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Thesis of Returnee Entrepreneurs
in a High-Tech Cluster:
Zhongguancun Science Park in China

By Ou Dai

In Partial Fulfilment

Of the Requirements for the Degree

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Business School

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Abstract

This thesis focuses on returnee entrepreneurs in a large industrial cluster, Zhongguancun Science Park in Beijing, based on a combined quantitative and qualitative method. Using a hand-collected dataset of returnee entrepreneur-owned 353 SMEs (small and medium enterprises) and local entrepreneur-owned 358 SMEs from Zhongguancun Science Park, the author empirically investigates the role of returnee-firms in technology transfer and knowledge spillovers. The findings suggest returnee entrepreneurs play a significant role in technology transfer and act as a new channel for international knowledge spillovers. It also examines the relationship between the characteristics of returnees and their firms' performance in comparison with non-returnee firms. The results also show that returnee-firms have gained competitive advantage in high-tech industries and perform better than non-returnee firms. Based on eight case studies, the author also compares and contrasts differences and similarities in term of internationalisation process of these two types of firms. It is found that returnee entrepreneurs are the early adopters of internationalisation due to their international background and international networks.

The findings provide new insights into the role of returnee entrepreneurs in technological development in China and help advance the theoretical development of a new channel for knowledge spillovers. The findings also shed light on the relationship between performance, knowledge and social capital, and provide evidence that emphasises the need to consider the impact of a wide range of factors such as social capital and networks on a firm's performance. The thesis provides a new insight into the factors determining the early adoption of internationalisation of Chinese firms.

Keywords: Entrepreneurship, Knowledge Spillovers, Knowledge-based view, Social Capital, Networks, Internationalisation, Performance

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Ou Dai

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Chapter 1 Introduction

1.1 The Research Context of the Thesis

International human mobility has recently increased significantly, and two-way flows of human capital between emerging economies and OECD countries have become a new phenomenon. Returnee entrepreneurs have recently appeared in the global market as a group of US-educated or other OECD-educated immigrant scientists and engineers have returned to their home countries to set up new ventures in order to take advantage of promising local opportunities (Saxenian, 2002). China provides an exciting opportunity to examine these new issues, given that the country experienced an outflow of human capital since the late 1970s. The Chinese government has sent a large number of students abroad and hopes these students and scientists will be able to enhance China's scientific and technological development when they return. More than 1.2 million overseas Chinese scientists and students have studied in developed countries and nearly 300,000 of them have recently returned to China (Lin, 2010). Among these returned students, scientists and entrepreneurs, some started up their own companies in science parks perhaps due to policy incentives, as well as established infrastructure (People's Daily, 2003). In 2007, 6,000 returnees set up 2,000 new high-tech firms in Zhongguancun Science Park (ZSP), China's Silicon Valley¹. It seems this trend will continue.

In this thesis, a returnee entrepreneur is defined as a Chinese native with at least two years of working and/or educational experience in an OECD country returning to start up business back home.. Some studies have been carried out on this issue (Saxenian, 2002, Song et al., 2003, Zweig, et al., 2005, Hui et al. 2005, 2007). For example, Saxenian (2002) investigated how Taiwan's IT industry has benefited from returnees back to the 1990s. Song et al. (2003) used a case study to examine how Samsung invested in Korean returnees to

¹ People Daily, Overseas Edition, 21, September 2007.

become a big IT firm on the global stage. However, still very little known about how the background and characteristics of returnee entrepreneurs affect the performance of their ventures in the case of China.

Returnee entrepreneurs who studied or worked in OECD countries in the past possess a number of important characteristics that differentiate them from local-grown entrepreneurs. For instance, returnee entrepreneurs may have specific human capital that relates to a spectrum of skills and knowledge with varying degrees of transferability (Castanias and Helfat, 1992). Returnee entrepreneurs may have acquired academic knowledge in the form of general education as well as scientific and technical training. They may also have acquired practical business skills from either working in a commercial environment or through having started a business abroad.

Second, returnees may have specific social capital that involves the relational and structural resources attained through a network of social relationships (Adler and Kwon, 2002; Cooper and Yin, 2005). An individual who develops social capital through working abroad may be able to use that social capital to access diverse sources of knowledge when they become a returnee entrepreneur.

Third, returnee entrepreneurs may also have international entrepreneurial orientation to view internationalisation as an opportunity to expand their business across national borders and be willing to take such risks because of their overseas education and working experiences.

The most important thing is that these Chinese returnees may represent a new source of advanced technology and ideas, and a bridge between China and the outside the world. They may be able to enhance technological development of China due to their international background and experience. They have both international and local knowledge, as well as professional networks. As China continues its fast economic growth, talented Chinese

professionals who contributed to a ‘brain drain’ in the past may represent ‘brain circulation’ or ‘brain gain’ through human mobility (Saxenian, 2003).

1.2 The Aim of the Thesis

The rise of returnee entrepreneurs poses a question as to whether they act as a new channel for international knowledge spillovers. Specifically, the first aim of this thesis is to investigate returnee entrepreneurs as a new channel through which spillovers take place across borders and firms’ boundaries. Particular emphasis is placed on the connection between knowledge spillovers and innovation. Not much is known about knowledge spillovers per se. The processes through which knowledge spillovers take place have received even less attention. As Audretsch et al (2003, p.13) pointed out “...*there is no understanding of the way in which spillovers occur and are realized at the geographic level*”. Considerable efforts have been made by researchers to examine the relation between knowledge spillovers and innovation. Therefore, this thesis attempts to investigate a new channel through which spillovers take place across borders and firms’ boundaries. The research examines the theoretical premises regarding international knowledge spillovers and innovation in the context of emerging economies. In particular, it is interesting to examine whether returnee entrepreneurs are able to enhance the innovative performance of their firms in a high-tech cluster where international knowledge spillovers occur through their social networks. This study will contribute towards understanding this new channel of international spillovers.

In addition, there is a lack of formal evidence showing whether returnee-owned firms gain a substantial competitive advantage compared with local entrepreneur-owned firms. What are the differences in innovation performance between returnee entrepreneur and local entrepreneur-owned firms?

This research also examines whether small and medium enterprises (SMEs) are born

global in today's business environment, which is highly international and knowledge information-intensive, to discover and explain the phenomenon of the rapid internationalisation of firms in the case of returnee entrepreneurs' SMEs. Hence, this study will have significant theoretical and practical implications. The research aims of this thesis are as follows.

- To examine whether direct knowledge spillover occurs and affects the innovation performance of returnee owned firms compared with non-returnee owned firms.
- To investigate whether indirect inter-firm knowledge spillover takes place from returnee owned firms to non-returnee owned firms.
- To study the differences in terms of firm performance between returnee entrepreneurs and local entrepreneur-owned firms.
- To examine to what extent, and under what circumstances, returnee entrepreneurs are becoming the earlier adopters of internationalisation in China in comparison with local firms.

In order to answer these questions, this thesis adopts a combined analytical framework, namely the 'knowledge-based view' and 'social capital theory' to examine whether returnee entrepreneurs have gained unique comparative advantages over non-returnee entrepreneurs at a firm level. In particular, given the importance of social capital for access to resources and mobilization by entrepreneurial firms, the author is interested in how global networks affect returnee-owned firms in terms of business opportunities, innovative characters, unique resources and firm performance. In addition, the focus of this thesis is on the role of returnee entrepreneurs as the carriers of advanced technology in their home country and the promoters of the internationalisation of Chinese firms. The findings from this study will generate important implications for both policymakers and business practitioners regarding the role of returnee entrepreneurs in the internationalisation process and knowledge spillovers.

1.3 Structure of the Thesis

This thesis consists of six main chapters and is structured as follows.

In Chapter 2 a literature review is conducted in order to provide theoretical foundations for the empirical investigation. A series of theories is investigated, such as ‘knowledge-based view’ and ‘social capital theory’, ‘entrepreneurship of knowledge spillovers’ and ‘internationalisation theories’. A justification is given for adopting a combined framework to explain the phenomenon of returnee entrepreneurs.

Chapter 3 discusses the methodology, the operationalisation of the research questions and the data collection. Choosing a mix of qualitative and quantitative methods allows the author to conduct both a descriptive analysis and statistical tests to help generate new insights into the research questions.

Chapter 4 examines the important issue as to whether returnee entrepreneurs are a new channel for knowledge spillovers. Both international business (IB) scholars and policy makers have paid much attention to the impact of rapid globalization in the form of foreign direct investment (FDI) and international trade. In particular, the impact of FDI and trade on international knowledge transfer in developing countries has been the focus of attention. However, the growing mobility of scientists and entrepreneurs may represent a new channel for international knowledge spillover, in parallel with FDI and international trade. In particular, knowledge spillovers and social networks are important factors affecting innovation performance. The findings from this investigation will generate important policy implications and add a new dimension to International Business theory.

Chapter 5 empirically investigates the performance of returnee owned firms in comparison with local firms. Performance is measured by perceptions (satisfaction) of entrepreneurial managers. The evidence obtained will address whether returnee owned firms have competitive advantages and perform better than local firms because of their knowledge,

entrepreneurial orientation and international networks.

Chapter 6 focuses on the internationalisation of returnee owned firms and examines whether returnees are the earlier adopters of internationalisation in comparison with local firms. In particular international experiences, knowledge and international networks are examined for their contribution towards the process of early stage internationalisation.

Chapter 7 provides conclusions and a summary of the research findings and contributions. It also draws policy implications. Suggestions for future research are also presented.

Chapter 2 An Overview of the Literature

This chapter reviews the theoretical and empirical debates across different bodies of literature in terms of entrepreneurship, international entrepreneurial orientation, the knowledge-based view, knowledge spillovers, social capital and internationalisation. The author also offers a new assessment of the existing literature in the context of emerging economies where returnee entrepreneurs set up their businesses.

2.1 The Concept of Entrepreneurship

The study is going to focus on the new phenomenon of returnee entrepreneurs. It naturally falls into research on entrepreneurs and entrepreneurship. Therefore, reviewing the relevant entrepreneurship literature is necessary. There is no common definition of entrepreneurship, although it has been used frequently in different ways. Entrepreneurship as a field of study is still relatively young (Cooper, 2003). A selection of the appropriate basis for defining and understanding entrepreneurs created a challenging problem for entrepreneurial research. Different studies have used various definitions of entrepreneurship. Many of these are based on the classic work of scholars such as Knight (1921), Schumpeter (1934), and Kirzner (1973). The following definitions of entrepreneurship are common:

1) Drucker (1985) defines “*entrepreneurship is an act of innovation that involves endowing existing resources with new wealth-producing capability. Innovation is the function of entrepreneurship*”.

2) Stevenson and Gumpert (1985) sum up entrepreneurship as “*the pursuit of opportunities that are beyond the resources currently controlled*”

3) Gartner (1989) states that “*entrepreneurship is the creation of organisations, the process by which new organisations come into existence.*”

4) Timmons (1997) defined “*entrepreneurship as a way of thinking, reasoning, and*

acting which is opportunity-driven and holistic in approach and leadership.”

5) Carton, Hofer and Meeks (1998) provide an operational definition of entrepreneurship that attempts to encompass definitions from scholars like Schumpeter into a comprehensive and adequate concept: *“entrepreneurship is the pursuit of a discontinuous opportunity involving the creation of an organisation or sub-organisation with the expectation of value creation to the participants. The entrepreneur is the individual or team who identifies the opportunity, gathers the necessary resources, and is ultimately responsible for the performance of the organisation. Entrepreneurship is the means by which new organisations are formed with their resultant job and wealth creation”*

6) Shane and Venkataraman (2000, p. 218) put emphasis on entrepreneurial opportunity and individual nexus. They define the study of entrepreneurship as the: *“examination of how, by whom, and with what effects opportunities to create future goods and services are discovered, evaluated, and exploited”*.

‘Overall, the definition of entrepreneurship has evolved from a trait on the supply side (who is the entrepreneur) to a context or demand side approach, e.g. the influence of firms and markets on how, where, and why new enterprises are founded’ (Thornton, 1999). Entrepreneurship research is biased towards either entrepreneurial behaviour or organisational behaviour studies. However, it is argued that without clear definitions of central concepts, each researcher would make his/her own interpretation of the concepts and this may limit the knowledge accumulation within the field. Davidsson (2003) states that the lack of agreement regarding the definition of entrepreneurship as a construct is an indicator that entrepreneurship is a field of inquiry with a relatively indistinct paradigmatic. The focus on explorative research in previous studies has been made at the price of a lack of conceptual standardization, and replication as well as the fragmentation of research.

Entrepreneurship research develops in an interdisciplinary paradigm, entrepreneurship

conceptualizations parse into academia, finance, and practice domains (Ireland et al, 2005). Phan (2004) appeals for a distinct theory of entrepreneurship as there are different theories, such as anthropological theories, psychological theories, sociological theories and economic theories which have been used in explaining entrepreneurship as shown in Figure 2.1 applied by Herron, L. and Robinson (1993).

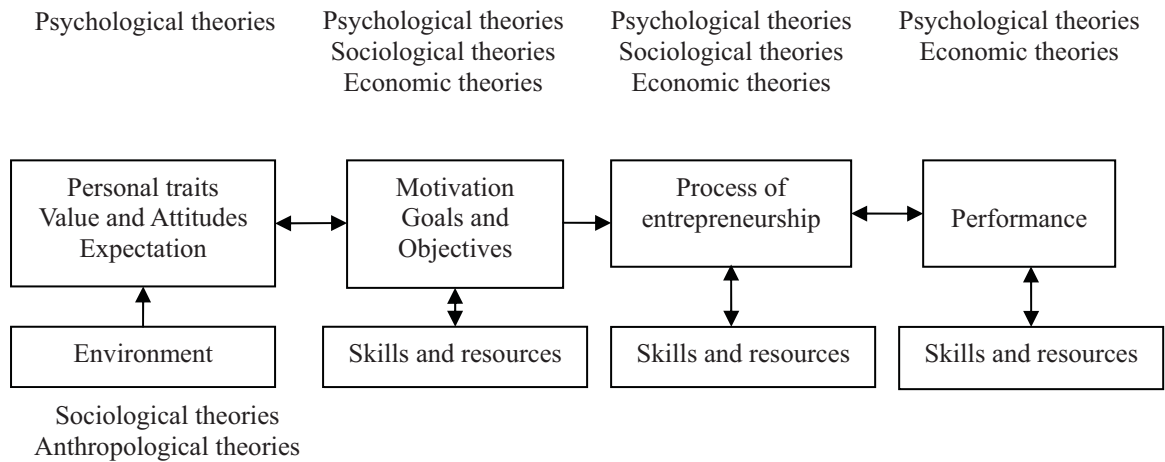


Figure 2.1 Different Theories in Explaining Entrepreneurship

Psychological studies have focused on the motives and character traits of potential entrepreneurs. Amit et al., (1995) has found that engaging in entrepreneurial activity is driven by individual motivation rather than on the basis of their personal attributes and risk attitudes. There are two types of entrepreneurs. ‘Push’ entrepreneurs are those whose dissatisfaction with their current position is unrelated to their entrepreneurial characteristics. This pushes them to start a venture in order to survive. ‘Pull’ entrepreneurs are those who are lured by their new venture ideas and initiate venture activities because of the attractiveness of the business idea and its personal implications (Amit et al.1995). An individual’s decision on whether to become an entrepreneur is likely to be based on a comparison of the expected reward of entrepreneurship and the reward of the best alternative use of his (her) time (Casson, 2003).

The sociological approach has considered the social background of entrepreneurs as an

important influence. However, it has never constituted a dominant theme within the subject. In terms of national policy, governments have also influenced the number of entrepreneurs through supportive policies and regulatory legislation (Koning and Snijders, 1992; Herron and Robinson, 1993; Storey, 1994; 1999; and Audretsch and Thurik, 2001).

Motivation is thought to act as a framework in different economic and social contexts. Hence, we have a rich and multidimensional group of entrepreneurship theories that could be used together to explain entrepreneurial phenomena. What is needed in the future is a stronger focus on exploitation – replication, integration and synthesis – in order to achieve a better balance between exploration and exploitation in entrepreneurship research (Liao and Welsch (2003). Different theories as well as different definitions should be used in different contexts. Research on entrepreneurs' characteristics and entrepreneurial process based on psychological and behavioral schools may find the causes of entrepreneurship, which could lead to the investigation of entrepreneurs' different social and cultural backgrounds by following the sociological path. Economic theories try to find the relationship between economic environment and entrepreneurship. In addition, the management literature focuses on an entrepreneur's skills, resources, management and firm growth, and may discover the factors affecting entrepreneurs' success. Entrepreneurship is a dynamic and innovative process designed to exploit economic opportunities. The author argues that the study of entrepreneurship could be conducted under a combination of these main theoretical streams. In particular, this research would combine the knowledge-based view, social network theory, and knowledge spillovers of entrepreneurship to investigate the of role returnee entrepreneurs in their firms' innovation and performance compared with local entrepreneurs.

2.2 Opportunities, Innovation and Entrepreneurship

The examination of previous research shows that, for at least 35 years, person-centric and strictly environment-based research has not adequately delineated explanatory linkages of entrepreneurship (Bull and Willard, 1993; Eckhardt and Shane, 2003; Mitchell, 1996). In recent years, the recognition of opportunities and the decisions to commercialize them have been the focal concern of research on entrepreneurship. The existing studies show that the ‘entrepreneurship construct’ concerns opportunity identification and exploitation (Shane and Venkataraman, 2000), corporate renewal (Guth and Ginsberg, 1990), and the pursuit of innovation (Schumpeter, 1934, p. 66; Vesper, 1982; Gartner, 1989; Reynolds, 1999; Alvarez, 2003).

New opportunities can be detected and exploited in two ways. First, opportunities can be seen as objective in terms of a context or demand. Opportunities are real and independent of entrepreneurs that perceive them (Casson, 2005). The perception of pursuing opportunities in order to decide whether to become an entrepreneur will be based on a comparison of the expected rewards, with the choice based on the best way to use his (her) time (Casson, 2003). For instance, entrepreneurs who have international entrepreneurial orientation (hereafter IEO) interact with business, social and economical environments and create dynamic tension and forces that become the engine of modern global capitalism (Baumol, 2002). In the context of internationalization, IEO is conceptualized as the sum of manageable strategic orientations, including innovativeness, risk taking, proactiveness and competitive aggressiveness dimensions (Covin and Covin, 1990; Covin and Slevin, 1991; Lumpkin and Dess, 1996; Birkinshaw 1999; Covin and Miles, 1999; Pittaway 2001; Dess et al., 2003). Different orientations and visions with regard to entry into the international market will lead entrepreneurs to see the international market differently when making decisions.

Entrepreneurs can utilize information asymmetries, such as typical imperfect markets of

knowledge and other assets to discover opportunities: “*the function of the entrepreneur consists not of shifting the curves of cost or of revenues which face him, but of noticing that they have in fact shifted*” (Kirzner, 1973), i.e. opportunities are exogenous. It can be said that Kirznerian entrepreneurs generate equilibrating tendencies within the global economy by proactive and competitively aggressive behaviour. For Kirzner (1973, p. 127) the entrepreneur remains “*the equilibrating force whose activity responds to the existing tensions and provides those corrections for which the unexploited opportunities have been crying out*” (see also Kirzner, 1999). Hence, the perception of international opportunities as *exogenous* conditions will cause entrepreneurs to respond accordingly. IEO will make a big impact on the recognition and creation of international development opportunities and on the decisions to commercialize business ideas, and the process by which opportunities are discovered, evaluated and exploited (Shane and Venkataraman, 2000, p. 218). Such a combination of innovative, proactive, and risk-seeking behaviour has been studied in the management literature (e.g., Covin and Slevin, 1989; Miller, 1983; and Lumpkin and Dess, 1996). The characteristics of entrepreneurs’ behaviour can be observed in how a firm responds to a competitor’s action (Lumpkin and Dess, 2001).

The prevalent view in the entrepreneurship literature is that opportunities are exogenous. However, the theory of innovation in the economics literature suggests that opportunities are endogenous. These opportunities are endogenous from the viewpoint of Schumpeterian entrepreneurs who have the basic capabilities of innovativeness, risk-taking and autonomy. As this type of entrepreneur views opportunities as objective, his/her function is to innovate or carry out new combinations, and “*the process of creative destruction is the essential fact about capitalism, destroying the old one, and incessantly creating a new one*” (Schumpeter, 1942, p83). For Schumpeter, entrepreneurial activity involves innovation through the introduction of new goods or methods of production, the opening up of new markets, the

conquest of a new supply of materials and the reorganisation of an industry (Schumpeter, 1934). The entrepreneur is not necessarily somebody who puts up the initial capital or invents the new product, but may be the person with the business ideas. In the hands of entrepreneurs, ideas become powerful as well as profitable. In particular, Schumpeter brought the entrepreneur into prominence in an economic thought that is the driver of the capitalist engine: the entrepreneur is the prime mover in economic development. These need to be reflected in innovation in terms of technology and product development, new processes, new business models and new markets (Schumpeter, 1934). His famous notion of ‘creative destruction’ can be presented along with a technological cycle in Figure 2.1.

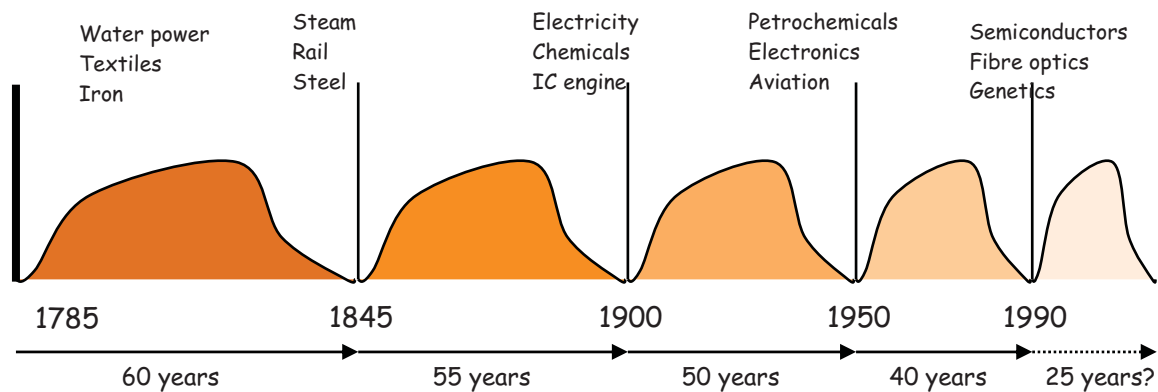


Figure 2.2 Schumpeter’s Theory of Creative Destruction

Source: Economist survey of Innovation in Industry, 1999

His work on entrepreneurship had an important impact on business history, on innovation, on the shaping of ideas relating to strategic responses and on the analysis of economic decline (Cochran, 1971; Elbaum and Lazonick, 1986; Landes, 1969). Schumpeter’s economic philosophy follows a uncertainty and disequilibrium approach that constitutes the breeding ground for new business opportunities and new ventures (Bettis and Hitt, 1995; Meyer and Heppard, 2000). The disturbance of equilibrium towards a new position is called ‘creative destruction’, because the exogenous circumstances are changing, such as technological advances, industry conditions, economic power and new regulations by local and provincial governments as Saxenian (2002) documented. The Schumpeterian

entrepreneurs act as dynamos of new innovations to create new opportunities and start disequilibrating tendencies that result in ‘creative destruction’ within the world economy.

2.3 The Resource-based View and Knowledge-based View of the Firm

The resource-based research on innovation is based on the fundamental premise that organisational resources and capabilities are those that underlie and determine a firm’s capacity for innovation. At a firm level, the resource-based view (RBV) of the firm is derived from the concept of economic rent and a view of the company as a collection of capabilities. The chosen strategy should allow the firm to best exploit its core competencies relative to opportunities in the external environment (Hitt et al., 2001). The RBV suggests that a firm’s unique resources and capabilities provide the basis for the firm’s performance. The fundamental point of the RBV is that certain key attributes of resources and the resources configuration of a firm provide it with the necessary competitive insulation for sustained abnormal profits, which in turn are a crucial fuel for sustained growth over time (Rumelt 1987; Penrose 1959). The RBV holds that sustainable competitive advantage is created when firms possess and employ resources and capabilities. Barney (1991) formalised this theory and defines firms as bundles of commitments to technology, human resources and processes all blanketed by knowledge that is specific and crucial to the firm. These resources must be valuable, rare, imperfectly imitable and not strategically substitutable. In terms of value and rarity, there are not enough for all competitors, and they are hard to copy and non-substitutable with other resources (Barney, 1991). The RBV suggests that the firm’s internal resources and capabilities should be the foundation for the firm’s strategy as they are the primary source of profit and provide a much more stable basis for defining the firm’s identity than the dynamic and often unpredictable external environment (Grant 1991). The entrepreneur may already control these resources or may be able to obtain them in the future.

But without resources to exploit a situation, even the best situation cannot create an entrepreneur. These unique bundles of resources, which are different from competitors, contribute to a firm's competitiveness and determine the success and survival of the firm (Alvarez and Busenitz, 2001; Barney, 1991; Lindelof and Lofsten, 2004).

Companies are able to achieve superior performance by best exploiting internal resources and capabilities in relation to opportunities in the external environment. Grant (1991, 1996) further distinguishes internal resources into three types: (1) tangible, (2) intangible, and (3) personnel-based human resources. A company can combine their internal resources with their external relations and formulate their strategy. It does not only incorporate market opportunities and competition into the model, but also emphasizes internal resources and strategic capabilities. Competitive advantage derived from the configuration of internal resources can be seen in Figure 2.3.

