groups are significant for *Sur* at the level of 0.05 and significant for *Ge* at the level of 0.1, this suggests the classification of three clusters can be well grounded. However, neither *Age* nor *Ge0* seem significant. Accordingly, a "typical" firm in each cluster may be described by the average attributes and by doing so, it helps provide an intuitive, yet quantitative feel for the sampled firms in different clusters. It is noted that a "typical" firm in cluster 3 has the highest probability of surviving as well as the highest growth rate during interviews in both 2004 and 2006. And a "typical" firm in cluster 2 tends to be less likely to survive with the

lowest growth rate during two interviews. Less charismatic is a "typical" firm in cluster 1 and its survivability is low and the growth rate during two interviews is the least satisfactory. Therefore, it is felt that firms in cluster 3 may represent a set of "promising athletes", dynamic enough to not only survive but also grow fast, whereas the firms in cluster 2 may refer to "dull clerks" that need to struggle for surviving with an unattractive growth rate. Finally, the firms in cluster 1 may find difficulty in either surviving or expanding. This may be called the "laid-off" set. It is of interest why these characters present such features and how these are related to the organizational structure and relevant contingency factors discussed earlier. Attention is turned to this in the extended data reported in Table 8.6 below.

[Table 8.6 near here]

As observed, the mean of organizational structure increases when the cluster number climbs. While the organic "athlete" cluster shows the most organic management style, with the "clerk" team being moderate, the "laid-off" set tends to be the most mechanistic. Concerning the contingency factors, three clusters demonstrate disparate characteristics. First, a "typical" firm in the "athlete" cluster usually has less cash flow problems in the past operation but expects the total profit to change in the next year. The cost leadership strategy is not much favoured, while the focus strategy and adventurous activities turn out to be the most favourable. The size measured by both assets and sales seems moderate, so is its R&D expenditure.

Table 8.6 The Extended Statistics of Three Clusters

		StuctureCfp	Pexpect	Costlead	Focus	Investage	SizeA	SizeS	RDexpend
	Mean	1.423	0.230 0.420	0.077	0.731	0.483	7653.731	4252.500	2.310
	Std.Err.	0.168	0.084 0.099	0.053	0.089	0.068	2789.024	1223.798	0.327
Cluster 1	Median	2.000	0.000 0.000	0.000	1.000	0.425	875.000	800.000	1.000
"Laid-off"	Min.	0.000	0.000 0.000	0.000	0.000	0.000	5.000	5.000	1.000
	Max.	2.000	1.000 1.000	1.000	1.000	1.200	58696.000	23000.000	5.000
	Mean	1.615	0.000 0.920	1.000	0.000	0.192	2129.769	3291.077	1.460
	Std.Err.	0.180	0.000 0.077	0.000	0.000	0.056	1228.285	1095.130	0.215
Cluster 2	Median	2.000	0.000 1.000	1.000	0.000	0.180	300.000	2000.000	1.000
"Clerk"	Min.	0.000	0.000 0.000	1.000	0.000	0.000	7.000	5.000	1.000
	Max.	2.000	0.000 1.000	1.000	0.000	0.600	15000.000	12000.000	3.000
	Mean	1.900	0.000 1.000	0.033	0.900	0.672	2145.200	2952.933	1.830
	Std.Err.	0.056	0.000 0.000	0.033	0.056	0.099	658.779	713.697	0.192
Cluster 3	Median	2.000	0.000 1.000	0.000	1.000	0.585	660.000	1750.000	1.500
"Athlete"	Min.	1.000	0.000 1.000	0.000	0.000	0.000	18.000	18.000	1.000
	Max.	2.000	0.000 1.000	1.000	1.000	2.000	15000.000	16500.000	4.000

Second, a "typical" firm in the "clerk" team, featuring moderate management style, also suffers less financial problems, yet the profit prospect is not that dynamic. It strongly emphasizes cost control, but neither the focus strategy nor the risk-taking investment are favoured. The size of either assets or sales for such a firm is the smallest in the entire sample and it tends to be the most prudent in the sense of R&D development.

Third, a typical firm in the "laid-off" set with the mechanistic structure reports the most severe cash flow problems and the least dynamic prospect of the total profit. Both cost minimization strategy and focus strategy are moderately deployed and the adventurousness is also medium. The organizational size of such a firm is usually big in terms of both assets and sales and the expenditure on R&D activities seems generously large.

Although the suggested morphology of Chinese sampled firms indicates three major clusters, as described above, it only provides an intuitive feel for the potential relationships between organizational structure and firm growth. As the cluster analysis is silent on causality and theoretical connection, I now turn to suggesting the mechanism that lies behind the configuration of these contingencies and its influence on firm outcomes by the mediation of organizational structure.

8.4 Configuration and Firm Growth

As discussed earlier in the contingency framework, organizational structure varies according to the occurrence of contingencies (i.e. environment, strategy, size and technology). There is no best organizational form, but the most suitable one involves adjusting to the varying contingent factors. This section aims to test the causality between

firm growth and the fittest configuration of organizational structure and its determinants. In other words, it sets out to answer the key question whether the fittest configuration can foster the growth of firms.

First of all, this section operationalizes the concept of configuration based on the contingency theory and the morphology of the sampled firms. Considering the extended statistics of three clusters in Table 8.6 above, cluster 3 ("athletes") is the most organic with cluster 2 ("clerks") being moderate, whilst cluster 1 appears the most mechanistic. As the results of the contingency model (8.1) show, organic structure is positively associated with environmental contingencies (i.e. *Cfp* and *Pexpect*), strategies (i.e. *Costlead, Focus* and *Investage*) and the size of sales (i.e. *SizeS*), yet it is determined by the negative technical variable (i.e. *RDexpend*). As for mechanistic form, it is supposed to be of opposite characteristics. In such logic, this study compares the mean of each contingency C_{hj} in three clusters, which is the mean of the *j*'th variable (*j*=1,2,…8) in the *h*'th cluster (*h*=1,2,3), and calibrates the score "*Score$_h$*" in the sense of the "badness" of fit for *h*'th cluster under the propositions the contingency theory has rendered in previous section 8.2. The formula is written as follows.

$$Score_h = \sum_{j=1}^{8} \left(|P_a - P_c| \right) \tag{8.3}$$

Where P_a refers to the actually position of C_{hj} (1 stands for low position value, 2 for medium and 3 for high), and P_c means the theoretical position of C_{hj} that contingency theory forebodes. While the absolute value of the difference between P_a and P_c measures the degree of mismatch for the *j*'th variable in the *h*'th cluster, the variable *Score$_h$* gauges the aggregated deviation from the perfectly set configuration

devised by the contingency theory. The larger the score is, the more variation there is from the perfect configuration (which scores zero). For instance, the smallest size of total net assets is supposed to match the most organic structure. Then cluster 3 ("athletes") should have the smallest size (theoretical position 1) to make a good match. However, the mean size of assets in this cluster is actually medium (actual position 2), which means one place mismatched and thereby one point of bad fit is accumulated. The opposite case is cluster 1 ("laid-off") that has the largest mean size (actual position 3) as the contingency theory expects, so no point will be added. A detailed calculation can be illustrated in Table 8.7 below.

Table 8.7 The Scores of the Badness of Fit (BOF) in Configuration

Variables		Cluster 1 "Laid-off" Mechanistic	Cluster 2 "Clerk" Moderate	Cluster 3 "Athlete" Organic
	P_a	3	1	1
	P_c	1	2	3
Cfp	*Score*	*2*	*1*	*2*
	P_a	1	2	3
	P_c	1	2	3
Pexpect	*Score*	*0*	*0*	*0*
	P_a	2	3	1
	P_c	1	2	3
Costlead	*Score*	*1*	*1*	*2*
	P_a	2	1	3
	P_c	1	2	3
Focus	*Score*	*1*	*1*	*0*
	P_a	2	1	3
	P_c	1	2	3
Investage	*Score*	*1*	*1*	*0*
	P_a	3	1	2
	P_c	3	2	1
SizeA	*Score*	*0*	*1*	*1*
	P_a	3	2	1
	P_c	1	2	3
SizeS	*Score*	*2*	*0*	*2*
	P_a	3	1	2
	P_c	3	2	1
RDexpend	*Score*	*0*	*1*	*1*
Total	**Score$_h$**	7	6	8

It is of interest that the "athlete" cluster with organic structure and the "laid-off" set in mechanistic form both score higher (i.e. 8 and 7) in the sense of the badness of fit in configuration than the "clerk" team does in a more balanced moderate structure (i.e. 6). It seems that organizational structures at two extremes are more likely to mismatch other contingency factors. Using the same calculation method, yet expanding to a base of 6 clusters, the similar results can be found that the more extreme firm structure is, either organic or mechanic, the poorer the goodness of fit in configuration. In a continuum from mechanistic to organic structure, the scores of the badness of fit in the 6-cluster case are 18, 16, 13, 13, 14 and 24, respectively. A "U-shape" curve is observed in a coordinate with the degree of organizational structure flexibility (OS, 1 standing for being mechanistic, 2 for moderately flexible, 3 for organic) on the horizontal axis and the badness of fit (BOF) on the vertical axis, regardless 3 or 6 clusters generated, as shown in Figure 8.1 (a) and (b) below.

Figure 8.1 Organizational Structure and Configuration
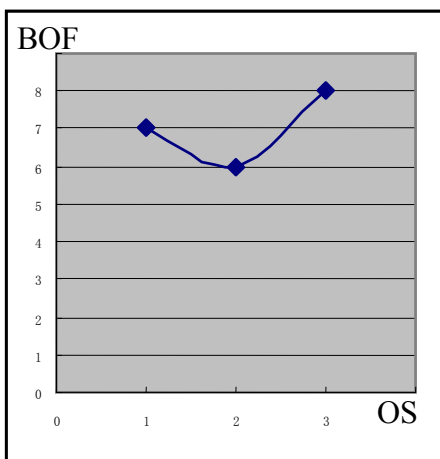
(a) 3-cluster Case   **(b) 6-cluster Case**
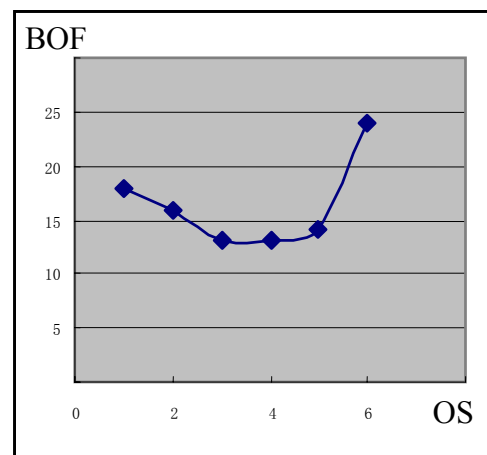
It is of surprise that the poorest fit of configuration (high BOF) actually brings about the highest mean growth rate in the "athlete" cluster (high OS), whereas the equally unsatisfactory system (high BOF) generates the lowest growth rate for the "laid-off" set (low OS). The same results can be also found in a 6-cluster case. It genuinely corresponds to an old Chinese saying, "one man's medicine can be the other's poison" at this point. Now it demands a new explanation of firm growth in the contingency framework since the business expansion seems not only because of their organizational structure, but also due to the fit of configuration.

In such a spirit, Birch's bestiary can be adopted to summarize a new morphology of Chinese private firms as the following three broad types. The first type of firms are like "gazelles in the wild", having their contingency configuration constantly out of balance but are agile and flexible enough to be acclimated to new situations in order to seize the precious growth opportunity. This type well corresponds to the high growth "athlete" cluster aforementioned. In a quite opposite way, the second type of firms resembles the kind of "domesticated gazelles freed to the wild", who are confused and reluctant to run by the haunting memories of the past comfort in domestication. This type of "gazelles" also encounters the bad fit of configuration, yet the growth prospect apparently goes to the other extreme. So they resemble more of the "laid-off" set with the least potential to grow. The last type is similar to a group of "gazelles caught into a zoo", who are positioned with a slightly more stable configuration of all elements, but it still somehow remains the wild nature and try to seek the chance to "run fast and jump high". This type appears to be similar to the "clerk" team with the medium growth rate between two extremes, as described above. Therefore, the poor fit of the configuration of contingency

factors (high *BOF*) can be a blessing for those who are ready to adapt and thus grow, yet a curse for those who find structurally difficult to turn around in the unbalanced situations. As for those enjoying the better fit of the configuration, the growth rate seems to be rather mediocre, providing the certain degree of the flexibility of organizational structures. Three types of "Chinese gazelles" are illustrated in Figure 8.2 below.

Figure 8.2 The Types of "Chinese Gazelles"
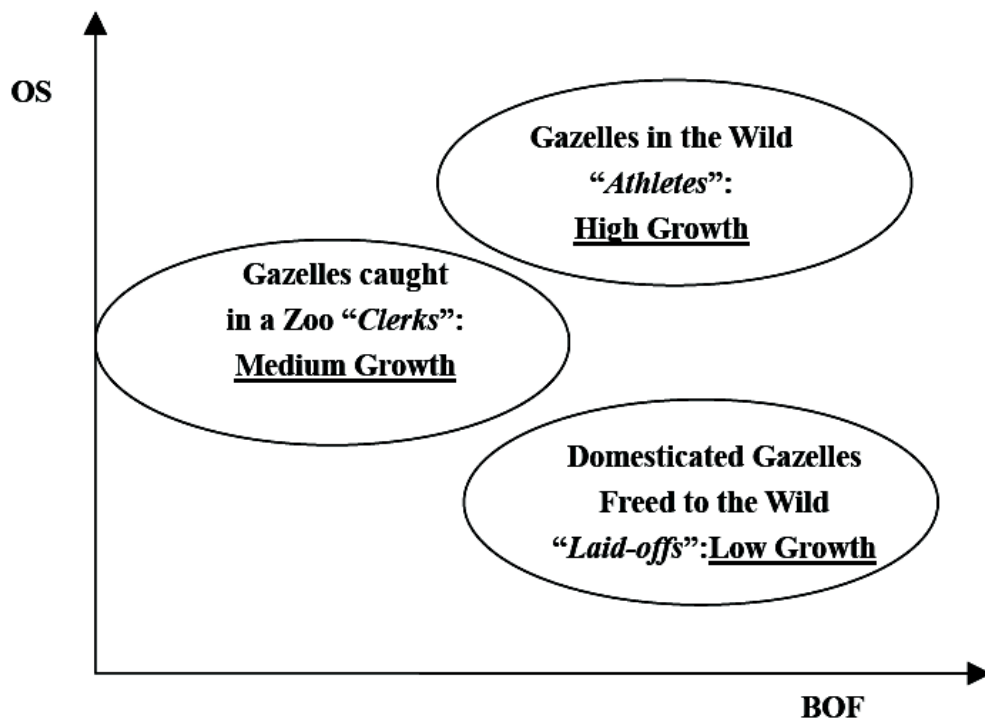
Although the good fit of configuration can probably explain the good performance, it may actually remove the effective incentives for firms to expand (Again, it should be emphasized that performance is not identical as growth and sometimes can be even negatively related). Further, as a household Chinese proverb put it, "dissatisfaction is the driving force of the wheel". While the fit of the configuration of all contingency elements

is poor, it may indeed stimulate firms to think of changes and obtain the momentum to grow, given its organizational form is organic and flexible enough. On the other hand, for those firms are highly mechanistic in terms of organizational structure, the outcome may be completely opposite. In this case, the lowest growth rate may take place. It would be certainly ideal if a larger dataset can be constructed and more clusters can be generated to verify such findings, considering the relatively small size of the sample this study used. Due to the limited scope and length of this chapter, I will leave it to future studies and now turn to draw the conclusions.

8.5 General Conclusions

This chapter accomplishes three major goals: (a) testing contingency theory in an ordered logit model, (b) depicting the preliminary morphology of firms by hierarchical cluster analysis, (c) examining the structure-configuration-growth relationship and drawing the conclusion on the morphology of Chinese private firms in a graph with horizontal axis (BOF) and vertical axis (OS). The major findings can be set out as follows.

First, this chapter operationalizes organizational structure as the dependent variable and other contingency factors (i.e. environment, strategy, size and technology) as the independent variables according to preceding empirical studies. Based on this reasoning, an ordered logit growth model is constructed and the maximum likelihood estimation retrieves significant coefficients for all the headings of contingencies aforementioned. Although the signs of coefficients for certain variables are at variance with some of those in the literature, the estimation results using the Chinese evidence largely in a SME

context broadly support the contingency theory that was originally proposed for the case of larger firms in the west.

Second, the validity of contingency theory in this work suggests that organizational structure and four major contingencies should be found to "cluster". Thereby a preliminary morphology of Chinese private firms can be illustrated by hierarchical cluster analysis using Ward's (1963) method. Three basic clusters are generated and characterized as "athletes", "clerks" and "laid-offs". Although their relationships with firm growth is still mostly intuitive, it provides necessary evidence on the relatedness of organizational forms to the business expansion process, and leads to more sophisticated analysis in the next section.

Third, it is a novelty of this chapter that it measures the badness of fit in configuration by a scoring method. It is found that the more a firm structure moves towards the extreme, the more unbalanced its configuration it is revealed to be, whether in 3-cluster case or 6-cluster case. It is discovered that neither organizational structure nor configuration acts alone but rather the combination of both has the higher explanatory power. The final proposed morphology of Chinese private firms in terms of growth is illustrated in a graph, in which the upper right oval represents the highest growth "Athlete" firms (i.e. "the gazelles in the wild"), with the lower right oval demonstrating the lowest growth "laid-off" firms (i.e. "domesticated gazelles free to the wild), and the middle left oval portraying the moderate growth "clerk" firms (i.e. "the gazelle caught in a zoo").

As Wiklund (1998) contended, "Growth itself, or more accurately, the larger size that a growing firm reaches, is the contingency that puts the firm's configuration out of

balance, and triggers the transformation of the firm into a new configuration" (p.49). While the good fit of contingency factors only influences the business expansion process in a moderate way, it seems that the badness of fit in configuration can engender either the highest or lowest growth firms, subject to their organizational structures. Regarding the "picking winner" policy in particular, those organic firms more ready to accommodate such turbulence caused by varying contingencies may therefore move forward by adding another contingency, in Wiklund's term, which we may call "growth".

PART V: CONCLUSIONS

CHAPTER 9: SUMMARY AND CONCLUSIONS

9.1 Aims and Research Conclusions

9.1.1 Aims of the Thesis

The major objective of this thesis is to identify the factors which affect firm dynamics in the setting of China, as a transition economy. Apart from this main theme, which runs throughout the entire thesis, each Chapter (in different Parts) also has its individual aims.

Regarding the metaphor of "building construction" used in Part I Chapter 1: Introduction, Part II Theory and Evidence presents the "foundation of the building" to be established. Chapter 2 aims to review the economics literature of firm growth in a most comprehensive, if not exhaustive way, ranging from classical economics, neoclassical economics, and new institutional economics, to later relevant developments. The purpose of Chapter 3 resembles that of Chapter 2, albeit in the different discipline of management. Three most famous success factors, namely people, resource and environment in a broad sense, as used in Menciusian philosophy, are quoted. It seems to be more than a coincidence that these three elements can be found in three mainstream managerial theories of firm growth – viz. entrepreneurship, strategic management, and organizational behaviour.

While the foundation is being set up, the empirical "bricks" and "straws" should be collected. Part III Fieldwork and Data aims to illustrate the fieldwork methodology utilized to collect the primary source data in Chapter 4 and to depict the general or "typical" characteristics of the model Chinese firm in Chapter 5. Based on the groundwork of Part III, the objective of Part IV (Statistical and Econometric Analyses) is to undertake the further explorations, in terms of the causality between growth

determinants and growth itself, in the setting of the Chinese economy. Chapter 6 aims to clarify whether the business expansion process is stochastic or deterministic, especially in relation to size and age, these being two important "stylized factors" in economics. By confirmation of the deterministic nature of firm growth, Chapter 7 and 8 mainly focus on three of the most oft-quoted managerial determinants of growth – viz. entrepreneurship, resources, and environment. Until the evolution of these chapters then, the "building construction" is accomplished, and the thesis is therefore now considered to be complete, in principle, given the general conclusions in this Chapter 9. Corresponding to the specific aims of each Chapter in various Parts, more detailed research conclusions can be stated as follows.

9.1.2 Part II Theory and Evidence

Chap 2 has provided a relatively rich, though not exhaustive, account of why firms grow, as explored in the discipline of economics. It starts from Adam Smith (1776) in classical economics, who claimed that the division of labour brought about increasing return to scale, a strong motivation for firms to expand. Then Neoclassical school of Marshall (1890) argued that decreasing returns to scale would occur, due to external economies, the decay of able managers and the imbalance between supply and demand. Later on, Sraffa (1926), however, emphasized constant returns to scale by the illustration of the flat average total cost and contended, with his follower Viner (1931), that the firm growth issue should be addressed by the demand side rather than the supply side. In other words, the firm's goals should be maximized profits instead of minimized cost. Nevertheless, firm's goals may not at all be identical. This may be due to the separation

of ownership and daily control, as Baumol (1959) analysed in his sale-maximization model. Unfortunately, he failed to demarcate the fine line between low profits and high sales, and thus made impractical the clarification of size changes. Marris (1969) constructed a more convincing equilibrium of firm size by illustrating the specific intersection point at which the growth of both sales and profitability reached the equilibrium, which actually indicated a firm's non-optimizing nature. In a different way, Knight (1921) conceptualized the term "uncertainty" as the cause of growth in a qualitative way, whereas Coase (1937) proposed the theory of transaction cost to set the limits of the firm size. Although he overlooked the behaviour of cooperation among firms, his transaction cost theory stated clearly one of the main reasons why firms grew. Stigler's (1939) flexibility concept also explained the possibility of achieving the superior performance for both small and large firms, though its positive impact was mainly on the performance but not on the growth.

While the theories aforementioned have a deterministic nature, Gibrat (1931) took an extraordinarily different approach, by asserting that the growth rate of firms would be totally random, due to multiplicate uncertain factors, in spite of its original size and prior growth patterns. Gibrat's law seemed plausible, as judged against the evidence on the size distribution in the industries in early UK and US data, but such conclusions could be biased due to the neglect of issues such as the target size classes, the entry and exit of firms, as well as acquisition and mergers. Moreover, the variance of growth rate in reality does not tend to reach infinity as expected in theory when time elapses, which left the room for Kalecki (1945) to suspect that certain short run "stability conditions" would be able to counteract this long run tendency. In recent empirical studies (Sutton, 2002;

Fabrittis, *et al.*, 2003; Gupta and Campanha, 2003), the flatness of power-law relationship also proves that the larger firms may be virtually less volatile. In later developments, Jovanovic's learning theory (1982) addressed the role of time, "age", in firm growth theories. Along with another generic growth factor "size" mentioned earlier, a large number of empirical studies of Evans (1987a, 1987b) and many others (Reid, 1993; Rodriguez,*et al.,*2003; Takehiko Yasuda, 2005) claimed the "stylized facts" that smaller and younger firms actually grew faster. However, the different voice could be also heard in the works of Hall (1987) and some others (Dunne and Hughes, 1994; Hart and Oulton, 1996; Farinas and Moreno, 2000; Heshmati, 2001), which believed that there were threshold size and age for such stylized facts to hold or fail.

Chapter 3 conveys a combination of Entrepreneurial Orientation (EO), Resource-based View (RBV) and contingency theory to comprehensively interpret the firm growth process in the managerial realm. In the literature of entrepreneurship, EO, as a novel growth factor in response to Mencius' "*People*" element of success, incorporates five dimensions, namely innovativeness, risk-taking, proactiveness, competitive aggressiveness and autonomy. A sole index of EO, created by integrating all elements, can be used, whereas the complicated effect of the individual dimension on firm outcomes may deliver separate explanations. The major findings in the literature of entrepreneurship demonstrated the significance of EO, but some found no impact (Smart ands Conant, 1994) or even a negative influence (Hart, 1992). Therefore, such disparate findings indicate that EO may need to be defined and measured in different ways, and it also suggests that other covariant factors may exist, which either enhance or hinder firm growth/performance, apart from five EO factors above.

On the subject of strategic management, the resource-based view (RBV) suggests three growth factors – viz. tangible assets, intangible assets and the capabilities of firms. The tangibles are physical and financial assets that are usually embodied in the accounting balance sheets. Yet they are rarely regarded as an important growth propellant in the empirical studies, due to their tradability and imitability. Continuous attention has been paid to intangible assets, which include human capital, corporate culture, intellectual property, reputation, knowledge and network. Further, the concept of capability refers to skills in reinforcing existing assets, as well as abilities to take advantage of one or more of tangible or intangible assets, for the ultimate purpose of enhancing firm outcomes. It seems relatively facile to draw the dividing lines between disparate resources, whereas the task of examining their individual effects on the business expansion mechanism is rather labourious as none of these resources has an open-and-shut relationship with firm outcomes.

In terms of organizational behaviour, it is felt that contingency theory critically relates to firm growth. Traditionally, four major factors (i.e. environment, strategy, size and technology) interact with organizational structures (organic or mechanistic, or somewhere between). First, the environment, in terms of capacity, stability/instability and homogeneity/heterogeneity requires a variety of organizational forms to fit in. Various strategies can be then implemented to achieve this fit between structure and environment. Besides, size and technology may also influence the firm outcomes differently, through the mediating variable "organizational structure". In addition, contingency theory has extended to a much wider range of areas, such as organizational culture, EO, management accounting, organizational learning and management control system,

strategic reward system, export venture creation and rhetorical congruence, and so on.

9.1.3 Part III Fieldwork and Data

Chapter 4 has described the sampling process, survey instrument design, fieldwork methodology and process, and database construction. First, due to the unique business culture in China, secondary source data and postal questionnaires are not suitable for the research of this kind. According to the specific aim of this thesis and limited financial means, face-to-face administered interviews were conducted through the instrumentation of structured questionnaires in 2004, and by follow-up telephone interviews in 2006. A sample of 89 firms was interviewed, including six SOEs. The representativeness of the sample was validated by geographic distribution, sectoral composition, ownership and employment, and size distribution. The population of 21 major cities economic data (*GD A*) and the population of manufacturing firms in 14 cities/counties of Guangdong Province (*GD B*) were utilised to attest to the representative nature of the sample (*SAMPLE A*, 83 firms excluding six SOEs; *SAMPLE B,* including six SOEs). Geographically, the correlation between *SAMPLE A* and *GD A* was found to be strong and significant (i.e. Kendall's tau_b .754 at the significant level of 0.01). In terms of industry sectors, the sample included all the industry categories of interest (by one digit CNSIC) and more than half (by two-digit CNSIC). The ownership structure and the employment of firms (*SAMPLE B*) also corresponded fairly well to the population of *GD B*. In addition, it was found that firm size classes could be better separated by employment than by sales, due to the temporariness and obsolescence of the division standard enacted by China NBS in terms of sales. Thereby, despite the constrained

sampling methods and the limited source of funding, *SAMPLE A* (83 firms) is believed to be a decent sample, which represents the privately owned firms in Guangdong Province, at the time of interviews, to a reasonable extent.

In keeping with the literature reviewed in Chapter 2 and 3, the survey instrument of 2004AQ was designed in order to collect: general information (firm basic registry data, market environment, and firm operations); measures of growth (employment, sales and assets); growth determinants, like EO (i.e. innovativeness, risk-taking, proactiveness, competitive aggressiveness and autonomy); RBV (i.e. physical and financial tangible assets, human capital, corporate culture, intellectual property, reputation, technology, network); and contingency factors (i.e. organizational structure, environment, strategy, size and technology), and so on. Upon the completion of survey instrument design, a pilot program was undertaken in a small sample of 8 firms to test the applicability of this research tool, and necessary amendments were made thereafter. A number of co-fieldworkers (nearly 180) were selected and trained in terms of the AQ2004 itself and the related interview techniques. Finally, a two-stage large-scale investigation was launched in both 2004 and 2006. The fieldwork process was thus completed by pilots, co-fieldworker training, first stage face-to-face administered interviews, second-stage telephone interviews, and the data countercheck. The database was constructed in the formats of both Excel spreadsheet and SPSS files. By doing so, it not only secures the storage of the data, but also allows the statistical and econometric analyses of the firm growth in the following chapters.

Chapter 5 introduced evidence on the sample of 83 private firms collected by face-to-face interviews in Guangdong province in China in 2004. The characteristics are

illustrated at length in terms of firm operation, human resource management, finance, technology and innovation, enterprise culture and competitive environment. This chapter, however, was developed in a preliminary way, by description and illustration, which leaves the more complicated statistical and econometric analysis to Part IV.

A "typical" Chinese private firm can be characterized as follows. It is a relatively mature manufacturer (slightly older than 7 years in one of the manufacturing industries), and established in Guangzhou (the capital city of Guangdong province). It had a workforce of 57 employees at the inception and of 212 employees at the time of interview in 2004. Over that time, the sales increased nearly fivefold and the total assets enlarged more than four times. While doing its main business in the local market, it usually possesses less than 1% of market share. Hence, a "typical" private firm is also a small, yet growing local firm.

In terms of *firm operations*, the normal principle of price setting is to add a flexible percent of profit to the cost. However, changes of the cost structure, market demand and competitors' prices would significantly influence this price setting, and the price elasticity of demand. A price hike (or cut) is most likely to be elastic (or perfectly inelastic). Marketing research was conducted to understand the market trend and attract the customers. Advertisements were purchased mainly from magazines and outdoor ads companies. Further, customer service was handled by the specific department rather than by *ad hoc* teams. This "typical" firm also planned a long time ahead, and thoroughly, in terms of sales, strategic development and finance. And the strategic development plans were perceived as the most difficult one to implement.

Regarding *Human Resource Management*, the HR manager, or sometimes the

general manager, would undertake recruitment tasks, and most of time they believed that "nepotism" engenders disadvantages. The education of the workforce was not extensive as there were less than 30% of employees having college diplomas or higher degrees. However, trainings were often organized for middle-level managers and lower-rank workers. This "typical" firm offered more than average remunerations and bonuses seemed to be the best incentive to work (followed by welfares and promotion). In such a "typical" firm, the general manager and the board director most often was the same person, who however preferred to delegate, rather than take care of everything, if there was a capable and credible agent.

In the matter of *finance*, the "typical" firm heavily depended on self-financing. Business plans and government SME support programmes seemed to help only a little to secure the start-up capital, mainly due to the smallness of the firm size and the insufficient personal wealth. The fraction of debt/equity (gearing or leverage) was relatively low (gearing2003=0.327, gearing2004=0.355). As a small firm, its ambition to be listed on the second board in the stock exchange (especially designed for SMEs) is hardly noticeable. Cash flow problems are brutally evident as well, largely because of the long delayed or even irretrievable receivables. Besides, limited overdraft quotas and poor overdraft facilities may aggravate the "typical" firm's financial health.

With respect to *technology and innovation*, a "typical" firm possessed a technology somewhat above average. It had launched new products with the aid of its own R&D department. Thist had 15 staff (3 with masters' degree or higher), spending less than 5% of profit on the R&D activities. Yet it had no ISO9000 or any equivalent international certificate. Nor did it have any patent for products or technologies. Concerning the

information technology, this "typical" firm had a website and attempted to do e-commerce via the internet. While the majority of communication had been done by traditional telephone/fax and meetings, emails become popular as well. Office and accounting software was used widely but HRM software appeared to be the least useful. Regarding the small size, the MIS construction has not yet been on the agenda.

Considering the *enterprise culture*, the owner-manager of this "typical" firm was a mixture of a manager undertaking particular activities, an agent of economic change and an individual with a unique personality. And this owner-manager's personal virtues and charisma seemed significantly to influence the enterprise culture, especially in the early stage of the company. This "typical" firm was quite flexible in organizational structure, and had updated its behavioural codes and regulations irregularly, where appropriate. The company slogan was also hung high, with the contents of it being highly customer-oriented, emphasizing high-quality and high-credibility. Internally, socializing activities were organized several times a year within the firm.

According to Porter's five forces, this "typical" firm encountered the fierce *competition* in an already saturated market. As such, it regarded both cost leadership and product differentiation as the imperative competitive strategies. Further, it would keep a low profile in business, with a passive defensive posture, in order to avoid unsolicited attention or even an attack from competitors. Market entry was somewhat difficulty for potential entrants, due to the lack of experienced workers, the scarce initial capital and the current competitive environment. However, the exit seemed easy. Its buyers were neither amateur technicians nor professionals, but a group of customers largely influenced by non-technical elements, such as price, brand, advertisement, design,

customer service, and so on. The average number of suppliers was 15 for this firm and its position usually was felt to be superior in the negotiation with suppliers. This "typical" firm had both superior and inferior substitutes.

Considering the *government support,* export tax drawback policy and small firm income tax reduction/exemption might be, among available policies, the ones that can benefit this "typical" firm the most. However, government financial or policy support generally needed improving. Externally, it firstly resorted to an industry association, then to a local SME credit guarantee scheme, and lastly to government SME support centres. This "typical" firm perceived that the overall macro environment was better than ever, but predicted that its sales, total assets, employment, profits would all increase (in a descending order of the growth rate).

9.1.4 Part IV Statistical and Econometric Analyses

Chapter 6 examines the effects of two "stylized factors", namely size and age, along with a vector of firm-specific, environmental and selection bias variables, on the growth of Chinese private firms. Firstly, a simplest pilot growth model is utilized to examine the relationship between size and growth, using the data on the inception and the year of 2004. When growth is measured by employment, sales and assets, respectively, between financial inception and the first-stage interview in 2004, Gibrat's law fails to hold in any of these simplest size-growth pilot models. The finding is that smaller firms grow faster. Then, Heckman's (1979) two-step selection model is deployed to test the causality between size/age and firm growth between 2004 and 2006. In this extended size-age-growth model, with the correction for sample selection bias and

heteroscedasticity, the "stylized facts" that smaller and younger firms grow faster are proven to apply also in the setting of China. This is important, given the popularity of such empirical studies in the developed countries of the West..

On this basis, a comprehensive growth model is further examined by encompassing firm-specific factors (i.e. Planning, RDorien, CSorien) and environmental ones (i.e. Dwed, Descomp, Location). First of all, the planning activities do not seem to generate the higher growth as expected, due to the definition of planning and the effectiveness of planning. The second growth factor, R&D emphasis, is found to be unrelated to the expansion process, either. Higher R&D expenditure may increase the number of valid patents and thus possibly lower the average cost of products. It seems to be difficult that innovation propensity is able to be automatically transformed into these advantages. Nor can it generate market entry barriers, if the innovation itself is merely incremental. Similarly, the effect of market conditions on growth is not straightforward. The price inelasticity of customers in response to a price cut virtually promotes no chance of firm growth, and the competitiveness of market situations appears to have no effect on firm growth, either. On a positive note, the degree of customer orientation does seem to help firms to gain the impetus to grow in a significant way. The better the customer service, the higher is the probability of expansion. The location also seems to be highly related to the firm expansion mechanism by the advantages of lower operating costs and strong industry cluster effects. Last but not least, the "stylized factors", size and age, are both again negatively related to the firm growth in this comprehensive model.

Chapter 7 has examined two major themes of entrepreneurship and the resource-based view in the managerial literature of firm growth. It does so by

operationalizing the concepts of entrepreneurial orientation (EO) and intangible assets (IA), and by exploring their influences on the business expansion process. A variety of statistical methods are utilized to operationalize EO and IA. For instance, the correlation analysis is utilized to select the most relevant items, especially when the sample size is not large enough to accommodate all tests, since the ratio of observations to variables must be equal to or larger than 5. A reliability test is conducted to validate such a selection. Due to the multiplicative nature of both EO and IA, exploratory factor analysis sets out to discover the latent structure of constructs, and confirmatory factor analysis is employed to confirm the results obtained.

Upon the completion of the operationalization of EO and IA, these two main attributes of firm growth, in the form of a sole index as well as a disaggregated expression of all attributes, are incorporated into a parsimonious growth model and the comprehensive growth model, respectively. The principal findings are three-fold. First of all, while EO and IA are defined as two abstract constructs at a higher level, IA seems to be more capable of facilitating the growth mechanism than EO. Second, the capacity of enhancing the growth by disaggregated attributes of EO and IA seems to vary accordingly. In general, none of the EO attributes has a significant relationship with the firm growth. However, speaking less strictly, in terms of the relatively small sample size, *innovativeness* and *proactiveness II* are related to the employment growth rate in a negative way, albeit quite weakly. With respect to disaggregated IA attributes, *network*, *enterprise culture* and *technological knowledge* present a significantly positive relationship with business expansion, whereas *intellectual property* and *human capital* impose a lesser significant influence. *Reputation* is defined in terms of advertisements,

and its relation to firm growth is highly insignificant. Finally, Gibrat's Law is again rejected and Jovanovic's learning theory prevails, providing the correction of sample selection bias and heteroscedasticity. Hence, these empirical results appear to closely correspond to what in reality pertains to the oft-quoted national slogan of "spirit and material" in China. It is commonly felt that China's booming economy is not much attributable to this "spirit" propaganda, but actually more to the materialistic pursuit. In this chapter, it seems also true that Intangible Assets (material) appear far more significant than Entrepreneurial Orientation (spirit), albeit in a different sense.

Chapter 8 has tested contingency theory in an ordered logit model, depicting the preliminary morphology of firms by hierarchical cluster analysis, and examining the structure-configuration-growth relationship by drawing the new morphology of Chinese private firms in a graph with horizontal axis (BOF) and vertical axis (OS). Three major findings can be described as follows.

First, organizational structure is operationalized as the dependent variable and other contingency factors (i.e. environment, strategy, size and technology) as the independent variables, in keeping with the preceding empirical studies. An ordered logit growth model is constructed and estimated by the maximum likelihood estimation, which retrieves significant coefficients for all of the headings of contingencies aforementioned. Although the signs of coefficients for certain variables are at variance with some previous studies in the literature, the estimation results, using the Chinese evidence broadly, support the contingency theory that was originally proposed for the case of larger firms in the west.

Second, the validity of contingency theory in this work suggests that organizational structure, and four major contingencies, can form "clusters", as created by hierarchical

cluster analysis using Ward's (1963) method. Three basic clusters are therefore generated and characterized as "athletes", "clerks" and "laid-offs" in a preliminary morphology of Chinese private firms. Although their relationship with firm growth is still mostly intuitive, it provides necessary evidence on the relatedness of organizational forms to the business expansion process.

Third, it is found that the more a firm structure moves towards the extremes (organic or mechanistic), the more unbalanced its configuration is revealed to be, by using a novel scoring method to measure the "badness of fit" in configuration. It is discovered that the combination of both organizational forms and contingency configurations presents the higher explanatory power. The final morphology of Chinese private firms in terms of growth is illustrated in a graph, in which the upper right oval represents the highest growth "Athlete" firms (i.e. "the gazelles in the wild"), with the lower right oval demonstrating the lowest growth "laid-off" firms (i.e. "domesticated gazelles free to the wild), and the middle left oval portraying the moderate growth "clerk" firms (i.e. "the gazelle caught in a zoo"). Therefore, while the good fit of contingency factors only influences the business expansion process in a moderate way, it seems that the badness of fit in configuration can engender either the highest or lowest growth firms, subject to their organizational structures.

9.2 Contributions and Further Research Recommendations

Apart from the introduction and conclusion (Chapter 1 & 9), the contributions and further research recommendations can be illustrated as follows.

Part II Theory and Evidence has mainly contributed to adopt an interdisciplinary

approach in the fields of economics and management, concerning the complexity of the business expansion mechanism. The economics literature review has covered the theories from Classical economics to the Neoclassical school, the New Institutional School, and other later developments. The management literature review has also incorporated three major areas, namely entrepreneurship, strategic management and organizational behaviour. While the economic thought is scrutinized for the major purpose of verifying the stochastic or deterministic nature of the firm growth and the possible growth determinants, the managerial theories are discussed in terms of "people, resource and environment", in correspondence to the ancient Menciusian philosophy of success. Thus, the literature review is really more than an aggregation of firm growth theories, yet it has been concerned with the philosophy of accidentalism and determinism and the philosophy of success, where in this particular case, "success" is firm growth.

Due to the ambition of incorporating both economics and management disciplines in this thesis, the Part II literature review has stretched out to achieve the necessary breadth and depth. However, limited by the aim and scope of this study, it has not been able fully to address some related theories, such as the recent research on the power-law relationship between size variance and firm growth in economics, the trend of encompassing both entrepreneurship and resource-based view in management, and so on. So it has left the ground for further investigations, providing the research interest.

Part III Fieldwork and Data has made particularly important contributions to this thesis. **Chapter 4** demonstrates that the fieldwork is not only innovative in the sense of survey instrument design, but also entrepreneurial in terms of data collection in the field in China. It is said to be innovative, as the survey instrument builds upon the numerous

preceding empirical studies in the fields of both economics and management, in a way which is relevant to the new Chinese context. And it is felt to be entrepreneurial, as the data collection process literally started from scratch, with no contacts and funding in the field at all. Faced with such an intimidating situation, the author obtained a teaching position at the Guangdong University of Foreign Studies, which not only covered the living expense of staying in the field of research interest, but also secured the research funds to a certain extent, and further, offered the best opportunities to get access to the field through the gatekeepers. This made it possible to undertake the following intensive fieldwork in both 2004 and 2006. As a matter of fact, none of the later statistical and econometric analyses can be done without this two-year-long collection of "bricks and straws" in the field. Three recommendations can be made here. First, it is better to interview more firms than the target sample size, as it is common that some of cases cannot be utilized due to various reasons, such as the incompleteness of questionnaires, intentional or unintentional false answers, etc. Second, one should collect more variables for related topics so that it is more flexible, should the original plan of the thesis be developed in a quite different way later on. Last, one should keep as many contact methods as possible with the interviewees, as one may need to get back to the firm for more information, or even a follow-up interview, as in this case.

Chapter 5 describes the general characteristics of the sampled firms, which remedies the neglect of the descriptions of Chinese private firms in the empirical literature, as most data about Chinese firms available at the moment is secondary source and in an aggregated form. It has provided the most "fresh" facts from Guangdong Province in China, and makes possible that the later related studies can use this database

to make comparisons. It is recommended that a similar approach be adopted in another two most prosperous Chinese regions (i.e. Shanghai-based Yangtze River Delta and Beijing-based Bo Hai Bay region) as well as those inland Provinces. The comparative studies can be undertaken and a more comprehensive picture of Chinese private firms can be drawn, accordingly.

Part IV Statistical and Econometric Analysis has contributed the core contents of this thesis, in a more sophisticated way, after the lead-in materials in previous chapters. **Chapter 6** clearly notes that Gibrat's (1931) law fails to hold, and Jovanovic's (1982) leaning theory prevails, which corresponds to the empirical evidence in the West. While China is perceived as a country different from the West in almost every way, the scientific results on firm growth seem to disagree. In an indirect way, it confirms China's position as a market economy, or at least her determination to move towards this direction. Besides, it has provided one of the strong reasons for government policy makers in China to pay more attention to SMEs, in terms of the employment contribution, stimulated by the launch of China's SME Promotion Law in 2003. It is recommended that future research should enlarge the sample size, so that it may be possible to demarcate the threshold size and the threshold age, based on which a deeper understandings of Gibrat's law and Jovanovic's learning theory can be hopefully obtained. Further, if more time-series (panel) data on the same sample can be collected, it would be likely to test the power-law relationship, which is another postulate of Gibrat's law.

Chap7 mainly contributes to operationalizing the concepts of EO and IA, which is done in a novel way with new Chinese evidence. Adapted from Miller's method, EO is operationalized here as a combination of four attributes (i.e. innovativeness, risk-taking,

proactiveness I & II). Due to the lack of an established concept of IA, this Chapter has encompassed six IA elements (i.e. human capital, enterprise culture, intellectual property, technical knowledge, reputation and network) and successfully tested their empirical validity. Quoting China's national slogan of "spirit and material", EO and IA are incorporated into growth models for econometric estimation, and the results are generally similar to the reality that "material' seems more conducive than "spirit", no matter to business expansion or to national development. It should be noted that some scholars have begun to discuss the entrepreneurial orientation by integrating resource-based view (Brown and Kirchhoff, 1997; Wiklund, 1998; Gasse, 1998), and it seems that even more attention needs turning to the complex interactions between EO and IA, which may be a promising field for future research.

Chapter 8 has made contributions in a sense that it tests the validity of contingency theory in the context of Chinese SMEs. It is felt to be novel, as contingency theory was originally utilized to describe the relationship between organizational form and environment for large firms in the West. Moreover, not being limited to simply copying a western contingency model to a Chinese sample, this chapter also discovers the morphology of Chinese firms by conducting statistical cluster analysis, and measuring the fit of configuration of all contingency factors in an innovative way. It finds that the bad fit of configuration actually can be either a blessing or a disaster, subject to the organizational structure. So "the fittest" may be "the survivor", but not necessarily "the fastest grower"!

It is recommended that future studies of contingency theory can be extended to wider areas, such as organizational culture (Schein, 1992), EO (Lumpkin and Dess, 1996;

Wiklund, 1998), management accounting (Andersen and Lanen, 1999; Mitchell, Reid and Smith, 2000; Lofsten and Lindelof, 2005), organizational learning and management control system (Romme and Dillen, 1997; Kloot, 1997), strategic reward system (Boyd and Salamin, 2001), export venture creation (Ilbeh, 2003) and rhetorical congruence (Sillince, 2005). Besides, if the sample size can be enlarged, more clusters (beyond three in this chapter) may be generated to depict those firms with medium fit of configurations, but different organizational forms. In other words, apart from "gazelles in the wild" and "domesticated gazelles free to the wild", one may discover more types of "gazelles" in between with middling growth potential. Further, econometric growth models can be established and estimated if the organizational form can be defined in a more refined way, and the scores of the fit of configurations can be obtained from more clusters in future studies of firm growth, with an extended framework of contingency theory.

9.3 Final Conclusion

This thesis has endeavoured to identify the factors which affect firm dynamics in the setting of the Chinese transition economy, such as size, age, entrepreneurship, resources, and environment. In a broad sense, these growth determinants resemble the household saying of the Chinese ancient philosopher Mencius, which is that "the fine weather in the sky, the advantageous position on the ground, the unity and support of people" (*Tianshi, Dili, Renhe* in Chinese). Though this resemblance may be accidental, systematic nature of firm growth itself is evidently not.

REFERENCES

Abouzeedan, A. (2001) Factors Affecting the Performance of SMEs and the Survival Index Equation: A Quantitative Evaluation, Washington International University, King of Prussia, PA, USA: Published Doctoral Dissertation.

Abouzeedan, A. and Busler, M. (2005) ASPEM as the New Topographic Analysis Toolfor Small and Medium-Sized Enterprises (SMEs) Performance Models Utilization, *Journal of International Entrepreneurship*, 3, 53-70.

Acs, Z.J. and Audretsch, D.B. (1990) *Innovation and Small Firms*, The MIT Press Cambridge, Massachusetts London, England.

Adam Smith (1776) An Inquiry into the Nature and Causes of the Wealth of Nations.

Adizes, I. (1989). *Corporate Lifecycles: How and Why Corporations Grow and Die and What to do about it,* Englewood Cliffs, NJ: Prentice Hall.

Alchian, A.A. (1950) Uncertainty, Evolution, and Economic Theory, *Jour. Pol. Econ.,* June, LVIII, 58, 211-222

Aldrich, H. (1979) *Organizations and Environments.* Englewood Cliffs, NJ: Prentice-Hall

Alicia Correa Rodriguez, et al. (2003), Size, Age and Activity Sector on the Growth of the Small and Medium Firm Size, *Small Business Economics*, 21: 289-307

Amit, R. and Schoemaker, P. (1993) Strategic assets and organizational rent. *Strategic Management Journal*, 1, 33–47.

Andersen, O. and Kheam, L.S. (1998) Resource-based theory and international growth strategies: an exploratory study, *International Business Review*, 7, 163–184.

Andersen, S.W. and Lanen, W.N. (1999) Economic Transition, Strategy, and the Evolution of Management Accounting Practices: The case of India, *Accounting Organizations and Society,* 24, 379-412.

Arditti, F.D. (1967) Risk and the required return on equity, *Journal of Finance*, 22: 19–36.

Audretsch, D.B. (1995a) *Innovation and Industry Evolution,* Cambridge: MIT Press.

Audretsch, D.B. (1995b) Innovation Growth and Survival, *International Journal of Industrial Organization* 13,441–447.

Audretsch, D.B. and Lehmann, E.E. (2005) Mansfield's Missing Link: The Impact of Knowledge Spillovers on Firm Growth, *Journal of Technology Transfer*, 30 1/2, 207-210.

Auger, P., Barnir, A., and Gallaugher, J.M. (2003) Strategic orientation, competition, and Internet-based. electronic commerce, *Information Technology and Management*, 4, 2-3, 139-164.

Barney, J. (1991) Firm resources and sustained competitive advantage, *Journal of Management 17*, 99–120.

Barringer, B.R. and Bluedorn, A.C. (1999) The relationship between corporate entrepreneurship and strategic management, *Strategic Management Journal*, 20: 421–444.

Barringer, B.R., Jones, F.F., Neubaum, D.O. (2005) A quantitative content analysis of the characteristics of rapid-growth firms and their founders, *Journal of Business Venturing*, 20, 663-687.

Bartlett, W. and Bukvic, V. (2001) Barriers to SME Growth in Slovenia, *MOCT-MOST,* 11: 177-195,.

Baumol, W. J. (1968) Entrepreneurship in Economic Theory, *The American Economic Review*, Vol. 58, No. 2, Papers and Proceedings of the Eightieth Annual Meeting of the American Economic Association. (May, 1968), pp. 64-71.