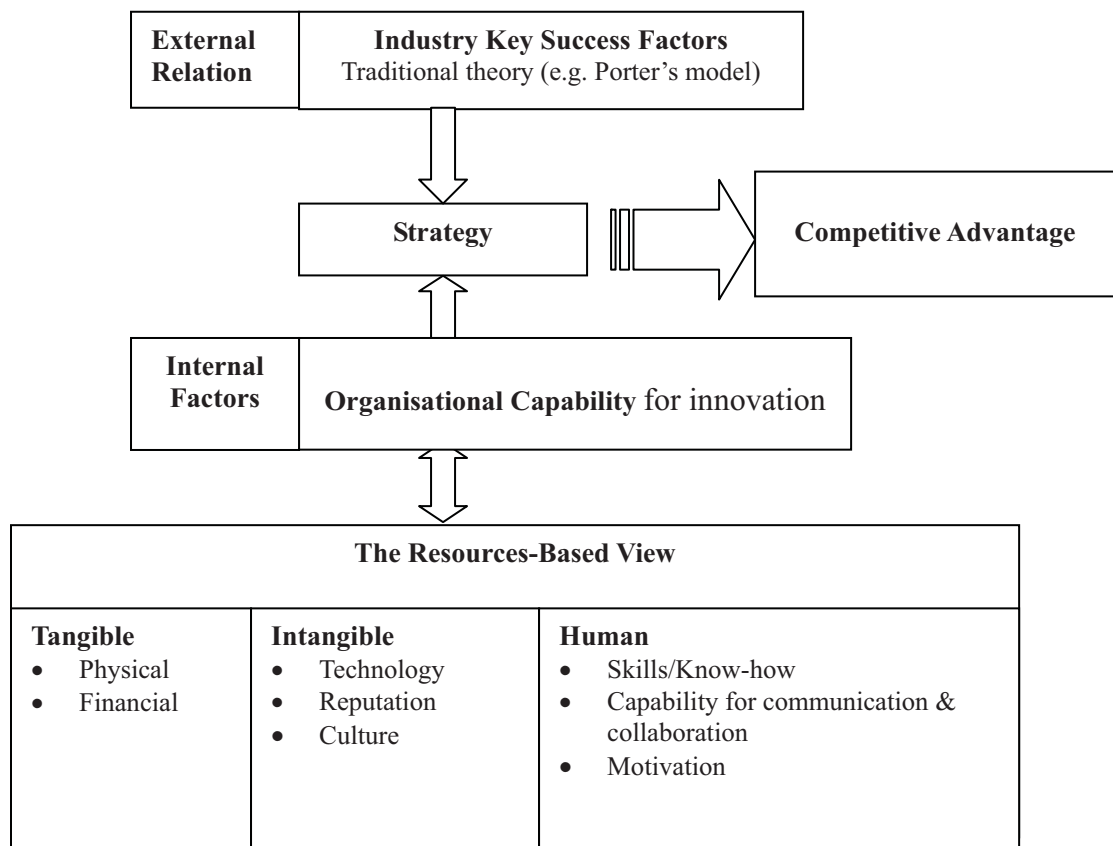


Figure 2.3 The Resource-based View of the Firm

The RBV has important practical implications for entrepreneurial firms because it focuses on the strengths, assets, and capabilities of entrepreneurs and their ventures. Firm development and entrepreneurial growth is an evolutionary and cumulative process of experimentation and learning about resources (Hayek, 1968; Spender, 1996) where resources and capabilities may serve as cognitive drivers for strategy (Itami & Roehl, 1987) and innovation. *“Heterogeneity is a common attribute of both resource-based and entrepreneurship theory — although resource-based logic has tended to focus on heterogeneity of resources while entrepreneurship theory has tended to focus on heterogeneity in beliefs about the value of resources”* (Alvarez and Busenitz, 2001: 756). The concept of heterogeneity is usefully unpacked in terms of entrepreneurial cognition (Barr, Stimpert & Huff, 1992), entrepreneurial discovery (Kirzner, 1997), changing market opportunities (Shane & Venkatraman, 2000), and differential capabilities in the coordination of knowledge (Conner & Prahalad, 1996). The process of discovering and pursuing business opportunities in the global market requires entrepreneurs to have capabilities and special knowledge to pursue or create opportunities themselves. Capabilities emerge via the integration of specialist knowledge, and the entrepreneur or organisational unit is responsible for combining different types of knowledge, skills and resources (Bakhr, 2004).

The RBV also helps define the difference between an entrepreneur and a manager and is rooted in the work of Penrose (1959). Penrose (1959) defines an entrepreneur as someone who adds value and creativity to the resources available and begins to exploit the market place to grow the business. As entrepreneurship is the pursuit of opportunities beyond the resources firms currently control (Stevenson and Gumpert, 1985), it is necessary to move beyond the identification of an opportunity for its pursuit, to gather the strategic resources and to create competitive advantage. On the other hand, a manager’s prime focus is to take care of the resources. Casson (2005) points out that the RBV highlights the importance of

human resources, as reflected in competencies and capabilities to firm performance.

In addition to RBV, there are also a variety of approaches that have played their own unique role in the evolution of RBV as a theory. The rise of interest in core competencies and the emerging knowledge-based view (KBV) of the firm reflects a belief that intangible assets, technical and organisational knowledge hold the key for competitive success. The KBV is a theoretical perspective in the literature of strategic management that, as its name suggests, emphasizes knowledge as the key elucidatory concept. KBV derives from RBV. Knowledge has been considered the only meaningful resource (Drucker, 1993, P.42) which provides better value and leads to key competitive success. The basic idea of KBV is that the primary role of the firm and the essence of organisational capability is the integration of knowledge. Firms exist because they are more efficient in integrating knowledge than markets (Grant, 1996). He also suggests that knowledge in its various forms is the resource of interest (Grant, 1996b). At firm level, knowledge has been widely recognized as a specific strategic resource and the principal basis for creating competitive advantage according to the KBV (Grant and Fuller, 1995; and Grant, 1996a, 1996b, 1997). Knowledge, as a special strategic resource, does not depreciate in the same way as traditional economic productive factors do. The nature of most knowledge-based resources is mainly intangible and dynamic, allowing for idiosyncratic development through path dependency and causal ambiguity, which are the basis of the mechanism for economic rent creation (Grant in 1996a, 1996b, 1997). Grant (2002) suggests that a *“focus on the role of knowledge as a factor of production”* unifies KBV.

Alvarez and Busenitz (2001) criticise the proposed distinctions between the RBV and the KBV, which state that the RBV is Ricardian and not Schumpeterian (Carpenter, Sanders and Gregersen, 2001). They argue that these distinctions are artificial as knowledge and dynamic capabilities are an extension of the boundaries of the RBV. For instance, knowledge

is regarded as the most important resource of the firm (Grant, 1996) because knowledge is an important basis for creating sustainable competitive advantage. The KBV emphasizes the importance of specific stocks of knowledge that are tacit, socially produced and reproduced, and path-dependent (Adman and Devine, 2000). It seeks to explain on the one hand the sources of competitive advantage and on the other hand the existence and boundaries of firms. The tacit nature of knowledge refers to the non-codifiable, person specific and context-specific dimension of knowledge. The social dimension stems from the interaction between members of economic organisations which creates an accumulation of knowledge. Accumulated knowledge is more than the sum of each individual's personal knowledge and is typically embedded in routines. Path dependency arises from the fact that each economic organisation provides a unique framework for the generation, mobilisation and articulation of knowledge (Adman and Devine, 2000). A good entrepreneur knows how to acquire, create and apply knowledge which is tacit, social and path dependent and is interwoven with the possibilities that the firm faces in efficiently using its knowledge base when being shaped and reshaped within an interactive process. (Adman and Devine, 2000).

In this setting, under certain conditions, to be successful, good entrepreneurs need 'knowledge' to recognise profit opportunities (Kirzner, 1973, p. 35). In particular, it is assumed that by using this superior 'knowledge' the entrepreneur will capture profits. The abilities of the entrepreneur are the principal human resource possessed by the firm. Kirzner (1973) argues that entrepreneurial knowledge goes beyond traditional applications of the RBV and transaction cost economics, and is an idiosyncratic resource that is capable of generating and sustaining a competitive advantage of business ventures. Entrepreneurial knowledge is the ability to take conceptual and abstract information concerning where and how to discover undervalued resources and how to deploy and exploit these resources (Alvarez, 2003). Knowledge as the resource is very important, but research is needed to

answer the question as to where knowledge comes from and how knowledge is created and spills over in the context of globalisation.

2.4 Knowledge Creation, Innovation and Knowledge Spillovers

The New Growth theory assumes that firms exist exogenously and then engage in the pursuit of new economic knowledge as an input into the process of generating innovative activity (Griliches, 1979; Romer, 1986, 1990; Lucas, 1988). The theory has also attempted to model production processes both by introducing human capital, explicitly as a factor input into production functions, and by allowing for the possibility of externalities (Mankiw, et al., 1992; Romer, 1993). This theory emphasizes the process of knowledge accumulation by relating it directly to human capital accumulation. These processes generate new knowledge, and gradually embody potentially labour-augmenting training or R&D activities (Lucas, 1988; Romer, 1990).

2.4.1 Innovation, Knowledge Spillovers and Human Mobility

From the evolutionary literature, Nelson and Winter (1982) note that a firm's explicit and tacit stocks of knowledge are articulated and mobilised in the course of interaction with the external economic environment, and what is learnt is then loaded in the firm's 'routines', which makes it available for future use. Since these routines are open to improvement, the firm is conceptualised as a learning organisation, with organisational knowledge emerging as the outcome of this learning process (Dosi and Marengo, 1994; Lazonick, 1994; Teece and Pisano, 1994).

Innovation with its diffusion can be seen as a cumulative and interactive process integrating technology push and market pull (Dosi, 1988; Lundvall, 1992). Learning is cumulative, indicating that it is not a rapid 'leap to wisdom' but rather a gradual process

whereby new knowledge is built upon previous understanding (Nelson and Winter, 1982). According to the innovation literature, tacit knowledge is, to a great extent, embodied in humans and thus can be transferred effectively by human mobility (Kaj et al., 2003; and Song et al., 2003). Hence, labour mobility may act as a channel for knowledge diffusion (Zucker et al. 1998; Almeida and Kogut, 1999). Previous research shows that tacit knowledge can be transferred more effectively through hand-on experience (Cohen and Levinthal, 1990), and learning-by-doing (Teece, 1982). Hence, human mobility helps facilitate the acquisition of technical skills.

Knowledge spillover is, indeed, an exchange of ideas among individuals. In knowledge management economics, a non-rival knowledge or a market externality that has a spillover effect of stimulating technological improvements in a neighbour through one's own innovation. This is also consistent with the insight of Arrow (1962) into knowledge spillovers. He notes that the traditional factors in production are non-rivalous which does not prevent others from using them. Based on the assumption that firms learn simultaneously to produce more efficiently, once a piece of knowledge is discovered, spillovers will eventually migrate across the whole economy. On the other hand, knowledge is not universally accessible (Arrow, 1962). Knowledge is also partially excludable (Romer, 1990) which allows private firms to have an incentive to invest in R&D in order to obtain higher profits based on market demand. Given the non-rival nature of general knowledge, a productive asset creates the possibility of knowledge spillovers which benefit other firms. In other words, investments in knowledge creation by one party emerge external to facilitate innovation by other parties (Jaffe et al., 2000).

With the emergence of the new-growth theories, the existing empirical research on spillovers has been extended from the traditional inter-firm or the inter-industry context to an international context (Terleckyj, 1974; Scherer, 1982a). One or more other firms or industries

will benefit from knowledge and technology spillovers from a firm's or industry's R&D efforts and business activities (Jaffe 1986; Los and Verspagen, 2000). Influenced by such theoretical development, intensive research has been conducted on the effect of technology spillovers on host countries via foreign direct investment (FDI) and trade. Those have been regarded as the main vehicle for technology spillovers (Grossman and Helpman, 1991; Blomstrom and Kokko, 1998; Buckley, et al., 2002; Liu and Wang 2003; Keller and Yeaple, 2003, Marin and Bell, 2006). It is recognized that knowledge spillovers not only occur through FDI and trade, but also take place through human mobility, given that scientific and technical human capital has become more mobile and is even more able to cross national borders than before.

The tacitness of knowledge is another major reason why knowledge spillovers, and in turn innovation, require interactive processes. Very few studies have been carried out on the impact of cross-border human mobility on knowledge spillovers (Song et al., 2003). There is relatively little empirical evidence on the extent to which cross-border human mobility affects the international diffusion of technological and scientific knowledge. In particular, the impact of reverse flows of highly skilled labour from OECD countries to emerging economies, such as China and India, has so far only attracted the attention of journalistic commentators (Li, 2006; People's Daily, Overseas Edition, 2007).

2.4.2 The Social Dimension of Knowledge Spillovers

In line with more traditional production factors such as physical, financial and human capital, social capital is also considered a factor contributing to production of goods and services. Social capital is a typical concept across the social sciences in terms of its contestability and the debate which it inspires. Many definitions describe what social capital is and what it does. For example, Bourdieu and Wacquant (1992, p. 119) define social capital as "*the sum of the*

resources, actual or virtual, that accrue to an individual or a group by virtue of possessing a durable network of more or less institutionalised relationships of mutual acquaintance and recognition. They acknowledge that social capital taking a variety of forms is indispensable to explain the structure and dynamics of differentiated societies.

Approximately in parallel with Bourdieu and Wacquant (1992), Coleman (1988) defines social capital in terms of structure and the functions. His efforts to refine the concept of social capital underlined the links between social capital and access to resources. Social relations were viewed by Coleman as making up important ‘capital resources’ for individuals by means of processes such as setting “*obligations, expectations and trustworthiness, creating channels for information and setting norms backed by efficient sanctions*” (Coleman, 1988). These resources may be influenced by factors such as generalised trustworthiness which ensures that obligations are met.

The third tradition has emerged around the work of Putnam (1993; 1995; 2000), who proposes the following definition of social capital: “*Social capital here refers to features of a social organisation, such as trust, norms, and networks, that can improve the efficiency of society by facilitating coordinated actions*” (Putnam 1993: 167). Whilst acknowledging that there are different forms of social capital, Putnam (2000) argues that forms of social capital vary (more or less) along two key dimensions: between bridging (or inclusive) and bonding (or exclusive).

Social capital includes both interpersonal relationships and the resources embedded in the relationships (Burt, 1992). Social capital addresses *networks* and what can gain through leveraging network ties and relationships. In line with this view, Nahapiet and Ghoshal (1998, p.243) define social capital as the “... *sum of the actual and potential resources, embedded within, available, and derive from the network of relationships.*” Social capital is an attribute of networks. Meanwhile, social capital in this sense can be both an outcome and a causal

factor as social networks. As discussed above, tacit knowledge is one of the vital components of the creation of new knowledge and innovation (Maskell and Malmberg, 1999). The fact that tacit knowledge is experienced-based and context-specific means that it cannot be transferred over long distances (Polanyi, 1962). It can be assimilated only by observation and face-to-face interaction, and in turn spill over to firms located in clusters.

Furthermore, the social characteristics of knowledge derive from the fact that the value of tacit knowledge increases when it is shared. During this process, tacit knowledge becomes explicit and contributes to innovation and the generation of new knowledge (Nonaka, 1994). Some philosophers even argue that knowledge cannot be measured and thus cannot be assigned a price (Gorz, 2003). According to Gorz, tacit knowledge has a social/public characteristic and its social value/use is reduced when it is privatised. This is why geographic proximity facilitates innovation because it enables the diffusion of tacit knowledge through interactive contact. The main body of the literature on advanced economies then focuses mainly on the relationship between knowledge spillovers and innovation; it pays less attention to the nature of knowledge spillovers and the way in which they occur via social networks, relying on social capital.

2.4.3 Characteristics of Social Network and Application

Nahapiet and Ghoshal (1998, p251) propose a conceptual framework to explain social capital, defining three inter-related dimensions: structural, relational and cognitive. First, the structural dimension addresses network configurations and linkages which is referred to as “whom you reach and how you reach them” by Burt (1992, p.59). It captures the pattern of relationships that define a particular network and the way in which a network structure emerges. The structural dimension includes both the direct and indirect ties individuals maintain with others (Granovetter, 1973). The number of direct ties a researcher maintains

provides insight into the redundancy of knowledge resources he or she is exposed to through the research process (Burt, 1992; Coleman, 1988). In a related way, it is important to consider how social context affects the production of social capital, from start-up to stability. The structure of an owner's networks affects the life chances of their businesses (Aldrich and Zimmer 1986; Zimmer and Aldrich 1987). Second, the relational dimension of social capital accesses the extent to which networks are underpinned by interpersonal ties held between exchange actors. Through interactions, individuals are able to access and leverage resources embedded in relationships. The strength of relations indicates how well an individual knows his or her exchange partners. Finally, cognitive dimensions inform shared 'interpretative schemes' developed by groups and shared language used to articulate and embed "shared representations, interpretations and systems of meaning among parties" (Nahapiet and Ghoshal, 1998).

Lin's approach is better suited for adaptation to the meso-level of organisations. Lin (2002, p24-25) suggests that social capital should be defined operationally as "*the resources embedded in social networks accessed and used by actors for actions*". Lin also differentiates between two prime motives for actions, that of preserving or maintaining resources - what he calls expressive actions - and that of searching for and obtaining resources, or instrumental actions. Instrumental actions have economic, political, or social outcomes. Lin proposes that the success of action is positively associated with social capital. Social capital may, for instance, facilitate the flow of information, and social ties may exert influence on agents. For an organisation this may imply increased earnings or reduced costs, favourable political decisions and representation in public committees, or an enhanced reputation. The survival of an organisation is the prime outcome when seeking to preserve and maintain resources. Social capital may function as certification of social credentials and may also reinforce identity and recognition (Lin, 2002).

Halpern (2005) attempts to put these conceptual strands together in three major cross-cutting dimensions in terms of the *components* of social capital - networks, norms (a cluster of norms, values and expectancies shared by group members); sanctions (punishments and rewards) - help maintain the norms and networks; *level or domain of analysis* including individuals, groups, communities, nations, can also be divided into micro-level, meso-level and macro-level.

However, the disagreement is rooted unsurprisingly in the absence of consensus not only as to how social capital should be conceptualised, but also as to its usefulness, and in the contentious debate concerning how social capital should be measured. In terms of the effect of social capital, the presence of social capital is viewed as being connected to local social structures (e.g. community social organisations), which can benefit particular individuals or groups. The collective phenomenon of social networks can be understood at the individual level using the concept of ‘social capital’ (Bourdieu, 1986). Each individual holds social capital that corresponds to all of the resources that are linked to the possession of durable social relationships. These social relationships are more or less institutionalised (Lin, 1999). It is also widely agreed that social capital facilitates mutually beneficial collective action (Hobbs, 2000). When networks become fragmented consisting of different groups with disparate agendas, pockets of social capital might potentially undermine collective action (Llewellyn and Armistead, 2000).

With the concept of ‘embeddedness’, Granovetter (1973, 1974, 1985, and 1991) has studied the impact of social networks held by individuals and by communities on their economic success. More ‘open’ networks, with many weak ties and social connections, are more likely to introduce new ideas and opportunities to their members than closed networks with many redundant ties. His famous ‘the strength of weak ties theory (SWT)’ indicates that strong ties create transitivity – two nodes connected by a strong tie will have mutual

acquaintances (ties to same third parties). Ties that are part of transitive triples cannot be bridges or local bridges. Only weak ties can be bridges; strong ties are embedded in tight homophilous clusters, whereas weak ties connect to diversity and are a source of novel information.

Burt (1992) applied 'structural holes' to explain that individuals can exercise influence or act as brokers within their social networks by bridging two networks that are not directly linked. Structural holes are an important form of social capital. This argument applies to individuals, firms, and entire economic sectors. Krackhardt (1992) proposed 'the strength of strong ties', and then analysed how emotional networks give informal influence (Krackhardt and Hanson, 1993). Lin et al (2001) used resource as a medium variable to explain how to look for jobs in the labour market. Social networks have also been used to examine how companies interact with each other, characterizing many informal connections that link executives together, as well as associations and connections between individual employees at different companies. Social capital, then, is not directly an attribute of individuals, but rather their abilities to draw upon their position in a network (Kadushin, 2004). These networks provide ways for companies to gather information, deter competition, and even collude in setting prices or policies. This approach has turned out to be useful for explaining many real-world phenomena but leaves less room for individual agency, the ability for individuals to influence their success, so much of it rests within the structure of their network.

In term of measurements, social capital may, as Bourdieu noted, strengthen the symbolic capital and can also have political and economic significance. In Coleman's (1990) view, the analysis of social capital is best achieved with qualitative methods, although the concept could be used in quantitative analyses, building on qualitative indicators. Bourdieu (1991), in contrast, claimed that statistical analysis is the sole means of demonstrating the structure of the social space, including the assessment of social capital. The 'truth' probably

lies more in the middle. That is, both quantitative and qualitative methods are needed to grasp individuals and an organisation's social capital and its influence. It is important to keep in mind that the roots of social capital lie in individual interaction and networks. One of research questions is to examine to what extent, and under what circumstances returnee entrepreneurs are becoming the earlier adopters of internationalisation in China in comparison with local firms, therefore the author also review two type of internationalisation firms in order to find the answers.

2.5 Types of Internationalisation Firms: 'Stage model' and 'Born Global'

In the context of the internationalisation process of SMEs, entrepreneurs are the key resource of their firms. They have different perceptions, views and visions. In other words, their international entrepreneurial orientation reflects the exogenous conditions for internationalization. The received and traditional theory of internationalization was formulated in the form of the Uppsala Model (U-Model) (Johanson and Vahlne 1977, 1990). This model mainly explained why the internationalization process tended to unfold in an incremental and gradual fashion in Swedish firms in the mid-1970s. Psychic distance is considered the fundamental determinant of incremental internationalization because differences in terms of national culture, political systems and levels of economic development vary across national borders (Andersen, 1993). Traditional IB research suggests that internationalising firms need to possess certain ownership advantages, such as size, superior technology, unique products, or managerial/marketing know-how (Chen and Chen, 1998: 446). A firm is assumed to build a stable domestic position before starting international activities via exports and FDI, and progressing into full manipulations of multinational business. However, a number of conditions - the *exogenous* circumstance - have changed since then. Particularly during 1990s, there was a new picture of internationalisation. Firms

tended to be more globalised as new developments occurred in transportation and communication technologies, and there were an increasing number of people with international experience. In the globalised world economy, markets integrate across national borders by the actions of economic forces, and this is a deliberate process. For example, the spatial re-organisation of production and the integration of financial markets determine the process which proceeds at a differential pace in different types of markets. It has also been argued that the stage model is weak because it uses only one explanatory variable (experiential knowledge), which is not sufficient to fully explain a firms' international expansion (Kuivalainen, et al. 2003). Such a 'stage model' is seriously challenged by empirical findings that some new ventures are able to internationalize very rapidly (Knight, 2000; Lu and Beamish, 2001). Research traditions conceptualise internationalisation taking place in gradual and sequential stages, based on a series of incremental commitment decisions depending on perception, expectation, experience and managerial capacity (Autio, 2005).

The emerging phenomenon of 'Born Global' and rapid internationalisation processes of firms have gained an increasing interest among scholars over the last 10 years. The phenomenon of 'Born Global' was initially reported by the consultants McKinsey in their survey on Australia's High Value-Added Manufacturing. There were emerging firms whose characteristic was that the '*...view the world as their marketplace from the outset and see the domestic market as a support for their international business*' (McKinsey and Co., 1993, p.9). Cavusgil (1994) interprets the McKinsey report such that 'small is beautiful' and 'gradual internationalization is dead'. Knight and Cavusgil (1996) initially defined a Born Global as "*... a production firm with an export percentage (compared to the total sale) of 25% or more, which has started exporting within three years after the firms founded.*" Madsen and Servais (1997) conducted systematic work on how to define a Born Global, and the discussion of the

trend behind the development of a rising number of Born Globals is continued in the existing literature. Some researchers argue that the theory behind the stages models can still be used to understand the internationalization of small firms (Johanson and Vahlne, 2009). A principal part of this model is uncertainty facing firms with regard to new markets abroad. This uncertainty can be reduced due to a founder's knowledge of the foreign markets, and in this way a firm can leapfrog to markets far away. However, the learning processes need not be gradual when a particular firm is studied. The differences in the internationalisation process come from differences of founders' background and in market conditions. Therefore, personal experience, relations and knowledge of managers and founders are thus crucial for the existence of Born Global firms (Madsen and Servais, 1997). An alternative explanation mentioned in Madsen and Servais (1997) is to take a closer look at the networks in which a firm is active during the founding period. When studying a Born Global firm, the time perspective should be extended beyond its birth. Probably, many of its 'genes' have roots back to firms and networks in which its founder(s) and top managers gained industry experience (Madsen and Servais, 1997, p.573).

Several other authors have also touched the similar idea of Born Global firms; for example Jones (1999) calls this type of firm 'international entrepreneurs'. Knight and Cavusgil (2004) extended the definition of Born Global to *'business organisations that, from or near their founding, seek superior international business performance from the application of knowledge-based resources to the sale of outputs in multiple countries'*. Although there is not an absolutely unified definition of a Born Global according to Rasmussen and Madsen (2002), the term of Born Global is frequently used in scholarly articles (e.g., Knight and Cavusgil, 2004). A similar phenomenon of global start-up can be found in all major trading countries and across all industry sectors. The following Table 2.1 summarises the concepts and empirical findings of the existing studies on Born Global.

Table 2.1 A Summary of Studies on Born Global and International Ventures

Authors	Concepts and Cases	Definition and Findings
McKinsey & Co., 1993 Rennie, 1993	Born Global. Report their survey amongst 310 production firms with a new export based on Australian High Value-Added Manufacturing.	25% of the firms had an intensive export within the first two years after the birth of the firm. Export on average 75% of their sales.
Cavusgil, 1994	Born Global. Interpretation of (McKinsey & Co., 1993)'s report	Small is beautiful Gradual internationalization is dead
McDougall et al., 1994; 2000	International New Ventures. 24 case studies.	A new venture from the birth directed towards the international markets.
Oviatt and McDougall, 1994; 1997;2005	International New Ventures - Firms with a proactive international strategy, 12 case studies – same as above in (McDougall et al., 1994).	“An INV as a business organisation that, from inception, seeks to derive significant competitive advantage from the use of resources and sales of outputs in multiple countries.”
Knight and Cavusgil, 1996	Born Global. Summary of existing research and articles. Firms with an export of 25% or more within the first 3-6 years.	Factors that lead to the existence of Born Global: Growing number of niche markets all over the world. Changes in production and communication technology. Growing number of international networks.
Madsen and Servais, 1997	Born Global. Summary of existing research, a number of Danish case studies	The classical stage models are valid for the Born Global if the founder's experience and the internationalization of the markets are taken into consideration and to take a closer look at the networks in which the firm is active during the founding period.
Jones, 1999	International Entrepreneurs Firms with a large international network at the foundation. A questionnaire survey of 196 small high-technology firms in England.	The internationalization of the firms often starts with networks, which does not have anything to do with sales. There are many different ways to internationalise.
Madsen, Tage K., Erik S. Rasmussen and Per Servais, 2000	Born Global. 51 of 123 firms (Young firms born in 1977 or after) were Born Global according to research in Denmark.	A Born Global is a production firm with an export percentage (compared to the total sale) of 25% or more, which have started exporting within three years after inception.
Knight, G. and Cavusgil, S. , 2004	Born Global & Early adopters of internationalisation - A random sample of 900 manufacturing firms across the United states, and exporting at least 25% of total production	A new definition of 'Born global' which is defined “as business organisations that, from or near their founding, seek superior international business performance from the application of knowledge-based resources to the sale of outputs in multiple countries”.

The existing studies on Born Global have been developed theoretically and empirically by the work of McDougall and Oviatt, and others (Oviatt and McDougall, 1994; Oviatt and

McDougall, 1995; Oviatt and McDougall, 1997; Knight, 2001; McDougall and Oviatt, 2000, Autio 2005). The distinguishing feature of these start-ups is that their origins are international, as demonstrated by observable and significant commitments of resources (e.g., material, people, financing, time) in more than one nation (Oviatt and McDougall, 1994, p.49). ‘Unique resources’ (Barney, 1991) are the core of the framework of INV combined with another three elements in terms of internationalization, such as some transactions, alternative governance structures and foreign location advantage (Oviatt and McDougall’s, 1994). The internationalisation of firms, which is defined as the third big question in international business studies (Buckley, 2002, 365), similarly depends on whether firms can successfully develop and deploy resources and capabilities which contribute to their performance abroad (Johanson and Vahlne, 1977; Peng, 2001).

When global competitors’ strengths in tangible areas are increasingly matched, complex intangible processes, such as global learning are likely to be the frontier in the quest for competitive advantage (Bartlett and Ghoshal, 1989). Knowledge has been increasingly considered a central resource for successful international growth. The increased market knowledge is supposed to lead to an increase in market commitments and vice versa (Anderson, 1997: 31). The RBV/KBV logic suggests that *‘a surplus of tacit knowledge on internationalisation is likely to provide the firm with a competitive advantage in foreign markets’* (Liesch and Knight, 1999, p. 385). Peng (2001) raises the question as to how some new ventures can succeed abroad rapidly without going through different stages as suggested by the ‘stages’ model. The answer typically boils down to superb tacit knowledge about global opportunities and the equally superb capability to leverage such knowledge in a way which is not matched by competitors (Mitchell, Smith, Seawright and Morse, 2000; Peng and York, 2001). Knowledge management is particularly important in across-borders settings where different cultures, corporate governance systems and language are involved

(Kummerle, 2002). Regarding to the internationalisation of firms, the dominant theories differ on their treatment of knowledge (Yli-Renko, 2002). According to Yli-Renko (2002), the internationalisation process theory views experiential knowledge of foreign markets as a key regulator of resource commitments to foreign activities. The new venture internationalization theory views knowledge, or the knowledge-intensity of the core resources of the firm, as an enabling factor for international expansion (Yli-Renko et al., 2002).

Regarding the treatment of international resource commitments, empirical research is needed not only on the impact of a firm's knowledge characteristics on the optimal choice of foreign entry modes, but also the effect of the structure and dynamics of innovation systems on new ventures' internationalization (Autio, 2005). Autio (2005) points out that the most important distinctive difference between the Uppsala model and the INV model is about resources issues in terms of resource access and control, the size of resources, qualities of resources and the treatment of international resources, although the focus of the U model is on the process of internationalisation itself, whereas the INV approach focuses mainly on explaining how early and rapid internationalisation of a new venture is possible. Thus, both models deal with the same issues of the internationalisation of firms, and are underlying the KBV of the firm. All in all, these two complementary theories will be considered with regard to how they treat knowledge and other resources which focus on opportunity recognition, discovery and creation (Shane and Venkataraman, 2000, p. 218).

2.6 Summary

This literature review has explored the existing studies with regard to the concept of entrepreneurship involving multidisciplinary approaches. The analysis reviews the subjective view of entrepreneurship based on entrepreneurial orientation as opportunities. It has also

focused on the objective view of entrepreneurship as opportunities which are *endogenous* when *exogenous* circumstances change constantly. In particular, the existing literature has shown that firms exist not only because of their resource-bases, but also entrepreneurial activities, which are an endogenous response to higher investments in new knowledge (Audretsch, Keibach and Lehmann, 2006). Innovation can also occur via imitation of other firms which gain from the externalities or knowledge spillovers, including new technologies as an endogenous variable. Firms continue creating knowledge, generating new ideas, and generating innovation through the introduction of new goods or methods of production, the opening up of new markets, the conquest of a new supply of materials and the reorganisation of an industry (Schumpeter, 1934). Knowledge spillovers make innovation diffusion possible through human mobility.

Meanwhile, “*entrepreneurship is the pursuit of opportunity beyond the resources you currently control*” (Stevenson, 1990). This definition takes into account both the individual and the society within which the individual is embedded. The individual identifies an opportunity to be pursued. Then, an entrepreneur must seek the necessary resources from the broader society. Thus, research should pay much attention to the nature and sources of opportunity itself. In contrast, by this definition, ownership or control of resources may not limit an entrepreneur's choice of opportunities. Frequently, the most important and valuable resources that a new venture has are the founding entrepreneurs; therefore, the research needs to look at entrepreneurs who are unique people with their own special characteristics and their social capital and networks which cannot be easily duplicated, as well as the source of innovation which form competitive advantages.

In terms of the internationalisation of SMEs, the current research falls into the domain of the intersection of international business and entrepreneurship. The author has argued that the KBV, social capital and Born Global or INVs are suitable for explaining the

internationalization process of returnee entrepreneurial firms, their international knowledge spillovers, innovation activities and firm performance. This chapter has briefly examined the different approaches that underpin the definition of these concepts and has also presented the controversy and debates regarding how social capital and social networks should be measured empirically.

The literature review reveals that more research in this area is needed. Both quantitative and qualitative methods are needed to examine how individuals' entrepreneurial orientation, entrepreneurs' knowledge, international experience and global networks affect international knowledge spillovers, the internationalisation of returnee owned firms and their firm performance. In particular, quantitative studies can provide a deeper understanding of the factors affecting the internationalisation process of returnee owned firms. Moreover, knowledge spillovers through networks between returnee entrepreneurs and local entrepreneurs need more attention.

Chapter 3 Research design and Methodology

3.1 Introduction

This chapter provides explanations for the research design and methodology adopted to address research objectives and data collection. Specifically, the reasons for the development of a mixed qualitative and quantitative empirical methodology are discussed. This chapter also generates and presents those issues to be investigated in subsequent chapters which consist of hypothesised relationships and case studies. The chapter is organised as follows. Section 3.2 presents the research questions. These are followed by explanations about the selection of research methods in Section 3.3. Section 3.3.1 discusses questionnaire design and data collection. The complimentary qualitative approach is presented in Section 3.3.2. Section 3.4 draws conclusions.

3.2 Research Questions

Chapter one noted that a new feature of human mobility, trans-national entrepreneurial communities, has recently appeared due to the rapid process of globalisation and accelerated technological changes. These provide returnee entrepreneurs with great opportunities to gain competitive advantage and speed up internationalisation. Returnee entrepreneurs are becoming agents of globalisation by setting up businesses in different countries. The growing mobility of trans-national entrepreneurs is in turn fuelling the emergence of global entrepreneurial networks. Recent research suggests that ‘brain drain’ may be giving way to a process of ‘brain circulation’ due to the emergence of these returnee entrepreneurs. They can be defined as a group of OECD-educated scientists and entrepreneurs who have returned to their home countries to start up a new venture in order to take the advantage of promising opportunities across national borders (Johnson and Regrets, 1998; Saxenian, 2001). Only a

few comparative, descriptive studies have been carried out on this issue (Saxenian, 2002). For instance, Saxenian (2003) has investigated the role of trans-national entrepreneurs in transforming the global organisation of semiconductor production in Silicon Valley, Hsinchu Science Park in Taiwan. However, there is a lack of formal evidence to why, when and how returnee entrepreneurs are becoming the earlier adopters of internationalisation. The research question thus becomes: “To what extent, and under what circumstances are returnee entrepreneurs the carriers of advanced technology in their home countries”.

So far very few studies have been carried out on the impact of cross-border human mobility on knowledge spillovers (Song et al., 2003). There is relatively little empirical evidence on the extent to which cross-border human mobility affects the international diffusion of technological and scientific knowledge which contribute to firm’s innovation performance. It has raised two related research questions.

Research question 1: Does direct knowledge spillover occur and affect the innovation performance of returnee-owned firms?

Research question 2: Do indirect inter-firm knowledge spillovers take place from returnee-owned firms to non-returnee owned firms?

Therefore, this study aims to examine the relationship between returnee entrepreneurs and their firms’ innovative performance as well as their roles in knowledge spillovers among high-tech firms. A wide range of issues are also examined in relation to knowledge spillovers via returnee entrepreneurs in high-tech industries. Of special interest is whether returnee entrepreneurs act as a channel for knowledge diffusion. The findings from the study help to provide a better understanding of the linkages between the innovation of non-returnee owned firms and international knowledge spillovers in the Chinese high-tech industry.

In addition, very little is known about how the background and characteristics of returnee entrepreneurs affect the performance of their ventures. There is a lack of formal

evidence as to what extent returnee-owned firms gain a substantial competitive advantage compared with local entrepreneur-owned firms. Hence, this thesis aims to address some important research questions as follows.

Research question 3: What are the differences in innovation performance between returnee entrepreneurs owned firms and local entrepreneur owned firms?

Research question 4: How do the knowledge and social capital factors of returnee entrepreneurs influence their firms' business performance.

Recent studies have shown that the growing mobility of trans-national entrepreneurs is fuelling the emergence of global entrepreneurial networks (Gaillard and Gaillard 1998; Johnson and Regrets, 1998; Saxenian, 2001, 2002). However, very limited studies have examined the relationship between the characteristics of returnee entrepreneurs and the process of internationalisation of their firms. There is a lack of formal evidence as to whether returnees are the promoters of their firms' internationalisation. Hence, the following research questions are raised.

Research question 5: What factors drive high-tech SMEs to internationalize rapidly?

Research question 6: How do returnee entrepreneurs owned firms internationalise compared with local entrepreneurs owned firms?

Research question 7: To what extent and under what circumstances are returnee entrepreneurs becoming the earlier adopters of internationalisation in their home countries?

Research question 8: Does internationalisation become a necessary condition for firms' performance and new value creation?

The chosen approach assumes that institutional factors are constant in Zhongguanchu Science Park (ZSP) where policy incentives and special institutional features apply to all firms. The author focuses on entrepreneurs as the unit of analysis in high-technology firms.

3.3 The Selection of Research Methodology

Different research methods and approaches can be employed by social scientists, each of which is influenced by their assumed understanding of reality. Different assumptions underlying research philosophies provide alternative perceptions of knowledge, which subsequently influence the selection of research methodology. In Chapter 2, the review of the relevant literature with regard to entrepreneurs' activities in terms of pursuit, discovery and exploitation of emerging opportunities reveals that this study on returnee entrepreneurs should take both subjective and objective views into account. To systematically examine the research questions specified above, it is necessary to adopt a combined research methodology. The choice of a mixed method allows the author to conduct both in-depth analysis and statistical tests which help provide a deep understanding of, and generate new insights into, the research questions. The following section discusses how appropriate research approaches are selected and adopted in this study.

The quantitative analysis is mainly concerned with the testing of hypotheses. In other words, it is prerequisite of positivist research. A criticism of purely quantitative research is that such researchers may neglect the social and cultural construction of the variables being tested (Strauss and Corbin, 1998). Therefore, it requires interpretation and understanding of the meanings attached to the business world. Qualitative methods tend to be less structured than quantitative ones and can, therefore “... *be made more responsive to the needs of respondents and to the nature of the subject matter*” (Walker, 1985: p3). Gill and Johnson (1991) further stress the advantages of such methods, which provide large quantities of rich data obtained from a limited number of individuals. Combining these two different approaches will help examine phenomena from different perspectives; that is where things can be tested and quantitative data are acquired to prove or disprove a hypothesis. As an alternative method, the qualitative view will help discover the minds of individuals, providing

a deep understanding of research questions.

3.3.1 A Quantitative Approach - Questionnaire Design and Data Collection

The research in question seeks to make a contribution to original knowledge in the field of entrepreneurship, knowledge spillovers and the internationalisation of SMEs. It also aims to generate new insights by testing the conceptual framework and research hypotheses established in the previous and the subsequent chapters. Both the conceptual framework and subsequent research hypotheses were generated from a comprehensive literature review.

Cross-sectional data on returnee owned firms and non-returnee owned firms were collected in connection with variables in a single questionnaire survey for the year 2005 when there was an observable wave of trans-national Chinese entrepreneurs returning to the country. The questionnaire development process can be considered critical to the successful collection of primary data for testing the research hypotheses. Thus, a rigorous and comprehensive questionnaire development process is required. A longitudinal design was believed to be difficult or impossible due to the large costs that would be incurred as a result of the substantial time commitment involved in such studies. A cross-sectional study entails the collection of data on more than one case at a single given point in time. Primary data sources are used to generate fresh data gathered by the researcher specifically for the research project at hand (Burns and Bush, 2006). In order to collect data in connection with two or more variables (Bryman, 2004), attention is directed to the different frameworks for the collection and analysis of data.

The author has paid special attention to some important issues during the research design process. As returnee entrepreneurs' overseas experience and the internationalisation of firms are part of the research focus, some returnees may have a 'reverse (counter) culture shock', so the study may involve cross-cultural issues. Green and White (1996) note that

researchers have two options in developing their instrument and measures. They can follow an emic (culturally specific) approach or an etic (culturally universal) approach, with instruments that are culture-free and, by virtue of formal equivalence, are able to be applied across countries. Two Professors confirmed the existence of such issues and also sent the author some related studies published in some Chinese journals, indicating that the themes of the thesis have already been established in China.

The researcher also pay attention to how language issues and context comparability or equivalence in meaning are addressed the research questionnaire was designed in English. The investigation of some local firms requires language adaptation and assurance of equivalence of meaning (Alder, 1983; Cavusgil and Das, 1997). In the process of questionnaire design and data collection, the author considered language issues by consulting two Chinese Professors in Beijing in an early stage of the questionnaire development and asked them to identify whether the research issues exist and are interpreted similarly in China. For example, the questionnaire was translated from English into Mandarin. Then it was back-translated by the two Chinese Professor to ensure its validity and accuracy.

Third, a pilot study was carried out in ZSP where two workshops were organized involving groups of 6 and 8 returnee and local entrepreneurs who completed the questionnaire and were asked to identify any unclear questions. In particular, great attention was paid to measurement equivalence and participants were asked about whether the meaning of constructs, scaling and scoring of measures makes sense in Mandarin. The participants reported that they were familiar with this type of questionnaire survey as the constructs and points of scales have been used in some local questionnaire surveys in which they have participated in the past.

To assess the research questions specified in section 3.2, comparisons are made between returnees and local-grown entrepreneurs who have not been abroad to study or work.

In this way, the author can examine whether special characteristics of entrepreneurs can make differences in terms of firm performance including innovation, economic performance and firms' internationalisation process. In this thesis, returnee entrepreneurs are considered as one particular group and are compared with non-returnee entrepreneurs.

For the final questionnaire, firms were selected from the largest science park in China, Zhongguancun Science Park (ZSP) which has attracted a large number of returnees, and local entrepreneurs (Tan, 2006). Both groups studied are based in ZSP and operate in the same business environment. The Chinese government has offered substantial inducements to entrepreneurs to set up new high-tech firms in ZSP. These include tax holidays, cheap office space, start-up loans, advice centres and other incentives (Li, Zhang and Zhou, 2005). The provision of such support is common to returnee entrepreneurs and local entrepreneurs as they all are located in ZSP and received the same level of government support. Thus, ZSP represents an ideal and unique laboratory to test the research propositions specified above.

All firms in the sample were from high-tech industries, following the definition of the Ministry of Finance and China National Bureau. These high-tech industries comprise electronics and information technology, bio-engineering and new medical technology, new materials and applied techniques, advanced manufacturing technology, aviation and space technology, modern agricultural technology, new energy and high power conservation technology, environmental protection technology, marine engineering technology and nuclear-applied technology. This classification of high-tech industries has been adopted by ZSP. Moreover, since returnee-owned firms are a recent phenomenon in China, the sample was limited to SMEs according to the official Chinese definition. Data were collected on board composition, technological and financial performance, as well as controls we describe above such as firm size, industrial classification and age of firms. A medium size firm is defined as a company which employs 300-2,000 employees with sales above 5 millions RMB,

or with total assets above 40 millions RMB. Firms which are below the threshold are classified as small size firms with fewer than 300 employees, and a total value of sales below 5 million RMB according to a joint regulation by the State Planning Committee, the Ministry of Finance and the National Bureau of Statistics of China (ZSP Development Report, 2006).

By applying the above criterion of high-tech SMEs founded between 3 and 5 years previously, populations of 1,003 returnee-owned and 1,138 non-returnee owned firms were identified from a list obtained from the management committee of ZSP. A willingness to participate in the survey was indicated by 857 returnee-owned firms and 976 local entrepreneurial firms, representing 85.4% and 85.6% of the population respectively.

The questionnaire had been developed through an interactive process of interviewing, drafting and pilot-testing. The questionnaire was modified according to feedback received from the pilot study. For example, the feedback received from the pilot workshops revealed that the participants were sensitive to the questions with regard to a firm's performance, such as sales and profits. This is a familiar problem in the Chinese context (Roy, et al., 2001). Hence, the questions were alternatively measured with subjective performance measures together with exploratory factor analysis to measure the extent to which returnees and local entrepreneurs were satisfied with firm performance in terms of market share, sales growth and the pre-tax profitability of their sales in both Chinese and international markets. The final questionnaires were mailed to 857 returnee-owned and 976 local firms.

The possibility of non-response bias was checked by comparing the characteristics of the respondents with those of the original population sample that did not return a questionnaire. Thirty non-responding firms were randomly selected by follow-up phone calls and were questioned regarding the firms' age, the number of employees and how many patents currently held. The data from non-responding firms were compared with those of responding firms using the t-test of independent means to determine if statistical differences

exist between the two groups. The results of the t-test are shown in Table 3.1

Table 3.1: Non-response bias t-test Statistics

	Sample	Mean	Std. Deviation	Std. Error Mean	2-tail Significance
Company age	Respondents	4.94	2.700	.143	0.298
	Non-respondents	4.42	2.497	.130	
Number of current employee	Respondents	49.24	125.776	6.657	0.365
	Non-respondents	41.35	110.255	5.779	
Number of current patents	Respondents	5.91	4.470	1.304	0.169
	Non-respondents	4.63	3.920	1.468	

(a) Respondents, n = 300; non-respondents, n = 30.

(b) SD = standard deviation.

The calculated t-statistics for the number of employees, firms' age and number of patents are all statistically insignificant, indicating that there are no significant differences between the respondent and non-respondent firms.

Moreover, the issue of difference in early respondents versus late respondents has also been addressed by comparing key variables. An independent t-test was conducted on the main differences between early and late respondents with regard to a firm's characteristics, such as the number of employees, firms' age and patents. Those who returned the questionnaire within two weeks were regarded as early respondents. Those who returned the questionnaires after follow-up telephone calls were considered as late respondents. There were 96 early respondents and 112 late respondents from entrepreneurs, respectively. However, no significant differences were found between them as shown in the following table 3.2.

Table 3.2: Early respondents VS Late respondents t-test Statistics

	Sample	Mean	Std. Deviation	Std. Error Mean	2-tail Significance
Company age	Early respondents	4.78	2.810	.150	0.373
	Late respondents	4.56	2.668	.138	
Number of current employee	Early respondents	48.18	110.106	6.453	0.399
	Late respondents	44.47	118.229	6.158	
Number of current patents	Early respondents	5.68	4.190	1.216	0.214
	Late respondents	5.01	3.110	1.379	

(a) Early respondents, n =96; Late respondents, n = 112.

(b) SD = standard deviation.

In addition, more descriptive information about sample represents the difference between returnee entrepreneurs' firm and non-returnee firm with regard to the following questions and answers (Q&A).

Q1. How many employees does the company have currently vs. had when the company established?

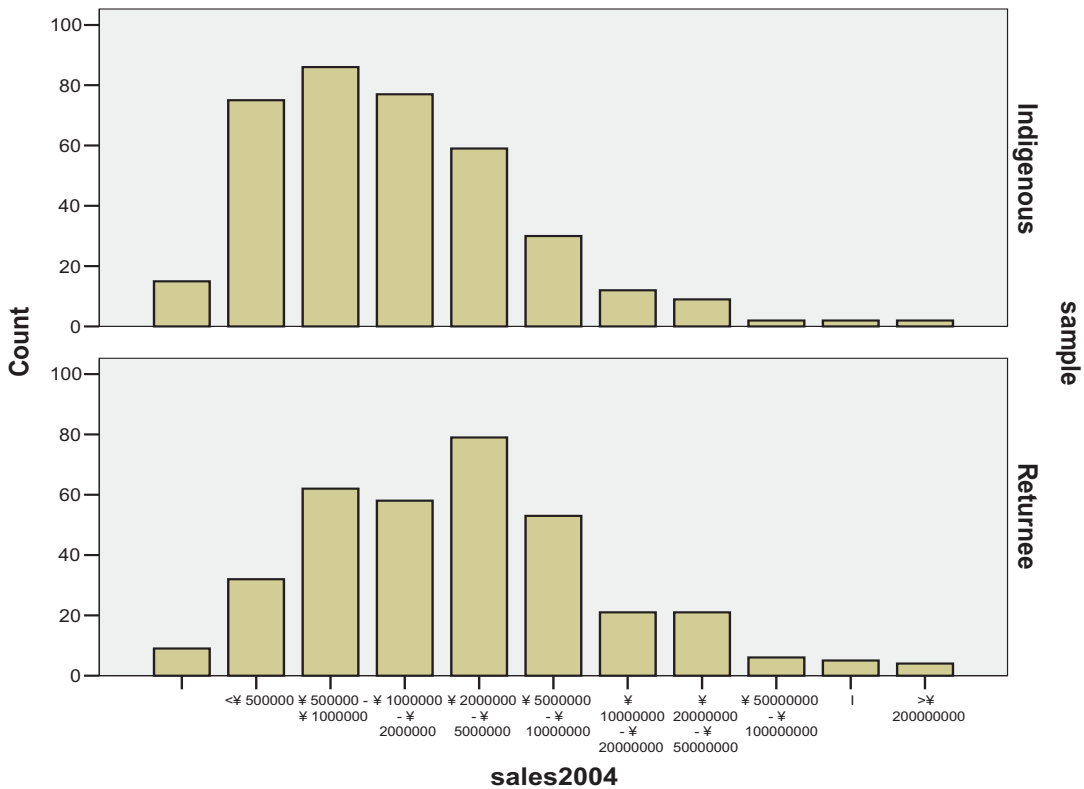
Variable		Group	Observation	Mean	Levene' test	Independent Samples t-test	Sig. (2-tailed)
Nos. of established employee	EVA	Returnee	337	14.39	.206	0.933	.351
	EV Not A	Non-returnee	356	13.25		0.934	
Nos. of established employee	EVA	Returnee	348	60.07	.000	3.795	.002
	EV Not A	Non-returnee	358	32.23		3.738	

A: The average age of returnee-owned firms is 4.97 years and local-owned firms' is 4.37 years. It seems returnee's firms have developed faster than non-returnee local entrepreneurs' firms, simply because their average numbers of employee (60.7 Vs. 14.39) nearly double increased than the later (32.23 Vs. 13.25).

Q2. How many years has the company been established?