Beard, D.W. and Dess, G.G. (1981) Corporate-Level Strategy, Business-Level Strategy, and Firm Performance., *Academy of Management Journal*, v24, 663-688.

Becchetti, L. and Trovato, G. (2002) The Determinants of Growth forSmall and Medium Sized Firms.The Role of the Availability of External Finance, *Small Business Economics,* 19: 291–306.

Begley, T. M. (1995) Using founder status, age of firm, and company growth rate as the basis for distinguishing entrepreneurs from managers of small businesses, *Journal of Business Venturing*, 10, 249-263.

Berle, A. and Means, G. (1932) *The Modern Corporation and Private property,* New York: Commerce Clearing house, Inc.

Binks, M., Ennew, C. and Reed, C. (1992) Information Asymmetries and the Provision of Finance to Small Firms, *International Small Business Journal* 11(1), 35–46.

Birch, D. (1977) The Job Generating Process, Cambridge, MA: MIT Program on Neighborhood and Regional Change.

Birch, D. (1987) *Job Creation in America: How our smallest companies put the most people to work,* The Free Press: New York.

Bird, B. (1993) Demographic approaches to entrepreneurship: The role of experience and background. In J. A. Katz & R. H. Brockhaus Sr. (Eds.), *Advances in Entrepreneurship, Firm Emergence, and Growth,* Vol. 1, pp. 11-48, Greenwich: JAI Press Inc.

Blalock, H.M. 1982. *Conceptualization and measurement in the social sciences.* Beverly Hills, CA: Sage.

Blau, P.M. and Schoenherr, R.A. (1971) *The Structure of Organizations,* New York: Basic Books.

Bluedom, A.C. (1993) Pilgrim's Progress: Trends and Convergence in Research on Organizational Size and Environments, *Journal of Management,* Summer, 163-92.

Bontis, N. and Fitz-enz, J. (2002) Intellectual capital ROI: a causal map of human capital antecedents and consequences, *Journal of Intellectual Capital,* 3, 223–247.

Boulding, K. E. (1950) *A Reconstruction of Economics,* New York:Wiley & Sons.

Box, T.M., White, M.A., and Barr, S.H.(1994) A contingency model of new manufacturing firm performance, *Entrepreneurship Theory and Practice*, 17(4), 31-45.

Boyd, B.K. and Salamin, A. (2001) Strategic Reward Systems: A contingency model of Pay system design, *Strategic Management Journal,* 22, 777-92.

Brock, W.A. and Evans, D.S. (1986) *The Economics of Small Business,* New York: Holmes & Meier.

Brown, T. (1996) *Resource Orientation, Entrepreneurial Orientation and Growth: How the Perception of Resource Availability Affects Small Firm Growth,* Newark, NJ: Rutgers University.

Brown, T. and Kirchhoff, B. (1997) The Effects of Resource Availability and Entrepreneurial Orientation on Firm Growth, Frontiers of Entrepreneurship Research, Wellesley, MA: Babson College: http://www.babson.edu/entrep/fer/papers97/kirtchoff/kir1.htm

Bruton, G.D. and Rubanik, Y. (2002) Resources of the firm, Russian high-technology startups and firm growth, *Journal of Business Venturing,* 553-76.

Burns, L.R. and Wholey, D.R. (1993) Adoption and Abandonment of Matrix Management Programs: Effects of Organizational Characteristics and Inter-organizational Networks, *Academy of Management Journal,* February, 106-38.

Burns, T. and Stalker, G. (1961) *The Management Innovation*, Tavistock Institute.

Butler, J.E. and Brown, B. (1994) The Impact of Inter-Organizational Relationships on Industrial Growth: The Case of the Handicraft Industry in Thailand, Frontiers of Entrepreneurship Research, Wellesley, MA: Babson College: http://www.babson.edu/entrep/fer/papers94/butler.htm.

Cesaratto, S. and Stirati, A. (1996) The economic consequences of innovations in italian manufacturing firms: theory and explorative results from the community innovation survey. *Studi Economici LI* (60/3).

Chaganti, R., DeCarolis, D. and Deeds, D. (1995) Predictors of capital structure in small ventures, *Entrepreneurship Theory and Practice*, 20: 7–18.

Chandler, G.N.(1996) Business similarity as a moderator of the relationship between pre-ownership experience and venture performance, Entrepreneurial *Theory and Practice*, Spring, 51-65.

Chapman, S.T. and Ashton, J.S. (1911), The Size of Businesses, Mainly in the Textile Industries, *Journal of Royal Statistics Society,* LXXVII, 512.

Chatterjee, S. and Wernerfelt, B. (1991). The link between resources and type of diversification: Theory and evidence. *Strategic Management Journal*, *12*, 33–48.

Chen, M.J. and Hambrick, D.C. (1995) Speed, stealth and selective attack: How small firms differ from large firms in competitive behavior, *Academy of Management Journal*, 38: 453–482.

Chen, M.J. and MacMillan, I.C. (1992) Nonresponse and delayed response to competitor moves: The roles of competitor dependence and action irreversibility. *Academy of Management Journal*, 35: 539–570.

Chen, M.J. and Miller, D. (1994) Competitive attack, retaliation and performance: An expectancy-valence framework. *Strategic Management Journal*, 15: 85–102.

Chittenden, F., Hall,G., and Hutchinson, P. (1996) Small Firm Growth, Access to Capital Markets and Financial Structure: Review of Issues and an Empirical Investigation, *Small Business Economics* 8, 59–67.

Chronbach, L.J.(1951) Coefficient alpha and the internal structure of tests. *Psychometrika*, 16: 297-334.

Churchill, N. and Lewis, V.L.(1983) The Five Stages of Small Business Growth, *Harvard Business Review,* 61(3), pp. 30-50.

Coase, R. H.(1937) The Nature of the Firm, *Economica* 4: 386-405

Collis, D.J. (1994) Research note: how valuable are organizational capabilities? *Strategic Management Journal,* 15, 143–152 (Special Issue).

Colombo, M.G. and Grilli, L. (2005) Founders' human capital and the growth of new technology-based firms: A competence-based view, *Research Policy,* v34 i6 795(20).

Converse, J.M. and Presser, S. (1986) *Survey Questions: Handcrafting the Standardized Questionnarie,* Series: Quantitative Applications in the Social Sciences, 63. A Sage University Paper, Sage Publications: London.

Cosh, A., Hughes A., Wood E. (1996) Innovation in UK SMEs: Causes and Consequences, ESRC, Centre for Business Researches, University of Cambridge, Mimeo.

Courtright, J.A., Fairhurst, G.T., and Rogers, L.E. (1989) Interaction patterns in organic and mechanistic systems, *Academy of Management Journal,*v32 n4 773(30).

Covin, J.G. and Slevin, D.P. (1986) The Development and Testing of an Organizational-Level Entrepreneurship Scale, In R. Ronstadt, J. A. Hornaday, R. Peterson, and K. H. Vesper (Eds.), *Frontiers of Entrepreneurship Research*, 628–639. Wellesley, MA: Babson College.

Covin, J.G. and Slevin, D.P. (1989) Strategic Management of Small Firms in Hostile and Benign Environments, *Strategic Management Journal*, 10 (January): 75–87.

Covin, J.G. and Slevin, D.P. (1990) New Venture Strategic Posture, Structure, and Performance: An Industry Life Cycle Analysis, *Journal of Business Venturing*, 5: 123–135.

Covin, J.G. and Slevin, D.P. (1991) A Conceptual Model of Entrepreneurship as Firm Behaviour, *Entrepreneurship Theory and Practice*, (Fall): 7–25.

Cubbin, J. and Leech, D. (1986) Growth versus profit maximization: a simultaneous equations approach to testing the Marris model, *Managerial and Decision Economics* 7: 123-31

Daley, J. (2001) The intangible economy and Australia, *Australian Journal of Management*, 26, 3–19 (Special Issue).

Das, S. (1995) Size, age and firm growth in an infant industry: The computer hardware industry in India, *International Journal of Industrial Organization* 13, 111-26.

Dasgupta, P. (1985) The theory of technological competition. In: Mathewson, G.F., Stiglitz, J.E. (Eds.), *Proceedings of a Conference Held by the International Economic Association on New Developments in the Analysis of Market Structure*, Ottawa, Canada, MacMillan, New York.

Davidson, R. and MacKinnon, J.G. (1993) *Estimation and Inference in Econometrics*, Oxford University Press; Oxford.

Davidsson, P.(1989) *Continued Entrepreneurship and Small Firm Growth,* Stockholm: Stockholm School of Economics.

Day, G.S.(1994) The capabilities of market-driven organizations, *Journal of Marketing* 58, 37–52.

De Fabritiis, G., Pammolli, F. and Riccaboni, M. (2003) On Size and Growth of Business Firms, *Physica A*, 324, 38-44

Dean, A.A., Day, J. and Reynolds, P.L.(1997) The adoption of a customer retention and development strategy as a low risk growth strategy for the entrepreneurial firm: some UK evidence from business service SMEs in West Yorkshire, Frontiers of Entrepreneurship Research, Wellesley, MA: Babson College: http://www.babson.edu/entrep/fer/papers97/sum97/dea.htm

Delmar, F. (1997) "Measuring Growth: Methodological Considerations and Empirical Results." In R. Donckels, and A. Miettinen (Eds.), *Entrepreneurship and SME Research: On its Way to the Next Millennium,* 199–216. Aldershot, England: Ashgate.

Dess, G.G. and Beard, D.W. (1984) Dimensions of Organizational Task Environments, *Administrative Science Quarterly*, March, v29 52-73.

Dess, G.G., Lumpkin, G.T. and Covin, J.G.(1997) Entrepreneurial Strategy Making and Firm Performance: Tests of Contingency and Configurational Models, *Strategic Management Journal*, 18(9): 677–695.

Dietz, M. and Elton, J. (2004) Intellectual Property Strategy and Licensing: Driving Growth from the Technology Portfolio, *McKinsey IP Licensing Benchmarking Survey,* 2003-2004. McKinsey & Company, New York.

Dobb, M. (1925) *Capitalist Enterprise and Social Progress*, London: George Routledge. & Sons, Ltd.

Dobson, S. and Gerrard, B. (1989) Growth and profitability in the Leeds engineering sector, *Scottish Journal of Political Economy* 36: 334-52.

Drucker, P. F. (1988) "The Coming of New Organizations." *Harvard Business Review,* 66(1): 45–53.

Du Reitz, G. (1975) New Firm Entry in Swedish Manufacturing Industries During the Post-War Period, Doctoral Dissertation, Stockholm.

Duncan, R.B.(1972) Characteristics of organizational environments and perceived environmental uncertainty, *Administrative Science Quarterly* 17: 313-327.

Dunne, P. and Hughes, A.(1994) Age, Size, Growth and Survival: UK Companies in the 1980s, *The Journal of Industrial Economics,* Vol.42, No.2, 115-140.

Eggers, J.H., Leahy, K.T. and Churchill, N.C.(1996) Leadership, Management, and Culture in High-performance entrepreneurial companies, Frontiers of Entrepreneurship Research, Wellesley, MA: Babson College: http://www.babson.edu/entrep/fer/papers96/eggers/.

Eiteman, W.J. and Guthrie, G.E. (1952) The Shape of the average cost curve, *American Economic Review* 42: 832-8.

Emery, F.E. and Trist, E. (1965) The Causal Texture of Organizational Environments, *Human Relations,* February, 21-32

Enke, S. (1951) On Maximizing Profits: A Distinction between Chamberlin and Robinson, *Am. Econ. Rev.,* September, XLI.

Ernst, H. (2001) Patent application and subsequent changes of performance: evidence from time-series cross-section analysis on the firm level, *Research Policy* 30, 143–157.

Evans, D.S. (1987a) Test of Alternative Theories of Firm Growth, *Journal of Political Economy,* Vol.95, No.4, 657-674

Evans, D.S. (1987b) The Relationship Between Firm Growth, Size, and Age: Estimates for 100 Manufacturing Industries, *Journal of Industrial Economics,* Vol.35, No.4, The Empiricial Renaissance in Industrial Economics, 567-581

Fahy, J. (2002) A resource-based analysis of sustainable competitive advantage in a global environment, *International Business Review* 11,57–78.

Farinas, J.C. and Moreno, L. (2000), Firm's Growth, Size and Age: A Nonparametric Approach, *Review of Industrial Organization* 17: 249-265

Fischer, E., Reuber, A.R. and Carter, N.M.(1998) A Comparison of Multiple Perspectives on Public Policy Supportive of Rapid Growth Firms, Frontiers of Entrepreneurship Research, Wellesley, MA: Babson College: http://www.babson.edu/entrep/fer/papers98/XVI/XVI_A/XVI_A.html.

Foss, N.J. (1997). *Resources, Firms, and Strategies: A Reader in the Resource-based Perspective*, Oxford University Press, New York.

Fowler, F.J. (1995) *Improving Survey Questions,* Applied Social Research Methods Series, 38, Sage Publications: London.

Frank, M.Z. (1988) An Intemporal Model of industrial Exit, *Quarterly Journal of Economics* 103, 333-344.

Friedman, M.(1953) The Methodology of Positive Economics, in *Essays in Positive Economics* , Chicago: Chicago University of Chicago Press.

Galbreath, J. (2005) Which resources matter the most to firm success? An exploratory study of resource-based theory, *Technovation* 25: 979-87.

Galunic, D.C. and Eisenhardt, K.M. (1994) Renewing the Strategy-Structure-Performance Paradigm, in Staw, B.M. and Cummings, L.L. (eds.), *Research in Organizational Behaviour,* Vol.16, 215-55, Greenwhich, CT: JAI Press.

Gerbing, D.W. and Andersen, J.C. (1998) An Updated Paradigm for Scale Development Incorporating Unidimensionality and its Assessment, *Journal of Marketing Research,* 25, 186-192.

Gerloff, E.A., Muir, N.K. and Bodensteiner, W.D. (1991) Three components of perceived environmental uncertainty: an exploratory analysis of the effects of aggregation, *Journal of Management,* v17 n4 p749(20).

Geroski, P.A. (1995) Innovation and Competitive Advantage, OECD, Economic Department, Working Paper No. 159.

Geroski, P.A., Machin, J., Walters, C.F. (1997) Corporate growth and profitability, *Journal of Industrial Economics*, XLV (2).

Gooding, R.Z. and Wagner III, J.A. (1985) A Meta-Analytic Review of the Relationship Between Size and Performance: The Productivity and Efficiency of Organizations and Their Subunits, *Administrative Science Quarterly,* December, 1985, 462-81.

Grant, R.M. (1991) The resource-based theory of competitive advantage: implications for strategy formulation. *California Management Review* 33, 114–135.

Grant, R.M. (1996) Toward a Knowledge-based Theory of the Firm, *Strategic Management Journal,* 17(Winter Special Issue): 109–122.

Grant, R.M. (1997) *Contemporary Strategy Analysis: Concepts, Techniques, Applications,* Blackwell Publishers

Greiner, L.E. (1972) Evolution and Revolution as Organizations Grow, *Harvard Business Review*, July/August.

Guidici, G. and Paleari, S. (2000) The Provision of Finance to Innovation: A Survey Conducted Among Italian Technology-based Small Firms, *Small Business Economics* 14, 37–53.

Guillermo A.C., Wellisz, S. (1980) Technology, Entrepreneurs, and Firm Size, *The Quarterly Journal of Economics*, Vol. 95, No. 4, pp. 663-677.

Gupta, H.M. and Campanha,J.R.(2003), Firm growth dynamics, competition and power-law scaling, *Physica A*, 323, 626-634.

Hair, F.J., Andersen, R.E., Tatham, R.L. and Black, W.C. (1995) *Multivariate Data Analysis,* Prentice Hall: New York.

Halal, W.E. (Ed.) (1998) *The Infinite Resource: Creating and Leading the Knowledge Enterprise.* San Francisco: Jossey-Bass.

Hall, B.H. (1987) The Relationship Between Firm Size and Firm Growth in the US Manufacturing Sector, *The Journal of Industrial Economics,* Vol.35, No.4, The Empirical Renaissance in Industrial Economics, 583-606.

Hall, R. (1992) The strategic analysis of intangible resources, *Strategic Management Journal* 13, 135–144.

Hall, R. (1993) A framework linking intangible resources and capabilities to sustainable competitive advantage, *Strategic Management Journal* 14, 607–618.

Hall, R. and Liberman, M. (1998) Economics: Principles and Applications, *South-Western College Publishing, an ITP company,* USA

Hamel, G. and Prahalad, C.K. (1990) The core competence of the corporation. *Harvard Business Review* (May–June), 75–84.

Hamilton, P. T. and Fox, M. A. (1998) The Financing Preferences of Small Firms Owners, *International Journal of Entrepreneurial Behaviour and Research* 4, 239–248.
Hammond, S.A. and Slocum Jr., J.W. (1996) The impact of prior firm financial performance on subsequent corporate reputation, *Journal of Business Ethics*, v15 n2 p160(7).

Han, T. (2002) A summary of Firm Growth Theories, *Economics Information,* Vol.5, 82-86

Hannan, M. T. & Freeman, J. (1977). The population ecology of organizations, *American Journal of Sociology*, 82, 929-964.

Hannan, M. T. and Freeman J. H. (1984) Structural inertia and organizational change, *American Sociological Review*, 1984,49: 149- 164.

Harris, I.C. and Ruefli, T.W. (2000) The strategy/structure debate: an examination of the performance implications, (Statistical Data Included), *Journal of Management Studies,* v37 i4 p587(17).

Harris, I.C. and Ruefli, T.W. (2000) The Strategy/Structure Debate: An Examination of the Performance Implications, *Journal of Management Studies*, June, 587-603.

Hart, P.E. (2000) Theories of Firm's Growth and the Generation of Jobs, *Review of Industrial Organization,* 17, 229-48.

Hart, P.E. and Oulton, N. (1996) Growth and Size of Firms, *The Economic Journal,* Vol.106, No.438, 1242-1252.

Hart, P.E. and Prais, S.J. (1956) The Analysis of Business Concentration: A Statistical Approach, *Journal of the Royal Statistical Society. Series A (General),* Vol. 119, No.2, 150-191.

Hart, S.L. (1992) An integrative framework for strategy-making processes, *Acad. Manage. Rev.* 17 (2), 327–351.

Havnes, P.A. and Senneseth, K. (2001) A Panel Study of Firm Gorwth among SMEs in Networks, *Small Business Economics* 16: 293-302.

Hay, D. and Morris, D.(2001) Industrial Economics and Organization, London: Oxford University Press.

Heckman, J.(1979) Sample Selection Bias as a Specification Error, *Econometrica,* 47, 153-161

Heshmati, A. (2001), On the Growth of Micro and Small Firms: Evidence from Sweden, *Small Business Economics,* 17, 213-228

Hitt, M.A., Hoskisson, R.E. and Kim, H. (1997) International diversification: Effects on innovation and firm performance in product-diversified firms, *Academy of Management Journal*, 40: 767–798.

Hoogstra, G.J. and Dijk, J.V. (2004) Explaining firm employment growth : Does location matter ? *Small Business Economics,* 22, 179-92.

Hymer, S. and Pashigian, P. (1962) Firm Size and Rate of Growth, *The Journal of Political Economy,* Vol.70, No.6, 556-569.

Hyytinen, A. and Pajarinen, M. (2005), External Finance, Firm Growth and the Benefits of Information Disclosure: Evidence from Finland, *European Journal of Law and Economics,* 19: 69–93.

Ijiri, Yuji and Simon, H.A. (1964) Business Firm Growth and Size, *The American Economic Review,* Vol.54, No.2, Part 1, 77-89.

Ilbeh, K.I.N. (2003) Towards a Contingency Framework of Export Entrepreneurship: Conceptualization and Empirical Evidence, *Small Business Economics*, 20, 49-68.

Irani, Z., Beskee, A. and Love, P.E.D. (2004) Total quality management and corporate culture: constructs of organisational excellence. (Brief Article), *Technovation,* August v24 i8 p643(8).

Iyer, S. and Doucette, W.R. (2002) The influence of environmental attributes on the relationship between entrepreneurial orientation and performance in independent community pharmacies, *Journal of Pharmaceutical Marketing & Management,* v15 i2 p25(22).

Jacobsen, L. R. (1986), *Entrepreneurship and Competitive Strategy in the New Small firm: An Empirical Investigation,* University of Edinburgh, Department of Economics, Ph.D.Thesis.

Jauch, L.R. & Kraft, K.L. (1986) Strategic management of uncertainty, *Academy of Management Review*, 11, 777-790.

Jensen, M. and Meckling, W. (1976) Theory of the Firm: Managerial Behaviour, Agency Costs and Ownership Structure, *Journal of Financial Economics,* 3, 305–360.

Joreskog, K.G. (1974) Analyzing Psychological Data by Structural Analysis of Covariance Matrices, in D.H. Krantz, R.C. Atkinson, R.D. Luce and P. Suppes, *Contemporary Developments in Mathematical Psychology,* Freeman: San Francisco.

Jovanovic, B. (1982) 'Selection and the Evolution of Industry', *Econometrica*, 50, 649–670.

Kaldor, N. (1934) The Equilibrium of the Firm,*The Economic Journal*, Vol. 44, No. 173, 60-76.

Kalecki, M. (1945) On the Gibrat Distribution, *Econometrica*, Vol. 13, No. 2. (Apr., 1945), 161-170.

Kazanjian, R.K. (1988) Relation of Dominant Problems to Stages of Growth in Technology-Based New Ventures, *Academy of Management Journal,* 31 (2), 257-279.

Kirzner, I.M. (1973) *Competition and Entrepreneurship.* Chicago: University of Chicago Press, 47.

Kirzner, I.M. (1997) *How markets work: Disequilibrium, Entrepreneurship and Discovery,* London: The Institute of Economic Affairs, 51.

Kloot, L. (1997) Organizational Learning and Management Control Systems; Responding to Environmental Change, *Management Accounting Research,*8, 47-73.

Knight, F.H.(1921) *Risk, Uncertainty, and Profit* Hart, Schaffner & Marx; Houghton Mifflin Company, Boston, MA.

Knight, G.A.(1997) Cross-cultural Reliability and Validity of A Scale to Measure Firm Entrepreneurial Orientation, *Journal of Business Venturing,* 12, 213-225.

Knight, K. (1976) Matrix Organization: A Review, *Journal of Management Studies,* May, 111-30.

Lang, L., Ofek, E. and Stulz, R.M. (1996) Leverage, Investment, and Firm Growth, *Journal of Financial Economics* 40, 3–29.

Lawrence, P.R., and Lorsch, J.W. (1967) *Organization and environment: Managing differentiation and integration.* Boston: Harvard University, Division Research Graduate School of Business Administration.

Lechner, C., Dowling, D. and Welpe, I. (2005) Firm Networks and the Firm Development: The Role of the Relational Mix, *Journal of Business Venturing.*

Lerner, M., Brush, C. and Hisrich, R. (1997) Israeli women entrepreneurs: An examination of factors affecting performance, *Journal of Business Venturing,* Volume 12, Issue 4, July 1997, Pages 315-339.

Levie, J.D. (1994) Can Governments Nurture Young Growing Firms? Qualitative Evidence from A Three Nation Study, Frontiers of Entrepreneurship Research, Wellesley,MA:BabsonCollege: http://www.babson.edu/entrep/fer/papers94/levie.htm

Liebeskind, J.P. (1996) Knowledge, strategy, and the Theory of the Firm, *Strategic Management Journal,* 17(Winter Special Issue): 93–107.

Littunen, H.(2000) Networks and Local Environmental Characteristics in the Survival of New Firms, *Small Business Economics,* 15(1), 59-71.

Liu, J-T, Tsou, M-W and Hammitt, J. (1999) Do Small Plants Grow Faster? Evidence from the Taiwan Electronics Industry, *Economics Letters* 65, 121–129.

Loasby, B. (1971) Hypothesis and Paradigm in the Theory of the Firm, *The Economic Journal,* Vol.81,No.324, 863-85.

Lockett, A. and Thompson, S. (2001) The resource-based view and economics, *Journal of Management* 27, 723–754.

Lockett, A. and Thompson, S. (2004) Edith Penrose's contribution to the resource-based view: an alternative view, *Journal of Management Studies* 41 (1), 193–203.

Lockett, A. and Wright, M. (2004) Resources, capabilities, risk capital and the creation of university spin-out companies, In: Technology Transfer Society Meetings, September 30th, Albany, N.Y.

Lofsten, H. and Lindelof, P. (2005) Environmental hostility, strategic orientation and the importance of management accounting--an empirical analysis of new technology-based firms, *Technovation*, 25, 725-738.

Lopez-Gracia, J. and Aybar-Arias, C. (2000) An Empirical Approach to the Financial Behaviour of Small and Medium Sized Companies, *Small Business Economics* 14, 55–63.