Variable		Group	Observation	Mean	Levene' test	Independent Samples t-test	Sig. (2-tailed)
Age of Company	Equal variances Assumed	Returnee	347	4.97	.003	3.154	.002
	Equal variances not assumed	Indigenous	358	4.36		3.143	.002

Q3. What was the level of total sales in the last financial year: (Renminbi)



A: Since the correspondence rate of these two groups is quite close, it seems the numbers of returnees' firms with higher level of total sales is larger than local entrepreneurs' according to the above figure in 2004 clearly shown in the graph below.

Q4. Was this establishment founded by a returning entrepreneur or scientist after at least two years' education or business experience abroad?

Returnee-owned	Observation	Mean	t-test test value=0	Sig. (2-tailed)
Years stay abroad	347	7.35	32.111	.000

Returnee-owned	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1	1	.3	.3	.3
1	4	1.1	1.2	1.4
2	21	5.8	6.1	7.5
3	30	8.4	8.6	16.1
4	38	10.6	11.0	27.1
5	45	12.5	13.0	40.1
6	43	12.0	12.4	52.4
7	12	3.3	3.5	55.9
8	47	13.1	13.5	69.5
9	6	1.7	1.7	71.2
10	1	.3	.3	71.5
10	47	13.1	13.5	85.0
11	8	2.2	2.3	87.3
12	6	1.7	1.7	89.0
13	8	2.2	2.3	91.4
14	2	.6	.6	91.9
15	10	2.8	2.9	94.8
16	4	1.1	1.2	96.0
17	2	.6	.6	96.5
18	1	.3	.3	96.8
19	1	.3	.3	97.1
20	7	1.9	2.0	99.1
21	1	.3	.3	99.4
24	1	.3	.3	99.7
25	1	.3	.3	100.0
Total	347	96.7	100.0	
Missing System	6	1.7		
Total	353	100.0		

A: It shows that more than 98% of the returnees had stayed abroad for at least two years. The average year they stray abroad is 7.35 years.

Q5. How much has your company spent on R&D expenditure? How many patents do you have?

A: In term of R&D and Patent, we can see from the following data, returnee also have more R&D spending and more patents than non-returnee entrepreneurs. There are only 20 firms have no patents reporting in the questionnaire, which only account less than 3%.

How many patents currently hold?	Returnee	353	8.81	4.470	.304
	Indigenous	349	4.03	2.920	1.468
Average Accumulated R&D expenditure per year	Returnee	303	149.2463	122.73594	7.05100
	Indigenous	342	93.3456	38.07169	18.28082

Q: 6. Do you have multinational firm experience before start-up? The local non-return entrepreneurs have more complex working background, which have been categorized into four areas: a. State-owned Company; b. Multinational Company; c. Collective Company; d. private start-up.

Returnees	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	5	1.4	1.4	1.4
Yes	166	46.2	46.2	47.6
No	188	52.4	52.4	100.0
Total	359	100.0	100.0	

Non-returnee entrepreneurs	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	11	3.0	3.0	3.0
State-owned company	133	36.0	36.0	39.0
Ab	20	5.4	5.4	44.4
Abc	5	1.4	1.4	45.8
Abcd	4	1.1	1.1	46.9
Abd	4	1.1	1.1	48.0
Ac	7	1.9	1.9	49.9
Acd	2	.5	.5	50.4
Ad	12	3.3	3.3	53.7
Multinational company	32	8.7	8.7	62.3
Bc	8	2.2	2.2	64.5
Bcd	4	1.1	1.1	65.6
Bd	2	.5	.5	66.1
Collective company	45	12.2	12.2	78.3
Cd	16	4.3	4.3	82.7
Private startup	63	17.1	17.1	99.7
E	1	.3	.3	100.0
Total	369	100.0	100.0	

A: In order to compare the figure of multinational company working experience, we need add up all items which include b. multinational company, we got the sum number = $20+5+4+4+32+8+4+2 = 79$, therefore it accounts $79/369*100\% = 21.4\%$, which is less than 46.2% of returnees with multinational working experience.

Q: 7. what percentage of your overseas contacts have a commercial relationship with your company?

Returnee	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	11	3.1	3.1	3.1
Yes	201	56.0	56.0	59.1
No	147	40.9	40.9	100.0
Total	359	100.0	100.0	

Non-returnee	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	5	1.4	1.4	1.4
Yes	129	35.0	35.0	36.3
No	235	63.7	63.7	100.0
Total	369	100.0	100.0	

A: Global network is related to business, returnee-owned company have 56% of business contacts with overseas. And local entrepreneurs' firms, they have 35% business contacts with overseas respectively.

Returnee	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	9	2.5	2.5	2.5
China	230	64.1	64.1	66.6
Abroad	11	3.1	3.1	69.6
Both	109	30.4	30.4	100.0
Total	359	100.0	100.0	

Non-returnee	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	10	2.7	2.7	2.7
China	290	78.6	78.6	81.3
Abroad	7	1.9	1.9	83.2
Both	62	16.8	16.8	100.0
Total	369	100.0	100.0	

A: In terms of the locations of overseas business networks, the returnees have 33.5% business network located abroad to compare with local entrepreneurs, they have only 18.7% business network located abroad.

Non-returnee entrepreneurs are statistically different. Most returnees have spent at least two years abroad and have working experience with multinational enterprises (46.2% vs.

21.4%), and global networks (56% vs. 35%) compared with non-returnees. Since start-up, returnee entrepreneur-owned firms have invested more R&D (149 vs. 93) and generated more patents (8.8 vs. 4.0). In addition, returnee entrepreneur-owned firms have higher employment growth and more sales income than those of local entrepreneur-owned firms. Over 70% of the sample of returnee entrepreneur-owned firms have introduced new technology from foreign countries where they used to study and/or work. Moreover, 40% of the sample local entrepreneur-owned firms stated that they have benefited from returnee-owned firms in terms of new technology and business ideas. The evidence also shows that over 35% of returnee entrepreneur-owned firms have engaged in exporting, whereas only 18% of local entrepreneur-owned firms are exporters. The detailed finding based on statistical tests will be presented in Chapter four and Chapter five.

3.3.2 A Qualitative Approach - Case Study

The author also looked into detailed cases in order to obtain a supplementary understanding of these SMEs' internationalisation issues. This section, therefore, explains the necessity of a qualitative research employed, in order to answer the research questions. It is widely recognised that the case study approach is ideal for contributing to theory development (Ghauri and Grønhaug, 2005). The qualitative method matches the research objectives in relation to factors affecting the internationalisation of both returnee and non-returnee owned firms.

The decision to use case studies in this study was also based on the following consideration. Rather than testing any specific hypotheses, descriptive case studies allow the author to develop an in-depth insight into these SMEs high-tech firms. In particular, this method enables the author to examine how entrepreneurs' experience, international entrepreneurial orientation and their behaviour affect their firms' internationalisation, and conduct a detailed and in-depth analysis of their firms' internationalisation process.

Moreover, data based on high-tech SMEs are not publicly available. An equally

important problem is the sensitive nature of strategic and personal aspects, implying that firms may be reluctant to publish/reveal any information with regard to their firms' business performance and internationalisation process. The author needed to make a trade-off between asking detailed questions, such as the process of internationalisation and characteristics of returnees and non-returnees, and the length of the questionnaire. The feedback received from the pilot studies clearly showed that the potential respondents were willing to fill in a shorter questionnaire. This implies that an appropriate means of obtaining detailed information is through case studies.

The other justification for using case studies is due to the descriptive nature of the study and the objective of generating a descriptive model of phenomena which are as yet incompletely documented. In this case, the case study approach appears more appropriate (Yin, 1994). Among case study strategies, the multiple-case study is considered to be preferable for the overall study. Multiple-case study data is more compelling than a single case study, and the overall study is therefore regarded as being more robust (Herriott and Firestone, 1983). It also helps explore those situations in which the intervention being evaluated has no clear, single set of outcomes. It is widely agreed that multiple cases provide a strong basis for theory building (Eisenhardt and Graebner, 2007). The case study emphasis will be on replication, extension of theory, contrary replication and elimination of contrary explanations. Selecting multiple cases is more complicated than single cases (Eisenhardt and Graebner, 2007: 27). Although multiple cases may offer fruitful theoretical development in the more flexible context of case studies, conducting a multiple-case study can require extensive resources and additional time.

A preliminary issue for conducting a multi-case study is how to select cases and how many cases to select. These issues are linked to the challenges of the generalisability, validity and rigor of the case study approach (Denscombe, 1998). Yin (1994) provides an answer to

the generalisation issue, arguing that the function of a case study is not to represent a 'sample' and enumerate frequencies (statistical generalisation), but to develop, expand and generalise theories (analytic generalisation) (Yin, 1994: 21). Eisenhardt (1989) advises that it *'makes sense to choose cases as extreme situations and polar types in which the process of interest is 'transparently observable'* (p. 537). In order to compare returnees and non-returnees as they are in different industries, the interviewees were selected to represent the diversity of high-tech industries, including software, telecommunications, medical equipment R&D and manufacturing, industrial heating and control in ZSP. The selected industries display common characteristics which show growing potential, and emphasise know-how and innovation in these high-tech sectors.

These specifications have been made for two reasons: first, to have cases representing polar types, and second, an effort has been made to identify "observable" categories (Eisenhardt, 1989). Once the type of selected companies was clear, the number of companies had to be decided upon. Some firms have been already internationalized through exporting, licensing and setting up branches abroad. Given the time and funding restraints of this Ph.D. thesis, plus the objectives to develop contextually rich in-depth cases, four returnee owned firms and four non-returnee firms were accessed and interviewed. Then they were studied in considerable depth. In-depth case analysis enabled the author to examine the process of internationalisation and how the characteristics of returnee entrepreneurs affect their internationalisation. Case evidence may complement the findings based on the questionnaire survey. The emphasis was on comparing the similarities and differences between returnee owned firms and non-returnee owned firms (Eisenhardt, 1989: 540). Different cases often offer new insights into the complementary aspects of a phenomenon. By piecing together the individual patterns, the researcher can draw a more complete theoretical picture (Eisenhardt, 1991: 520).

The selection for multiple cases was based on Yin's recommendation (1994) in terms of convenience, access and geographic proximity. The data collection was divided into two stages: the pilot case study stage and in-depth case study stage. Pilot case studies were conducted in the first stage from early 2006. The pilot case firms were diversified in terms of corporate history, geographic coverage of their businesses and industry scope, which provided a considerable insight into the crucial research issues raised in this thesis. Hence, the first step was to identify and select cases in ZSP from the same sample used in the quantitative survey. In selecting potential companies, access to the companies was decisive.

Initially, the author used the contact information obtained from the filled questionnaire to target some firms. However, the response rate was quite low. Most of the firms had no interest in participating in interviews, even via the telephone. Therefore, the author also asked a Chinese consulting company to help contact some SMEs. Twenty firms from each group (returnee and non-returnee) were selected and contacted via telephone. In order to gain a better insight into each company and to build up a personal relationship with the interviewees, the preliminary interviews were unstructured. In the second round, the interviewer employed a semi-structured design in order to allow for an appropriate degree of comparability and, at the same time, to allow for an ample opportunity of an unobstructed narrative flow. An interview guideline was used to structure and direct the open-ended interviews. This two-part interview guideline was used in the semi-structured interviews: the first section included questions designed to obtain information on the history, context, and objectives of each company, as well as on the interviewee, including questions about their position, their responsibility and their professional background (Ghauri and Grønhaug, 2005).

Out of the 40 companies contacted over the telephone, entrepreneurs from 8 companies were available and willing to be interviewed face to face. The fieldwork research was carried out during the summer of 2006. The interview schedule was semi-structured and the same

format was used for all interviews, creating standardisation and reliability. The structure consisted of open questions, encouraging an extensive and descriptive answer, and allowing any key points, which were raised by the interviewee, to be explored in greater detail. Respondents were free to talk and give their opinions as they understood the process.

All interviews lasted between 1 hour and 2 hours. Every interview was transcribed and resulting responses were coded and analyzed according to emergent themes (Miles and Huberman, 1994; Seidel and Kelle, 1995).

In order to achieve a triangulation, some secondary data and information were sought to gain background knowledge. The suitability of all of the data used was evaluated, taking into consideration reliability and existing bias. This enabled the author to collect more convincing and accurate evidence using multiple sources in the case study (Yin 1994). The archival search relied on existing academic research, independent analysis, published interviews, and articles from the business and trade press. Internal company documents, such as company leaflets and presentations, annual reports, executive speeches, and company press releases available on the websites of these case companies were also used. All these documents were used to describe each company. The advantages of the documented sources include their tendency to be more comprehensive and less subject to memory-based bias.

The key themes investigated in the semi-structured interview include: (1) this study will consider international entrepreneurial orientation (IEO) in terms of entrepreneurs' vision, proactive, risk-taking and competitive behaviours and examine how these factors motivate entrepreneurs to start-up across national borders and how important of IEO is in making decisions about internationalisation and in firm performance. (2) Entrepreneurs' background and experience including education, start-up and international work experience were the focus. In order to control for the length which returnees had spent abroad, 10 years or above were used as the criteria for selecting cases. (3) Entrepreneurial knowledge, knowledge

spillovers and innovation. (4) International and local networks. Throughout, emphasis was put on the internal factors identified as critical by these high-tech SMEs entrepreneurs for taking the early step of internationalisation. The entire process of data collection (including archival document research) and analysis lasted from December 2005 to July 2007. The interview schedule and related firms' information are enclosed in Table 3.3, Table 3.4 below:

Table 3.3: Dates and Venues of the interviews conducted

Case	Respondent Position	Interview Date	Interview Types
A	Founder (Returnee)	05/07/2006	Face-to-face Interview in Beijing
B	Founder (Returnee)	14/07/2006	Face-to-face Interview in Beijing
C	Founder (Returnee)	21/07/2006	Face-to-face Interview in Beijing
D	Founder (Returnee)	10/07/2006	Face-to-face Interview in Beijing
E	Co-founder (COO)	07/07/2006	Face-to-face Interview in Beijing
F	Founder	03/07/2006	Face-to-face Interview in Beijing
G	Founder	12/07/2006	Face-to-face Interview in Beijing
H	Co-founders (three)	28/07/2006	Face-to-face Interview in Beijing

Table 3.4 Eight Interviewed Companies' Information

Case	Industry	Country of Return	History of Abroad (Years)	History of China (Years)	Number of Employees	Exporting Country	Proportion of Exporting Sale
A	Software Outsourcing	Japan	10 years	2003	200	Japan	50% of Total Sales
B	Medical Imaging Software	USA	10 Years	2002	100	USA	Mainly to USA
C	Software Outsourcing	USA	10 years	2003	210	USA	Nearly half to USA
D	Medicine R&D Manufacturing	USA	10 years	2003	200	North America	Sales income mainly from China

E	CAD Software	Non-returnee	None	2002	250	USA	10% of the total Sales income
F	Industrial Heat pumps	Non-returnee	None	2003	30	Norway	20% in 2005
G	Industrial control market	Non-returnee	None	2003	40	USA	Small export sale income
H	Telecom industry	Non-returnee	None	2003	15	None	None exporting

As suggested by Sinkovics et al. (2005), the author established the same concepts in the research questions and related constructs for all the interviewees before beginning the data collection stage. Whilst gathering the data, the author observed several rules of interviewing and qualitative data-handling (Spradley, 1979, Yin, 1994, Bourgeois and Eisenhardt, 1988,). Due to the confidential issues, some interviewees did not allow audio taping, which made it more important to take notes, as suggested by Wengraf (2001), regarding the data collection through open questions and narrative parts. Audio-taped interviews were used only with the agreement of the interviewees. The author also took notes and made a preliminary analysis in accordance with a '24-hour rule' to capitalise on the immediacy of the data. All transcripts have been included as part of the case study database. What should be mentioned here is that all of the interviewees were granted personal anonymity, and approved of the transcript (Leonard-Barton, 1995). When planning research, the author also completed the ethical checklist before the research was commenced. The interviewees were assured that no reference would be made to their names or to their company without explicit permission. They were also assured that they would have the right to withdraw from the investigation and to require their own data to be destroyed. All information on participants was treated as confidential and not identifiable unless agreed otherwise in advance, and subject to the requirements of law. The storage of data was to comply with the Data Protection Act 1998. All video/audio recording of participants was to be kept in a secure place and not released for use by third parties and be destroyed within six years of the completion of the investigation.

All the interviews were analysed by building categories, reflecting common patterns in the answers of the interview respondents (Eisenhardt, 1989, Ghauri, 2004). All cases were compared and contrasted in order to draw conclusions. In order to analyse a case study, it needs strategies and techniques. Yin (1994) recommends that there are two general strategies: relying on theoretical assumptions and developing a case description. The strategy of relying on theoretical assumptions has been used in this study, in which theoretical propositions are used to lead the case study. This analytical strategy is consistent with the nature of the research – this case study does not claim to produce generalised theory; its aim is rather to identify the predicted variables and its causal inferences with the pattern (Yin, 1994). It helps develop a theoretical framework and related propositions with regard to the internationalisation of high-tech SMEs in emerging economies, such as China.

After choosing a general analytical strategy based on theoretical assumptions, specific analytical techniques must be defined. The study has chosen the pattern- matching technique in which an empirically based pattern has been compared with a predicted one (Miles and Huberman, 1994; Yin, 1994). In this pattern-matching technique, the author adopts several technical procedures to analyse the data. The data were analysed using the strategies of within case analysis and cross case analysis (Patton, 1990, p.376). Patton (1990) explains that ‘within case analysis’ examines each participant’s answer, and ‘cross case analysis’ compares the participants’ answers and describes the differences and similarities among those answers. A cross case method allows the author to go beyond initial impressions, especially through the use of structured and diverse lenses on the data. These tactics improve the likelihood of accurate and reliable theory; that is, a theory with a close fit to the data (Eisenhardt, 1989). Also, cross case searching tactics enhance the probability that the investigators will capture the novel findings that may exist in the data. A useful and detailed data set is helpful for interpreting and matching the proposed framework. The preliminary interviews from the case

studies were used to modify the conceptual framework to highlight the key factors involved in the internationalisation context of SMEs. In Chapter 6, the author discusses the findings from these in-depth interviews.

3.4 Conclusions

This chapter has presented the research design. It also described the research methods adopted in this thesis. In particular, the sampling issues, questionnaire survey process and case selection were discussed in detail. It also explained the reasons that a combination strategy of quantitative and qualitative approaches is considered in order to enrich our understanding of the research questions.

Chapter 4 Knowledge Spillovers and Innovation Performance

4.1 Introduction

The New Growth Theory assumes that firms exist exogenously and then engage in the pursuit of new knowledge as input into the process of generating innovative activity (Griliches, 1979; Romer, 1986). Influenced by such theoretical development, intensive research has been conducted on the effect of technology spillovers on host countries via foreign direct investment (FDI) and trade, and those have been regarded as the main vehicle for technology spillovers (Blalock and Simon, 2009; Blomstrom and Kokko, 1998; Buckley, et al., 2002; Grossman and Helpman, 1991; Keller and Yeaple, 2003; Liu and Wang 2003; Liu, et al., 2009; Marin and Bell, 2006). However, in the current globalised economy, knowledge spillovers not only occur through FDI and trade, but also happen through human mobility, given that scientific and technical human capital has become more mobile and is even more able to cross national borders than before, and this has encouraged researchers to examine the role of human mobility in knowledge spillovers.

A new phenomenon of trans-national entrepreneurs has appeared recently as a group of US-educated or other OECD-educated immigrant scientists and engineers return to their home countries to start up new ventures in order to take advantage of promising local opportunities (Saxenian, 2002). This phenomenon shows that there is a shift from ‘brain drain’ to ‘brain circulation’ under globalization (Saxenian, 2003). It has raised two related research questions. One is whether direct knowledge spillovers occur between local and returnee-owned firms. The other is whether indirect inter-firm knowledge spillover takes place from returnee to non-returnee owned firms. Both questions are addressed by comparing the innovation performance of returnee and non-returnee owned firms.

This chapter examines the relationship between knowledge spillovers and firms’

innovative performance via entrepreneurs and their role in high-tech SMEs in China. A comprehensive framework is adopted which combines the knowledge-based view and social capital theory. A wide range of issues are examined in relation to knowledge spillovers via returnee entrepreneurs, MNE working experience and trade in high-tech industries. Of special interest is whether returnee entrepreneurs act as a channel for knowledge diffusion and technology spillovers. The findings from the study help show the linkages between the innovation of local firms and international knowledge spillovers in Chinese high-tech sectors. The analysis of these SMEs shows that international knowledge spillover occurs via human mobility and is strongly associated with the innovation performance of returnee owned firms. The findings support the view that the presence of returnee entrepreneurs positively affects the innovative performance of non-returnee owned firms. These returnee entrepreneurs not only absorb international knowledge, but also indirectly transfer it to local firms.

The remainder of this chapter is organized as follows. Section 4.2 discusses theories and hypotheses. Section 4.3 introduces the model and variables used in the study. The empirical results are presented and analysed in Section 4.4. In Section 4.5 the findings of this chapter are discussed. Finally, Section 4.6 concludes.

4.2 Theory and Hypotheses

Building on the literature review in Chapter two, a comprehensive framework which embraces the KBV and social capital theory is adopted to examine whether returnee entrepreneurs are a new channel for knowledge spillovers. While the KBV focuses on the importance of knowledge creation and acquisition in innovation, social capital theory highlights the role of relational capital in acquiring knowledge externally through firm networks. Thus, these two approaches complement each other by emphasizing that critical resources/knowledge for innovation may be beyond firm boundaries and so firms may benefit

from external knowledge spillovers through human mobility and their networks (Dyer and Singh, 1998). This combined framework allows the author to examine how human mobility and global networks established by entrepreneurs affect international knowledge spillovers. Those potential channels for international knowledge spillovers have not been commonly noted in the existing literature. In this section, the author discusses the integrated framework first, then establishes hypotheses based on the framework.

4.2.1 Knowledge-based View and Knowledge Spillovers

Knowledge is considered as a specific strategic resource and the principal basis for creating competitive advantage according to KBV (Grant and Fuller, 1995; Grant, 1996a, 1996b, 1997). The knowledge needed for innovation may be obtained from a variety of internal and external sources. From the knowledge-based perspectives, firms may develop internal innovative capabilities associated with R&D activities (Barney, 1991; Peteraf, 1993). Few firms, however, possess all the elements required for successful and continuous technological development even though they are the source of much of the knowledge needed in innovation. Some studies (Mansfield, 1988) have found that the original sources of invention came from outside the firm. Firms often find that it is less costly and faster to source external knowledge rather than develop it internally.

The process of knowledge creation involves a combination of tacit and codified knowledge (Nonaka and Takeuchi, 1995). Heterogeneous knowledge bases and capabilities among firms are the major determinants of sustained competitive advantage and superior corporate performance (Papoutsakis, 2006). These two different types of knowledge can be moved, shared and transferred. For example, Explicit or codified knowledge may be published in books, papers or documents, which can be reproduced at low cost. The transfer of this kind of knowledge does not prevent its use by the original holder. On the other hand,

much knowledge in organisations is tacit (Nonaka and Takeuchi, 1995) and socially complex. The tacit and complex nature of valuable knowledge makes knowledge acquisitions very difficult (Kogut and Zander, 1992) as it embodies in organisational members, tools, tasks and networks (Argote and Ingram, 2000). Lundvall (1992) agrees that important elements of tacit knowledge are collective rather than individual at firm level. It is hard to articulate (Nonaka and Takeuchi 1995). This kind of knowledge can be transferred more effectively through human mobility (Kaj, et al. 2003; Song et al., 2003) and hands-on experience (Almeida and Kogut, 1999; Teece, 1982; Zucker, et al. 1998). Hence, human mobility enables firms to overcome barriers in knowledge spillover and facilitate knowledge diffusion.

4.2.2 Social Capital Theory and Knowledge Spillovers

As discussed above, firms not only depend on internal knowledge sources for innovation, but also need to obtain new knowledge and business information externally within the firm's networks and through human relations. Social capital theory places a greater emphasis on human relations and on the elicitation of tacit knowledge in the context of the global economy. Social capital in the form of networks is viewed as the relational and structural resources attained by entrepreneurs/firms through a network of social relationships (Adler and Kwon, 2002; Cooper and Yin, 2005). It is argued that social capital-related factors may enable firms to access external knowledge and new ideas created anywhere else, thus stimulating their firms' innovation performance (Coviello and Munro, 1997; Zahra et al., 2000).

The international experience of entrepreneurs may be associated with the development of international business networks. Returnee entrepreneurs who have developed social capital in the form of international networks may act as a bridge between the context of their home country and international markets. Zweig et al (2005) perceive returnee entrepreneurs as

‘trans-national capital’ that results from trans-national networks. This type of social capital may help returnee entrepreneurs to access valuable resources, thus enhancing their firms’ innovation performance directly.

Extending the existing literature on knowledge spillovers, this chapter examines the impact of returnee entrepreneurs, networks, other channels for knowledge spillovers and in-house R&D efforts on innovation, and seeks evidence as to whether returnees are a new force of international knowledge diffusion. KBV and social capital theory are combined to investigate how firms acquire much needed knowledge for innovation through different external spillover channels. This integrated theoretical framework helps explain how external knowledge spillovers and internal efforts jointly determine the innovation performance of Chinese high-tech firms. Specifically, the author focuses on returnee entrepreneurs as a channel for external knowledge spillovers, apart from MNC working experience and trade. The reason for considering this new channel is that it involves direct human interaction and communications rather than through tangible means of spillovers, such as trade and FDI. Based on the framework discussed above, a number of testable hypotheses are derived below.

4.2.3 Entrepreneurs as a New Channel for Knowledge Spillovers

The existing studies have shown that technological change occurs due to intentional and costly investments undertaken by firms and entrepreneurs who seek to profit from monopoly power resulting from successful innovation (Saggi, 2008). When knowledge spillovers flow from the sources of producing knowledge to the (new) organisational form, new entrepreneurial firms are able to take advantage of knowledge spillovers to create competitive advantage (Acs and Audretsch, 1989). In this sense, entrepreneurship serves as a conduit through which knowledge spillovers occur via new firm formation (Shane, 2001a and 2001b).

Technical progress and growth can be based on the creation of entirely new knowledge,

or adaptation and transfer of existing advanced technology. At the firm level, few firms can generate internally all the knowledge required for continuous technological development. The diffusion of knowledge becomes a very important and complementary source of innovation, especially for those firms which lack necessary resources for innovation. Therefore, firms may be able to catch-up by imitating and using the technology developed by more advanced economic agents (Song, et al., 2003). In developing innovation, firms learn from others, and this transfer of knowledge across firms' boundaries is a crucial part of the development process. This can be challenging, even within a firm, given that tacit knowledge and networks do not easily flow unless individuals possessing these resources also move (Szulanski, 1996). Hence, the diffusion of new technology depends on the mobility of engineers and scientists (Teece et. al., 1997). This is particularly true when knowledge tends to be "sticky" and remains localized within firms, regions, and countries (Szulanski 1996, Jaffe et al. 1993). Almeida and Kogut (1999) support the notion that inter-firms employee mobility influences knowledge spillover and this improves production efficiency for the entire local industry.

Returnee entrepreneurs as a new phenomenon of human mobility can be considered alongside the flow of money, knowledge, and universal ideas (Faist, 2000). Such mobility implies at least two important assumptions. One is that knowledge possessed by individuals can be transferred and applied to a new context. The other is that there is potential for mutual learning which can be instrumental both for generating innovative ideas as well as for finding solutions to existing problems. Human mobility can play an important role in transferring tacit knowledge or knowledge-building capabilities (Ettlie, 1980, Leonard-Barton, 1995; Chesbrough, 1999). Tacit knowledge rather than explicit knowledge among firms becomes a necessary condition supporting firms to improve their flexibility, performance and innovative capabilities (Angel 1991; Saxenian 1994; Feldman 2000). As documented by Saxenan (2002), returning entrepreneurs have contributed to scientific and technological development in

Taiwan, South Korea and India, this study argues that these returnee entrepreneurs act as an important channel for transferring tacit knowledge (Fornahl et al., 2005). Some returnee entrepreneurs not only brought the latest technology and patents with them when they returned to China, but also their tacit knowledge, experience and business networks. In this sense, returnee entrepreneurs are able to contribute to knowledge creation and innovation of their own firms. Hence, the author proposes:

H1a: The innovation performance of high-tech SMEs is positively associated with the presence of returning entrepreneurs.

Intensive research has been conducted on knowledge spillovers via firms' activities. It is widely recognized that foreign direct investment (FDI) is a mechanism that helps a country overcome the geographic barriers to international knowledge diffusion. In particular, MNCs are regarded as the main channel for knowledge spillovers. However, few studies have considered entrepreneurs as a channel for knowledge spillovers. The exception is Asc et al. (2006) who propose a knowledge spillover theory of entrepreneurship and view the stock knowledge as exogenous and embedded in individuals. The knowledge is created endogenously in the effort of third-party firm and economic agent through innovative activities. This approach is different from the endogenous growth theory under which firms are considered to be exogenous and their performance in generating technology change is endogenous. Hence returnee entrepreneurs may also be an important source of dynamic externalities. Malmberg and Maskell (2002) found that the rivalry between firms encourages variation, observability and comparability. As a consequence, different types of knowledge are exchanged, and the possibilities for innovation are enhanced. Innovation diffusion occurs not only through commercializing a new product, but also imitating and introducing it into different contexts. Learning-through-observation may also allow for the diffusion of tacit knowledge. Non-returnee owned firms may learn and gain the benefits of knowledge

spillovers from returnee entrepreneurs, and thereafter improve their innovation activities. Therefore, a hypothesis is proposed as follows

H1b: The innovation performance of non-returnee owned firms is positively associated with interaction between non-returnee owned firms and returnee entrepreneurs.

4.2.4 R&D and Innovation Performance

One of the most important determinants of innovation is research and development. Countless research regarding R&D and its role on innovation has been conducted (Love and Roper, 1999, 2002; Bougrain and Haudeville, 2002; Silverberg, 2002; Hagedoorn and Cloudt, 2003). Previous research has shown that firms which conduct internal R&D are better able to use externally gathered information (Freel, 2000). Meanwhile, most of the existing studies on knowledge spillovers attempt to capture the effect of spillovers on innovation measured by patents, R&D spending, and new product/service output. These spillovers can emerge from the mobility of R&D employees, supplier-buyer relationships, public information contained in patents, scientific and professional journals and conferences (Los, 2000). It is argued that entrepreneurial opportunities could be greater in contexts where new knowledge plays a big role, since this would increase the degree of uncertainty and asymmetries involved in making decisions, this induces a higher propensity for economic agents to start new firms in order to exploit the value of their (potential) economic knowledge (Acs, et al., 2006). The centre part for entrepreneurs is still investment in R&D along with human resources development and infrastructures via entrepreneurial efforts. It should be reflected in firms' innovation activities when the addition of external linkages for innovation. R&D is measured as R&D expenditure per employee here. Hence, the author hypothesizes:

H2: The innovative performance of high-tech SMEs is positively associated with their firms' R&D efforts.

4.2.5 Knowledge Spillovers, Technology Gap and Innovation Performance

Knowledge spillovers can be considered to be a function of a technology gap (Verspagen, 1993, pp. 129-130). Especially a technology gap exists between those who create and innovate to produce new technology and those who cannot. A technology gap also exists between those who can access, adapt, master and use existing technologies and those who cannot. The technology gap may enhance knowledge spillovers from the primary firm (which is knowledge based) to other firms through disembodied outputs, such as patents and the process of 'reverse engineering' another firm's new products.

In general, there is a technology gap between developed countries and developing countries. While some studies have found that spillovers from foreign firms appear when there is a large technology gap between domestic and foreign firms (Driffield, 2001; Castellani and Zanfei, 2003, others have shown that domestic firms are able to reap the benefit from spillovers only when the technology gap is moderate (Flores et al., 2000). In developing countries, local firms try to catch up with advanced technology innovations. Innovation may refer mainly to the acquisition of capabilities by firms that enable them to adapt and change substantially a product and/or process. The diffusion of knowledge and technology from advanced countries is therefore an important and complementary source of growth. However, without adequate human capital or investments in R&D, local firms may fail to materialize technology spillovers.

The same argument can be applied to the case of returnee entrepreneurs who are more likely to access advanced technology due to their background and international networks, whereas local-grown entrepreneurs have few opportunities to access advanced technology or encounter difficulties in benefiting from FDI and trade directly. There may be a technology gap between returnee owned firms and non-returnee owned firms. The technology gap may impact on the effectiveness of knowledge spillovers and innovation performance of

non-returnees firms. Thus, the author hypothesizes:

H3a: The relationship between the innovation performance of non-returnee owned firms and interaction with returnee owned firms is positively moderated by a technology gap.

4.2.6 Global Networks and Innovation Performance

Network spillovers occur when the commercial or economic value of a new technology is strongly dependent on the development of a set of related technologies. For instance, when firms develop complex new technologies, there are often several parts that may be developed simultaneously in order to make sure that the technology functions properly. External cooperation has become a very sought-after organisational form to ensure access to external knowledge sources (Mowery, Oxley, and Silverman, 1996).

Networks play an important role in the development of a firm (Birley, 1985; Aldrich and Zimmer, 1986). Social capital is a social structure of relationships which are accessed and/or mobilized in purposive actions (Lin, Cook, and Burt, 2001), and the importance of social capital for learning and knowledge transfer has been explicitly recognised (Kostova and Roth, 2002). Social capital has been highlighted as “a critical resource for accessing, exploiting and leveraging individual and collective knowledge” (Reiche, 2004, p.7). In particular, people who are central to the previous innovation network can bring crucial technical expertise, organisational memory, and a set of social relationships into the recipient firms (Parise et al., 2006).

The social structures of professional networks are an effective means of establishing trust. Hence, they facilitate communication and knowledge spillover. Simmie (2003) considered the interface of local and global networks, and found that in the UK, innovative firms are concentrated in a few locations but at the same time innovative regions and firms have more linkages with international actors than less innovative regions and firms. In his

interpretation, international linkages are important for firms to obtain leading-edge knowledge. Through transnational community networks, an increasing number of entrepreneurs, who are often bilingual, move easily between different cultures and countries and pursue economic, political and cultural interests. International entrepreneur mobility represents a potential channel for bridging gaps through building social relations and informal networks (Fornahl et al., 2005). The benefits of returnee entrepreneurs are perceived not only in the capital they bring with them, but also in advanced technology, commercial knowledge and social networks. These are the essential tool for the successful development of technology-based firms in emerging economies. Many Chinese scholars and scientists who returned to China have maintained ties and contacts with the Western scientific community through ‘knowledge networks’ (Barré et al., 2003; Kuznetsov, 2006). Hence, the author proposes:

H3b: The innovative performance of high-tech SMEs is positively associated with entrepreneurs’ global networks

4.2.7 MNCs, Exporting and Importing Experience

In addition to the unauthorised reverse engineering, technology is diffused and transferred through many legitimate channels under the accelerating pace of globalization. FDI and international trade have been regarded as the main vehicle for technology spillovers (Grossman and Helpman, 1991; Blomstrom and Kokko, 1998; Buckley, et al., 2002; Liu and Wang, 2003; Keller and Yeaple, 2003). In particular, MNCs not only acquire economical scale and financial capital, but also possess intangible assets (technological know-how, marketing and management skills and reputation) which enable them to compete successfully with local firms. Spillovers can arise when workers receive training or accumulate experience working for MNCs, and then move to domestic firms or set up their own enterprises. Axinn

(1988) has observed that decision-makers who have had prior MNCs' work experience building the linkage with buyer and supplier are able to draw upon their personal contacts in foreign markets to facilitate their firms' exporting. Entrepreneurs with MNCs' experience may be able to transfer technology, management skills and marketing techniques to local firms (Inkpen and Tsang, 2005) and positively affect their firms' performance. Therefore, the following hypothesis is proposed.

H4a: The innovation performance of high-tech SMEs is positively associated with entrepreneurs' working experience in MNCs

In addition, non-FDI modalities (such as exporting and importing spillovers) are also noted in the literature (Aitken, et al., 1997; Dunning, Kim and Lin, 2001; and Greenaway, et al., 2004). Previous studies have examined import-related international technological spillovers (Grossman and Helpman, 1991; and Coe and Helpman, 1995) and have identified a number of ways in which international R&D spillovers may affect domestic technological progress, as this source of international spillovers enables domestic researchers to access the ideas and technology developed by their foreign counterparts. In particular, importing technology is regarded a channel through which domestic firms may 'reverse engineer' the products of their foreign rivals. As a result, importing foreign technology can enhance domestic firms' innovative capacity (Coe et al., 1997).

Some studies have shown that domestic innovation in developing countries consistently depends on high technology imports from developed countries, and that the importance of imports in the diffusion of technology is greater for developing countries than for developed countries (Connolly, 2003). Importing foreign technology can help boost the innovation capability of domestic firms not only through their own R&D spending but also through the foreign R&D spending of trade partners (Alvarez and Robertson, 2004; Almeida and Fernandes, 2006). Lumenga-Neso, et al., (2005) provide strong evidence that imports play a

significant role in technology transfers. Imports were found to have a positive association with productivity and innovation of Chinese firms (Chuang and Hsu, 2004; Falvey et al., 2004; Liu and Buck, 2007) and can be seen as a channel for knowledge spillovers. Hence, the author proposes the following hypothesis.

H4b: The innovation performance of high-tech SMEs is positively associated with importing.

Besides imports, exports are also considered a channel for technology spillovers. Learning-through-exporting may facilitate technology diffusion and transfer, thus affecting innovation performance (Greenaway and Yu, 2004). There are two reasons that exporting may lead to innovation through technology spillovers.

First, exporting firms may obtain technical assistance from foreign buyers or buyers may specify high quality products. Evidence, however reveals that technology transfer from buyers does take place. Pack and Saggi (2001) construct a theoretical model to show the incentive for buyers to provide technology to sellers. Rhee et al. (1984) describe the role of foreign buyers in the early development of Korean manufacturing. A case study from Taiwan shows that selling in export markets may stimulate firms to improve their own technological capacity (Westphal, 2002). Blalock and Gertler (2004) find that Indonesian textile exporters benefit from foreign customers in various ways, from product design to technology. Salmon and Shaver (2005) have shown that exporting is associated with innovation as exporters are more likely to access diverse knowledge about competing products and customer preferences through export intermediaries, customer feedback and other foreign agents, which facilitate innovations. Their research has directly measured the relationship between exporting and innovation rather than productivity.

Second, high-tech firms have to develop and maintain their innovative capability to remain viable in competitive international markets, as these firms are facing the intense

competition of export markets. Whereas non-exporting firms may be insulated from such competition by trade and geographical barriers, exporting firms may find it difficult to survive without innovation and adopting best-practice technology (Blalock and Gertler, 2004). Therefore, the following hypothesis is proposed

H4c: The innovation performance of high-tech SMEs is positively associated with exporting.

4.3 The Variables and Empirical Models

Dependent variable

The number of patents owned by firms is used as a measure of innovation performance (**IP**). Patents are mainly the outcome of formal research processes. For instance, Jaffe, Trajtenberg and Henderson, (1993) have used patents as the output of innovation. This measure is convenient because patent data are easily accessible. Also it is argued that innovation facilitated by international knowledge spillovers can be more directly assessed in firms' efforts to generate patents (Salmon and Shaver, 2005). Hence, patents classified across various technological categories allow us to characterize firms' positions in the technological space.

Independent variables

RE: a dummy variable for returnee-owned firms which equals 1 (zero otherwise), where a returnee is defined as a Chinese native with at least two years of commercial and/or educational experience in an OECD country.

R&D: R&D intensity (RD) variable was measured as R&D expenditure per employee.

GN: global networks variable was constructed using three questions in our questionnaire.

These seven point Likert-type questions focused on the degree of importance of three

types of networks: (1) networks established in foreign markets; (2) contacts maintained with people in foreign markets; (3) membership of different associations abroad. Factor analysis confirmed that these three questions all loaded on one factor with eigen value exceeding 1.0. The cumulative variance explained was 84.64%.

KS: an international knowledge spillover variable was constructed on the basis on four questions that asked returnee and local entrepreneurs to evaluate (on a 7-point Likert scale) the importance of knowledge in innovation (1) new technological ideas; (2) new business ideas and opportunities; (3) new marketing knowledge, and (4) new financial knowledge. Factor analysis also confirmed that these four questions loaded on to one factor, with eigen value exceeding 1.0. The cumulative variance explained was 92.83%.

EX: export orientation variable was measured by a dummy variable, taking 1 if firms export, and zero otherwise

IM: importing technology variable which measures whether the firms have imported advanced technology from the OECD countries, taking value 1 if firms have imported technology abroad, and zero otherwise.

MNC: dummy variable was created for entrepreneurs' working experience in an MNC, taking the value 1 if the entrepreneur previously worked for an MNC, and zero otherwise.

RS: denotes spillovers from returnees to local entrepreneurs, taking 1 if local entrepreneurs have stated that they have benefited from returnees, and zero otherwise.

Gap: the technology gap variable which was constructed based on the question of how long it will take for local entrepreneurs to catch up with returnees. If the answer is over three years, then there is a substantial technology and knowledge gap between these two groups.

Control variables

Control variables include firm age in years since founding, and firm size which measured by number of employees (Bonacorsi, 1992) for a discussion as well as industries. The sample firms mainly fall into 10 sub-sectors in high-tech industries, including electronics and information technology (42.9% of the sample firms), bio-engineering and new medical technology (12.1%), new materials and applied techniques (7.8%), new energy and high-power conservation technology (4.8%), and others. Industry dummy variables are included in the estimation equation to capture the impact of industrial sectors on a firm's performance. In addition, a firm's age (years since founding) and a firm's size (the total number of employees) were controlled for in the estimation. The proposed hypotheses are tested based on the following equation.

To test these hypotheses, two equations have been estimated. The first equation is used to model the innovation performance of firms for the overall sample to examine whether the presence of returnees has a direct contribution to the innovation performance of their own firms which we call direct knowledge spillover. The second equation will be tested whether there is indirect knowledge spillover from returnees to non-returnee owned firms by estimating the sub-sample of non-returnee owned firms. The research model contains two equations as follows.

$$IP_i = \alpha_0 + \alpha_1 RD_i + \alpha_2 RE_i + \alpha_3 GN_i + \alpha_4 KS_i + \alpha_i IS_i^{ex,im,mnc} + \Gamma_i X_i + \varepsilon_i, \quad (1)$$

$$IP_i^{local} = \beta_0 + \beta_1 RD_i + \beta_2 RS_i + \beta_3 Gap_i + \beta_4 GN_i + \beta_5 KS_i + \beta_i IS_i^{ex,im,mnc} + \Pi_i X_i + \eta_i, \quad (2)$$

where the variables in Equations (1) and (2) are defined in detail above. IS represents other sources of international knowledge spillovers such as exporting and importing, and X is a vector which denotes a set of control variables, including firm size and age. The two equations are estimated using the count integrate method, as the dependent variable (patents) is a positive number.

4.4 Empirical Results

Table 4.1 reports the descriptive statistics for the variables used in the analysis and the matrix of correlation coefficients. The correlations between the variables show the predicted signs and most of the coefficients are statistically significant, providing preliminary evidence for the proposed hypotheses. Spearman correlation coefficients have been used instead of Pearson correlation coefficients since many of the variables used in the sample are non-continuous. A correlation coefficient varies from +1 to -1. It should be noted that correlations are not causality. It is just a measure of association between variables that addresses whether these covary. It is not necessary to prejudge these as dependent or independent before estimating correlation. To determine whether these covary in a significant fashion, apply a t-test to the correlation coefficient at a given $n - 2$ degrees of freedom and confidence level.

Based on equation (1) the overall sample is first estimated by using returnee (RE) as a dummy variable to test whether returnee owned firms are more innovative than non-returnee owned firms in order to obtain evidence on the direct impact of returnees on their firms' innovation performance. Meanwhile, in order to examine how global networks may enhance firms to transfer tacit knowledge and help innovation activities, an interaction term between returnee dummy variable and global network variable was created. The results summarized in Table 4.2 show that the eight hypotheses specified above receive support for the overall sample.

Table 4.1: Correlation Matrix and Descriptive Statistics

Spearman's rho	Mean	Std. Deviation	Patents	KS	GN	R&D	RS	GAP	Export	IM	MNCs	Age	Size
Patents	3.910	11.950	1.000										
KS	4.997	1.253	0.009*	1.000									
GN	4.486	1.401	0.018*	0.075*	1.000								
R&D	340.50	11.84	0.031**	0.173*	0.053*	1.000							
RS	0.608	0.491	0.048	0.143*	0.160*	0.057*	1.000						
GAP	0.165	0.373	0.148**	0.144*	0.103	0.147*	0.103*	1.000					
Export	0.270	0.444	0.004*	0.075*	0.036*	0.254*	0.187*	0.204*	1.000				
IM	0.373	0.484	0.084*	0.129**	0.105	0.169**	0.377*	0.134*	0.278**	1.000			
MNCs	0.340	0.474	0.011*	0.027*	0.006*	0.143*	0.290**	0.074	0.172**	0.263**	1.000		
Age	4.632	2.571	0.028	0.011	0.086	0.124*	0.025	0.146*	0.153*	0.002	0.019	1.000	
Size	2.515	3.953	0.054	0.011	0.298	0.271**	0.013	0.063	0.139**	0.011	0.025	0.362*	1.000

Note: ** and * represent the 1% and 5% significance levels, respectively (2-tailed).

Table 4.2: Direct Knowledge Spillover (Dependent Variable: Patents)

Variables	Model I Coefficients (Std. errors)	Model II Coefficients (Std. errors)	Model III Coefficients (Std. errors)
KS		0.146*** (0.023)	0.146*** (0.023)
GN		0.084 (0.109)	0.081 (0.138)
RE		0.278*** (0.068)	0.166*** (0.089)
R&D		0.000*** (4.40E-05)	0.000*** (4.42E-05)
EX		0.573*** (0.106)	0.449*** (0.109)
IM		-0.052 (0.066)	-0.097 (0.066)
MNCs		0.158** (0.065)	0.127** (0.064)
RE*GN			0.264** (0.138)
Control			
Age	0.050*** (0.008)	0.032*** (0.009)	0.032*** (0.009)
Size	0.699*** (0.022)	0.598*** (0.026)	0.598*** (0.025)
Industry Dummies	Included	Included	Included
R ²	0.11	0.23	0.24
Obs	711	711	711

Notes: ***, ** and * represent the 1%, 5% and 10% significance levels, respectively.

The results in both Model II and III in Table 4.2 indicate that both types of firms' innovation performance is strongly related to international knowledge spillover, derived from (1) new technological ideas; (2) new business ideas and opportunities; (3) new marketing knowledge, and (4) new financial knowledge from abroad. It has been found that this variable is significant at the 1% level in Model III for returnee owned firms. The level of significance is much stronger than non-returnee owned firms in Model II. This implies that returnee entrepreneurs owned firms have exhibited a higher level of innovation than non-returnee owned firms which support hypothesis H1.

Innovation activities are also positively associated with in-house R&D at the 1% level. The result indicates that R&D activity still plays a significant role. R&D, as one of important factors, contributes to firms' innovative capacity to support sustainable technological development. This suggests that firms which invest more in R&D exhibit higher innovation than those that are weak in R&D investment. Hence, H2 is also supported as R&D expenditure is important for both types of firms' innovation performance.

In addition, the interaction between returnees and global networks, RE x GN, is tested in regression. The result shows that the variable of global networks is a significant mechanism to empower knowledge spillovers through the interaction between returnees and global networks at the 5% level, reflecting the advantages of returnees with established global networks. In particular, returnee entrepreneurs owned firms with well-established global networks tend to be more innovative than the firms without global networks. Hence, this provides evidence which supports hypothesis H3b.

The results also suggest that knowledge spillovers through export channels are statistically significant at the 1% level, implying that the extent of exposure of Chinese high-tech SMEs to international markets fosters external learning, augments innovative capacity through interaction with buyers and suppliers. Similarly, the results show that innovation performance is positively associated with entrepreneurs' experiences of MNCs at the 5% level. Both variables have higher coefficients for returnee owned firms in Model III than non-returnee owned firms in Model II. The results show that knowledge and technology spillovers via learning-by-exporting and MNCs' working experience positively affect firms' innovation performance. Returnee owned firms extract more benefits from knowledge spillovers via these two channels due, perhaps, to their innovation advantages compared with non-returnee owned firms. However, there is not a significant association between importing technology and innovation performance in both types of firms, hence providing no evidence

that imported technology positively affects the innovative capacity of Chinese high-tech SMEs, as postulated in the existing literature (Coe and Helpman, 1995).

The innovation literature shows that new firms tend to be more innovative than old firms (Aubert et al. 2006). New firms are often credited for being more flexible and innovative than larger, more established firms (Katila and Shane, 2005). However, our result shows that there is a positive association between innovation performance and the age of the firms. This implies that relatively well-established firms are more innovative than young ones. Hence, the firm age and size still matter and positively affect these firms' innovative performance. The results summarized in the following table 4.3:

Table 4.3: Knowledge Spillovers from Returnees to Non-returnee owned Firms

(Dependent variable: Patents of Non-returnee owned Firms)

Variables	Model I Coefficients (Std. errors)	Model II Coefficients (Std. errors)
KT		0.205* (0.108)
GN		0.084 (0.123)
R&D		0.092*** (0.014)
RS		0.562** (0.323)
RS*GAP		0.153** (0.140)
EX		0.170* (0.171)
IM		-0.099 (0.313)
MNCs		0.031* (0.378)
Control		
Age	0.033** (0.014)	-0.135 (0.086)
Size	0.813*** (0.034)	0.583*** (0.147)
Industry Dummies	Included	Included
Adjusted R ²	0.10	0.23
Obs	358	358

Notes: ***, ** and * represent the 1%, 5% and 10% significance levels, respectively.

Using Equation 2, a test was carried out investigating whether there is an indirect impact of returnee owned firms on non-returnee owned firms upon the technological performance. The regression results indicate that there is a strong association between innovation performance and R&D at the 1% level. Again, this supports the important role of investment on in-house R&D which affects firms' innovation performance endogenously. Knowledge spillover (KS) is also positively associated with the innovation performance of non-returnee owned firms although it is only significant at the 10% level.

The regression result shows a positive association between returnee spillovers and local innovation performance at the 5% significance level. This result suggests that returnee owned firms have indirect impacts on local firms' innovation performance and act as a channel for technology and knowledge spillovers. The interaction between the technology gap variable and returnee spillover variable is significant at the 5% level, reflecting the fact that local firms that are behind returnees firms are able to learn more from returnees. Hence, they have better innovation performance. Such a technology gap (three years time) may moderate the effect of knowledge spillovers on the innovation performance of non-returnee owned firms. Thus, the result supports hypothesis H3a.