Lumpkin, G.T. and Dess, G.G. (1996) Clarifying the entrepreneurial orientation construct and linking it to performance, *Academy of Management Review*, 21(1):135–172.

Lumpkin, G.T. and Dess, G.G. (1997), Proactiveness versus Competitive Aggressiveness: Teasing Apart Key Dimensions of An Entrepreneurial Orientation, Frontiers of Entrepreneurship Research, Wellesley, MA: Babson College: http://www.babson.edu/entrep/fer/papers97/lumpkin/lum1.htm.

Lumpkin, G.T. and Dess, G.G. (2001) Linking two dimensions of entrepreneurial orientation to firm performance: the moderating role of environment and industry life cycle, *Journal of Business Venturing*, v16 i5 p429(2).

Lyon, D.W. and Ferrier, W.F. (1998) The relationship between innovative firm behavior and performance: The moderating role of the top management team. Paper presented at the Academy of Management Meetings, San Diego, CA.

Lyon, D.W., Lumpkin, G.T. and Dess, G.G. (2000) Enhancing Entrepreneurial Orientation Research: Operationalizing and Measuring a Key Strategic Decision Making Process, *Journal of Management,* v26 i5 p1055.

Macrae, D.J.R.(1992) Characteristics of high and low growth small and medium sized businesses. *Management Research News*, 15(2), 11-17.

Mansfield, E. (1962) Entry, Gibrat's Law, Innovation, and the Growth of Firms, *The American Economic Review*, Vol.52, No.5. 1023-1051.

Marris, R. (1963) A Model of the Managerial Enterprise, *Quarterly Journl of Economics,* Vol.77, No.2, 185-209

Marshall, A. (1890) *Principles of Economics,* London: MacMillan

Mata, J. (1994) Firm Growth During Infancy, *Small Business Economics* 6, 27–39.

Merrifield, D.B. (2005) Obsolescent corporate cultures (One Point Of View), *Research-Technology Management*, v48 i2 p10(3).

Merz, G. R., Weber, P. B., and Laetz, V. B. (1994) Linking Small Business Management with Entrepreneurial Growth, *Journal of Small Business Management*, 32(3): 48–60.

Miles, R.E. and Snow, C.C. (1978) *Organizational Strategy, Structure, and Process*, New York: McGraw-Hill.

Miller, C.C., Glick, W.H., Wang, Y. and Huber, G.P. (1991) Understanding Technology-Structure Relationships: Theory Development and Meta-Analytic Theory Testing, *Academy of Management Journal,* June, 370-99.

Miller, C.C., Glick, W.H., Wang, Y-D and Huber, G.P. (1991) Understanding technology-structure relationships: theory development and meta-analytic theory testing, *Academy of Management Journal,* v34 n2 p370(30).

Miller, D. (1983) The Correlates of Entrepreneurship in Three Types of Firms, *Management Science*, 29: 770–791.

Miller, D. (1987) The structural and environmental correlates of business strategy, *Strategic Management Journal,* v8 n1 p55(22).
Miller, D. (1987) The Structural and Environmental Correlates of Business Strategy, *Strategic Management Journal,* January-February, 55-76.

Miller, D. (1990) Organizational configurations: Cohesion, change, and prediction, *Human Relations*, 43(8), 771-789.

Miller, D. and Friesen, P. H. (1982) Innovation in Conservative and Entrepreneurial Firms: Two Models of Strategic Momentum, *Strategic Management Journal*, 3: 1–25.

Miller, D. and Friesen, P. H. (1982) Structural Change and Performance, *Academy of Management Journal*, v25 p867-892.

Miller, D. and Friesen, P. H. (1984) A Longitudinal Study of the Corporate Life\Cycle, *Management Science,* 30 (10), p1161-118.

Miller, D., and Toulouse, J.M. (1988) Strategy, structure, CEO personality and performance in small firms. *American Journal of Small Business*, Winter, 47-61.

Miller, K.D., & Leiblein, M.J. (1996) Corporate risk-return relations: Returns variability versus downside risk, *Academy of Management Journal*, 39: 91–122.
Milliken, F. J. (1987) Three types of perceived uncertainty about the environment: State, effect, and response uncertainty, *Academy of Management Review*, 12: 133-143.

Mintzberg H. (1983) *Structure in Fives: Designing Effective Organizations,* Upper Saddle River, NJ: Prentice Hall, 157.

Mitchell, F., Reid, G.C., and Smith, J.A. (2000) *Information System Development in the Small Firm,* CIMA Publishing: London

Modigliani, F. and Miller, M. (1958) The Cost of Capital, Corporate Finance and the Theory of Investment, *American Economic Review,* 48(3), 291–297.

Modigliani, F. and Miller, M. (1963) Taxes and the Cost of Capital: A Correction, *American Economic Review,* 53(3), 433–443.

Monte, A.D. and Papgni, E. (2003) R&D and the growth of firms: empirical analysis of a panel of Italian firms, *Research Policy,* 32, 1003-1014.

Mueller, D. C. (1992) 'The Corporation and the Economist', *International Journal of Industrial Organization,* 10, 147–170.

Mueller, D.C. (1972) A Life Cycle Theory of the Firm, *The Journal of Industrial Economics,* Vol.20, No.3, 199-219

Myers, S. And Majluf, N. (1984) Corporate Financing and Investment Decisions when Firms have Information that Investors do not Have, *Journal of Financial Economics* 13, 187–222.

Nahm, A.Y., Voderembse, M.A. and Koufteros, X.A. (2004) The impact of organizaitonal culture on time-based manufacturing and performance, *Decision Sciences,* v35 i4 p579(29).

Neck, H.M., Welbourne, T.M. and Meyer, G.D. (2000), Competing on knowledge: Young High-technology Initial Public Offerings Build for Growth, Frontiers of Entrepreneurship Research. Wellesley, MA: Babson College: http://www.babson.edu/entrep/fer/XXXIV/XXXIVA/XXXIVA.htm

Nelson, R.R. and Winter, S.G. (1982) *An Evolutionary Theory of Economic Change*, Harvard University Press, Cambridge, MA.

Nolan, M.P., Oppenheim, C., Witheis, K.A. (1980) Patenting profitability and marketing characteristics of the pharmaceutical industry, *World Patent Information* 2, 169–172.

Nowotny, E. and Walther, H. (1978) *Die Wettbewerbintensitat in Osterreich: Ergebnisse der Befragungen und Interviews,* in E. Nowotny, A. Guger, H. Suppanz, and H. Walther *Studien zur Wettbewerbintensitat in der Osterreichischen Wirtschaft,* Vienna: Orac Verlag, 87-263.

Nunally, J.C. (1978) *Psychometric Theory*, second ed, McGraw-Hill, New York.

O'Mahony, M. (1998) Anglo-German productivity differences: the role of broad capital, *Bulletin of Economic Research* 50 (1), 19–36.

Odagiri, H. (1983) R and D Expenditures, Royalty Payments, and Sales Growth in Japanese Manufacturing Corporations, *Journal of Industrial Economics,* 32, 61-72

Penrose, E. (1952) Biological Analogies in the Theory of the Firm, *The American Economic Review,* Vol.42, No.5, 804-819.

Penrose, E. (1953) Biological Analogies in the Theory of the Firm: Rejoinder, *The American Economic Review,* Vol. 43, No.4, 603-609.

Penrose, E. (1955) Limits to the Growth and Size of Firms, *The American Economic Review*, Vol. 45, No. 2, Papers and Proceedings of the Sixty-seventh Annual Meeting of the American Economic Association (May, 1955), 531-543

Penrose, E. (1959) *The Theory of the Growth of the Firm,* Oxford University Press.

Peteraf, M. (1993) The cornerstones of competitive advantage: a resource-based view, *Strategic Management Journal* 14, 179–191.

Phillips, A. (1971) *Technology and Market Structure: a Study of the Aircraft Industry*, Massachusetts: Lexington Brooks, Lexington.

Piore, M.J. and Sabel, C.F. (1984) *The Second Industrial Divide: Possibilities for Prosperity,* Basic Books: New York.

Power, B. (2004) Factors Which Foster the Survival of Long-Lived Small Firms, Unpublished doctoral dissertation, University of St. Andrews, Scotland, UK

Power, B. and Reid, G.C. (2002) Flexibility, Firm-Specific Turbulence and the Performance of the Long-lived Small Firm, *CRIEFF Discussion Paper* No.0207, Dept. of Economics, University of St. Andrews.

Pugh, D.S. (1981) The Aston Program of Research: Retrospect and Prospect, in Van de Ven, A.H. and Joyce, W.F. (eds), *Perspectives on Organization Design and Behaviour,* New York: John Wiley, 135-66.

Rauch, A., Wiklund, J., Frese, M. and Lumpkin, G.T. (2004) Entrepreneurial Orientation and Business Performance: Cumulative Empirical Evidence, http://www.babson.edu/entrep/fer/FER_2004/web-content/Section%20VI/P1/VI-P1.html

Reid, G. C. and Jacobsen, L.R. (1988). *The Entrepreneurial Firm*, Aberdeen; Aberdeen University Press.

Reid, G. C. (1991), Staying in Business. *International Journal of Industrial Organisation,* 9, 545-56.

Reid, G. C. (1992a) Scale Economies in Small Entrepreneurial Firms, *Scottish Journal of Political Economy* 39, 39–51.

Reid, G. C. and M. E. Andersen (1992b), A New Small Firms Database: Sample Design, Instrumentation and Summary Statistics, *CRIEFF Discussion Paper*, Dept. of Economics, University of St. Andrews, No. 9207

Reid, G. C. (1993) *Small Business Enterprise: An Economic Analysis.* London; Routledge.

Reid, G. C., Jacobsen, L.R. and Anderson, M.E. (1993) *Profiles in Small Business: A competitive strategy approach,* London: Routledge.

Reid, G. C. (1995) Early Life-Cycle Behaviour of Micro-Firms in Scotland, *Small Business Economics* 7, 89–95.

Reid, G. C. (1996a) Financial Structure and the Growing Small Firm: Theoretical Underpinning and Current Evidence, *Small Business Economics* 8, 1–7.

Reid, G. C. (1996b), Mature Micro-Firms and Their Experience of Funding Shortages*, Small Business Economics,* 8*,* 27-37.

Reid, G. (1996c) Capital Structure at Inception and the Short-Run Performance of Micro-Firms, *CRIEFF Discussion Paper*, Dept. of Economics, University of St. Andrews, No. 9607.

Reid, G. C. (1998) Limits to a Firm's Rate of Growth: The Richardsonian View and its Contemporary Empirical Significance, Ch.3 in B.J. Loasby and N.J. Foss (eds.) *Capabilities and Coordination: essays in honour of G.B. Richardson*; Routledge; London, 1998, 243-260.

Reid, G. C. (1999), Complex Actions and Simple Outcomes: How New Entrepreneurs Stay in Business*, Small Business Economics,* 13, 303-315.

Reid, G. C. and Smith J.A. (2000a), What Makes a New Business Start-up Successful? *Small Business Economics,* 14(3): 165-182.

Reid, G. C. and Smith J.A. (2000b), The Impact of Contingencies on Management Accounting System Development*, Management Accounting Research,* 11, 427-450.

Reid, G.C. (2002), Trajectories of Small Business Financial Structure, *Small Business Economics,* forthcoming.

Reid, G. C. and Smith J.A. (2003) *Co-evolution of Information Systems in Fast-Growing Small Firms*, CRIEFF Discussion Paper No.0306, Dept. of Economics, University of St. Andrews.

Reid, G. C. (2007) *The Foundations of Small Business Enterprise,* London; Routledge.

Richardson, G. B. (1964) The Limits to a Firm's Rate of Growth, *Oxford Economic Papers* 16, 9–23.

Richardson, G.B. (1972) The Organization of Industry, *Economic Journal,* Vol.82, No.327, 883-896

Rickne, A. (2001) Networking and Firm Performance, Frontiers of Entrepreneurship Research. Wellesley, MA: Babson College: http://www.babson.edu/entrep/fer/Babson2001/XII/XIIC/XIIC.htm

Robbins, S. (2005) *Organizational Behavior* (10th Edition) (Hardcover), Upper Saddle River, NJ: Prentice Hall.

Roberts, K.H. and Grabowski, M. (1999) Organizations, Technology and Structuring, in Clegg, S.R., Hardy, C. and Nord, W.R. (eds), *Managing Organizations: current issues,* Thousand Oaks, CA: Sage, 159-71.

Roberts, P.W. and Dowling, G.R. (2002) Corporate reputation and sustained superior financial performance, *Strategic Management Journal* 23, 1077–1093.

Romme, G. and Dillen, R. (1997) Mapping the landscape of organizational learning, *European Management Journal*, February n1 p68(11).

Roper, S. (1997) Product innovation and small business growth: a comparison of the strategies of German, UK, and Irish companies, *Small Business Economics* 9, 523–527.

Rose, M. (2001) Risk *versus* Uncertainty, or Mr. Slate *versus* Great-Aunt Matilda, http://www.econlib.org/library/Columns/Teachers/riskuncertainty.html

Ross, S. A. (1977), The Determination of Financial Structure: the Incentive Signaling Approach, *Bell Journal of Economics and Management Science* (Spring), 23–40.

Rothwell, R. (1979) The relationship between technical change and economic performance in mechanical engineering: some evidence, In: Baker, M.J. (Ed.), *Industrial Innovation: Technology, Policy Diffusion,* London: MacMillan, 36–59.

Say, J-B (1821) *A Treatise on the Political Economy,* Longman, Hust, Rees, Orme and Brown: London.

Schein, E, H. (1992) *Organizational culture and leadership*, 2nd ed. San Francisco: Jossey-Bass.

Schumpter, J.(1911)*The Theory of Economic Development: An inquiry into profits, capital, credit, interest and the business cycle* , Cambridge Mass: Harvard University Press.

Scott, J. and Marshall, G. (2005) "non-probability sampling" A Dictionary of Sociology. Oxford University Press 2005. Oxford Reference Online. Oxford University Press. St Andrews University Library.

Shenhar, A.J. (2001)*, One Size Does Not Fit All Projects: Exploring Classical Contingency Domains, *Management Science*, March v47 i3, 394.

Sherer, F.M. (1965) Corporate inventive output, profits and growth, *Journal of Political Economy*, 73 (3), 290–297.

Sillince, J. A.A. (2005) A contingency theory of rhetorical congruence. *The Academy of Management Review,* Vol.30, No.3, 608-621.

Silver, M. and Auster, R. (1969) Entrepreneurship, Profit, and Limits on Firm Size, *The Journal of Business*, Vol. 42, No. 3. 277-281.

Simon, H. (1964) Comment: Firm Size and Rate of Growth, *The Journal of Political Economy,* Vol.72, No.1, 81-82.

Simon, H.A. and Bonini, C.P. (1958) The Size Distribution of Business Firms, *The American Economic Review,* Vol.48, No.4, 607-617.

Singh, A. and Whittington, G. (1975) The Size and Growth of Firms, *The Review of Economic Studies,* Vol.42, No.1, 15-26.

Singh, J.V., House, R.J. and Tucker, D.J. (1986) Organizational change and organizational mortality, *Administrative Science Quarterly*, 31: 587-611.

Singh, L. (1994) Productivity, Competitiveness and Export Growth in a Less Developed Economy: a Study of Indian Punjab. Working Paper, Yale Economic Growth Center Discussion Paper no. 714.

Singh, L. (1994) Productivity, Competitiveness and Export Growth in a Less Developed Economy: a Study of Indian Punjab. Working Paper, *Yale Economic Growth Center Discussion Paper* no. 714.

Slater, M. (1980) The Managerial Limitation to the Growth of Firms, *Economic Journal* 90, 520–528.

Smallbone, D., North, D. and Leigh, R. (1993) The Growth and Survival of Mature Manufacturing SMEs in the 1980s: An Urban-Rural Comparison, in J. Curran and D.J. Storey (eds.) *Small Firms in Urban and Rural Areas,* Routledge: London.

Smart, D.T. and Conant, J.S. (1994) Entrepreneurial orientation, distinctive marketing competencies and organizational performance, *Journal of Applied Business Research*, 10, 28–38.

Smith, J. A. (1997), *Small Business Strategy: An Empirical Analysis of the Experience of New Scottish Firms*, PhD Thesis, University of Abertay, Dundee, Scotland.

Smith, J. A. (1998), Strategies for Start-ups, *Long Range Planning*, 31(6), 857-872.

Smith, J. A. (1999a), Strategy Processes for Success. *CRIEFF Discussion Paper*, Dept. of Economics, University of St. Andrews, No. 9812

Smith, J. A. (1999b), The Behaviour and Performance of Young Micro Firms: Evidence from Businesses in Scotland. *Small Business Economics* ,13, 185-200.
Smith, K.G., Mitchell, T.R. and Summer, C.E. (1985) Top Level Management\Priorities in Different Stages of the Organisational Life Cycle, *Academy of Management Journal*, 28 (4), pp.799-820.

Spender, J-C (1996) Making Knowledge the Basis of a Dynamic Theory of the Firm." *Strategic Management Journal,* 17(Winter Special Issue): 45–62.

Sraffa, P. (1926) The Laws of Returns under Competitive Conditions, *Economic Journal*.

Sraffa, P. (1930) Increasing Returns and the Representative Firm, *Economic Journal.*

Steindl, J. (1965) *Random Processes and the Growth of Firms,* London: Griffin.

Stevenson, H. (1983) A Perspective on Entrepreneurship, *Harvard Business School Working Paper*, 9-384-131.

Stevenson, H. and Gumpert, D. (1985) The Heart of Entrepreneurship, *Harvard Business Review,* 85(2): 85-94.

Stevenson, H. and Jarillo, J. (1986) Preserving Entrepreneurship As Companies Grow, *Journal of Business Strategy*, 10-23.

Stigler, G. (1939) Production and Distribution in the Short Run, *Journal of Political Economy,* 47, 305-27

Stigler, G. (1951) The Division of Labor is Limited by the Extent of the Market, *Journal of Political Economy*, 59, 3

Storey, D.J. (1996) The Ten Percenters: Fast Growing SMEs in Great Britain, Deloitte Touche Tohmatsu International: London Report No.1

Storey, D.J. (1997) The Ten Percenters: Fast Growing SMEs in Great Britain, Deloitte Touche Tohmatsu International: London Report No.2

Storey, D.J. (1998a) The Ten Percenters: Fast Growing SMEs in Great Britain, Deloitte Touche Tohmatsu International: London Report No.3

Storey, D.J. (1998b) The Ten Percenters: Fast Growing SMEs in Great Britain, Deloitte Touche Tohmatsu International: London Report No.4

Storey, D.J. and Wynarczky, P. (1996) The Survival and Non Survival of Micro Firms in the UK, *Review of Industrial Organization,* 11(2), 211-29.

Storey, D.J.(1994) *Understanding the Small Business Sector*. London; Routledge.

Storey, D.J.(1994) *Understanding the Small Business Sector*. London: Routledge.

Sutton, J. (1997) Gibrat's Legacy, *Journal of Economic Literature,* Vol.35, No.1, 40-59.

Sutton, J. (2002) The variance of firm growth rates: the 'scaling' puzzle, *Physica A*, 312, 577-590.
Tan, J. (1996) Regulatory environment and strategic orientations in a transitional economy: A study of Chinese private enterprise, *Entrepreneurship Theory and Practice*, 21: 31–46.

Tashakkori, A. and Teddlie, C. (1998) *Mixed Methodology: Combining Qualitative and Quantitative Approaches,* Applied Social Research Methods Series, Sage Publications: London,Vol.46.

Teece, D.J. (1998) Capturing value from knowledge assets: the new economy, markets for know-how, and intangible assets, *California Management Review* 40, 55–79.

Teece, D.J.,Pisano, G. and Shuen, A. (1997) Dynamic capabilities and strategic management, *Strategic Management Journal* 18, 509–533.

Tether, B.S. and Massini, S. (1998) Employment creation in small technological and design innovators in the UK during the 1980s, *Small Business Economics* 11, 353–370.

Thompson, J.D. (1967) *Organization in Action,* New York: McGraw-Hill.

Thornhill, S., Gellatly, G. and Riding, A. (2000) Relationships among capital structure, industry membership, and firm growth: Evidence from Canada, Frontiers of Entrepreneurship Research. Wellesley, MA: Babson College: http://www.babson.edu/entrep/fer/XXXII/XXXIIE/XXXIIE.htm

Trau, F. (1996) Why do firms grow? ESRC Centre for Business Research, University of Cambridge, *Working Paper* No.26.

Tsai, W. M-H, MacMillan, I.C. and Low, M.B. (1991) Effects of strategy and environment on corporate venture success in industrial markets, *Journal of Business Venturing,* Volume 6, Issue 1,9-28.

Tushman, M.L. and Anderson, P. (1986) Technological discontinuities and organizational environments. *Administrative Science Quarterly* 31, 439-465.

Van de Ven, A.H. (1986) Central problems in the management of innovation, *Management Science*, 32: 590–607.

Variyam, J. N. and Kraybill, D. S. (1992) Empirical Evidence on Determinants of Firm Growth, *Economics Letters* 38, 31–36.

Weick, K. E. (1979) *The social psychology of organizing*, 2nd ed. Reading, MA: Addision-Wesley.

Wernerfelt, B. (1984) A resource-based view of the firm, *Strategic Management Journal* 5, 171–180.

Wied-Nebbeling, S. (1975) *Industrielle Preissetzung,* Tubingen: Mohr

Wiklund, J. (1998) *Small Firm Growth and Performance*, Unpublished doctoral dissertation, Jonkoping International Business School, Jonkoping, Sweden.

Wiklund, J. and Shepherd, D. (2003) Knowledge-based resources, entrepreneurial orientation, and the performance of small and medium-sized businesses. *Strategic Management Journal,* December, v24 i13, 1307-1327.

Wiklund, J. and Shepherd, D. (2005) Entrepreneurial orientation and small business performance: a configurational approach, *Journal of Business Venturing*, Volume 20, Issue 1, 71-91.

Williamson, O. (1964) *The Economics of Discretionary Behavior: Managerial Objectives in a Theory of the Firm,* Upper Saddle River, NJ: Prentice Hall.

Williamson, O. (1975) *Market and Hierarchies: Analysis and Antitrust Implications,* New York, Free Press.

Woodward, J. (1965) *Industrial Organization: Theory and Practice,* London: Oxford University Press.

Yang, E. A-Y. (1994), The entry process into American's network vs. Chinese Guan-xi: A cross-cultural understanding of comparative method and business owners' network, Frontiers of Entrepreneurship Research, Wellesley, MA: Babson College: http://www.babson.edu/entrep/fer/papers94/sum94_sz.htm#yang

Yasai-Ardekani, M. (1986) Structural Adaptations to Environments, *Academy of Management Review*, January, 9-21

Yasuda, T. (2005) Firm Growth, Size, Age and Behavior in Japanese Manufacturing, *Small Business Economics* 24, 1-15

Yi Danhui (2002) *Data Analysis and Eviews Application,* Beijing: China Statistics Publisher.

Young, G., Smith, K., and Grimm, C. (1996) "Austrian" and industrial organization perspectives on firm-level competitive activity and performance, *Organization Science*, 7: 243–254.

Zahra, S. (1991). Predictors and financial outcomes of corporate entrepreneurship: An explorative study. *Journal of Business Venturing*, 6, 259-285.

Zahra, S., and Covin, J. (1995) Contextual Influence on the Corporate Entrepreneurship-Performance Relationship: A Longitudinal Analysis, *Journal of Business Venturing,* 10: 43–58.

APPENDIX 1: ADMINISTERED QUESTIONNAIRE 2004

Name of Inteviewer： ....

Date of Interview： ....

Starting Time： ....

This questionnaire consists of eight sections: general information, enterprise operation, human capital, finance, technology innovation, enterprise culture, competition, and environment, etc. We may start with the general information.

Section I（General Information）

1.1 Year of Establishment： .... Start-up Capital .... (RMB)

1.2 Current full-time employment： .... At the time of establishment: ....

1.3 Registered company type on the license： .... （e.g. private, limited co.）

1.4 Major business： ....

1.4.1 Main products： ....

1.4.2 What is the approximate range for your firm's market share? (pertaining to main products)

    A. <1%   ☐

    B. 1-5%   ☐

    C.6-10%   ☐

    D. 11-20%   ☐

    E. 21-30%   ☐

    F. 31-50%   ☐

    G.>50%   ☐

    H. Don't know   ☐

1.4.3 What are your major markets?

    A. Guangzhou City (or local city)   ☐

    B. Guangdong Province   ☐

    C. China   ☐

    D. Asia   ☐

    E. Worldwide   ☐

Section II (Enterprise Operation)

Multiple choices (MC) are specially noted where appropriate.