The results also show that the variables for exporting and MNC experience are positive, but are only significant at the 10% level. There is not a significant association between importing technology and innovation performance for the non-returnee owned firms.

4.5 Discussion

This chapter adopts an integrative framework which embraces KBV and social capital theory to examine the spillover effect of returnee entrepreneurs, MNC working experience, trade and global networks on innovation performance. Specifically, the regression results show returnee entrepreneurs owned firms are more innovative and perform better than their local

counterparts in terms of innovation. Hence, there is evidence which shows direct knowledge spillover through returnees. The results also show a positive association between returnee spillover variable and innovation performance in non-returnee owned firms. This finding suggests that returnee owned firms have indirect impact on non-returnee owned firms' innovation performance and act as a new channel for technological knowledge spillovers. Global networks are important for innovation through its direct and interaction effect. In particular, it is found that global networks complement the advantage possessed by returnee entrepreneurs. Returnees with well established global networks are able to obtain external knowledge, hence contributing to higher innovation performance. The results support the hypotheses built on social capital theory which focus on the importance of networks in obtaining external source of knowledge and ideas needed for innovation.

It has also been found that the innovation performance of the sample firms depends on their internal learning mechanisms and investment on R&D. R&D is the variable which exhibits the strongest effect upon the innovation performance of both types of firms. The evidence indicates that innovative firms are able to access external knowledge, and continue to devote an effort to internal development, such as investment on R&D. This combined strategy positively affects innovative performance. It may imply that firms with high levels of accumulated R&D are able to access international knowledge and benefit from knowledge spillovers.

With regard to the role of technology gap, the finding suggests that a technology gap positively moderates the effect of returnee spillovers on non-returnee owned firms' innovation performance. This finding implies that local firms that lag behind returnees firms are able to learn more from returnees, thus enhancing innovation in those firms. This positive moderating effect suggests that local-grown entrepreneurs are able to absorb new knowledge and ideas from returnee entrepreneurs even though the technology gap is relatively large.

Taken together, these results suggest that returnee entrepreneurs are an important channel for international knowledge spillovers.

Export-related spillover channel and MNC experience are positively associated with the innovative capacity of returnee and non-returnee owned firms, suggesting that learning-by-exporting and working experience in MNCs do enhance innovation performance. The firms may learn from foreign buyers and obtain advanced technology via exporting. Entrepreneurs who worked in MNCs not only learned the codified knowledge and technology there but also tacit knowledge.

This chapter makes a number of contributions to the existing studies. First, this study is among a few studies which compare the innovation performance of two groups of firms with different characteristics. Besides returnee entrepreneurs as a new channel for international knowledge and technology spillovers, this study also estimates the impact of MNE working experience on the innovation performance of local firms in high-tech industries.

Second, the research extends the literature on international knowledge spillovers by adding a new channel for knowledge spillovers. The author not only considers human mobility, such as returnee entrepreneurs and MNE working experience, but also incorporates social capital theory into the existing literature. This helps broaden the mechanisms which facilitate international knowledge spillovers.

Third, it has been found that the spillover effect from returnee entrepreneurs is positively moderated by a technology gap. A possible explanation is that local non-returnee owned firms are able to extract more spillovers when they lag behind returnee owned firms. The findings from this chapter will provide new insights into the role of human mobility in technological development in emerging economies and will help to advance the theoretical development of the new channel for knowledge spillovers and broaden our understanding of the factors affecting international knowledge flows.

4.6 Conclusions

This chapter exploits a new channel for international knowledge spillovers on the innovation performance of Chinese SMEs firms in high-tech industries using survey data. The direct positive impact has been found on returnees entrepreneurs owned firms' innovation because of entrepreneurs' MNC experience and their international networks. Returnees took directly benefits from international knowledge spillover. Meanwhile returnees also play an important role as a new channel to indirectly impact on non-returnee entrepreneurs owned firms' innovation. Technology gap, learning capability and social interaction may all help knowledge spillovers flow not only include the codified knowledge and technology there but also tacit knowledge. Export-related spillover channels are estimated positively associated with the innovative capacity of both types of firms, implying that learning-by-exporting and do enhance domestic innovation. Meanwhile, these high-tech firms' R&D activities in China are also found to benefit innovation.

The results also suggest a number of implications for policymakers. The evidence supports the government policy which aims at technology advancement through international sources of technology spillovers, continue encouraging welcome returnee entrepreneurs back to China to start business. Second, Chinese high-tech industries may need to continue to attract human capital who have experience working in MNEs because of their technology advantage. Third, the findings indicate that the influence of technology spillover sources is not automatic, but they are linked with deliberate learning and active interactions including social networks and international networks between entrepreneurs and environments.

Finally, the government may need to foster innovation in high-tech sectors by allocating more resources to support high-tech firms R&D activities and invest in manpower. As shown in this chapter, human capital is the essential channel to access, carry and transfer cutting-edge international technology. It may be crucial for firms to adopt a combined

strategy to obtain new technology via various spillover channels, while at the same time move towards developing their own technological capabilities through internal effort.

Chapter 5 the Performance of Returnees and Non-returnee's Firms

5.1 Introduction

Building on the Knowledge-Based View and International Network Perspectives, this chapter explores the relationships between knowledge, networks and firms performance using a unique, hand-collected dataset of 353 small and medium enterprises (SMEs) of returning entrepreneurs and 358 local entrepreneur-owned SMEs from Zhongguancun Science Park (ZSP) in China. The research aims to examine the business performance of returnee and local entrepreneur-owned firms.

This chapter compares the performance of returnee owned firms with that of non-returnee owned firms. To assess whether returnees have competitive advantages derived from their international backgrounds and networks, a comparison is made between this group and local-grown entrepreneurs who have not been abroad to study or work. In this way, the author can examine whether the special characters of returnee entrepreneurs can make differences in a firm's performance. Both groups studied are based in ZSP and operate in the same business environment.

The chapter is organised as follows. The following section situates the analysis in the concepts of the KBV and social capital theory. This is followed by the proposed hypotheses, then building an equation model with variables in Section 5.3, while the subsequent section presents data analysis and analyses the empirical results. Section 5.5 discusses the findings from this chapter, Finally, Section 5.6 concludes.

5.2 Theory and Hypotheses

To compare the business performance of returnee and non-returnee owned firms, the author employs a combined research framework, namely the KBV and social capital theories. These

two approaches complement each other. While the KBV focuses on knowledge creation and acquisition internally, social capital theory highlights the importance of relational capital in acquiring knowledge-externally through networks. Thus it complements the KBV by emphasizing that critical resources may be beyond a firm's boundaries and so firms can share knowledge and information within their networks (Dyer and Singh, 1998). In this section, an integrated framework of the KBV and social capital theories is discussed first, and then hypotheses are derived based on the framework.

The Knowledge Based View

The KBV proposes that knowledge is crucial to creating sustainable competitive advantages. Knowledge is created and stored within individuals. The primary role of the firm is to apply knowledge to the production processes of goods and services, and its source of unique advantage rests in its ability to integrate the knowledge of different individuals (Kogut and Zander, 1992; Nonaka, 1994; Ghoshal and Moran, 1996; Grant, 1996; Spender, 1996; Teece, 1998).

KBV theorists have drawn directly from the resource-based view (RBV) of a firm, which argues that firms exist because they have resources which are unique, immobile and socially complex. These resources are the foundations of competitive advantages and performance (Penrose, 1959; Wernerfelt, 1984; Barney, 1991). Extending the RBV, the KBV particularly emphasizes the distinction between different types of knowledge-based activities and capabilities, and whether they are inherently internal to the firm or can be outsourced. Therefore, heterogeneous knowledge bases and capabilities among firms are the major determinants of sustained competitive advantage and superior corporate performance.

According to the KBV, knowledge is embedded and carried through multiple entities including organisational culture and identity, policies, routines, documents, systems, and

employees. In general, knowledge can be classified into two types: explicit knowledge and tacit knowledge. While the former can be articulated and easily communicated between individuals and organisations, the latter (skills, know-how, and contextual knowledge) is manifest only in its application and it is difficult and costly to transfer tacit knowledge from one individual/organisation to another (Nonaka, 1994; Kogut and Zander, 1992). In this regard, the possession of advanced technology and commercial knowledge is the essential tool for the successful development of technology-based firms in emerging economies. It is expected that the business performance of returnee owned firms will be affected and distinguished by their founder's ability to create knowledge internally and acquire knowledge externally.

Social capital theory

Entrepreneurs not only depend on internal knowledge sources for business success but also need to be able to obtain knowledge and business information externally from within the firm's networks and through human relations. Social capital theory highlights the important role of human relations in firm performance (Burt, 1992; Davidson and Honig, 2003; Peng and Zhou, 2005).

Specifically, social relations underline the links between social capital and access to resources including both interpersonal relationships and the resources embedded in the relationships. It can be regarded as an intangible resource that is difficult to replicate, thus providing start-ups with a significant advantage (Burt, 1992; Lin, 2001; Peng and Luo, 2000). Such social capital is particularly important to many small firms as it provides access to information and resources not available internally, as found in some studies (Davidson and Honig, 2003; Peng and Zhou, 2005).

Social capital in the form of networks is viewed as the relational and structural

resources attained by individuals/firms through a network of social relationships (Adler and Kwon, 2002; Cooper and Yin, 2005). Networking capability refers to the capacity of the new venture to identify, establish, coordinate and develop a variety of relationships with different players in the market, resulting in the generation of a new resource configuration and the venture's capacity to integrate, reconfigure, gain and release resource combinations (Eisenhardt and Martin, 2000; Mort and Weerawardena, 2006; Ritter, Wilkinson and Johnston, 2002). It is argued that social capital-related factors may enable entrepreneurial firms to access valuable information and create efficient value chains to target both local and international niche markets (Coviello and Munro, 1997; Zahra et al., 2000).

The commercial working experience of returnee entrepreneurs may be associated with the development of international business networks. Returnee entrepreneurs who have developed social capital in the form of international networks can act as a bridge between the Chinese context and international markets. Returnee entrepreneurs can be considered as 'trans-national capital' that results from overseas links, foreign education or training, or trans-national networks (Zweig et al., 2005). This type of social capital may help returnee entrepreneurs to access valuable resources, thus enhancing their firms' business performance.

Building on these theoretical perspectives, this study adopts an integrated theoretical framework to examine the relationship between the characteristics of entrepreneurs and their firms' performance. In particular, the research interest is in how returnee entrepreneurs' knowledge and social networks established abroad affect returnee owned firms compared with that of non-returnee owned firms. This study explores this issue in two dimensions. First, international education and working experience not only reflect international entrepreneurial orientation, but also provide returnee entrepreneurs with opportunities to access advanced technological knowledge and commercial knowledge abroad. Hence their firms may exhibit better performance than local entrepreneur-owned firms. Second, the competitive advantage

derived from the integration of technological knowledge, commercial knowledge and social networks may help returnee entrepreneur-owned firms grow rapidly. Based on the integrated framework discussed above, a number of testable hypotheses are derived as follows.

5.2.1 International entrepreneurial orientation and Performance

An international entrepreneurial orientation is associated with innovation, managerial vision and a proactive competitive posture (Covin and Slevin, 1989; Dess et al., 1997; Lumpkin and Dess, 1996). Returnee entrepreneurs may have an international entrepreneurial orientation because of their educational background and experience of working abroad which provide unique entrepreneurial competences (e.g., Autio et al., 2000; McDougall et al., 1994). Having an international entrepreneurial orientation signifies transformation of scientific and technological knowledge into products and services. Combining international entrepreneurial orientation with other resources such as technological knowledge and commercial knowledge enables returnee entrepreneurs to exploit opportunities in both domestic and foreign markets.

Existing studies show that firms that implement a global mindset have a competitive advantage (Levitt, 1983). Based on a 5-year study of nine of the world's largest corporations, by Harvard Business School in the 1970s, the transnational mindset was hypothesized to lead to superior long-term performance (Orly et al., 2007). More recent studies on the interrelationships between an entrepreneurial orientation, markets and business performance indicate that venture performance is positively related to the innovativeness component of an entrepreneurial orientation, a market orientation and learning orientation (Fredric et al., 2006). Therefore, it is proposed.

***Hypothesis H1:** The SMEs of returnee entrepreneurs with international entrepreneurial orientation perform better than local entrepreneur-owned SMEs.*

5.2.2 Technological Knowledge and Performance

Entrepreneurship often involves the development and application of new technology in high-tech industries. Taking advantage of technological breakthroughs is a driving force in entrepreneurial activity (Schumpeter, 1950). Exploiting what returnee entrepreneurs have obtained abroad is a critical factor driving them to become reverse migrants. The importance of technological knowledge in generating superior performance is widely recognized. In particular, the introduction of new or improved products and processes is widely believed to be a main determinant of competitive advantage, organisational performance and survival (Damanpour, 1991). Recent theoretical and empirical research suggests that it is not the total stock of knowledge, but specific characteristics of the knowledge stock that is important for sustained competitive advantage (Helleloid and Simonin, 1994; March, 1991; Winter, 1987; Christensen, 1993; Henderson and Clark, 1990; Prahalad and Hamel, 1990; Starbuck, 1992).

Patents are used as an indicator of the possession of technology knowledge. Patents usually are considered not only as a proxy of commercialising the outcome for formal research processes, but also constitute important intellectual property which permits companies to gain full economic value of their ideas and inventions. It is expected that patents help returnee entrepreneurs exploit niche business opportunities and gain first-mover advantages. As a result, patents may enhance firm performance. Hence, the following hypothesis is proposed.

***Hypothesis H2a:** The SMEs of returnee entrepreneurs possessing more patents perform better than local entrepreneur-owned firms.*

However, patents do not cover all the outcomes of innovative activity. In particular, patents relate to pre-commercial inventions rather than innovation that can readily be developed into new products. R&D activity may develop new capabilities that a firm can use

to develop new products. R&D investment consists of searching among various novel and uncertain pathways. Through complementarities, R&D increases the likelihood that firms will engage in external knowledge sourcing, and hence the likelihood that they will be able to obtain successfully the knowledge necessary for technical innovation. Moreover, R&D contributes directly to enterprises' knowledge stock and increases innovation intensity. Some studies have found that innovation is a mechanism by which organisations can draw upon core competencies and transfer these into performance outcomes critical for success (Reed and DeFillippi, 1991; Barney, 1991). In particular, new business enterprises, or 'start ups', may still depend on in-house R&D labs to take the first innovative step and create sustainable competitive advantage. Thus, it is proposed:

***Hypothesis H2b:** The SMEs of returnee entrepreneurs with more R&D spending perform better than local entrepreneur-owned firms with less R&D spending.*

5.2.3 Commercial knowledge and Performance

The depth and breadth of technological knowledge may help nascent entrepreneurs identify opportunities. However, technological knowledge and R&D investment do not guarantee entrepreneurs' business success (Casson, 2003). A successful new venture requires not only the capabilities to exploit opportunities, but also the skills for managing the venture and commercialising new ideas.

The commercialisation of high-tech opportunities requires access to manufacturing and marketing techniques as well as distribution channels. Commercialisation may also require access to other technological developments to create a product that fits customer needs. Hence, successfully commercialising ideas involves bringing knowledge from a variety of sources and effectively meeting performance criteria in terms of discovery, exploration and exploitation of business ideas and opportunities (Patel and Pavitt, 1998; Shane and

Venkataraman, 2000, p.218).

Returnee entrepreneurs may have obtained practical business knowledge from either working in a commercial environment or through having started a business abroad. For example, working in MNCs may enable them to understand the complexities of global operations, the characteristics of foreign markets, the business climate and cultural patterns (Downes and Thomas, 1999). It is argued that the prior commercial knowledge from working in developed commercial markets such as business knowledge, management skills and marketing techniques enables returnee entrepreneurs to manage their ventures well in the global context.

In addition, returnee entrepreneurs may also have the knowledge to seek out funding. For example, how to contact venture capital firms abroad which may provide funds and professional guidance. Thus they may have developed transferable expertise in accessing such funding in China as well (Saxenian, 2006). Hence, it is proposed:

***Hypothesis 3a:** The SMEs of returnee entrepreneurs who acquired commercial knowledge abroad perform better than local entrepreneur-owned firms.*

Besides advanced technological and commercial knowledge acquired abroad, returnee entrepreneurs also face new challenges in their home country as the overwhelming variety, complexity of business relationships and differences in market conditions require returnee entrepreneurs to have local knowledge. This kind of knowledge is specific to each country with regard to language, culture, politics, society and economy (Inkpen and Beamish, 1997; Makino and Delios, 1996). For example, when running a successful business in any country, entrepreneurs need to understand and have sufficient knowledge of the local culture and the business environment. The cultural elements provide a sustainable system of values, beliefs, artifacts and artforms, and help sustain social organisations and rationalise action (Norgaard,

1994).

Possessing local knowledge can in fact contribute to a firm's performance. Local commercial knowledge includes local competitors, local laws, the local business climate and the local consumer base. Such commercial knowledge constitutes an intangible asset and comprises information about how to access the labor force, distribution channels, infrastructure, raw materials and other factors required for conducting businesses (Makino and Delios 1996). Local knowledge is deeply spatially embedded. It may take time for returnee entrepreneurs to learn and/or update their local knowledge (Nonaka and Takeuchi, 1995). Hence, it is proposed:

***Hypothesis 3b:** The local commercial knowledge possessed by returnee entrepreneurs may moderate their business performance compared with local-entrepreneur-owned firms.*

5.2.4 International networks and performance

Social capital theory provides the theoretical foundations to understand the impact of the special character of entrepreneurs on firm performance. The theory stresses that social capital in the form of business networks is a powerful tool for entrepreneurs enabling them to gain access to resources and improve their strategic position (Alvarez and Barney, 2001; Hitt and Ireland, 2000). Managers or founders with such social capital are well-positioned to identify and develop opportunities (Burt, 1997). Being embedded in social networks gives entrepreneurs the opportunity to acquire information and ideas, and helps entrepreneurs to establish credibility and access critical resources, including knowledge and technology (McDougall, et al., 1994). For SMEs, knowledge and social capital are positively interrelated because social capital directly affects the combine-and-exchange process and provides relatively easy access to network resources (Nahapiet and Ghoshal, 1998). The interplay of this type of special social capital with knowledge enables firms to realise their new resource

configurations, creating unique competitive advantages (Shane and Stuart, 2002).

It is argued in this study that returnee entrepreneurs' international networks may have an important impact on a firm's performance by reducing information asymmetries and providing the focal firm with important knowledge and resources. Such social capital-related factors may enable entrepreneurs to access valuable information and create global value chains to target international niche markets. These factors also provide the resources for returnee-owned firms (Coviello and Munro, 1997; Zahra et al., 2000). Davidson and Honig (2003) find a significant positive association between social capital and performance. Therefore, SMEs whose owners are heavily involved in networking should outperform the SMEs whose owners make limited (or no) use of networks (Havnes and Senneseth, 2001). Hence, the author hypothesises:

***Hypothesis 4:** The SMEs of returnee entrepreneurs who have established international networks perform better than local entrepreneur-owned firms.*

5.3 The Variables and Empirical Model

To test the hypotheses proposed above, a questionnaire survey was conducted. The sample firms were selected from within the largest science park in China, ZSP in Beijing. The detailed process for the data collection was presented in Chapter three.

Dependent variable

Business Performance (**BP**) is measured by the entrepreneurs' satisfaction with their business performance. The problems of measuring a firm's performance in transitional economies are widely recognised and quantitative and qualitative measures have their own relative merits (Hoskisson, Eden, Lau and Wright, 2000). Financial measures are unreliable in a transitional environment where asset values still rely on historic cost and crude depreciation charges, and

the quality of local auditors is variable (Liu, 2005). Similarly, measuring the performance of newer, smaller firms, even in developed economies, can also be problematical due to the lack of published information.

A number of indicators of a firm's performance have been found to be relevant, and to have good reliability, internal consistency and external validity (Chandler and Hanks, 1993). Newer high-tech firms in particular may be loss-making or have little revenue since they are in the early stages of developing a market presence. Financial performance measures may therefore not provide a reliable indicator of a firm's performance. Satisfaction is a fundamental measure of performance for the individual entrepreneur and may bear on decisions about whether to continue or close a business (Cooper and Artz, 1995). 'Satisfaction-with-performance' measures have been shown to possess strong internal consistency and reliability (Chandler and Hanks, 1993; Cooper and Artz, 1995).

Therefore, this study used performance perception together with exploratory factor analysis to measure the extent to which returnees and local entrepreneurs were satisfied with a firm's performance in terms of market share, sales growth and the pre-tax profitability of their sales in both Chinese and international markets. The items were measured on a 7-Likert point scale. The results show that these four items in terms of 1) sales growth in local markets; 2) sales growth in international markets; 3) pre-tax profitability in local markets; and 4) pre-tax profitability in international markets - loaded on a single factor with a reliability coefficient Cronbach's Alpha of 0.847. The correlation between this performance perception measure and employment growth was 0.53, indicating that entrepreneurs' perceptions of a firm's performance were in line with employment growth, and they constitute a reasonable measure of a firm's performance in the context of high-tech SME start-ups in an emerging economy.

Independent variables

IEO: International entrepreneurial orientation was used to measure entrepreneurs' international vision, proactive for marketing position, risk-taking and competitive attitude. This measure was adopted from Knight and Cavusgil (2004). IEO was calculated based on 5 items each with a 7-Likert point scale (Appendix 1). The Cronbach's Alpha reliability coefficient is 0.806.

PAT: The number of patents possessed by the sample firms was used to measure technological knowledge acquired.

RD: R&D was used to represent internal technological capability.

CK: Commercial knowledge was measured in terms of (1) new commercial technologies; (2) new business ideas and opportunities; (3) new marketing knowledge, and (4) new financial knowledge obtained either (a) abroad or (b) locally. The items above are used to construct two composites of commercial knowledge obtained abroad (**KI**) and locally (**KL**). The Cronbach's Alpha reliability coefficients for these two constructs are 0.737 and 0.712 respectively.

GN: A variable for global networks was created using three questions in the questionnaire. These 7-Likert point questions focused on the degree of importance of three types of networks: (1) business networks established with firms in major markets; (2) business contacts maintained with people in foreign markets; (3) membership of business and professional associations abroad. The Cronbach's Alpha reliability coefficient for the variable of *GN* is 0.843.

The following Table 5.1 shows these factors' reliability.

Table 5.1: Factor Measures

Measure	Items	Reliability Coefficient Cronbach's Alpha:
International entrepreneurial orientation	5 items	.806
Knowledge obtained abroad	4 Items	.737
Knowledge obtained locally	4 Items	.712
International business networks	3 Items	.843
Business performance	4 Items	.847

Control variables

The sample firms mainly fall into 10 sub-sectors in high-tech industries, including electronics and information technology (42.9% of the sample firms), bio-engineering and new medical technology (12.1%), new materials and applied techniques (7.8%), new energy and high-power conservation technology (4.8%), and others. Industry dummy variables are included in the estimation equation to capture the impact of industrial sectors on a firm's performance. In addition, a firm's age (years since founding) and a firm's size (the total number of employees) were controlled for in the estimation. The proposed hypotheses are tested based on the following equation.

$$BP_i = \alpha_0 + \alpha_1 IEO_i + \alpha_2 KI_i + \alpha_3 KL_i + \alpha_4 R \& D_i + \alpha_5 PAT_i + \alpha_6 IN_i + \Gamma_i X_i + \varepsilon_i \quad (1)$$

BP represents the entrepreneurs' satisfaction regarding business performance. IEO, KI, KL, PAT, R&D and GN denote the variables as described above. X is a vector which denotes a set of standard control variables, including firm age, size and industry dummies which are differentiate their possible impact on business performance. The equation is tested by applying OLS. In order to investigate in more detail the different characteristics associated

with performance, the overall sample is divided into two sub-samples, returnee entrepreneur-owned firms and local-grown entrepreneur owned firms. The results from the overall sample and two sub-samples are compared. A Chow test is applied to compare the equivalence of regression estimates for Equation (1) between sub-samples. If differences between estimations are statistically significant, then the division of the overall sample into two sub-samples is justified.

5.4 Empirical Results

Based on the survey data, the average number of years that returnees stayed abroad was seven. More than 83.3% of returnees worked abroad at least for two years, among which 14.5% set up their own business abroad. The data also shows that returnee owned firms are more internationally orientated and 37% of returnee owned firms export their products, whereas only 18% of non-returnee owned firms are engaged in exporting. The average age of the firms is almost five years. The following table 5. 2 reports the descriptive statistics for the variables used in the analysis and the matrix of correlation coefficients. Spearman correlation coefficients have been used instead of Pearson correlation coefficients since many of the variables used in the sample are non-continuous. A correlation coefficient varies from +1 to -1. It should be noted that correlations are not causality. It is just a measure of association between variables that addresses whether these covary. To determine whether these covary in a significant fashion, apply a t-test to the correlation coefficient at a given $n - 2$ degrees of freedom and confidence level. The correlations between the variables show the predicted signs and most of the coefficients are statistically significant, providing preliminary evidence for the proposed hypotheses. Most of the coefficients are statistically significant, providing preliminary evidence for the proposed hypotheses.

Table 5.2: Correlation Matrix and Descriptive Statistics

Variables	Mean	Std. Dev	1	2	3	4	5	6	7	8	9
1 Business Performance	4.232	1.311	1.000								
2. Patents	3.910	11.950	0.227**	1.000							
3. R&D Expenditure	340.50	11.840	0.252**	0.758**	1.000						
4. International entrepreneurial orientation	3.671	0.611	0.126*	0.090	0.024	1.000					
5. Knowledge obtained abroad	4.997	1.253	0.245**	0.035	0.000	0.329**	1.000				
6. Knowledge obtained locally	5.037	1.245	0.298**	0.035	-0.008	0.101*	0.551**	1.000			
7. Global Networks	4.486	1.401	0.508**	0.190**	0.065	0.469**	0.262**	0.178**	1.000		
8. Age	4.67	2.604	0.010	0.118*	0.142**	0.263**	-0.004	-0.049	0.111*	1.000	
9. Size	50.21	10.066	0.53**	0.427*	-0.230*	0.338*	0.299	0.148	0.267*	0.487*	1.000

Notes: ** and * represent the 1% and 5% significance levels, respectively (2-tailed).

The overall sample is estimated first and then divided into two sub-samples. Two specifications for Equation 1 were tested with and without industry dummy variables. The industry dummy variables are not statistically significant in the analysis of the different specifications, indicating that a firm's performance is independent of industry and therefore internal factors are the main driving force for performance. The results summarised in the following table 5.3 show that the six hypotheses specified above receive partial support for equation 1 for the overall sample and sub-samples.

Table 5.3: The Dependent Variable: Business Performance (BP)

Independent variables	Model I	Model II	Model III
	OLS The overall sample	OLS The sub-sample Returnee-owned firms	OLS The sub-sample local entrepreneur-owned firms
(H1) IEO	.395	.934*	.803
(H2a) PAT (Patents)	.272	.009***	.343
(H2b) R& D	.003***	.056*	.040**
(H3a) KI	.798	.071*	.746
(H3b) KL	.011**	.106	.127
(H4) GN	0.000***	0.000***	0.000***
Control variables			
Firm age	.133	.202	.179
Industry dummy	Included	Included	Included
Constant	1.109	2.067	1.097
Adjusted R ²	.406	.283	.515
Observations	711	353	358

Notes: ***, ** and * represent the 1%, 5% and 10% significance levels, respectively.

The results from the overall sample in Model I indicate that a firm's performance is strongly related to in-house R&D at the 1% significance level, entrepreneurs' local knowledge at the 5% level and international business networks at the 1% level. Other factors such as international entrepreneurial orientation, technological knowledge and commercial knowledge are not significantly associated with business performance. The firm age variable is not statistically significant in the analysis, indicating that the performance of high-tech firms is not directly linked to firm age. In fact, all these sample high-tech firms are quite young. The variable of firm size is only significant at the 10% level in the overall sample, showing that large firms marginally perform better than small ones.

The result of the Chow test is statistically significant at the 1% level ($F=2.83$ with $p=0.01$), showing that there are distinctive differences in performance between returnee and local entrepreneur-owned firms. Therefore, it is appropriate to divide the overall sample into the two sub-samples. Based on the sub-sample of returnees in Model II, the six hypotheses receive most support. The variable of international entrepreneurial orientation is significant at the 10% level, thus hypothesis H1 is weakly supported. Patents possessed and transferred by returnees from abroad are significant as hypothesized in H2a at the 1% level. R&D expenditure is positively associated with the performance of returnee-owned firms, which is the same as the result obtained from the overall sample. Hence hypothesis H2b is fully supported.

The variable of commercial knowledge obtained abroad by returnee entrepreneurs is statistically significant at the 10% level, which produces weak evidence for supporting H3a, whereas there is no significant association between commercial knowledge obtained locally and firm performance. Hence, hypothesis H3b is not supported. The possession of global networks contributes to the firm performance of returnee-owned firms at the 1% significance level as predicted by hypothesis H4.

The results from Model III based on the sub-sample of local entrepreneur-owned firms show that there is no significant association between international entrepreneur orientation and business performance. This finding supports hypothesis H1 as local entrepreneurs may have weak international entrepreneurial orientation. Hence, the business performance of their firms is not as strong as those of returnee entrepreneurs. The variable of patents is not statistically significant, indicating that the SMEs of local entrepreneurs may have fewer patents to drive performance than returnee-owned firms that have better performance with more patents. In fact, returnee owned firms possessed, on an average, seven patents, whereas non-returnee owned firms only had three and half patents. The variable of R&D investment for both groups is positively associated with their venture performance.

There is no positive association between commercial knowledge obtained abroad and a firm's performance for local entrepreneur-owned firms. However, the analysis shows that global networks also positively affect the business performance of local entrepreneur-owned firms.

5.5 Discussion

This study examines the firm performance of returnee owned firms by comparing local entrepreneur-owned firms with different characteristics in an emerging economy. This study has identified an important phenomenon, returnee entrepreneurs. Insightful evidence is provided on how the characteristics of returnee entrepreneurs affect firm performance compared with local entrepreneur-owned firms in relation to different types of accumulated technological and commercial knowledge and the global networks they developed in the past.

These findings show that having an international entrepreneurial orientation is important. Based on education and working experience abroad, returnee entrepreneurs' international entrepreneurial orientation is (as hypothesized in H1) significantly and

positively associated with firm performance. The international vision of returnee entrepreneurs reflects an innovation-focused managerial mindset that leverages the competitive advantage of their firms and increases business performance. The entrepreneurs who have an international vision make the leap into international markets due to their unique entrepreneurial competence (Autio, et al., 2000; McDougall et al., 1994). Their international orientation is reflected by their firm's overall innovativeness and pro-activeness in the pursuit of both domestic and international markets (Knight and Cavusgil, 2004).

The availability of academic technological knowledge is found to be important in the growth of returnee ventures through technology transfer (patents) and R&D investment. The support for these two hypotheses H2a and H2b is consistent with the special features of returnee entrepreneurs who are well-stocked with patents from abroad and subsequently are rewarded with a positive performance outcome. These findings support the KBV that knowledge is the most important resource, and the integration of individuals' specialized knowledge is essential to business success (Conner and Prahalad, 1996; Grant, 1996a; Nelson and Winter, 1982). The evidence also supports that innovation positively and directly impacts on firms' business performance.

The study finds that commercial knowledge accumulated abroad positively affects the business performance of returnee-owned firms. This result suggests that returnee entrepreneurs have played an important role in transferring commercial skills as well as technological knowledge. It supports the view that returnee entrepreneurs have developed human capital related to how enterprises abroad work in the international context, which helps returnees develop their own businesses in China. Returnees not only brought physical capital back to their home country, but also human and social capital which they accumulated abroad. This type of human and social capital positively affects their performance as shown in the results. The findings also support the Chinese government's policy which aims to

attract overseas Chinese back to the country.

The findings suggest that global networks are an important factor affecting the performance of both returnee and local entrepreneur-owned firms. One important aspect of Chinese returnee entrepreneurs is that they have well-established networks in major global markets, such as the US and the EU. This kind of international network enables them to access valuable information and create global value chains to target international niche markets. Thus, global networks contributed to firm performance. A significant result for the sub-sample of local firms may reflect the fact that local entrepreneur-owned firms not only produce and provide products and services to the domestic market, but also extend their business to international markets. The findings indicate that engaging in international business may also help local firms generate high levels of sales and profits.

This study makes a number of contributions to understanding the relationship between firm performance, knowledge and social capital in an emerging economy. A complementary approach is developed which combines technological knowledge and commercial knowledge. This perspective may be extended usefully to other emerging economies such as India where returnee entrepreneurs have also increased substantially. This investigation contributes to the KBV and network literature by linking knowledge and social capital together. These two types of complementary factors enable returnee entrepreneurs to establish an effective mechanism to integrate knowledge into business activities and gain sustainable competitive advantage in high-tech industries. The findings shed light on the relationship between performance, knowledge and social capital, and provide evidence that emphasises the need to consider the impact of a wide range of factors such as social capital and networks on a firm's performance. It seems likely that the findings from the study are generalisable and advance our understanding of returnee entrepreneurs. This study gives a complementary line of research which provides novel explanations for the new phenomenon of returnee

entrepreneurs worldwide.

5.6 Conclusions

Based on an integrated framework, this chapter investigates the firm performance of both returnee owned firms and non-returnee owned firms. Specifically, this study examines the links between entrepreneurial characteristics and firm performance and investigates how the human and social capital factors of entrepreneurs affect the business success of high-tech SME. The findings show that the SMEs of returnee entrepreneurs perform better than those owned by local entrepreneurs due to their technological and commercial knowledge as well as their international entrepreneurial orientation. The results also indicate that international networks positively affect firm performance in high-tech industries. The evidence suggests that returnee entrepreneurs gain competitive advantages through utilising their intangible assets to exploit business opportunities and development in an emerging economy.

The study not only considers the role of individual internal and external factors in firm performance, but also the interaction of these factors in terms of the combination of technological knowledge, commercial knowledge and networks, and their effects on entrepreneurial venture success. The findings from the study help to broaden our understanding of entrepreneurship in emerging economies and provide new insights into the existing literature by considering a new phenomenon of returnee entrepreneurs and their role in firm performance. In particular, the findings advance our understanding of the importance of complementary resources in creating sustained competitive advantage in high-tech industries.

Chapter 6 The Internationalisation of Chinese high-tech SMEs

6.1 Introduction

The relationship between entrepreneurship and the internationalisation of firms has become the focus of attention of scholars and policymakers in recent years. The existing literature shows that 'Born Global', together with the notion of international new ventures, brings new insights into the internationalisation process of firms. Born Global is defined '*business organisations that, from or near their founding, seek superior international business performance from the application of knowledge-based resources to the sale of outputs in multiple countries*' Knight and Cavusgil (2004). In recent years, returnee entrepreneurial firms have appeared in emerging economies. The rapid process of globalization and accelerated technological changes provide returnee entrepreneurs with more opportunities to speed up the internationalisation of their firms. Yet relatively little research attention has been paid to the driving forces and the process of internationalisation of these firms. In particular, how international entrepreneurial orientation, knowledge-based spillovers and international networks as a combined factor impact on the process of internationalisation remains a significant research gap.

It is important to examine how firms internationalise in today's business environment, which is highly international and knowledge information-intensive. Examining the phenomenon of rapid internationalisation of firms has profound theoretical and practical implications. Intensive competition occurs not only between incumbents, but also involves the emergence of 'Born Global' firms, or worldwide international new ventures (Knight and Cavusgil, 1996; Oviatt and McDougall, 1994; Autio et al., 2000; Zahra, Ireland and Hitt, 2000; Autio, 2005). It is important to examine the new emerging phenomenon of returnee entrepreneurs and the impact of their characteristics and international background on their

firms' internationalisation. Therefore, this chapter focuses on factors affecting the process of internationalisation of returnee owned firms by comparing non-returnee owned firms based on case studies.

This chapter is organised as follows. The following section presents the findings based on the evidence from eight case studies to explore the possible factors which are extracted from the literature review and proposed frameworks. These factors may affect the internationalisation of firms from emerging economies, such as China. Then the author discusses and develops a series of propositions with regard to the internationalisation process for Chinese High-Tech Entrepreneurial SMEs.

6.2 Case Analysis and Findings

6.2.1 Returnee Group

In the returnee group, companies A and C are software outsourcing companies, and the other two are in the medical industry. Firm B focuses on developing medical imaging software, and firm D is a medicine manufacturer with an R&D centre in China. These returnee entrepreneurs share some common characteristics. Their founders were all educated and worked abroad for many years, and started their businesses in China around 2003. The entrepreneur from Firm B has the least international working experience, nine years comparing with other three returnees with nearly 10 years experience abroad each. Firm B has 100 staff. The other three returnee owned firms have about 200 employees. Only firm D focuses on the domestic market, while with the other three firms, half their income comes from abroad. The details of returnee entrepreneur owned-firms cases are given below:

Case 1 – Firm A

International Entrepreneurial Orientation

When the founder of Firm A was asked what drove him to start business in Japan and China, he said *“I had a dream that one day I could return to China to start a business across borders. When I worked abroad, I registered my first company in Japan. I always believed running a business between Japan and China would not only bring great business opportunities and profits for me personally, but also it would bring wider benefits to people in China. That would bring Japanese customers to China and I would employ more Chinese staff who could learn and be trained well in the company.”* The motivation for entry into international markets came from the returnees’ vision to exploit business opportunities and compete in the international market.

“I prepared myself and planned to do so since then. I observed there were emerging opportunities across Japan and China in 2003, so I registered my company in Beijing.” In term of risk, *“I would like to undertake risks. I also saw internationalisation as more opportunities than risks. To do business across borders will help firms to achieve competitive advantages based on high margin markets in Japan and low costs in China.”* (The Founder of returnee owned firms A)

International Experience and Entrepreneurial Knowledge

“Another reason that has influenced me to do business across borders is that I believe I can contribute to Japanese and Chinese people, where I can use my nearly 10 years working and management experience, industry resources and business networks across borders. For example, one important thing that I have learned in the software industry, is that you need to institutionally set up the process of programming from start-up if your company wants to become a real international player. There are a lot of successful examples in Japan and India, but unsuccessful examples in China. The former follow the international path and standards, the latter does not. You can argue that Indian software engineers benefit from their English

advantage. But Japanese software engineers do the same as Indian software engineers making programmes according to international standards. They have institutionalised such kinds of rules in their work. It not only requires visions, but also needs international industry experience and knowledge. In turn, these specific intangible resources can contribute to form capabilities to compete with rivals in the international market from the beginning.

Innovation and Knowledge Spillovers

One important factor which drove entrepreneurs back to their home countries to start their own business was that they possessed advanced technology. Some of them even have patents for new products or processes which enable them to take technological advantage to compete in global markets. The returnee from Firm A talked about his background: *“I went to Japan in 1980 to pursue my PhD degree. During the time I was in university I learned how to make software programs. After that, I started my first job in a Japanese software company and worked for it for many years. The industry knowledge and experience I accumulated in the past has been converted, transferred and contributed to my own firms. I had also developed and registered my own patents before I started business across borders. I believed that advanced technology and specific industry knowledge would help me to have good prospects in China. This was another important reason for returning to China.”*

International Networks and Internationalisation

“Networking is one of the important elements in creating a successful business across borders. It is not limited to leading company staff working together as a team within the firm. The links with other firms in terms of how to get different resources and capabilities will help create new ideas and new business opportunities, and provide added value for customers”.

“In order to develop and maintain the established business relationship, I spend a lot of time

travelling between China and Japan to manage my two firms and contact our clients. Many top Japanese firms are our customers, such as Toshiba. Meanwhile, I joined and made alliances with five other software firms in Japan to expand our networks and achieve economies of scale. Wide business networks have brought more customers, new ideas, technology and the capabilities of management. Knowledge spillovers including information sharing and technology learning also enable firms to generate new ideas through these formal and informal networks. I also realise that the most important assets in the software outsourcing business are intangible – human capital. Finding the right people to apply their knowledge and create new value to satisfy international customers is another reason why I came back to China.”

It seems that returnees gather the resources in terms of technology and networks needed to secure and prepare their return to the homeland by mobilising resources stemming from the commonality of interests and the availability across borders which include social and business networks. International networks are an important resource which links firms to the world markets.

Case 2 – Firm B

International Entrepreneurial Orientation

Similar questions were directed to the returnee from firm B as to why he chose to return to his home country and start a business. He said *“From the beginning I had a vision to provide innovative products and professional services for the Chinese market, but also for international markets. Therefore, I prepared myself doing a lot of research on (a) technology in terms of how to apply technology and create innovative products or services, and (b) marketing in terms of who, where customers are and how to sell to them. To be successful in the international market, entrepreneurs need good preparation and international vision with*

a clear strategic plan from start-up. I feel that the preparation and vision have enabled me to catch opportunities in the process of internationalisation with low possibility of failure.”

International Experience and Entrepreneurial Knowledge

“I worked in GE Healthcare for 9 years after I got my PhD degree in the United States. It was a very good opportunity to work in such a great company where I could apply what I had learned from the university, but I also learned a lot of practical things about how to pursue business opportunities in the healthcare industry. In addition, all my senior management team members have had international working experience for at least two years. To sum up, this international working experience has helped me overcome the long distance between China and America and made it easier to reach international customers. In a very short time, we received international orders after starting our business in China.

Innovation and Knowledge Spillovers

“I have developed Milwaukee-based provider of software solutions that allow physicians to use PCs or notebooks to access 2D, 3D and 4D medical imaging applications securely over the Internet. Such advanced new technology has benefited both patients and doctors. It allows more medical experts to diagnose a syndrome online even if they live in different countries. They can share their experience and knowledge to deal with more complicated diseases. This not only saves costs, but also saves more lives. This is one of the reasons I returned to start a business in China where patients cannot go to big cities due to the long distances and large area, but will benefit from this innovative technology. This technology has been further developed in China” (Returnee CEO of Firm B).

International Networks and Internationalisation

A returnee from Firm B said *“The benefits for our marketing partners and physician customers are not only the technology itself, but also networks and links across countries. Because I have built up and maintained relationships and networks with experts and clients in the past nine years when I worked in GE, such external and broad networks are very beneficial for exporting our products. In other words, such networking capabilities broaden international market opportunities. International buyers get to know us very quickly via ‘word of mouth’ and are attracted by our innovative products”*.

Case 3 – Firm C

International Entrepreneurial Orientation

“The reason I started my business across borders was that I was attracted by the tremendous business opportunity which, merged together with my personal ambitions, drove me to start my own company in 2002. I was supported by a Hong Kong investor. We worked with each individual customer to develop a high return, low risk strategy to achieve internationalisation objectives. I think my vision always leads me to where I want to go in the business context. To start business across borders, I prepared myself not only on technical points, but also my mind-set too. The current global business environment is highly competitive with a fast changing pace. Customers are very demanding and constantly change their minds”
(Returnee entrepreneur from Firm C).

International experience and Entrepreneurial Knowledge

The returnee entrepreneur from Firm C introduced himself as follows: *“I spent nearly ten years in various executive positions in the US and China, serving as the CEO of Chenming Software company with more than 200 employees, as well as being a board member of China*

Enterprise Services, the largest e-commerce application provider in China. I am also currently the Director of Outsourcing for Tsinghua Science Park, an incubator hosting more than 140 domestic high-tech companies and research centres of foreign corporations such as Sun, NEC and P&G. I reside in Boston and am a respected speaker on topics about China. I also often attend business and academic conferences such as Stanford Innovation Summit in 2005, Outsourcing World New York in 2005 and MIT Talent Forum in 2006. In general, I feel that the advantages of returnees are not only measured in terms of technology, but also international experience, vision, information and business ideas. In particular, this applies when firms exploit international markets which require heterogeneous knowledge and combined capabilities.”

Innovation and Knowledge Spillovers

The returnee entrepreneur from Firm C continued to talk about his experience in terms of technology and knowledge spillover. *“As a firm, we combine experts in U.S. management with the technical excellence of Chinese scientists to create value for our customers. But I believe that advanced technology obtained by returnees needs to be further developed and updated in order to be ahead of local firms. It is impossible to bring a single technology back to China. In particular, advanced technology needs to be transferred and upgraded in order to be ahead of local firms. This depends on human capital such as team work and highly skilled Chinese staff. Without this, returnees’ technology advantage will not be sustainable.”*

International Networks and Internationalisation

“I focus on building a bridge between China and the US. For instance, I use my USA based company to obtain information and marketing information. My company mainly focuses on the US market, so it does not have any local sales in China. I also use my global networks to

bring the US market and Chinese talent together. This means I can utilize China's abundant human capital, with our partners such as Tsinghua University, to provide fast track research and development in China. My business model is beyond costs and focuses on high valued-added activities. My US firm is responsible for demand and orders, whereas my Chinese company focuses on outsourcing local Chinese scientists in order to leverage international connections. I think if returnees do not keep contact with the US or other OECD countries, their advantages will disappear soon and they will be the same as other local firms."

"I think that the relationship with the government is not as important as before. If you have the right business model, and you develop your own business in line with the government's priorities, then you can obtain government support. I measured the importance of the government as 3 on a scale of 5. Business connections are much more important than the government relationship nowadays, especially in the high-tech industry. My social networks have covered MIT, Boston and biotechnology industry. These two relationships or connections complement each other."

"Chinese social networks are also important, so I have to spend time re-establishing my local links and I have also learned from local entrepreneurs about their local networks. I started with friends, schoolmates, family connections and then joined business professional associations, business meetings and conferences. I feel that home-grown entrepreneurs understand Chinese customers well and the Chinese business environment. It is an important factor to link with local entrepreneurs and learn from them. Social networks allow me to access valuable resources and information."

Case 4 – Firm D

International Entrepreneurial Orientation

A returnee entrepreneur from firm D described how he decided to start-up in China. *“I feel that the domestic medical market is not highly regulated as medical system reform has provided opportunities for doctors or hospitals to seek commissions by choosing providers, often low quality and cheap products crowd out high quality ones. Demand for medical products to some extent, depends on commission which doctors and hospitals receive. For instance, I found that diagnostic instruments have huge potential in China. Broad domestic market conditions provide business opportunities to apply my knowledge and technology to produce high quality products and better services compared with locals.*

However, I recognised that to run an international medical company requires financial resources and also commercial knowledge. The medical business brings profits with high risks. As a start-up SME, we are still too small to compete with big players across borders. I would rather focus on China until we can develop a certain scale. My firm should gain a dominant domestic market share first and then we can expand our business across national borders.”

International Experience and Entrepreneurial Knowledge

“Before I set up my own firm, I had worked in a North American medical company (Connet Company) for seven years in experimental bio-technology where I accumulated knowledge and experience, including medical R&D, technology applications, scale up (pilot plant) on manufacturing. All these have contributed to my own business later on. I learned how to find and exploit opportunities by utilizing innovative knowledge practice in terms of medical products and services.

Innovation and Knowledge Spillovers

Then he continued his start-up story. *“Before setting up my own company, I tried to find business links between patents, technology and domestic companies. I tried to make 7-8 patent transfers but found that it was extremely difficult. For example, Chinese firms are anxious to obtain new and advanced technology but reluctant to pay the fees for using the technology. I am worried about the credibility of Chinese firms. I found that both parties lacked trust so it was time consuming to make a deal. Innovation for me is broad in its scope, implying that it covers not just inventions (including patents), but also commercialisation.*

“I realised that it is difficult to make technology transfer through arm-length. The best way to deal with this problem is that I should produce my own products using my own technology in the formation of a new firm. In 2003, I set up my own company with 20 employees, including 4 technicians and one returnee. The company enables me to transfer technology and knowledge into products and services. In the context of firms, innovation is economically valuable and has become a fundamental platform of my firm to reach international markets. Innovation must be a sustainable and continuous process.

International Networks and Internationalisation

“In order to connect with the world, in my case I visit the US once every two months. Every time I find new things, new ideas and new information. I describe the trips to the US as recharging my battery. These networks help my company continue developing new products and services. To maintain and develop business links helps sell our products abroad and keeps long term customer relationships.”

6.2.2 Non-returnee Group

The four local non-returnee companies focus on different business areas. Firm E has become one of the biggest CAD providers in China. Firm F designs and manufactures high temperature pumps to serve heavy industries. Firm G provides hardware and software to the industrial control market. Firm H sells hardware in the telecom industry. These local entrepreneurs have some common characteristics: they were all highly educated in China, and started business in China around 2003. Firm E's history can be traced back to 1992, and the entrepreneur from Firm E has more than 15 years business experience compared with those of the other three firms that have had only a few years working experience. Firm E also has the largest number of employees among the four firms. The findings from the interviews of non-returnee group are presented below.

Case 5 – Firm E

International Entrepreneurial Orientation

“When we started our business in 1992 we had a dream that one day we would become the largest domestic CAD/CAM/PLM provider in China. It is true that you need a vision to look forward, particularly if you want to become a big player in the market. However, it was time consuming and took us quite a long time to achieve that goal. We positioned ourselves in the domestic market rather than international markets from the beginning. Therefore, we only planned to focus on China rather than the world when the firm was still young because we did not have enough information and knowledge about international markets which may involve a lot of uncertainty and risks.” (Cofounder and COO of non-returnee Firm E)

International Experience and Entrepreneurial Knowledge

“It has really taken almost 10 years for the business to take off after passing the stage of survival. Initially, we only focused on the local market within which our experience and knowledge were limited. Before we entered the USA market, we did not have direct international experience but we did learn indirectly from our foreign partners with whom we cooperated in China. We not only exchanged our ideas and technology, but also shared information and knowledge to learn how to approach foreign customers. In this way, we acquired necessary resources and information needed for entering the international market. We eventually opened our USA branch in 2004 to sell our AUTOCAD software for the engineering market over there.”

Innovation and Knowledge Spillovers

“We positioned ourselves and focused on the domestic market from the start-up because CAD technology and products were originally from Europe and North America where the market has become quite mature. So we had to absorb this advanced knowledge, then apply and redevelop western technology to make products according to customer demand in China. At the beginning, we had to compete with nearly 300 firms in the Chinese market. We operated in a highly competitive environment under double pressure from monopolistic foreign MNCs and faked software by local producers. We competed with other big players in the architecture and civil engineering design market. For instance, AUTODESK is the biggest competitor, and the position of AUTODESK in the CAD/CAM software industry is like Microsoft in terms of PC operating systems. Nowadays, there are only a few competitors left in the market. As we compete with them, we also learn from them as well. Only creative and innovative companies can survive. Hence, innovation is the foundation for us if we want to have further international development”

International Networks and Internationalisation

“From 2002, we started to develop and adjust our management structure and strategy for internationalisation. Developing a strategic alliance has been a key strategy for CAXA’s business in order to enter the international market and to learn new technology and understand customer demand.”