2.1 About product pricing, which one will you choose ? (MC)

A. The cost of each product plus a fixed percentage of profit ☐

B. The cost of each product plus a flexible percentage of profit ☐

C. The highest price the market can bear ☐

D. Mainly depend on big clients to quote ☐

E. Set by the government agencies ☐

F. Regulated by the law ☐

G. Other

2.1.1 If other, can you specify if possible? ....

2.2 When the supply cannot meet the demand, what actions will you possibly take? (MC, please rank in terms of priorities)

A. Prolong work time, or increase work shifts (i.e. one shift increased to two) ☐

B. Expand production capacity (i.e. more employees and equipments) ☐

C. Refer the excessive orders to sub-contractors ☐

D. Extend the delivery deadline ☐

E. Buy up the products of competitors ☐

F. Merge the competitor's company ☐

G. Price hike ☐

H. Other ☐

2.2.1 If other, can you specify if possible? ....

2.3 When will be possible to change the product price？ (MC)

A. New production cycle ☐

B. New tax year ☐

C. Price of inputs increases ☐

D. Market demand varies ☐

E. New government regulations （e.g. newly enacted social welfare） ☐

F. Price change made by competitors ☐

G. Other ☐

2.3.1 If other, can you specify if possible? ....

2.4 Do you specifically calculate the extra cost caused by the expansion of the firm?

YES ☐

NO ☐

2.5 According to Show Cards at the end of this questionnaire，what is the most likely cost structure your company may present if expanding your company to the maximum level possible?

A.　　　☐　　　B.　　　☐　　　C.　　　☐
D.　　　☐　　　E　　　☐　　　F.　　　☐

(Note：Please consult with the interviewer where clarification is needed for each diagram.)

2.6 Have your firm taken any type of market research？
　　　　　YES　　　　　　　　　　　　　　　　☐
　　　　　NO　　　　　　　　　　　　　　　　☐

2.6.1 If YES，what's the main purpose?（MC）
A.　To know the customers' sensitivity to price change　　☐
B.　To know how customers think of the new products　　☐
C.　To know better about the competitors　　　　　　　☐
D.　To know the market trend　　　　　　　　　　　　☐
E.　Other　　　　　　　　　　　　　　　　　　　　☐

2.6.2 If other, can you specify if possible?　⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯

2.7.1 If others remain constant and the price of your products decreases 5%，how about the sales?
A.　Increase more than 5%　　　　　　　　　　　　☐
B.　Increase less than 5%　　　　　　　　　　　　　☐
C.　Increase about 5%　　　　　　　　　　　　　　☐
D.　Will not increase　　　　　　　　　　　　　　　☐
E.　Hard to tell　　　　　　　　　　　　　　　　　☐
2.7.2 If others remain constant and the price of your products increases 5%, how about the sales?
A.　Decrease more than 5%　　　　　　　　　　　　☐
B.　Decrease less than 5%　　　　　　　　　　　　　☐
C.　Decrease about 5%　　　　　　　　　　　　　　☐
D.　Will not decrease　　　　　　　　　　　　　　　☐
E.　Hard to tell　　　　　　　　　　　　　　　　　☐

2.8 If your company either increase or decrease the product price in the following range, the sales will not be influenced。
A.　1-2%　　　　　　　　　　　　　　　　　　　　☐
B.　3-4%　　　　　　　　　　　　　　　　　　　　☐
C.　5-6%　　　　　　　　　　　　　　　　　　　　☐
D.　7-9%　　　　　　　　　　　　　　　　　　　　☐
E.　10-15%　　　　　　　　　　　　　　　　　　　☐
F.　>15%　　　　　　　　　　　　　　　　　　　　☐
G.　No such an elbow-room　　　　　　　　　　　　☐

2.9 What was the total sales of the company in 2003? .... RMB
      What were total sales at the year of establishment? .... RMB

2.10   Any advertisement made in the past？ （MC）
A. TV   ☐
B. Newspapers   ☐
C. Radio   ☐
D. Magazines   ☐
E. Internet   ☐
F. Outdoors   ☐
G. Not yet   ☐

2.11 Any customer service provided?
A. Yes，different departments deal with problems respectively if any arises. ☐
B. Yes，a specific customer service department is established.   ☐
C. No， but plan to set up a customer service system   ☐
D. No customer service needed in this industry   ☐

2.12 Any plan usually framed in the company？ （MC）
A. Sales plan   ☐
B. New product plan   ☐
C. company governance plan   ☐
D. Expenditure plan   ☐
E. Financial plan   ☐
F. Development strategies   ☐
G. Other   ☐

2.12.1If other, can you specify if possible? ....

2.12.2 What is the most difficult plan to implement? ....

Section III (Human Capital)
3.1What about the level of your employees' average salary within the industry your firm operates?
A. Quite high   ☐
B. Slightly above average   ☐
C. Average   ☐
D. Slightly below average   ☐
E. Quite low   ☐

3.2 What is the percentage of employees who hold university diploma or degrees?

A. <10%   ☐
B. 10-30%   ☐
C. 31-50%   ☐
D. 51-70%   ☐
E. 71-90%   ☐
F. >90%   ☐

3.3 Will you fully authorize a person at work if he/she is highly professional and trustworthy?
A. Yes，absolutely.   ☐
B. Yes, but it depends on the task sometimes.   ☐
C. No，I trust myself better.   ☐
D. Impossible to find such a person.   ☐

3.4 Any regular/irregular training programs provided to employees?
            YES   ☐
            NO   ☐

3.4.1 If YES，who most often get trained?（MC）
A. Top management   ☐
B. Middle-level management   ☐
C. Low-rank staff   ☐

3.5 What do you think of nepotism?
A. Advantage over disadvantage   ☐
B. Disadvantage over advantage   ☐
C. Half-half   ☐
D. No good at all   ☐
E. Good indeed   ☐
F. Hard to tell   ☐

3.6 Is the general manager and the chairman of the board the same person?
            YES   ☐
            NO   ☐

3.6.1 If NO，how is the general manager hired？
A. Chairman appointed   ☐
B. Internal promotion   ☐
C. open recruitmentin the society   ☐
D. Head-hunter companies recommendation   ☐

3.7 Who is in charge of new employee recruitment？

A. HR department ☐
B. Office secretary ☐
C. Workshop director ☐
D. GM/Chairman ☐
E. Other

3.7.1 If other, can you specify if possible? ....

3.8 Any Incentive Scheme for employees?（MC）
A. Bonus ☐
B. Better welfare plans ☐
C. Training opportunities ☐
D. Promotion ☐
E. Paid holidays/sick leave ☐
F. Stock Options ☐
G. Other ☐

3.8.1 If other, can you specify if possible? ....

3.8.2 Which one is the most effective in your company? ....

Section IV (Finance)
4.1 What were the sources you consulted with for advice when establishing this firm?
（MC）
A. Family ☐
B. Friends/classmates ☐
C. Banks ☐
D. Accounting firms ☐
E. Law firms ☐
F. Local government agencies ☐
G. SME service center ☐
H. Real-estate agencies ☐
I. Talent Markets ☐
J. Other

4.1.1 If other, can you specify if possible? ....

4.1.2 What are the three most significant sources? ....

4.2 What were total assets when the firm was founded? ....(RMB)
     What about the current total assets? ....(RMB)

4.3 Any reason for the financing difficulty when establishing the firm?(MC）

A. Interest was too high	☐	G. No complete auditing/accounting	☐
B. No qualified collateral	☐	H. No convincing business plans	☐
C. The firm is too small.	☐	I. No SME board in the stock exchange	☐
D. Lack of banks supporting SMEs	☐	J. Very little personal wealth	☐
E. Lack of funds from family/friends	☐	K. Lack of government support	☐
F. No SME support systems	☐	L. No financing difficulty at inception	☐

4.4 Start-up capital mostly are from（MC）: ....

A. Self-owned	☐	F. Borrowing from family/friends	☐
B. Cooperation with other firms	☐	G. Bank loans	☐
C. Venture capital	☐	H. Installment	☐
D. Leasing	☐	I. Stock shares	☐
E. Bonds	☐	J. Other	☐

4.4.1 If other, can you specify if possible? ....

4.5 GEARING means the debt/equity ratio. For instance, if the debt of your firm is 5 million and the equity is 10 million, the gearing will be 5m/10m=0.5.

4.5.1   What is the approximate gearing in the year of 2003？ ....

What about the gearing at the year of firm's establishment? ....

4.6 Any cashflow problem ever occurred in the past and what were the possible causes？ (MC)

A.	Difficult to get back the receivable	☐	E.Inadequate credit with suppliers	☐
B.	Expanding too fast/overinvestment	☐	F. Insufficient overdraft facilities	☐
C.	Limited amount of overdraft	☐	G. management cost too high	☐
D.	Fluctuation of inputs prices	☐	H. no cashflow problem	☐

4.7 Any further investment after the establishment of the firm?

YES ☐

NO ☐

4.7.1 If YES, what was the new investment?（MC）

A.	New premises	☐	E. Expanded premises	☐
B.	Purchase new equipments	☐	F. R&D	☐
C.	New products release	☐	G. Increased Stock	☐
D.	More employees hired	☐	H. Cashflow problem	☐
			I. Other	☐

4.7.1.1 If other, can you specify if possible? ....

4.8 The second board (SME board) was newly launched at Shenzhen Stock Exchange. Any plan for getting listed in this market?

	YES	☐
	NO	☐
	MAYBE	☐

Section V (Technology Innovation)

5.1 Is there a Research and Development (R&D) department/branch in the company?

	YES	☐
	NO，but plan to set up.	☐
	No R&D needed.	☐

5.1.1 If YES, how many R&D staff hired? ....

5.1.1.1 How many hold a Masters' degree or above？..

5.2　How much is approximately spent on R&D？(in RMB)

A.	<50,000	☐
B	50-100,000	☐
C.	110-200,000	☐
D.	210-500,000	☐
E.	0.51-1 million	☐
F.	> 1 million	☐

5.3 Technology innovation basically depends on which following option?

A.	own technology branch/center	☐
B.	equipment/machine suppliers	☐
C.	university research center	☐
D.	SME support centers	☐
E.	Tech centers at Ministry of relevant industries	☐
F.	inter-firm technological cooperation	☐
G.	Other	☐

5.3.1 If other, can you specify if possible?..

5.4 What is your technology level within the industry in China?

A.	Most advanced	☐
B.	Slightly above average	☐
C.	average	☐
D.	slightly below average	☐
E.	comparatively low but plan to update	☐
F.	at a low level	☐

5.5 How many new products have been put into the market in 2003?

A. None ☐
B. 1-3 ☐
C. 3-6 ☐
D. 7-10 ☐
E. 10-20 ☐
F. >20 ☐

5.6 Does the company have its own website?

YES ☐
Under construction now ☐
Plan to make one ☐
No plans ☐

5.6.1 If YES，the website is：_____

5.7 Does the firm seek business opportunities/submit supply-demand information via internet?

YES ☐
ATTEMPT TO TRY ☐
NO PLANS ☐

5.8 What are the major correspondence methods among top management?

A. Tel/Fax ☐   D. Telephone meetings ☐
B. Mails ☐   E. Video meetings ☐
C. Emails ☐   F. Other ☐

5.8.1 If other, can you specify if possible?_____

5.9 Has the firm applied for any product/technology patent?

YES ☐
NO ☐

5.9.1 If YES, how many？_____

5.9.2 Approximately, how many percentage of profits the company has used to do research and development last year?

A. <5% ☐   F. 40-49% ☐
B. 6-10% ☐   G. 50-59% ☐
C. 11-19% ☐   H. 60-80% ☐
D. 20-39% ☐   I. >80% ☐
E. 30-39% ☐

5.10 Has the firm passed the ISO9000 or any other international assessment?

    YES   ☐

    Plan to apply   ☐

    No plans   ☐

5.11 What are the major software used in the office?（MC）

A. office software   ☐

B. accounting software   ☐

C. HRM software   ☐

D. communication software   ☐

E. logistics management software   ☐

F. customer service software   ☐

G. Other   ☐

5.11.1 If other, can you specify if possible?

5.12 What's the biggest difficulty in implementing Management Information System (MIS)?

A. Lack of IT personnel   ☐

B. Too much investment   ☐

C. Old management style still works   ☐

D. The firm is too small to find those complicated MIS necessary ☐

E. Other   ☐

5.12.1 If other, can you specify if possible?

Section VI (Enterprise Culture)

6.1 How do you define an entrepreneur？ （MC）

A. Innovator   ☐ B. Arbitrageur   ☐

C. Coordinator   ☐ D. Uncertainty bearer ☐

E. Manager undertaking particular activities, agent of economic change, individual with particular personality   ☐ F. Other   ☐

6.1.1 If other, can you specify if possible?

6.2 Do you agree "enterprise culture is fundamentally originated from entrepreneur him/herself？"

    YES   ☐

    NO   ☐

6.3 As for the working environment, what do you think appropriate to choose?（MC）

A. Own cleaning staff   ☐

B. Hire cleaning companies   ☐

C. DIY where you work   ☐

D. Change room / leisure lounge ☐
E. Basic kitchen cooking tools ☐
F. Sufficient protection at work in terms of individual industries ☐

6.4 As for company governance/regulations, what do you think appropriate to choose?
A. Setup in the early stage and very complete ☐
B. update regularly ☐
C. It depends on the real situation ☐

6.5 Is there any company slogan?
　　　　YES ☐
　　　　NO ☐

6.5.1 If other, can you specify if possible? ....

6.6　　　Do the CEO/GM/Chairman attend any sorts of training/seminar/forum in the industry?
A. once a year ☐
B. a few time per year ☐
C. once in a few years ☐
D. too busy to attend ☐

6.7 How often will there be any parties/activities organized for employees？ ....
....
A. once a year ☐
B. a few time per year ☐
C. once in a few years ☐
D. No such activities ☐

Section VII (Competition)
7.1 What kind of clients you have?
A.　　Product differentiation in technology is quite small in this industry. The clients are largely influenced by the price, brand, advertisement, design, after-sale service, etc. ☐
B.　　The clients are only concerned about some basic functions of the product. ☐
C.　　The clients will ask for detailed explanation for all functions of the product ☐
　　　　before they buy.
D.　　The clients have considerable knowledge about your product, at amateur level. ☐
E.　　The clients are the expert for this product and can be very critical to the quality ☐
F.　　Other ☐

7.1.1 If other, can you specify if possible? ....

7.2　How many major suppliers do you have? ....

| A. 1 | ☐ | B. 2-5 | ☐ |
| C. 6-10 | ☐ | D. more than 11 | ☐ |

7.2.1 If the suppliers do not perform or cooperate well, what will your firm probably do?

A. Change suppliers right away ☐
B. Communicate first and then decide ☐
C. Switching costs so high that must negotiate for improvement ☐
D. Suppliers are strong so you may have to bear for the moment ☐

7.3 As for the industry where your firm operates, what do you think appropriate to choose?

A. Early stage of the industry ☐
B. Still lots of space to grow ☐
C. Reach maturity ☐
D. Extremely competitive ☐
E. Sunset industry ☐
F. The industry is nearly dead so as to plan to quit. ☐

7.3.1 If one wants to get in this industry, what do you think appropriate to choose?

A. Very hard ☐
B. A little hard ☐
C. Kind of easy ☐
D. Very easy ☐

7.3.2 If one wants to exit the industry, what do you think appropriate to choose?

A. Very hard ☐
B. A little hard ☐
C. Kind of easy ☐
D. Very easy ☐

7.4 What are the major obstacles to enter this industry where your firm runs?（MC）

A. limited product variety ☐
B. high average cost of products ☐
C. huge start-up capital needed ☐
D. Lack of raw material suppliers ☐
E. government restriction policies ☐
F. existing competition ☐
G. Lack of experienced workers ☐
H. Other ☐

7.4.1 If other, can you specify if possible?..

7.5 Do your products have the substitutes in the market? (e.g. corduroy is the substitute for denim to produce garments)

YES   □

    NO   □

7.5.1 If YES, compared with your products, what do you think of these substitutes?
A. inferior □
B. the same quality □
C. slightly superior □
D. all are possible □

7.6 What strategies will you adopt in order to strengthen the core competitiveness of your firm?
A. Lower cost □   B. more products □
C. Adopt both □   D. adopt either of them □

7.7 What defensive strategies will you choose when the market competition gets fierce? (MC)
A. Get the barrier of entering the industry higher □
B. Declare to revenge □
C. Keep low key to avoid attack □
D. Take no defensive actions □
E. Other □
7.7.1 If other, can you specify if possible?..

Section VIII (Environment)
8.1 Has your firm received any government sponsorship? （MC）
A. Township enterprise development funds □
B. SME credit guarantee scheme □
C. High-tech SME innovation Funds □
D. Other □
E. No government sponsorship received □
8.1.1 If other, can you specify if possible?..

8.2 Has your firm enjoyed any type of tax reduction policy? （MC）
A. High-tech companies income tax reduction □
B. Technology innovation subsidies □
C. Subsidies for buying equipments made-in-China □
D. Township enterprise income tax reduction □
E. Job-creation for city laid-offs income tax reduction □
F. Export drawback □
G. University factories/welfare factories income tax reduction □
H. Small companies income tax reduction □
I. Minority region income tax reduction □
J. Other □

8.2.1 If other, can you specify if possible?

8.3 "Arbitrarily fine, levy and raise money" was a serious social problem in the 1990s in China and since the policy changed in1997, what do you think of this problem now?
A. basically eliminated ☐
B. alleviated but still exists ☐
C. not improved ☐
D. more serious ☐
E. Don't know ☐

8.4 What organizations can be most helpful for the development of your firm?
A. Government SME support center ☐
B. Local SME credit guarantee agencies ☐
C. Industry associations ☐
D. Professional consulting companies ☐
E. Venture Capital ☐
F. Other ☐

8.4.1 If other, can you specify if possible?

8.5 Considering all the elements we have discussed in this and the previous sections, you would expect your firm in the next year:

Employment:	Grow	☐	Stay unchanged	☐	Decrease	☐
Profits:	Grow	☐	Stay unchanged	☐	Decrease	☐
Sales:	Grow	☐	Stay unchanged	☐	Decrease	☐
Total Assets:	Grow	☐	Stay unchanged	☐	Decrease	☐

Thank you very much for your precious time and cooperation. The administered questionnaire 2004 successfully ends here. All the contents of this AQ2004 will be only used for academic purpose and all the firms interviewed will simply appear anonymously for the sake of strict confidentiality, for instance, F440100-3 stands for the third firm interviewed from the city of Guangzhou. Certainly, once the research project has been accomplished, the findings will be made available to you if you so desire. We wish you all the best with your business.

（The contents below filled out by the interviewer.）
Firm's Area Code: _____ Firm's Industry Code： _____
Firm's Registration Code:_____ Firm's Individual Code： _____

Signature of interviewer： _____Date of completion： _____

Additional Remarks：

SHOW CARDS：COST STRUCTURE CURVES

A. Total cost increases in line with amount supplied, i.e. for each extra unit supplied, your cost rises by the same amount.

Cost

Constant returns to scale

Quantity supplied
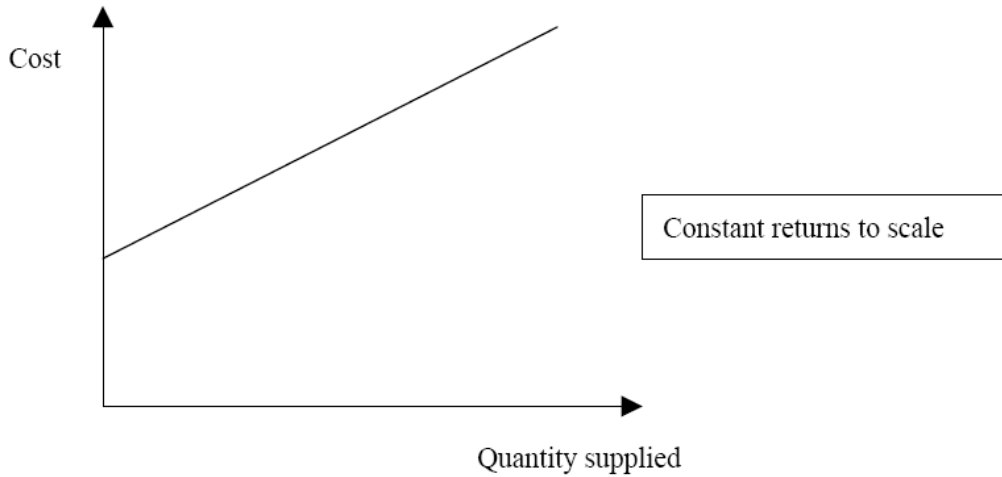
B. Total cost does not increase as fast as amount supplied, i.e. the extra cost of supplying each additional unit falls as more is supplied.

Cost

Economies of Scale

Quantity supplied
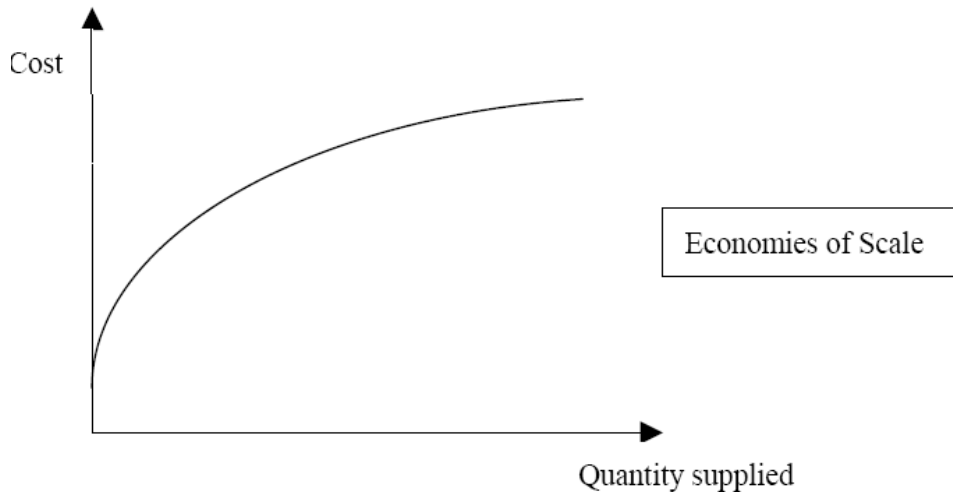
C. Total cost increases fasters than supply, i.e. each extra unit supplied adds more to cost than the last unit supplied.

Cost

Diseconomies of Scale

Quantity supplied
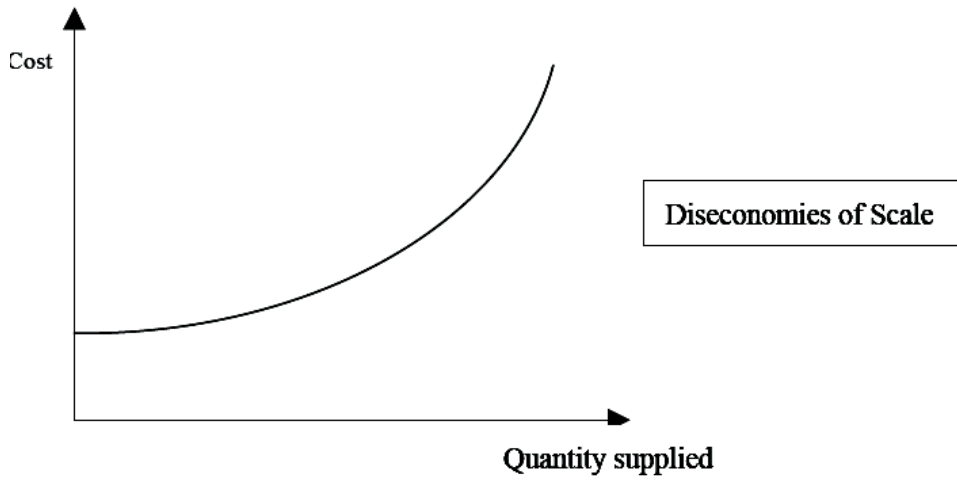
D. At first, firms has the economies of scale but after a certain point, diseconomies of scale emerges.

Cost

Quantity supplied
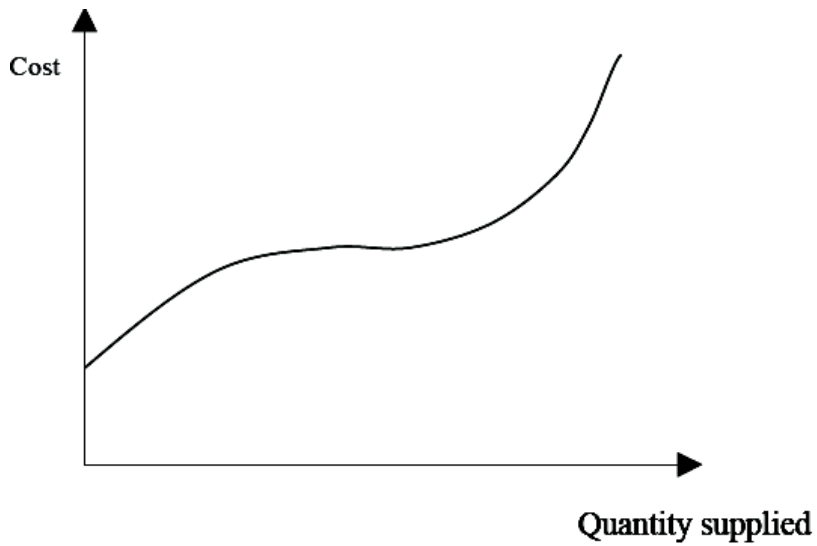
E. At first, firm has constant returns to scale and then after a certain point, diseconomies of scale appears.
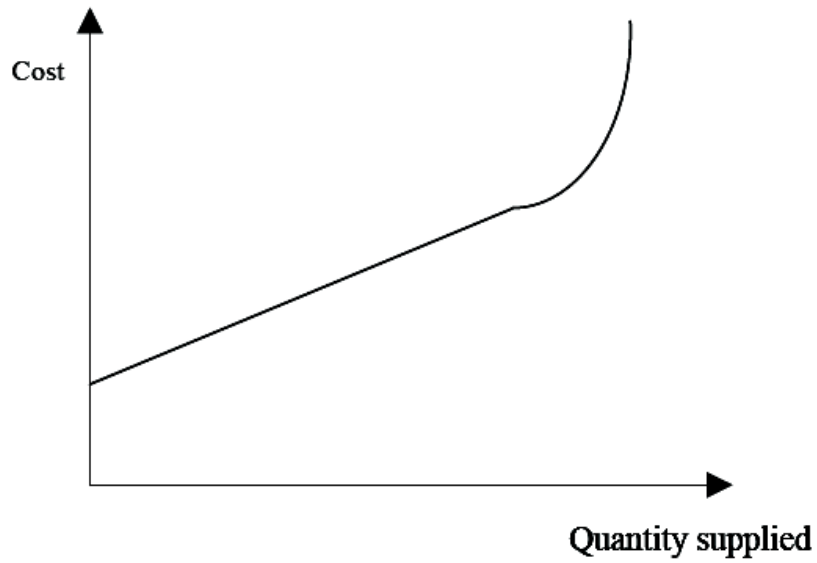
F. At first, the firm has economies of scale but after a certain point, it starts to only enjoy constant returns to scale.
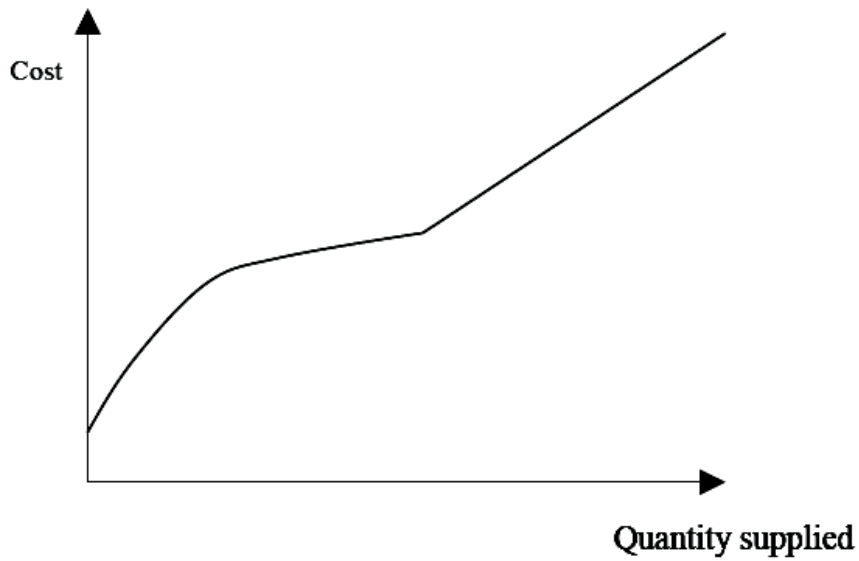
APPENDIX 2:
ADMINISTERED QUESTIONNAIRE 2004 (A SHORT FORM IN CHINESE)

调 研 问 卷 2004
（ADMINISTERED QUESTIONNAIRE 2004）

调研人：

调研日期：   起始时间：

这份调研问卷由八部分组成：基本信息，企业运作，人力资源，财务管理，技术创新，企业文化，竞争防御和成长环境。让我们先从基本信息开始。

第一部分（基本信息）

1.1企业成立时间：   注册资金
（万元）

1.3 现有员工人数(全职)：   企业成立时员工人数(全职)：

1.3 企业营业执照上的登记注册类型：   （例如：有限责任公司）

1.4 企业主营业务：

1.4.1 企业的最主要产品是：

1.4.2 这一产品大概在市场上占多少份额？
　A．＜1%　B．1–5%　C.6–10%　D．11–20%　E．21–30%　F．31–50%　G．＞50%　H.
不清楚

1.4.3 这一市场主要是指：
　A.本市　B．本省　C．中国地区D．亚洲地区E．世界范围

第二部分（企业运作）

非常好，让我们继续谈一下您在企业运营中的经验。（<u>多选题都已特别注明</u>）

2.1 关于企业如何定价，您会选择（多选）：

E.　每个产品的成本加上一定百分比的利润额就是定价。这个百分比是固定的

F.　每个产品的成本加上一定百分比的利润额就是定价。但这个百分比不是固定的

G.　在市场所能承受的最高价处定价　　D.　主要由您的重要客户来定价

E.　由政府部门来定价　　　　　　　　F.　价格由法律条文规定　　　　G.　其它

2.1.1 如果选其它，能否具体说明？

2.2 当市场销售形势大好，供大于求时，您可能采取什么措施？（请按先后顺序写，多选）

A.　延长上班时间或增加班次（例如变一天一班为两班或三班倒）

B.　扩大生产容量（如添置机器，增加雇员）　　C.　订单过多时转包给次承包商

H.　延长订单交付期限　　E.　买下竞争对手的产品

F.　兼并竞争对手的公司　　　　G.　提高产品售价　　　　H.　其它

2.2.1如果选其它，能否具体说明？

2.3 企业在哪些情况下很可能会改变产品价格？（多选）

A.　新的生产周期开始时　　　　　　　　B.　新的税收年度开始时

C.　当成本发生变化时 （如能源价格上涨）　　D.　当市场需求发生变动时

E.　当国家新规定发布时 （如合同工社保/养老金/最低工资等规定）

F.　当竞争对手改变价格时　　　　　　G.　其它

2.3.1如果选其它，能否具体说明？

2.4 当公司计划扩大产量的时候，是否具体计算增产带来的额外成本？（请打钩）
是 / 否

2.5 根据调研问卷后的附录1中提供的图片，如果扩大生产，您企业的成本最有可能发生哪种变化？
（注：每张图片都附有文字解释，也许可帮助您做出合适选择；如仍有疑问，请询问调研人）

2.6 您所在的企业是否进行过任何形式的市场调查？（请打钩） 是 / 否

2.6.1 如果是，其主要目的是什么？（多选）

A.　了解顾客对产品价格变化的敏感性　　B.　了解顾客对产品的感兴趣程度

C.　了解竞争者的情况　　　D.　了解市场发展趋向　　　E.　其它

2.6.2如果选其它，能否具体说明？ _____

_____

2.7.1 假定其它任何条件都不变，如果企业降价5%，销售额将如何变化？ _____

_____

A.．增加超过5%　B.增加小于5%　C.大概增加5%　D.不会增加　E.难以判断

2.7.2 假定其它任何条件都不变，如果企业涨价5%，销售额将如何变化？ _____

_____

A.减少超过5%　B.减少小于5%　C.大概减少5%　D.不会减少　E.难以判断

2.8 企业在一定范围内降价或涨价 _____，不会引起销售量的变化。
A. 1-2%　B. 3-4%　C. 5-6%　D. 7-9%　E. 10-15%　F.＞15%　G. 不存在这样一个范围

2.9　2003年公司的年销售额大概在什么水平？ _____ 万元

　　　公司刚成立那年的销售额大概在什么水平？ _____ 万元

2.10 企业做过以下哪些形式的广告？（多选） _____
A. 电视 B. 报纸 C. 广播电台 D. 杂志　E. 网络广告 F. 户外广告 G. 没有做过广告

2.11 企业是否提供售后服务？ _____
A. 是，不同的情况由不同部门处理　　　　B. 是，由一个专门的部门负责
C. 否，但准备建立售后服务系统　　　　　D. 否，我们这个行业不需要售后服务

2.12 企业通常制定下列哪些计划？（多选） _____
A. 市场销售计划　　　B. 产品开发计划　　　C. 组织计划
D. 资本支出计划　　　E. 财务计划　　　　F. 发展战略计划　　G. 还有其它计划

2.12.1如果选其它，能否具体说明？ _____

_____

2.12.2 您企业制定的上述计划中，最难控制实现的计划是： _____

第三部分（人力资源）

企业运作离不开高质素的人才，让我们看一些企业的人力资本资源。
3.1您企业员工的平均薪酬在国内同行业中大概居于什么水平？ _____

A．较高　　B．中上水平　　C．中等平均水平　D．中下水平　E．较低

3.2 企业中大专以上学历的员工大概占多少百分比？ ....
A．＜10%　　B．10-30%　C．31-50%　D．51-70%　E．71-90%　　F．＞90%

3.3 如果能招聘到可以信任又具备高素质的专业人才，您是否会对其授以重任？
....
A．是，充分授权　　　　　　　　B．是，看情况授权
C．否，事必躬亲是我的作风　　　　D．几乎不可能招到这种人才

3.4 企业是否会定期或不定期的给员工进行相关培训？（请打钩）　是　／　否

3.4.1 如果是，培训员工层次主要是：（多选）................................
A．高层管理人员　　　　B．中层管理人员　　　　C．基层员工．

3.5 您如何看待企业中雇用亲朋好友的现象？................................
A．利大于弊　B.弊大于利 C．利弊各半 D．没什么好处　E．确有好处　F.很难说

3.6 您企业的董事长和总经理是否是同一个人？（请打钩）　是　／　否

3.6.1如果不是，总经理是怎样产生的？................................
A．董事长指定　B．企业内部选拔 C．社会上公开招聘　D．猎头公司招聘

3.7 您企业中通常谁来负责招聘新员工？................................
A．.人事主管　B．办公室负责人　C．车间主任　D．董事长或总经理　E．其他

3.7.1 如果选其它，能否具体说明？ ....

3.8 企业有以下哪些激励机制？（多选）................................
A．奖金B．各种福利 C．各种培训机会D．提升　E．带薪假期 F．公司股票期权
G．其它
3.8.1 如果选其它，能否具体说明？................................
....

3.8.2 在您企业中，上述哪些激励机制最为有效？（多选）................................

第四部分（财务管理）

管理人力资本的同时，没有一个企业家会忽视资本财富的管理，财务管理显得尤其
重要。

4.1 企业创办时，谁曾经给您提供过意见建议或咨询服务？（多选）……………………

…………………
    A．家人   B.朋友/同学   C.银行   D.会计事务所
    E.法律事务所 F.地方政府部门（税务/工商等）   G.中小企业服务机构
      H.房地产中介 I.招工中介   J.其它
4.1.1如选其它，能否具体说明？……………………………………

4.1.2 您认为哪三个是最重要的意见来源？………………………………

4.2 企业刚创立时的规模大概有多大？（以总资产来计）……………………（万元）
    企业现在的规模大概达到多大？（以总资产来计）……………………（万元）

4.3 企业创立时曾经因为以下哪些原因造成融资困难？（多选）……………………
A.贷款利率过高   G. 企业自身还没有建立完善的财务审计制度
B.企业缺乏符合条件的抵押品   H. 商业计划制定不够说服力
C.企业创立规模小贷不到款   I. 股市的中小企业板可望不可即
D.支持中小企业的银行数量不够多 J. 个人财富还不够雄厚
E.缺乏亲友们的资金支持   K. 政府部门支持力度不够
F.缺乏专业的中小企业服务中介机构 L. 没有融资困难

4.4 企业创办的启动资本主要来自（多选）：……………………
A.自有资金   F. 亲朋好友的私人借款
B.其他企业（国内/国外）的合作、联营   G. 银行和其他金融机构贷款
C.风险投资商入股   H. 分期付款方式
D.承租方式   I. 股票或股东集资
E.企业债券   J. 其它

4.4.1 如选其它，能否具体说明？……………………………………

4.5 资本杠杆率（GEARING）是指负债/资产的比率。如果您企业的资产负债表中，
负债为50万，资产为100万，经济学上我们称资本杠杆率为 50/100 = 1/2
    4.5.1   2003年企业的资本杠杆率大概是多少？负债÷资产=………
          企业刚创立时的资本杠杆率大概是多少？负债÷资产=………

4.6 您所在的企业曾经有过下列哪些现金周转的问题？ （多选）……………
A.客户拖欠货款，无法及时收回应收款 E. 供应商处无法赊账，占用大量资金
B.规模扩张过快，过度投资   F. 可供企业透支的方式很少
C.可供企业透支的额度不够   G. 管理费用过高
D.原材料和能源的短期价格波动   H. 没有出现过现金周转问题

4.7 企业在成立后是否曾经追加投资？（请打钩） 是 / 否

4.7.1如果是，追加投资的原因是哪些呢？（多选）＿＿＿＿＿＿＿＿＿

A. 新的厂房/工作场地　　　　　E. 扩建厂房/工作场地

B. 购置机器设备　　　　　　　　F. 科研的投入

C. 新产品的推出　　　　　　　　G. 库存增加

D. 雇佣人数增加　　　　　　　　H. 现金流的问题　　　　I. 其它

4.7.1.1如果选其它，能否具体说明？＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿

4.8 深圳创业板成为中小企业企业融资又一新途径，您所在的企业将来是否有上市的计划？（请打钩）　　　　是 / 否 / 看情况

第五部分（技术创新）

拥有资本和人力资源可以创立企业，但企业能否生存很大程度上依赖技术创新和质量管理。

5.1 企业是否设立了专门的研发机构（R&D）？

（请打钩）　是 /否，但准备设立　/　否，企业不需要研发

5.1.1 如果是，这个机构有多少研发人员？＿＿＿＿＿＿＿＿＿＿＿＿＿

5.1.1.1 其中硕士以上学历有多少名？＿＿＿＿＿＿＿＿＿＿＿＿＿＿

5.2　2003年企业的研发经费大概有多少？＿＿＿＿＿＿＿＿＿

A. 少于5万　B　5-10万　　C. 11-20 万　　D. 21-50万　E. 51-100万 F.100万以上

5.3 企业的技术创新主要依靠：（　　　　　　　　　）

A. 自己的技术部门　　　　B. 机器设备的供应商　　　C. 高等院校的科研中心

D. 中小企业服务中心　　　E. 国家相关产业部门的技术中心　F. 企业间的研发合作　G. 其他

5.3.1 如果选其他，能否具体说明？＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿

5.4 您认为企业现在的技术水平在国内同行业中居于什么水平？＿＿＿＿＿

A. 最先进 B. 中等偏上 C. 中等　D. 中等偏下　E. 比较落后，但准备更新 F. 落后

5.5 企业2003年推出的新产品数量为：＿＿＿＿＿＿＿＿＿

A. 没有　B. 1-3种　C. 3-6种　D. 7-10种　E. 10-20种　F. 20种以上

5.6 企业是否有自己的公司主页？（请打钩） 是/正在筹建 / 计划筹建 /没有计划

5.6.1 如果有，网址是：————————————————————————

5.7 企业是否曾在国际互联网上发布产品供求信息，寻求商业机会？
（请打钩）　　是　/　打算尝试　/　没有计划

5.8 企业中高级管理人员之间的联络方式主要有：————————————
A. 电话/传真　B. 邮政信件　C. 电子信件　　D. 电话会议　E. 视频会议　F. 其它

5.8.1 如果选其它，能否具体说明？————————————————————

5.9 企业是否申请过产品专利或技术专利？（请打钩）　是　/　否

5.9.1 如果是，大概有多少项？————————————————————————

5.9.2 大概有百分之几的公司年利润会用来投资做研发经费？
A. 小于5%　　　B. 6-10%　　　　C. 11-19%　　　　D. 20-39%　　　　E. 30-39%
F. 40-49%　　　G. 50-59%　　　H. 60-80%　　　　I. 80%以上

5.10 关于ISO9000系列的国际认证或其他国际认证：——————————————
　A.已经获得认证　　B.准备申请认证　　C.无此准备

5.11 企业主要使用的电脑软件有哪些？（多选）————————————
A. 办公软件　　　　B. 财务软件　　　　C. 人力资源软件　　　D. 通讯软件
E. 资源管理软件　　　F. 客户管理软件　　G. 其它

5.11.1 如果选其它，能否具体说明？————————————————————

5.12 您认为企业管理信息化的主要困难是：（　　　　　　　　　　　　）
A.缺乏专业的信息技术人员　　　　B.资金投入大　　C.公司原有的管理模式依然有效 D.
公司的规模小，不需要太复杂的程序软件　　　　E. 其它

5.12.1 如果选其它，能否具体说明？————————————————————

第六部分（企业文化）

海尔张瑞敏说"不卖产品，只卖信誉"。

6.1 您认为一个创业者的定义应该是什么？　（多选）————————————

A．发明和创新的人　　B．发现利润空间就去着手追求的人 C．组织各种资源进行生产的人 D．承担各种不确定性的人　　E．具有人格魅力，能处理各种变化的经理人　　F．其他

6.1.1 如果选其他，能否具体说明？ ....
....

6.2 您是否认同"企业文化主要来源于企业家个人的素质、品德和魅力？"
（请打钩） 同意 ／ 不同意

6.3 关于企业的工作环境：（多选）...........................
A．由专职清洁人员打扫卫生　　B．外包给清洁公司打扫　　C．员工自己包干
D．提供员工更衣室/休息区　　　E.提供饮水机/微波炉等　　F.足够的安全防护
（视行业而定）

6.4 关于企业的各种规章制度：............................
A．在企业创立初制定，很完善无需变动　B.定期更新 C.根据实际情况不定期更新

6.5 企业是否有企业的口号/宗旨？（请打钩）　是 ／ 否

6.5.1 如果有，能否具体说明？ ....

6.6 企业的总经理/董事长是否参加各种培训/研讨会？ ....
A．一年一次　B．一年几次　C．几年一次　D．太忙，没有时间参加

6.7 企业是否组织各种员工联谊/文化活动？ ....
A．一年一次　B．一年几次　C．几年一次　D．没有组织过

第七部分（竞争力量）

知彼知己，百战不殆。业界激烈的竞争已经是不可避免的现实。

7.1 您的主要客户通常是下面的那一种？（　　　　　）
A.本公司和竞争对手间在产品上的技术差别非常小，您的顾客更多的受到价格、品牌、设计、广告力度、包装和售后服务等影响。
B.您的顾客对产品的技术含量并不非常在意，但是可能会要求产品具备某些技术功能。
C.购买前，您的顾客会要求产品的各种功能得到详细讲解，并以次作为购买的依据。
D.您的顾客从个人经历或专业期刊上对您的产品具备相当的了解，能够对产品做出比较专业的选择。

E. 您的顾客是这一产品的专家，能非常专业地评价产品的技术质量。
F. 其他

7.1.1 如果选择其他，能否具体说明？ ⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯
⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯

7.2 您企业的主要供应商大概有多少个？ ⋯⋯⋯⋯⋯⋯⋯
A. 1个　B. 2-5个　C. 6-10个　　D. 11个以上

7.2.1 如果您的供应商表现不佳，您的企业会：⋯⋯⋯⋯⋯⋯⋯⋯
A. 马上换供应商　　　　　　　　B. 沟通后不行再换
C. 换的成本高，继续沟通希望改善　　　D. 老问题，暂时拿他/她没有办法

7.3 关于您所在的这个行业：⋯⋯⋯⋯⋯⋯⋯⋯
A. 发展初期　　　　　　B. 正在接近饱和，人仍然有空间　C. 市场已经很饱和
D. 竞争非常激烈　　　E. 市场开始萎缩　　　　　　　　F. 行业调整，准备转产

7.3.1 如果想要进入这个行业：⋯⋯⋯⋯⋯⋯⋯⋯
A. 很难　　　　B. 比较难　　　　C. 比较容易　　　D. 很容易

7.3.2 如果想要退出这个行业：⋯⋯⋯⋯⋯⋯⋯⋯
A. 很难　　　　B. 比较难　　　　C. 比较容易　　　D. 很容易

7.4 如果一个潜在竞争对手想要进入您所在行业，最可能遇到的困难有哪些？
（多选）⋯⋯⋯⋯⋯⋯⋯⋯
A. 产品品种不可能太多　　B. 产品平均成本会比较高　C. 需要较高的启动资金
D. 缺少原材料供应渠道　　E. 政府的限制性政策　　C. 行业中现有企业排挤压制
G. 缺少有经验的员工　　　　H. 其它

7.4.1 如果选其它，能否具体说明？ ⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯
⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯

7.5 市场上是否存在您的产品的替代品？（例如灯芯绒是牛仔布的替代品，都可以
做服装）（请打钩）　　是　/　否

7.5.1 如果存在，这些替代品和您的产品相比的话：⋯⋯⋯⋯⋯⋯⋯⋯
A. 比较低档　　　　B. 同一档次　　C. 比较高档　　D.高低档的替代品都有

7.6 您所在的企业为增强最核心的竞争力，会采取哪些策略？⋯⋯⋯⋯⋯⋯⋯⋯
A. 尽量降低成本　B. 不断增加产品种类　C. 两者同时使用　　D. 两者任选其一

7.7 在市场竞争加剧时，您所在的企业可能会采取下列哪些防御策略？（多选）

A. 设法让这个行业进入的门槛变高　　　B. 高调表示会对可能的竞争对手进行反击
C. 保持低调不露富　　　　　　　　　　D. 不采用防御策略　　　　　E. 其它

7.7.1 如果选其它，能否具体说明？ _____
_____

第八部分（成长环境）

我们的访谈已经接近尾声，再谈最后几个比较宏观的成长环境问题。

8.1 您所在的企业接受过下列那些政府财政资助？（多选） _____
A. 乡镇企业发展基金　 B. 中小企业信用担保　 C. 科技型中小企业技术创新基金
D. 其它资助　　　　　　　 E. 没有接受过财政资助

8.1.1 如果选其它，能否具体说明？ _____
_____

8.2 您所在的企业享受过以下哪些优惠政策？（多选） _____
A. 高新技术企业减免所得税　　　　　　B. 技改项目贴息
C. 购国产设备的资金抵免税　　　　　　D. 乡镇企业减免所得税
E. 安置城市待业人员一定人数以上减免所得税　F. 出口退税
G. 校办工厂、福利企业减免税　　　　　H. 小型企业减免所得税
I. 老少边穷地区和民族自治区的减免税　　J. 其它
8.2.1 如果选其它，能否具体说明？ _____
_____

8.3 "乱收费、乱罚款、乱集资和各种摊派"为"三乱"问题，您认为1999年以来的整治情况如何？ _____
A. 基本杜绝　 B. 减轻但依然存在　 C. 似乎没什么好转　 D. 更为严重　 E. 不清楚

8.4 您认为下列哪些机构对中小企业发展帮助会较大？（　　　　　　　　　）
A. 政府的中小企业管理单位和服务中心　　B. 地方中小企业信用担保机构
C. 行业协会　　　 D. 专业咨询公司　　　 E. 风险投资公司　　　　 F. 其它

8.4.1 如果选其它，能否具体说明？ _____
_____

**8.5 在现在的法制、经济、政治和社会环境下，综合各种因素，
　　您估计您的企业在未来的一年中：（请打钩）**

员工人数比较可能会： 增长 / 基本不变 / 减少

利润比较可能会： 增长 / 基本不变 / 减少

销售额比较可能会： 增长 / 基本不变 / 减少

总资产比较可能会： 增长 / 基本不变 / 减少

问卷调研到此顺利结束。非常感谢您的宝贵时间和积极合作。 所有问卷内容将仅限于学术研究之用，所有企业都以编码的匿名形式出现（如F440100-3代表来自中国广州的第三个企业样本），以保证对您公司信息的绝对保密。最终研究成果将以调研报告的形式供您垂询。

（以下内容**不需要填写**）

企业的地域代码：

企业的行业代码：

企业登记注册类型的代码：

企业编码：

调研人签字：

调研问卷完成时间：

备注项：

成本曲线图样卡

A. 总成本随着产量的增加而增加，增加的幅度和产量增加的幅度一致。如果增产50%，企业的总成本也会增加50%。也就是说，不管您的企业如何增产，每个增加的产品的成本都是一样的。
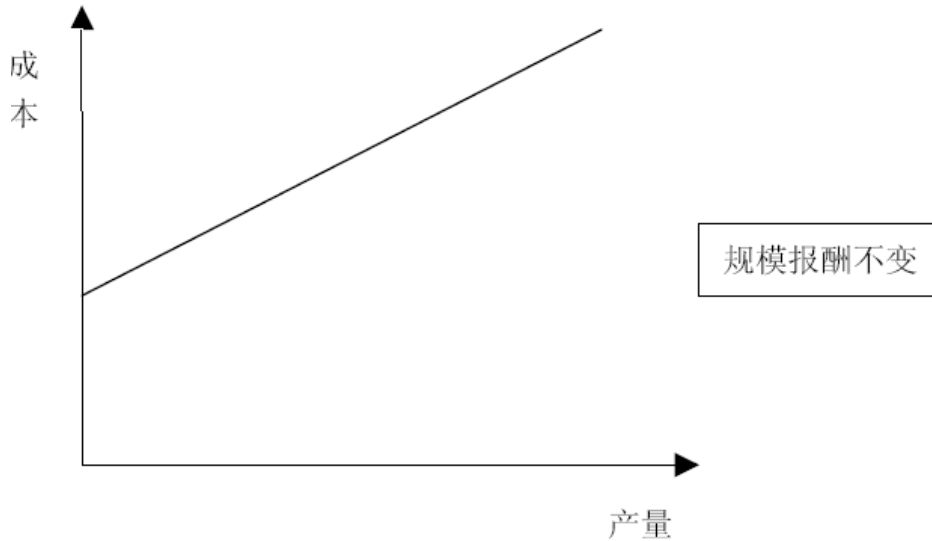
B. 总成本随着产量的增加而增加，但增加的幅度没有产量的增幅来的快。如果增产50%，企业的总成本的增加会小于50%。也就是说，如果您的企业扩大生产，会比较有利，因为每个增加的产品的成本在变小。
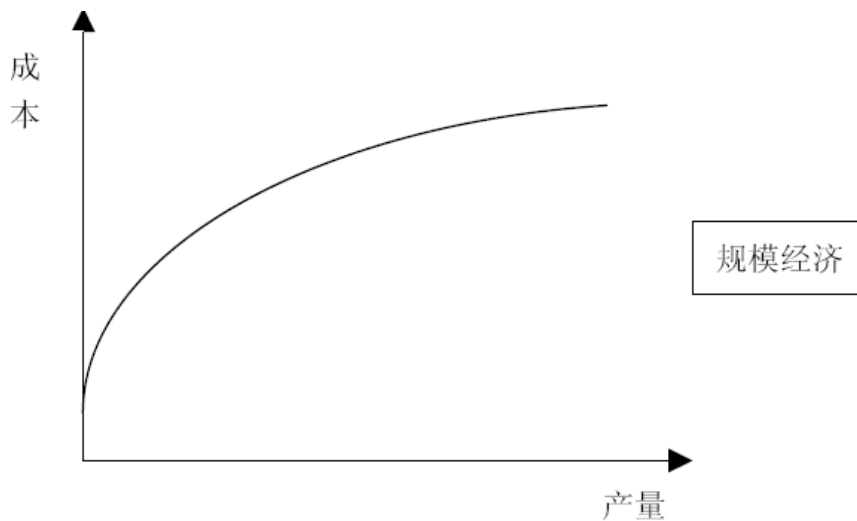
C. 总成本随着产量的增加而增加，但增加的幅度比产量的增幅来的快。如果增产50%，企业的总成本的增加会大于50%。也就是说，如果您的企业扩大生产，则会比较不利，因为每个增加的产品的成本在变大。
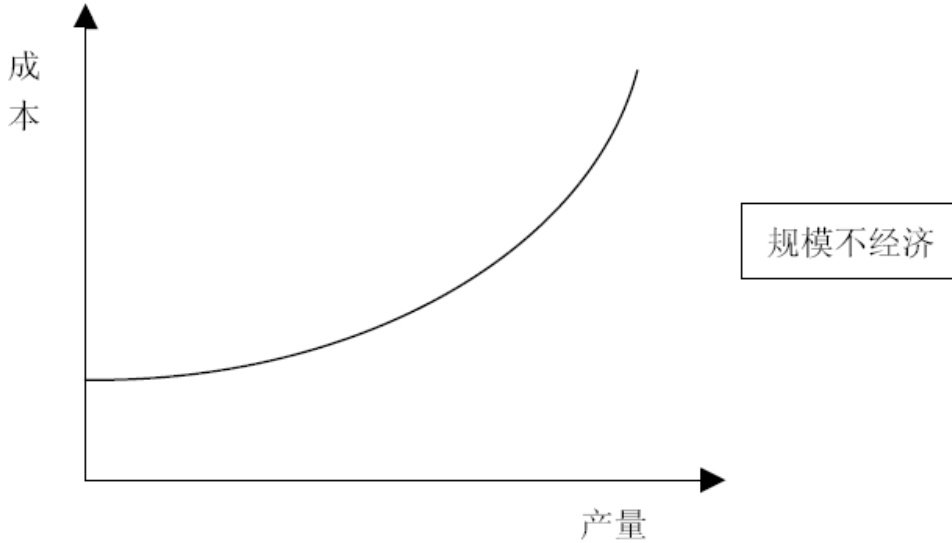
D. 总成本随着产量的增加而增加，但在产量水平较低时，增幅比产量的增幅慢；但当产量达到一定水平之后，总成本会比产量的增幅快。也就是说，如果您的企业扩大生产，开始会带来好处，随后又带来坏处。
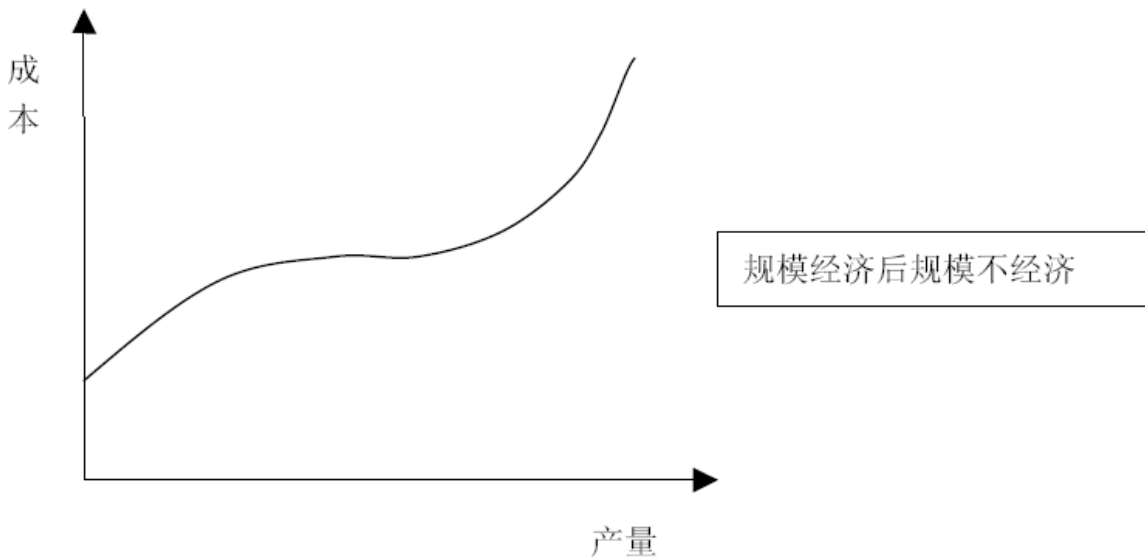
E．总成本随着产量的增加而增加，当产量水平低于企业最大生产能力时，总成本增加的幅度和产量的增幅相同；但产量一旦超过企业最大生产能力后，总成本增幅超过产量增幅。也就是说，一旦您的企业超过一定的产量，会给企业带来不利。

规模报酬不变后规模不经济
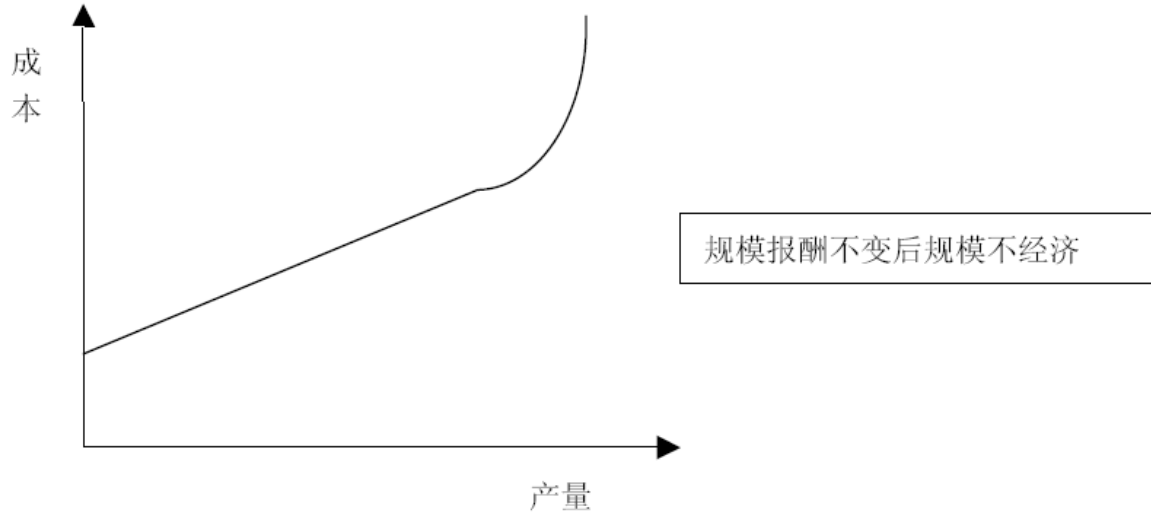
F．总成本随着产量的增加而增加，总成本增加的幅度小于产量的增幅；但产量一旦超过一定水平后，总成本和产量等比例增长。也就是说，企业一直享受扩大生产的好处，但产量超过一定水平后，这种好处消失了。

规模经济后规模报酬不变
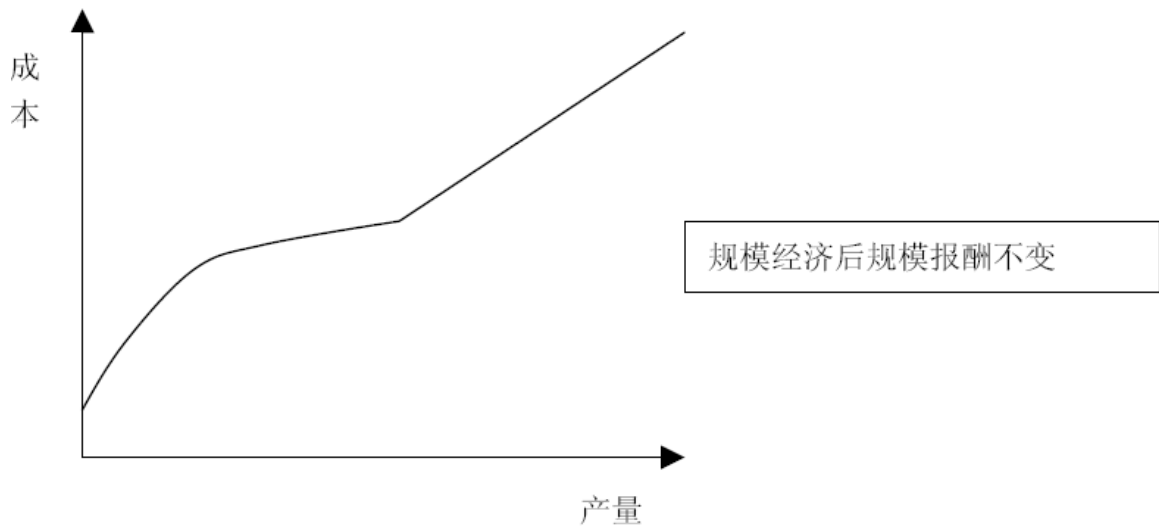
APPENDIX 3:   MEASURING GROWTH: A META-ANALYSIS

1. Introduction

Firm growth is a phrase commonly used to delineate the expansion process of firms, but it is not a term that automatically explains itself. Varying measures of such a concept exist in a rather fragmented way and the question about why growth is measured in one way instead of the other remains largely unanswered.

This section examines a total of 73 empirical studies from the major academic research sources (e.g. JSTOR, Science Direct, Springerlink, European Academic ASAP, Frontiers of Entrepreneurship Research, etc)[152] over the years 1989-2005. The selection criteria are as follows: (a) an empirical study, (b) growth as dependent variable, and (c) full-text access.

Concerning the growth measurement, each article is coded for growth indicators (i.e. sales, employment, assets, or multiple variables), calculation methods (relative, absolute, logarithm relative, or logarithm absolute), and measured periods in the number of years. In order to describe the general characteristics, each article is also coded for author(s), publishing journal, publishing year, perspective (managerial or economic), industry (mainly manufacturing or service, or both), data collection methods (interviews, or mailed questionnaires, or second-hand source), response rate, sample size, and explanatory variance (R^2), and so on.

This section firstly illustrates the general features of 73 articles and then focuses on the growth indicators, calculation methods and measured time in the number of years. It is hoped that the concept of the firm growth can be to some extent clarified on the basis of such evidences.

2. Sample Characteristics

2.1 Journal Types

In the survey of 73 articles, more than half (58.9%) come from *The Journal of Business Venturing* (30.1%, Science Direct), *Small Business Economics* (19.2%, Springerlink), and *Entrepreneurship: Theory and Practice* (9.6%, European Academic ASAP). Two major perspectives can be roughly categorized into economics (35.6%) and business/management studies (38.4%), whereas other social science views consist of

---

[152] References for reviewed articles are listed after this Appendix 3.

merely one quarter of the entire sample. Not only have these statistics manifested the significance of the growth topic in both disciplines, but also bode well the applicability of a dual-disciplinary approach adopted by this work.

2.2 Industry

It is shown that more than half of studies (50.7%) concentrate on industries in general, whereas 45.2% of articles focus on manufacturing industries. However, it is surprising to find that only 4.1% of research targets the service industry. Although manufacturing industries, or high technology industries, or the industries in general, are the conventional foci, which may not correspond well to the strong emergence of service industries. As the service sector becomes increasingly vital in national and international economies, the lack of relevant research in the field seems rather incommensurate. Certainly, this field may not necessarily be barren for fecund minds, if being carefully ploughed.

2.3 Data Collection and Sample Size

Concerning the methods of data collection, 22.2% of studies conduct fieldwork by in-depth interviews (by either telephone or face-to-face) and 33.3% of researchers employ mailing questionnaires. A large percent of data, nearly 44.5%, come from second-hand sources, such as government agencies and commercial data vendors. It seems that field interviews are most time-consuming and costly. Mailed questionnaires appear relatively easy to conduct but the possible low response rates can always check (in this sample μ =34.59, σ =15.42). The second-hand source may be most convenient to acquire but the data are usually not designed for one's particular research purpose. The cons and pros of data collection methods will be further discussed in the next chapter in terms of fieldwork.

The sample size of each study varies dramatically due to different data sources. The fieldwork method tends to allow the size as small as around 40 firms, whereas the number of returned questionnaires can reach as high as a few hundred. The largest dataset is usually built up based on the second-hand source, sometimes up to a few thousand

observations. Thus, it comes no surprise to find the average sample size is 735.34 (the standard deviation of 1,133.22) while the minimum is 44 and the maximum is 11,221.

2.4 Explanatory Power

Explained variance is one of the pivotal indicators for validating a growth model. Taking growth as the dependent variable, 45 articles out of 73 in total report the coefficient of determination, or "goodness of fit" (R^2) with the mean (0.2959) and the standard deviation (0.1577). The range of the explained variance can be rather broad from 0.03 to 0.74. Apparently, this wide gap can be due to the model specification and on the top of which, it now should turn to clarify the dependent variable, the firm growth itself.

3. Measuring Growth
3.1 Growth Indicators

It is unanticipated to find such a wide spectrum of growth indicators under the same banner of "firm growth", shown in Table 3.1 below. While this field is continuously filled with the accumulating knowledge of why and how firm grows, it seems even more startling that the measurement of growth itself is either neglected, or simply taken for granted.

Table 1 Frequencies of Growth Indicators

INDICATOR	FREQUENCY	PERCENTAGE
Employment	25	35.2
Sales	21	28.8
Multiple Indicators	15	20.5
Growth Performance	7	9.6
Assets	1	1.4
Others	4	5.5
Total	73	100

According to the frequencies above, employment appears the most popular (35.2%). One reason may be that the employment growth directly relates to job creation. It may be also because the headcount information is widely available and less sensitive

than those financial variables. Certainly, issues like extended working hours, part-time workers and outsourcing would complicate the definition of the employment. And labour-intensive firms may prefer using the employment indicator, whereas capital-intensive enterprises do not. These issues, however, do not seem to prevent the employment variable from serving the major research purpose in a ready-to-use, parsimonious and objective way.

The financial indicator of sales equally attracts a large amount of attention (28.8%). When asked about the growth rate of the firm in interviews, most of entrepreneurs or managers would naturally respond with a sales figure. Such figures are also officially documented in financial statements so as to be used straightforward in the calculation of growth rates. Yet this variable is not entirely unproblematic. As it is technically gauged by volume, inflation/deflation should be taken into consideration and the benchmark year should be properly set. More seriously, it requires extra discretion when interpreting the data from those countries with less developed, if not totally inexistent, taxation and legal systems since the tax evasion problem overwhelmingly distorts the sales report. This issue nevertheless undermines the quality of empirical studies focusing on the developed market economies to a much lesser extent.

Another growth indicator, namely assets, seems to have an extremely low percentage (1.4%) in the sample. Traditionally, state-owned enterprises (SOE) in centrally-planned or transition economies would be more prone to offer financial figures in total assets instead of sales as the markets in such economies are often favourable for sellers, who are thus unworried about the sales and would pursue the accumulation of more assets that directly relate to their current social status and future promotion. With the very few SOE cases in the sample, it seems reasonable to see assets rarely being used alone.

While employment, sales or assets are relatively objective, an indicator as growth performance is calibrated subjectively by the perceptions of owner-managers. Although it is argued that entrepreneurs or managers are most knowledgeable to their firms, it is difficult to tell the perceptual growth from the real one. Sometimes the former can be indeed a good proxy of the latter, yet it is just equally possible to approximate badly. Due to such a concern, a low percentage (9.6%) of studies devises this subjective indicator.

Other growth variables like geographical expansion (1.4%) and market share (4.1%) are deployed in almost negligible percentages, compared with the major indicators (i.e. employment and sales).

Apart from those indicators used alone, there is a well accepted method to combine two or more of them to convey the concept of growth in a comprehensive way. As a matter of fact, multiple indicators have the third highest percent, more than one fifth in 73 studies. A combination of these indicators can present more facets of the expansion process, which would be more of interest to the owner-managers who demand the overall understanding of firms. Technically, the factor analysis of multiplicative variables regularly reveals high item loadings and relatively high Cronbach's alpha coefficient, which reinforces the empirical applicability of such a method. It is felt that the shortcomings brought about by the individual indicator may be avoided and thus a more comprehensive expansion process can be comprehended. If research is not designed to deliberately target a narrow topic of specific interest, an approach of multiple indicators may be recommended, provided the rich data.

3.2 Calculation Methods

Not only growth indicators, but also the way of calculation can make the difference. Four types of calculation methods are generalized and their frequencies are reported in Table 3.2 below.

Table 2 Frequencies of Growth Calculation Methods

CALCULATION	FREQUENCY	PERCENTAGE
Relative	33	45.2
Absolute	17	23.3
Log relative	13	17.8
Log absolute	3	4.1
Missing	7	9.6
Total	73	100

The relative (45.2%) and absolute (23.3%) changes of firm size are observed in more than two thirds of the sample. Seldom did authors explain the disparity between two

calculations. It may be because of the limited space in methodology part or the presumed insignificance of the difference. However, this ignorance may be problematic. For instance, the sales of firm A have doubled from an initial level of GBP 10,000 over one year time and firm B also sells GBP 10,000 at the initial size of GBP 50,000, providing no inflation. The relative sales growth rate of the former is 100%, whereas that of the latter is only 20%. Thus, firm A seems to outperform firm B in terms of growth in sales. If using the absolute measurement, notwithstanding, it will be GBP 10,000 for both and then a tie occurs. Now taking another example, we modify that firm B has also doubled its sales at the initial size of GBP 50,000, excluding the inflation factor. Then, both firms will have the same relative growth rate as large as 100% but firm B will grow much faster than firm A with regard to absolute sales volume. Apparently, the relative calculation prefers firms of smaller size, whereas the absolute one favours large firms. In other words, whichever calculation is adopted, growth rates will be dependent on the size of firms. Therefore, when using either calculation, firm size must be carefully taken into account.

The logarithm of relative (17.8%) or absolute (4.1%) growth rate is used as well, though less frequently. As the distribution of firms usually presents high skewness, the logarithm of growth rates is supposed to satisfy the assumption of distribution normality. By doing so, a better goodness of fit (R^2) can be hopefully obtained. It should be noted, however, that even though a higher R^2 is achieved by transforming dependent variable into a logarithm form, *ceteris paribus*, this new function form cannot be considered as any superior. While the original R^2 measures the variance of growth rate (*G*), the new R^2 calibrates the variance of *logG*. Hence, two coefficients of determination are rather not comparable. Furthermore, the relationship between the logarithm of growth rates and independent variables should be interpreted with caution as it is now in the form of log-log or log-linear. Thereby, researchers may need to present both non-transformed and transformed models in order to avoid the confusion and make their findings comparable and eventually make the knowledge in this field accumulate and evolve.

3.3 Measured Periods

One very last question is the time period on which those studies focus. The number of years is fairly arbitrary as illustrated by Table 3.3 below but very little has been explained by authors so far.

Table 3 Frequencies of Measuring Time

YEARS	FREQUENCY	PERCENTAGE
5	17	23.3
1	15	20.5
3	13	17.8
Age	9	12.3
2	5	6.8
4	3	4.1
6	1	1.3
7	1	1.3
8	2	2.7
Not Reported	7	9.6
Total	73	100

According to the statistics above, five years (23.3%) and three years (17.8%) are commonly noted and such choices strongly relate to second-hand sources. Only 5.3% of studies choose a longer period (>5 years), which is probably because very few panel data are available for the length longer than that. Besides, the exit of old firms and the entry of new ones inevitably increase the complexity of samples.

One year is another popular measured period (20.5%) as it is relatively expedient to conduct a follow-up research one year after the first time interview or mailed questionnaire. However, an eclectic period of two years (6.8%) doesn't show much attractiveness as its neighbouring number, either one or three. Maybe it is too short when the second-hand data are rich and accessible, whereas it is perhaps too long when conducting a follow-up fieldwork two year later.

Another evident tendency for researchers is to calibrate from start-up year to current research date, viz. "age", up to 12.3% of the sample articles. The author's experience of conducting interviews demonstrates that interviewees are much more likely

to tell employment number or sales volume at the establishing year and the year when the interview is conducted, rather than some figures occurred three or five years ago. Age is regarded as a key element in Jovanovic's learning theory (1982) and exerts the considerable impact at the right hand side of the growth model. However, not yet has it been known that how influential when age is counted as the measured period of growth. The further analysis will be required hereby.

In sum, it would be sensible and practical to choose a wider range of growth indicators, specify a series of models in different function forms, and decide the measured period of growth providing the availability of suitable data. It is only half the battle even if this is done as the determinants of growth present an even more fragmented and unsystematic style at the right hand side of the growth model, which will be addressed in the following section at length.

Although firm growth is such a commonly used phrase in fields of economics and management, its concept, calculation method, and time measurement are all far from convergent.

Regarding the meta-analysis of 73 articles from major referred academic journals (more than half from the *Journal of Business Venturing* and *Small Business Economics*) in this chapter, employment and sales are viewed as the most popular growth indicators, whereas a growth index made of multiple variables also serves the purpose in a broader sense. Relative and logarithm relative calculations are found dominant in more than 60% of the sample. And the logarithm of relative growth rates may correct the skewness and fulfill the assumption of distributional normality. Yet it should be noted that the resultant coefficient of determination in such a calculation is rather incomparable with that in other methods. The time period of measurement is seemingly capricious but the data collection methods may explain to certain extent. Fieldwork interviews and mailed questionnaires are more likely to take place within a shorter period (e.g. one year), whereas second-hand sources may choose a longer period (e.g. three or five years).

REFERENCES FOR APPENDIX 3:

1. Arbaugh, J.B., & Sexton, D.L. (1996). New firm growth and development: a replication and extension of Reynolds' research. Journal of Enterprising Culture, 4, 19-36.

2. Arrighetti, A. (1994). Entry, growth and survival of manufacturing firms. Small Business Economics, 6, 127-137.

3. Audretsch, D.B. (1995). Innovation, growth and survival. International Journal of Industrial Organization, 13, 441-457.

4. Audretsch, D.B. and Lehmann, E.E. (2005) Mansfield's Missing Link: The Impact of Knowledge Spillovers on Firm Growth, *Journal of Technology Transfer*, 30 1/2, 207-210.

5. Bartlett, W. and Bukvic, V. (2001) Barriers to SME Growth in Slovenia, MOCT-MOST, 11: 177-195.

6. Becchetti, L. and Trovato, G. (2002) The Determinants of Growth forSmall and Medium Sized Firms.The Role of the Availability of External Finance, Small Business Economics, 19: 291–306.

7. Begley, T.M., & Boyd, D.P. (1987). Psychological characteristics associated with performance in entrepreneurial firms and smaller businesses. Journal of Business Venturing, 2, 79-93.

8. Binks, M.R., & Ennew, C.T. (1996). Growing firms and the credit constraint. Small Business Economics, 8, 17-25.

9. Birley, S., & Westhead, P. (1994). A taxonomy of business start-up reasons and their impact on firm growth and size. Journal of Business Venturing, 9, 7-31.

10. Box, T.M., Watts, L.R., & Hisrich, R.D. (1994). Manufacturing entrepreneurs: An empirical study of the corrolates of employment growth in the Tulsa MSA and Rural East Texas. Journal of Business Venturing, 9, 261-270.

11. Box, T.M., White, M.A., & Barr, S.H. (1993). A contingency model of new manufacturing firm performance. Entrepreneurship Theory and Practice, 18, 31-46.

12. Brixy, U. And Kohaut, S. (1999) Employment Growth Determinants in New Firms in Eastern Germany, Small Business Economics, 13,155-70.

13. Brooksbank, R., Kirby, D.A., & Wrigth, G. (1992). Marketing and company performance: An examination of medium sized manufacturing firms in Britain. Small Business Economics, 4, 221-236.

14. Brown, T. and Kirchhoff, B. (1997) The Effects of Resource Availability and Entrepreneurial Orientation on Firm Growth, Frontiers of Entrepreneurship Research, Wellesley, MA: Babson College: http://www.babson.edu/entrep/fer/papers97/kirtchoff/kir1.htm

15. Bruton, G.D. and Rubanik, Y. (2002) Resources of the firm, Russian high-technology startups and firm growth, Journal of Business Venturing, 553-76.

16. Chaganti, R., & Schneer, J.A. (1994). A study of the impact of owner's mode of entry on venture performance and management patterns. Journal of Business Venturing, 9, 243-260.

17. Chandler, G.N., & Hanks, S.H. (1994). Market attractiveness, resource-based capabilities, venture strategies, and venture performance. Journal of Business Venturing, 9, 331-349.

18. Chandler, G.N., & Jansen, E. (1992). The founder's self-assessed competence on venture perfromance. Journal of Business Venturing, 7, 223-236.

19. Chen, T-J and Ku, Y-H. (2000) The effect of foreign direct investment on firm growth: the case of Taiwan's manufacturers, Japan and the World Economy 12, 153-72.

20. Colombo, M.G. and Grilli, L. (2005) Founders' human capital and the growth of new technology-based firms: A competence-based view, Research Policy, v34 i6 795(20).

21. Cooper, A.C., Gimeno-Gascon, F.J., & Woo, C.Y. (1994). Initial human and financial capital as predictors of new venture performance. Journal of Business Venturing, 9, 371-395.

22. Covin, J.G. (1991). Entrepreneurial versus conservative firms: a comparison of strategies and performance. Journal of Management Studies, 28, 439-462.

23. Covin, J.G. and Slevin, D.P. (1991) A Conceptual Model of Entrepreneurship as Firm Behaviour, Entrepreneurship Theory and Practice, (Fall): 7–25.

24. Covin, J.G., & Covin, T.J. (1990). Competitive aggressiveness, environmental context, and small firm performance. Entrepreneurship Theory and Practice, Summer, 35-50.

25. Covin, J.G., & Slevin, D.P. (1990). New venture strategic posture, structure, and performance: An industry life cycle analysis. Journal of Business Venturing, 5, 123-135.

26. Covin, J.G., Slevin, D.P., & Covin, T.J. (1990). Content and performance of growth-seeking strategies. A comparison of small firms in high- and low-technology industries. Journal of Business Venturing, 5, 391-412.

27. Cragg, P.B., & King, M. (1988). Organizational characteristics and small firms' performance revisited. Entrepreneurship Theory and Practice, Winter, 49-64.

28. Cressy, R. (1996). Pre-entrepreneurial income, cash-flow, growth and survival of startup businesses: model and tests on U.K. Data. Small Business Economics, 8, 49-58.

29. Davidsson, P. (1989). Continued Entrepreneurship and Small Firm Growth. Stockholm School of Economics, The Economic Research Institute.

30. Donckels, R., & Lambrecht, J. (1995). Networks and small business growth: an explanatory. Small Business Economics, 7, 273-289.

31. Doutriaux, J. (1992). Emerging high-tech firms: How durable are their comparative start-up advantages? Journal of Business Venturing, 7, 303-322.

32. Dunne, P., & Hughes, A. (1996). Age, size, growth and survival: UK companies in the 1980s. Journal of Industrial Economics, XLII, 115-140.

33. Dunne, T., Roberts, M.J., & Samuelson, L. (1989). The growth and failure of U.S. manufacturing plants. The Quartely Journal of economics, November, 671-698.

34. Gales, L.M., & Blackburn, R.S. (1990). An analysis of the impact of supplier strategies and relationships on small retailer actions, perceptions, and performance. Entrepreneurship Theory and Practice, Fall, 7-21.

35. Geroski, P.A., Machin, J., Walters, C.F. (1997) Corporate growth and profitability, Journal of Industrial Economics, XLV (2).

36. Ginn, C.W., & Sexton, D.L. (1990). A comparison of the personality type dimensions of the 1987 Inc. 500 company founders/CEOs with those of slower-growth firms. Journal of Business Venturing, 5, 313-326.

37. Hansen, E.L. (1995). Entrepreneurial network and new organization growth. Entrepreneurship Theory and Practice, 7-19.

38. Heshmati, A. (2001), On the Growth of Micro and Small Firms: Evidence from Sweden, Small Business Economics, 17, 213-228

39. Hoogstra, G.J. and Dijk, J.V. (2004) Explaining firm employment growth : Does location matter ? Small Business Economics, 22, 179-92.

40. Hyytinen, A. and Pajarinen, M. (2005), External Finance, Firm Growth and the Benefits of Information Disclosure: Evidence from Finland, European Journal of Law and Economics, 19: 69–93.

41. Johnson, P., Conway, C. And Kattuman, P. (1999) Small Business Growth in the Short Run, Small Business Economics, 12, 103-112.

42. Kazanjian, R.K., & Drazin, R. (1990). A stage-contingent model of design and growth for technology based new ventures. Journal of Business Venturing, 5, 137-150.

43. Kolvereid, L. (1992). Growth aspirations among Norvegian entrepreneurs. Journal of Business Venturing, 7, 209-222.

44. Kolvereid, L., & Bullvag, E. (1996). Growth intentions and actual growth: the impact of entrepreneurial choice. Journal of Enterprising Culture, 4, 1-17.

45. Konings, J. (1997) Firm Growth and ownership in transition countries, Economics Letters 55, 413-18.

46. Majumdar, S.K. (2004) The hidden hand and the license raj to An evaluation of the relationship between age and the growth of firms in India, Journal of Business Venturing, 19, 107-125.

47. Mata, J. (1994). Firm growth during infancy. Small Business Economics, 6, 27-39.

48. McCann, J.E. (1991). Patterns of growth, competitive technology, and financial strategies in young ventures. Journal of Business Venturing, 189-208.

49. McGee, J.E., Dowling, M.J., & Megginson, W.L. (1995). Cooperative strategy and new venture performance: The role of business strategy and management experience. Strategic Management Journal, 16, 565-580.

50. Merz, G.R., & Sauber, M.H. (1995). Profiles of manegerial activities in small firms. Strategic Management Journal, 16, 551-564.

51. Miller, D. (1987). Strategy making and structure: Analysis and implications for performance. Academy of Management Journal, 30, 7-32.

52. Miller, D., & Toulouse, J. (1986). Chief executive personality and corporate strategy and structure in small firms. Management Science, 32, 1389-1409.

53. Miner, J.B., Smith, N.R., & Bracker, J.S. (1989). Role of entrepreneurial task motivation in the growth of technologically innovative firms. Journal of Applied Psychology, 74, 554-560.

54. Miner, J.B., Smith, N.R., & Bracker, J.S. (1994). Role of entrepreneurial task motivation in the growth of technologically Innovative firms: interpretations from follow-up data. Journal of Applied Psychology, 79, 627-630.

55. Ming-Hone Tsai, W., MacMillan, I.C., & Low, M.B. (1991). Effects of strategy and environment on corporate venture in industrial markets. Journal of Business Venturing, 6, 9-28.

56. Monte, A.D. and Papgni, E. (2003) R&D and the growth of firms: empirical analysis of a panel of Italian firms, Research Policy, 32, 1003-1014.

57. Morris, M.H., & Sexton, D.L. (1996). The concept of entrepreneurial intensity: implications for company performance. Journal of Business Research, 36, 5-13.

58. O'Farrell, P.N., Hitchens, D.M.W.N., & Moffat, L.A.R. (1992). The competitiveness of business service firms: A matched comparison between Scotland and the South East of England. Regional Studies, 26, 519-533.

59. Ostgaard, T.A., & Birley, S. (1996). New venture growth and personal networks. Journal of Business Research, 36, 37-50.

60. Peters, M.P., & Brush, C.G. (1996). Market information scanning activities and growth in new ventures: A comparison of service and manufacturing businesses. Journal of Business Research, 36, 81-89.

61. Phillips, B.D., & Kirchhoff, B.A. (1989). Formation, Growth and survival; small firm dynamics in the U.S. economy. Small Business Economics, 1, 65-74.

62. Siegel, R., Siegel, E., & MacMillan, I.C. (1993). Characteristics distinguishing high-growth ventures. Journal of Business Venturing, 8, 169-180.

63. Sleuwaegen, L. and Goedhuys, M. (2002) Growth of firms in developing countries, evidence from Cote d'Ivoire, Journal of Development Economics, Vol.68, 117-35.

64. Storey, D.J. (1994). New firm growth and bank financing. Small Business Economics, 6, 139-150.

65. Stuart, R.W., & Abetti, P.A. (1990). Impact of entrepreneurial and mangement experience on early performance. Journal of Business Venturing, 5, 151-162.

66. Thwaites, A., & Wynarczyk, P. (1996). The economic performance of innovative small firms in the south east region and elsewhere in the UK. Regional Studies, 30, 135-149.

67. Vaessen, P., & Keeble, D. (1995). Growth-oriented SMEs in unfavourable regional environments. Regional Studies, 29, 489-505.

68. Wagner, J. (1992). Firm size, firm growth and persistence of chance. Testing GIBRAT's law with establishment data form lower Saxony, 1978-1989. Small Business Economics, 4, 125-131.

69. Wagner, J. (1994). The post-entry performance of new small firms in German manufacturing industries. Journal of Industrial Economics, XLII, 141-154.

70. Westhead, P. (1995). Source and employment growth contrast between types of owner-managed high-technology firms. Entrepreneurship Theory and Practice, 5-27.

71. Willard, G.E., Krueger, D.A., & Feeser, H.R. (1992). In order to grow, must the founder go: A comparison of performance between founder and non-founder managed high-growth manufacturing firms. Journal of Business Venturing, 7, 181-194.

72. Williams, M.L., Tsai, M., & Day, D. (1991). Intangible assets, entry strategies, and venture success in industrial markets. Journal of Business Venturing, 6, 315-333.

73. Zahra, S.A. (1993). Environment, corporate entrepreneurship, and financial performance: a taxonomic approach. Journal of Business Venturing, 8, 319-340.

APPENDIX 4: China's National Standard of Industrial Classification (CNSIC)

(GB/T 4754-2002) Updated by China National Bureau of Statistics on 14 MAY 2003

Industries	Categories	Coding	Classifications
Primary	A	01	Agriculture
		02	Forestry
		03	Stock Raising
		04	Fishery
		05	Supporting Activities for Agriculture, Forest, Stock Raising and Fishery
Second	B		Mining
		06	Coal Mining, Washing and Dressing
		07	Extraction of Petroleum and Natural Gas
		08	Ferrous Metals Mining and Processing
		09	Nonferrous Metals Mining and Processing
		10	Nonmetal Minerals Mining and Processing
		11	Other Minerals Mining and Processing
	C		Manufacturing
		13	Agricultural By-product Processing
		14	Food Manufacturing
		15	Beverage Manufacturing
		16	Tobacco Processing
		17	Textile
		18	Garments,shoes and hats- making
		19	Leather, fur, feather-made goods manufacturing
		20	Lumber processing, wood, bamboo, bine, palm and grass manufacturing
		21	Furniture-manufacturing industry
		22	Paper-making and paper goods industry
		23	Printing and recording media reprography
		24	Teaching and sports goods- manufacturing

		25	Petroleum-processing, coking and nuclear fuel-manufacturing industry
		26	Chemistry material and products-making industry
		27	Medicine-manufacturing industry
		28	Chemical fiber-making industry
		29	Rubber-manufacturing industry
		30	Plastic-manufacturing industry
		31	Nonmetal-mineral manufacturing industry
		32	Black metal smelting and pressing industry
		33	Colored metal smelting and processing industry
		34	Metalwork industry
		35	General equipment manufacturing industry
		36	Speical equipment manufacturing
		37	Transportation equipment manufacturing
		39	Electric machinery & equipment manufacturing
		40	Communication equipment, computer and electronic product manufacturing industry
		41	Apparatus and instrument, culture and office supplies machinery manufacturing industry
		42	Arts and crafts, other manufacturing industry
		43	Trash, refuse and waste reclaiming industry
	D		Electricity, Gas, Water Supply Industry
		44	Electric power and heat production and supply industry
		45	Gas production and supply industry
		46	Water production and supply industry
	E		Building Industry
		47	Civil engineering architecture industry
		48	Achitecture fixing industry
		49	Construction and decoration
		50	Other construction
Third	F		Transportation,Storage,Postal Service

		51	Railway transportation
		52	Road transportation
		53	City public transportation
		54	Water transportation
		55	Air transportation
		56	Pipeline
		57	Handling & transportation, and other transport service
		58	storage
		59	postal service
	G		Information Technology
		60	telecommunication and other information delivery
		61	computer service
		62	software industry
	H		Wholesale and Retailing
		63	Wholesale Trade
		65	Retail Trade
	I		Food and Accommodation
		66	Accommodation Industry
		67	Catering Services
	J		Financing
		68	Banking Industry
		69	Securities Industry
		70	Insurance Industry
		71	Other Finance Services
	K		Real estates
		72	Real Estate Industry
	L		Leasing and Commercial Services
		73	Leasing Services
		74	Commercial Services
	M		Scientific Research, Professionals
		75	Research and Development

		76	Professional and Technical Services
		77	Technology Application and Dissemination as well as Science and Technology Exchange Services
		78	Geological Prospecting Industry
	N		Water,Environment,Public facilities
		79	Water Conservancy
		80	Environmental Management
		81	Public Facilities Management
	O		Residental Service and others
		82	Residential Services
		83	Other Services
	P		Education
		84	Education
	Q		Sanitation,Social Welfare
		85	Sanitation
		86	Social Security
		87	Social Welfare
	R		Culture,Sports,Entertainment
		88	Press Industry
		89	Radio, Television, Film and Audiovisual Industry
		90	Culture and Arts Industry
		91	Sports
		92	Show Business
	S		Government and organizations
	S	93	Communist Party of China
		94	National Government
		95	National Committee of the Chinese People's Political Consultative Conference and the Democratic Parties
		96	Social Organization and Religious Organization
		97	Fundamental Organs of Self-government of the Mass
	T	98	International Organization

APPENDIX 5:

GDP PER CAPITA OF MAJOR CITIES IN GUANGDONG PROVINCE

Code	City/County	Firms	Percent	GDP per capita
1	Guangzhou	48	57.8	41884
2	Shenzhen	8	9.6	46388
3	Foshan	7	8.4	34850
4	Jiangmen	4	4.8	17344
5	Dongguan	4	4.8	43401
6	Huizhou	3	3.6	18641
7	Yangjiang	3	3.6	7965
8	Qingyuan	2	2.4	4416
9	Jieyang	2	2.4	7597
10	Shantou	2	2.4	10268
	Total	**83**	**100**	232754

Source: NBS of China,2004

APPENDIX 6: DEFINITION OF VARIABLES USED IN CHAPTER 6

ENDOGENOUS VARIABLES

Ge	Annual growth rate of employment between 2004 and 2006
Ge0	Annual growth rate of employment from inception to 2004
Gs0	Annual growth rate of sales from inception to 2003
Ga0	Annual growth rate of assets from inception to 2003
Survival	=1 survivor in 2006, 0 otherwise

EXOGENOUS VARIABLES

Size	Number of full-time employees in 2004
Age	Number of years from inception to 2004
Sales03	Total net sales in 2003
Se	Size in terms of full-time employees at financial inception
Ss	Size in terms of total net sales at financial inception
Sa	Size in terms of total net assets at financial inception
IMR	The inverse Mill's ratio
Planning	Number of plans undertaken
RDorien	The degree of R&D orientation: strong (3), weak (2), none (1)
CSorien	The degree of Customer orientation: strong (3), weak (2), none (1)
Cfp	=1 if coming across cash flow problems since inception, 0 otherwise
DwEd	The price elasticity of demand when price decreases 5%, *ceteris paribus*, elastic (4), unitary (3), inelastic (2), perfectly inelastic (1)
Descomp	Description of market competition: weak (1), medium (2), strong (3)
Sector	=1 if a firm locates in manufacturing industries (one-digit CNSIC code is C), 0 otherwise
Location	=1 if in Guangzhou, 0 otherwise

APPENDIX 7: DEFINITION OF VARIABLES USED IN CHAPTER 7

Ads	=1 if making advertisements, 0 otherwise
Adsmedia	The number of media types used for advertisements
Advinet	Major sources for advices at inception: small (1), medium (2), large (3)
Age	Number of years from inception to 2004
CEO	=1 if CEO and the board director is the same person, 0 otherwise
Codes	Flexibility of changing company codes: low (1), medium (2), high (3)
Communi	The number of communication methods
CultureS	=1 if enterprise culture is influenced by entrepreneurs, 0 otherwise
Defestgy	The number of defensive strategies taken
Delegate	The level of control: (1) low, (2) medium, (3) strong
Diploma	The degree of higher education among employees: very low (1), low (2), medium (3), high (4), very high (5)
Ebiz	The willingness to do E-commerce: low (1), medium (2), high (3)
ExInvest	=1 if a firm has extra investment after the inception, 0 otherwise
Ge	Annual growth rate of employment between 2004 and 2006
IMR	The inverse Mill's ratio
Investage	The number of extra investment per year after the inception
ISO	The willingness to adopt international quality standard: low (1), medium (2), high (3)
Knet	The base of financial sources: very small (1), small (2), medium (3), large (4)
Mmkt	The Market extent: local (1), provincial (2), national (3), Asian (4), International (5)
MSurvey	=1 if a firm conducts the market survey, 0 otherwise
NewPro	The innovation of new products: very low (1), low (2), medium (3), high (4), very high (5)
Npatent	The number of patents held valid in a firm
NStimula	The number of stimulation schemes
Patent	=1 if a firm has any patent, 0 otherwise

Psurvey	The number of survey purposes
RDbranch	The establishment of R&D department: none (1), informal (2), formal (3)
RDexpend	The amount of money spent on R&D activities in 2004: very small (1), somehow below medium (2), medium (3), somehow above medium (4), very large (5)
RDorien	The degree of R&D orientation: low (1), medium (2), strong (3)
RDprofit	The ratio of R&D expenditure to profit: very low (1), somehow below medium (2), medium (3), somehow above medium (4), very high (5)
Reputation	The reputation compared to substitutes: below average (1), average (2), good (3)
Gearing	The degree of risk-taking: very low (1), low (2), medium (3), high (4), very high (5)
Salary	The salary level compared to the industry average: relatively low (1), somehow below average (2), average (3), somehow above average (4), relatively high (5)
Size	Number of full-time employees in 2004
Slogan	=1 if a firm has a company slogan, 0 otherwise
Social	The frequency of company socializing activities: very low (1), low (2), medium (3), high (4)
Software	The number of software that a firm employs
StgyPlan	=1 if a firm makes strategic development plans, 0 otherwise
StockEx	The ambition of being listed in the SME board of stock exchange: low (1), medium (2), strong (3)
Substi	=1 if superior to the substitutes, 0 otherwise
Suppnet	The base of suppliers: very small (1), small (2), medium (3), large (4), very large (5)
Survival	=1 survivor in 2006, 0 otherwise
Tech	The technological level: low (1), less advanced (2), moderate (3), moderately advanced (4), highly advanced (5)
Technet	The base of technological support: very small (1), small (2), medium

	(3), large (4), very large (5)
Toptrain	The frequency of top management training: very low (1), low (2), medium (3), high (4)
Training	=1 if a firm has training programs, 0 otherwise
Website	The willingness of having its own official website: low (1), medium (2), high (3), very high (4)
Workcon	The standard of working condition: poor (1), below average (2), average (3), above average (4), good (5)

APPENDIX 8: DEFINITION OF VARIABLES USED IN CHAPTER 8

Access	The degree of geographical accessibility: low (1), medium (2), high (3)
Aexpect	=1 if a firm expects the business environment to influence assets, 0 otherwise
Age	Number of years from inception to 2004
BOF	The score in terms of the badness of fit in configuration
CEO	=1 if CEO and the board director is the same person, 0 otherwise
Cfp	=1 if a firm has serious cash flow problems during the operation in the past, 0 otherwise
Codes	The flexibility of changing company codes: low (1), medium (2), high (3)
Communi	The number of communication methods
Control	The level of control: (1) low, (2) medium, (3) strong
Costlead	=1 if a firm takes cost leadership strategy, 0 otherwise
CSorien	The degree of Customer orientation: weak (1), medium (2), strong (3)
Defestgy	The number of defensive strategies taken
Descomp	Description of market competition: weak (1), medium (2), strong (3)
Different	=1 if a firm takes product differentiation strategy, 0 otherwise
Eexpect	=1 if a firm expects the business environment to influence employment, 0 otherwise
Entrdiff	The difficulty of entry: very difficult (1), somehow difficult (2), somehow easy (3), very easy (4)
Exitdiff	The difficulty of exit: very difficult (1), somehow difficult (2), somehow easy (3), very easy (4)
Focus	=1 if a firm takes focus strategy, 0 otherwise
GDPpc	GDP per capita of the city where a firm operates
Ge	Annual growth rate of employment between 2004 and 2006
Imr	The inverse Mill's ratio
ISO	The willingness to adopt international quality standard: low (1), medium (2), high (3)
nbarrier	The number of market entry barriers
NewPro	The innovation of new products: very low (1), low (2), medium (3), high

	(4), very high (5)
Nfdiff	The number of financial difficulties encountered at inception
Npatent	The number of patents held valid in a firm
NPolicy	The number of supportive government policies received by a firm
NSponsor	The degree of financial sponsorship: low (1), medium (2), high (3)
OS	The degree of structure flexibility: low (1), medium (2), high (3)
Pexpect	=1 if a firm expects the business environment to influence profits, 0 otherwise
RDexpend	The amount of money spent on R&D activities in 2004: very small (1), somehow below medium (2), medium (3), somehow above medium (4), very large (5)
RDprofit	The ratio of R&D expenditure to profit: very low (1), somehow below medium (2), medium (3), somehow above medium (4), very high (5)
Sanluan	The description of business environment after the renovation action of "san ran" problem: worse (1), same (2), better (3), greatly improved (4)
Sexpect	=1 if a firm expects the business environment to influence sales, 0 otherwise
Sizea	The monetary value of total assets in 2003
Sizeasq	The square of the monetary value of total assets in 2003
SizeE	Number of full-time employees in 2004
SizeEsq	The square of the number of full-time employees in 2004
Sizes	The monetary value of total sales in 2003
Sizessq	The square of the monetary value of total sales in 2003
Structure	The organizational structure: mechanistic (0), moderate (1) and organic (2)
Substi	=1 if superior to the substitutes, 0 otherwise
Supplier	The base of suppliers: very small (1), small (2), medium (3), large (4), very large (5)
Sur	=1 survivor in 2006, 0 otherwise
Tech	The technological level: low (1), less advanced (2), moderate (3), moderately advanced (4), highly advanced (5)

APPENDIX 9: Expectation-Prediction Table of Ordered Logit Model

Dependent Variable: OS4

Method: ML - Ordered Logit

Sample: 1 83

Included observations: 64

Excluded observations: 19

Prediction table for ordered dependent variable

Value	Count	Count of obs with Max Prob	Error	Sum of all Probabilities	Error
0	7	6	1	6.830	0.170
1	9	9	0	8.855	0.145
2	48	49	-1	48.315	-0.315