“We have built partnerships with other firms in China and the United States. We work together with our partners to develop our technology and new products. Our innovation steps never stop. CAXA focuses on its best value-added domain expertise to develop strategic components in its solutions, supplementing other required technologies by working with world leaders. In 2005 we acquired an American firm, and started to cooperate with a European company. In particular, CAXA has formed a strategic alliance with DASSAULT SYSTEMES. A joint ‘CAXA-DASSAULT SYSTEMES R&D Centre was established in 2004 with the mission of extending all products PLM. CAXA V5 PLM is developed on top of DASSAULT SYSTEMES CAA V5 framework and includes CATIA and SMARTEAM product components. Third party partners develop add-ons on top of CAXA’s platform. Such partnership and alliances have expanded our international networks and have helped us to speed up the process of internationalisation.”

Case 6 – Firm F

International Entrepreneurial Orientation

The motivation for exporting is still random and uncertain for some firms as they still think price is the most important factor competing in the advanced market. A local non-returnee entrepreneur from Firm F said: *“I mainly focus on the domestic market, whereas our exporting was through a Chinese immigration agent who accidentally found our products,*

contacted us and sold our heat pumps to Norway. We did not prepare or plan to do so. Our product prices are much lower than other similar products but quality is world class. However, the international market is still unknown to us although sometimes you can do something without knowing the risks. Therefore, I would like to develop my company in China first. I may think about internationalisation again, but it is not the centre of my firm's strategy at this stage."

International Experience and Entrepreneurial Knowledge

I graduated from Tian Jin University in 1997. Then I started my first job in Tongfang Company where I accumulated some working experience such as project management. I started a company for a green house project with my classmates in 2000. However, it was a failure as I lacked technical experience and specific industry knowledge. From that failure, I learned that the structure and design of green house must be modified to adapt to local geographic conditions and local climate. You cannot simply copy successful models from different backgrounds. The new technology should be redeveloped to adapt to the new context.

In 2003, I started again and registered Beijing Qingyuanshiji Technology Co., Ltd. This time, my current company mainly focuses on manufacturing high temperature pumps to serve heavy industries in the domestic market. Using our technology and products not only saves a lot of energy and money for our clients, especially when the oil price is rising, but also it helps to reduce CO₂ to protect the environment. My company only exports to Norway through a Chinese immigrant there, as I lack international experience and links. To be honest, I have limited knowledge about international markets."

Innovation and Knowledge Spillovers

“Our core technology of high temperature heat pumps was unique in China and in the world. It came out of a joint research and development project with Tsinghua University. The original technology was transferred from the university.

We had developed more than ten patents and three inventions which include the pump, structure, system of design, and important key hardware parts and PID software to cover the whole heating supply system. We can supply our products to different customers such as home and industry heating systems. We not only provide equipment, but also design the whole project for our customers. R&D investment accounts for around 10-15% of our annual sales.”

International Networks and Internationalisation

“Unfortunately, as I mentioned earlier, we only export to Norway through a Chinese immigration agent. We do not have other international contacts. In the domestic market, we learn from others entrepreneurs and firms, including returnees via social networks. There are some channels to link with other entrepreneurs through joining formal industry associations and attending informal meetings or gatherings organised by friends or classmates. These are always the best informal channels because of the trustful relationship. What we have learned from others is not only limited to the technology they have, but also ideas about how to commercialise technology and how to manage the company.”

Case 7 – Firm G

International Entrepreneurial Orientation

“We mainly serve the Chinese market at the moment. There is a lot of competition and cooperation with market leaders - leading domestic firms such as Tongfang (where I started

my career) and foreign companies such as SIEMENS (which my firm worked with). We are constrained by resources and information therefore we have had to adopt a stable growth strategy rather than jump into internationalisation. It is a very tough process to develop an international business, and we face huge pressure and risks” according to Non-returnee entrepreneurs from Firm G.

International Experience and Entrepreneurial Knowledge

The entrepreneur from G continued his business start-up story “I obtained my master degree in Tsinghua University. After that I worked in Tongfang Company for one and half years. I accumulated some experience and ability to implement projects. I started setting up a company with my classmates in 2000. At the beginning, my company played a role as a distributor for foreign firms such as SIEMENS. Then we started developing our own products and tried to find investors. In 2001, we proposed a business plan and obtained venture capital of 350 million RMB to invest in both software and hardware (R&D and marketing). However, we lacked continuous investment and further development. Negotiation with venture capitalist failed. In addition, the business environment was not favourable after the 2000 dotcom crash. It was difficult to communicate or negotiate with foreign counterparts and to cooperate with foreign firms due to a lack of international experience. In particular, I still feel that I have limited access to foreign markets and information, and do not fully understand the rules of the game in the world market. These factors deter us entering the international market.”

Innovation and Knowledge Spillovers

“In order to survive, compete and cooperate with other firms, in particular, with those foreign firms, we have to heavily invest in R&D to develop technological competence. Each

year we invest one million RMB in R&D (at least 5% of sale income) and develop innovative products. We learned new technology in terms of hardware and software development, from cooperation with market leaders and foreign companies. We have definitely benefited from knowledge spillovers through cooperation with them.

International Networks and Internationalisation

“I have some business links with a Russian company and Dutch company. In China, government policies give preferential treatment in different sectors. The relationship with officials or government is important, but not crucial. Firms can do better with support from the government. My company does not have any links with the government and officials. However, I feel that professional relationships are very important in order to obtain information and generate customers and clients. There are several ways to develop professional links, through the media, Internet, workshops and professional associations. We are able to develop links through the ZSP committee. I think returnees need to be localized. In particular, they need to adjust themselves to do business with local firms and deal with domestic customers. A totally westernized style does not suit the Chinese business environment.”

Case 8 – Firm H

International Entrepreneurial Orientation

“We mainly focus on the domestic market because the Chinese market is really big enough for us compared with small countries such as South Korea and Finland. When firms operate in small domestic markets, they have to adopt an early stage of internationalisation and develop themselves as transnational players in order to seek further growth beyond their limited domestic market. We do not have any plan to expand internationally because of our

limited capabilities and competence. Also, there are more risks in the world market.” (Three cofounders from non-returnee Firm H)

International Experience and entrepreneurial Knowledge

“Although our co-founders have different working experiences, such as working for the government and companies, none of us has direct international working experience. The only experience we have had is that we acted as an agent for products originally from the USA, Canada, and Korea at the early stage of the company. It helped us to learn and start to develop our own OA framework for broadcasting via mobile TV and digital TV such as DMA and DAB standard, which is international.”

Innovation and Knowledge Spillovers

“We are still in the learning stage. At the beginning, we imported hardware from abroad. As we don’t have the core technology, it was difficult to surpass our foreign counterparts. It takes time to accumulate and form your own core technology to compete with others. We have had difficulty seeking funding for our research projects. Moreover, our business is also influenced by the government policy for new industry development.”

International Networks and Internationalisation

“There are few chances for us to get in touch with the international market as we do not have international links and networks. We do not have the necessary resources to do so. In China, we depend on our relationship and other resources from the government and with companies we have previously worked there. In turn, we can get orders from these customers and networks. It is really time-consuming to build personal trust and business links, especially with foreign customers. We realise the importance of our social networks. Therefore, we

currently focus on the domestic market rather than international markets as we do not possess knowledge and international networks abroad.”

6.3 Discussion

Comparing and contrasting the eight cases, one can observe some common features associated with internationalisation. Specifically, the case evidence illustrates how entrepreneurial orientation, international experience and entrepreneurial knowledge, innovation and knowledge spillovers and international networks, as a set of combined factors, affect the decisions about internationalisation and the process of internationalisation.

There are four major elements of international entrepreneurial orientation in terms of vision, proactive risk-taking and competitive behaviour according to literature review in chapter two. From the case study, the extent of international entrepreneurial orientation of these entrepreneurs reflects views about whether they prefer to enter international markets at the early stage of their firms. If they observe internationalisation as an opportunity to expand their business, then entrepreneurs tend to be proactive and set up a plan to pursue the business opportunities emerged across borders. They are also willing to take risks to compete with other players.

From an objective view of internationalisation, returnee and non-returnee entrepreneurs all are aware of the uncertainties and high risks of doing business across national borders. In these eight cases, most returnees see internationalisation as an opportunity to develop their business and make more profits by selling their products and services across borders. The interviewed firms are all aware that competition is fierce as they not only compete with leading domestic firms, but also foreign firms. So they are initiative and prepare themselves in order to take risks and competition. Non-returnees feel that they lack the resources and knowledge to enter the international market. Hence, they have to take careful steps by

following a ‘stages model’. They hope to develop and grow step by step, and go through certain stages based on the domestic market, rather than the international market where they need to learn how to reduce and avoid uncertainties and risks. The detailed case evidence on international entrepreneurial orientation has been shown in Table 6.1 below.

Table 6.1 International Entrepreneurial Orientation

Case	Exporting Countries	International Entrepreneurial Orientation			
		Vision	Proactive	Risk-taking	Competitive
A	Japan >50%	Dream to do business across borders	Plan to do so at early career time	See and take opportunities than risks	Based on a high margin market and low cost in China
B	Mainly USA	Good view of international markets	Good preparation in terms of technology and marketing	Catch opportunities with low risks of failure	With a clear strategic plan to compete
C	USA > 50%	See opportunities emerging together with personal ambitions	Prepare himself in technology, but also mind sets	Personal ability to handle the risks	Awareness of the international competitive market
D	Mainly China	Domestic market provides chance to apply knowledge and technology to produce high quality products and better services	Prepare to compete in the domestic market at the first stage	Medical business brings good margin profits with high risks. It requires more resources such as finance and knowledge	Plan to take dominant domestic market share first, and then expand business across national borders.
E	10% of income	Had a dream that one day we would become the largest domestic CAD provider in China.	Only planned to focus on China rather than the world when the firm was still young	At an early stage entering international markets may face a lot of uncertainty and risks	Initially positioned to compete in the domestic market rather than across national borders.
F	Norway 20%	Mainly focus on China, accidentally to export Norway through an immigration agent.	Did not prepare or plan to export in advance	International market is still unknown to us.	Our product prices are lower than others in the world markets but quality is world class.
G	Small exporting	Mainly serve the Chinese market with small scale sales abroad	Constrained by resources to adopt stable growth rather than jump into internationalisation	It is a very tough process to develop an international business with huge pressure and risks	Facing competition with market leaders, such as leading domestic and foreign firms
H	Non exporting	Mainly focus on China because the Chinese market is big enough	Do not have any plan to go international	There are more risks in the world market	because of our limited capabilities and competence

In the following Table 6.2 presents five major factors which have been recognised to impact

on the decisions, process and result of internationalisation based on the case evidence.

Table 6.2: Description of Specific Factors Affecting Internationalisation

Case	International experience	Entrepreneurial knowledge	Innovation	Knowledge Spillovers	International Networks
A	Ten years working and management experience	Know how to get resources with specific industry knowledge	Developed and registered own patents before start-up	Advanced technology and specific industry knowledge	Networks with clients and alliances help knowledge spillovers and finding resources
B	Nine years GE Healthcare after obtaining a PhD degree in the USA	Know how to discover business opportunities in healthcare industry	Developed unique software solutions	Technology need further developed	Relationships with experts and clients help for international order
C	Ten years experience as CEO of a firm, director of science park, etc	With required heterogeneous knowledge and combined capabilities	Combine U.S. management experts with the technical excellence of Chinese scientists	Technology advantage needs to be transferred and upgraded	Do need to keep contact with international markets, otherwise their advantages will disappear soon
D	Seven years in North American medical company and in experimental bio-technology	Knowledge of medical R&D, technology application, manufacturing, and market developing	Not just about inventions, but also it is a sustainable and continuous commercial process	It is difficult to make technology transfer through aim-length, and the best way is to set up a new firm.	Visit the US every two months to find new things, ideas and information and sell products abroad and keep relationship
E	Before entered the USA market, he did not have experience but did learn from foreign partners	Learned advanced knowledge from the West, then redeveloped it according to local customer demand	Only creative and innovative firm can survive. is the foundation for international development	Spillovers via learning, competition and cooperation with monopolistic foreign MNCs	Developed a strategic partnerships in order to enter the international market, to learn new technology and to understand customers
F	Local working experience with start-up experience but lack international experience	Learn from failure, technology and model should be modified to adapt to the new context	Its core product - high temperature heat pump - was unique in China and in the world	Original technology was spillover from a university via a R&D project.	Do not have international contact. Learn from others entrepreneurs via social networks.
G	Difficult to work with foreign counterparts due to a lack of experience.	Limited access to foreign markets and information. Did not understand the rules of the game	Heavily invested in R&D to develop technological competence	Learn new technology from cooperation with market leaders and foreign firms	Some international businesses links and professional links.
H	None has direct international working experience	Still in the learning stage to know how to grow their business	Import hardware (products) from abroad; have no core technology	It takes time to accumulate and form own core technology	Few chances to contact outside world as do not have international networks.

In terms of entrepreneurs' international experience and entrepreneurial knowledge, the case evidence shows that the returnee entrepreneurs were all highly educated and had years of experience studying and working abroad. They know the rules of the game in the international market. For example, the returnee entrepreneur from Firm A set up the process of programming complying with international software standards to satisfy international customer demand from the beginning. The returnee entrepreneur of Firm B worked in GE Healthcare for 9 years after he got his PhD degree in the United States where he learned advanced technology and accumulated business experience. These elements have all contributed to his company operating across national borders. The CEO of returnee Firm C spent more than 10 years in various executive positions in the US and China, serving as the CEO of his firm with 200 employees and as a board member of China Enterprise Services, the largest e-commerce application provider in China. The returnee entrepreneur from Firm D spent seven years in a USA medical company, and this experience contributed to the start up and running of his own medical firm in China. International experience also provided these returnees with the opportunities and the ability to absorb the different aspects of business knowledge which helps to identify, discover and create opportunities in international markets.

Compared with returnees, a non-returnee from Firm E had to take years to acquire international experience through partnership and cooperation with foreign firms in China. In particular, the process of internationalisation only speeded up when the firm bought an American firm in 2005, and opened its own branch in the USA in the same year. The interviewed entrepreneurs from firms F, G and H also stated that they had less international experience and lacked international links even though they wanted to expand their business abroad. Non-returnee owned firms have to rely on the experience learned from the domestic market and find it time-consuming and difficult to gain international experience.

To summarise, these returnee entrepreneurs all have many years' specific industry knowledge and working experience. In particular, they had worked in foreign firms abroad before they started their own business. The critical role of entrepreneurial knowledge and international experience as a source of competitive advantage has helped them to understand how to identify, acquire, and use externally-generated knowledge. Returnees have learned a great deal about how to compete in the international market, and their accumulated international experiences have been increasingly considered as central resources for their firms in connecting with the world market.

In terms of innovation and knowledge spillovers, all returnees from the four firms have patented technology or directly applied what they obtained abroad to their own business. All technology and products they have produced are advantageous not only in China, but also in the world. These returnee entrepreneurs are willing to take risks and started their own businesses. They prefer to directly apply their patents and technology and to further develop skills and know-how through the formation of new ventures.

Compared with returnees, some non-returnees firms, such as entrepreneurs Firm E, admitted that they did not have advanced technology at first hand. What they learned was all from the developed countries where they imported technology and bought licences. Since then they have learned, and redeveloped the technology, and started selling their products back to the developed markets in recent years. Non-returnee Firm F claimed that their technology and products have achieved the same level as imported products from abroad, but they lack knowledge and channels to target the international market. Non-returnee entrepreneurs from Firms G and H agree that advanced technology and commercial knowledge are the core competitive requirements to be successful not only in China but also in the world market. However, learning and absorbing new technology not only requires 'absorptive capability', but it also needs time to develop skills and know-how to improve the

technology acquired.

In terms of international networks, the returnee entrepreneur from Firm A has already built up both personal and business networks between Japan and China. In turn, his company is able to get more resources across national borders. The returnee from Firm B has also developed and maintained effective networks in the USA. These help the firm access more information and identify more opportunities. International networks have enabled the firm to expand internationally. The returnee founder from Firm C also intends to build a bridge between China and the USA, and the returnee entrepreneur has managed to maintain connections and networks outside China. Hence, international networks help firms gain sustainable technology development and international operation. A returnee from Firm D stated that international networks help him to get new ideas and continuing innovation.

Non-returnee entrepreneurs also realise the importance of international networks. A local entrepreneur from Firm E stated that it is very important to acquire knowledge, exchange technology and learn new things from their foreign partners. A local entrepreneur from Firm G also agrees that professional relationships are very important in order to obtain information and generate customers and clients, but he also realised that there are other ways available to connect with the world via media, the Internet and international workshops. He also suggests that returnees should fit in the local business environment. The two non-returnees entrepreneurs from firms F and H admitted that they lack international links and contacts, which may prevent them from adopting an internationalisation strategy.

6.4 Theoretical Propositions

In emerging economies business leaders often have little direct experience of operating in market economies. Those able to acquire knowledge and build networks in the West are likely to be key decision-makers (Tan, 2006). Returnee owned firms often leverage special

advantages which derive from information-based intangible and knowledge-based global networks to pursue the special location advantages emerging across borders. Therefore, international entrepreneurial orientation, international experience and entrepreneurial knowledge, innovative global technology, competence through knowledge spillovers and international networks are crucial. This is the case not only for the existence of 'Born Global' firms, but also for local-grown SMEs who may exploit opportunities in both domestic and foreign markets. As noted earlier, this chapter provides evidence for further theoretical development. Based on the case evidence, the formulation of preliminary key findings is developed that support the proposed framework of the internationalisation of Chinese high-tech entrepreneurial SMEs with a set of tentative theoretical propositions. The propositions are tentative because further research, involving large-sample testing is required in this area.

It shows that international entrepreneurial orientation is associated with the transformation of scientific and technological knowledge into products and services. In particular, returnees who have a global vision see international markets as an opportunity and are more proactive to internationalisation. They can be considered the early adopters of internationalisation. The distinguishing features of these returnee owned firms are that their origins are international. They have a global view of their markets and have established themselves to achieve their international goals compared with traditional firms that have operated in the domestic market for many years and gradually evolve into international trade (e.g., Johanson and Vahlne, 1977). Although both returnees and non-returnees realise that it is imperative to expand internationally, returnees firms view the domestic market as a part of a networked global economy. They have prepared themselves for facing the challenges in the process of discovering and pursuing business opportunities in the global market. Such initiatives reflect how these firms target their customers both in domestic and/or foreign

markets. To position their products correctly and compete with others reflects the intensity of a firm's international operation. Thus, they are able to outperform rivals within the industry and efficiently utilize arbitrage opportunities.

Entrepreneurial orientation refers to a firm's recurring behavioural patterns and consists of more or less durable capabilities that the firm replicates through continuous learning processes (Covin and Slevin 1991; Winter 2003). Comparing the level of international entrepreneurial orientation of these returnees with non-returnee entrepreneurs in terms of proactiveness and competitive behaviours, these returnee entrepreneurs may be central in resolving a deficit of entrepreneurial leadership (Tan, 2006) and in stimulating technology-based firms in emerging markets. As innovation is a function of entrepreneurship, entrepreneurs form their own new ideas, judgments and decisions about how to carry out their innovative business (Lumpkin and Dess 2001). They may calculate risks based on the costs involved (Knight, 1929; Sagie and Elizur, 1999). In particular, they may be proactively engaged in the international market by means of effective arbitrage. In the fast changing and globally competitive environments, a firm's ability to sense new signals and then proactively seize discontinuous opportunities is becoming the most important single element of entrepreneurship in internationalisation. For instance, the local conditions in transitional economies may cause 'disequilibrium' because of economic, social and political forces. Entrepreneurs can devote themselves to creating more business opportunities emerging across national borders. Most returnees see internationalisation as an opportunity to develop their business and make more profits by selling their products and services across national borders. All these lead to the following baseline proposition:

***Proposition 1:** Entrepreneurs with a high level of international entrepreneurial orientation in terms of vision, proactive risk taking and competitive behaviour are likely to regard internationalisation as a necessary condition and opportunity for their firms' growth*

and development in the international market.

Entrepreneurs' international experience is crucial in impacting on their vision with regard to pursuing international opportunities, and discerning appropriate inputs is ultimately a matter of entrepreneurial vision and intuition in a resource-based view (Conner, 1991, p. 121). According to Miller (1993) experience may shape '*...the lens lie cognitive structures through which managers see the world*', and these cognitive structures enable entrepreneurs to filter business opportunities as well as to interpret and construct meaning out of them, to cope with fast changing environments and to make approximate strategic responses (Huff, 1990).

'*Entrepreneurial Knowledge*' equates to abilities to accumulate and combine different knowledge and experiences in the context of internationalisation, including the process of accessing and acquiring knowledge of foreign market conditions (Erramilli, 1991). It also incorporates the ability to try different types of entry modes (Vermeulen and Barkema, 2001). Knowledge of foreign markets provides particular advantages and facilitates internationalisation (Kogut and Zander, 1993). When entrepreneurs coordinate knowledge-transfer activities across borders (Szulanski, 1996) they create new added value to customers in the international market place. Heterogeneous knowledge bases and capabilities among firms are the major determinants of sustained competitive advantage and superior corporate performance at firm level (Papoutsakis, 2006). Entrepreneurs with specific knowledge and abilities to '*transfer*' such '*context regional*' know-how are able to combine knowledge and resources into specific inputs.

Returnee entrepreneurs who previously moved to a developed country are usually highly educated or skilled in business (Saxenian, 2001, Min and Bozorgmehr, 2003). When they stayed abroad, many returnee entrepreneurs gained access to advanced technology and knowledge unavailable in their home countries. Knowledge management is particularly

important in cross-border settings which involve different cultures, corporate governance systems and language (Kummerle, 2002). Returnees also learned how to apply and manage knowledge and technology to produce products and provide services according to customer needs and demands across national borders.

International managerial experience and entrepreneurial knowledge enable firms to acquire resources and leverage capabilities across national borders. These form their internationalisation competitive advantage and foster the dynamic capability effect of early internationalisation (Autio et al. 2000). This is an important qualifier since, in order to transfer knowledge between entities, experiential knowledge is transformed into objective knowledge (Nonaka, 1994). However, it is suggested that experiential knowledge is more important than objective knowledge in terms of informing a firm's decision making (Johanson and Vahlne, 1977, 1990). Most returnee entrepreneurs use their technical working experience and management experience accumulated abroad. They can apply these experiences to their own ventures, especially to their international business development.

In addition, their entrepreneurial know-how knowledge facilitates their international operations based on their international business knowledge about clients, competitors and the market and foreign institutions which are concerned with knowledge of government, culture, and institutional frameworks and norms (Eriksson, Johanson, Majkgård and Sharma, 1997). Meanwhile, entrepreneurs' knowledge creation involves a combination of tacit and explicit knowledge (Nonaka and Takeuchi, 1995). Returnee entrepreneurs can utilise their international experience to leverage heterogeneous knowledge in terms of new technology, new business ideas, marketing and finance knowledge. Therefore, entrepreneurs with abundant international experience are able to leverage intangible knowledge-based capabilities in foreign markets at the early stage of internationalisation. They are able to recognise and pursue the opportunities emerging from international markets. Therefore, a

proposition is as follows:

***Proposition 2:** Entrepreneurs who can utilise their international experience and leverage their entrepreneurial heterogeneous knowledge are more likely to become the early adopters of internationalisation.*

Knowledge spillovers are not only exogenous events resulting from the prevailing geographic configuration of economic actors, but also are the result of firms viewing the economic landscape and locating strategically. Cantwell (1989) argues that firms may supplement their existing technical capabilities by expanding geographically to access new technology, skills, or knowledge. Several empirical studies offer evidence that firms expand abroad to gain knowledge by setting up R&D facilities or manufacturing sites (Kogut and Chang 1991; Chung and Alcacer 2002).

Knowledge can spill-over and can be transferred under certain conditions, and constitute innovation, and as a result it has become the source of competitive advantage. Knowledge spillovers may often occur in the knowledge-intensive sector. Returnee entrepreneurs may take this kind of advantage unavailable in their home countries. When returnees return to their home countries, they also bring advanced technology and new ideas with them. Knowledge creation and innovation are replacing physical processes as value-adding activities (Cartwright and Oliver, 2000). They are able to benefit from transferring new technology originating in developed countries via entrepreneurs' mobility across national borders. In this sense, international knowledge spillovers may help firms narrow down the knowledge gap between them and international players, enhance competitive capabilities and provide the foundations of internationalisation.

Entrepreneurs need to internationalise their firms in order to enjoy this kind of knowledge generation through knowledge spillovers. The cross-border combination of valuable resources and value creation through technological advances is central (Zahra et al.,

2000; Yli-Renko et al., 2002). Returnee entrepreneurs can take advantage of technological breakthroughs as a key force in opening up opportunities for entrepreneurial activities (Schumpeter, 1950) arising from international operations across national borders. This leads to the following proposition:

Proposition 3: *Entrepreneurs who are able to benefit from external knowledge spillovers in the developed countries and continue innovation are more likely to facilitate the process of internationalisation.*

In a network theoretical stance, linkages reflect the international experience of returnees that may provide a significant adjunct to the returnees' initiatives at home. Such linkages are not the direct outcome of the aforementioned commonality of attributes. Resources needed also stem from patterns of interpersonal relationships that may derive from returnees' past experiences and international background. Previous generations relied on ethnic resources with immigrant networks, social relations and cultural ties which encompassed both host and home societies. Cross-border social and economic networks correspond to 'a social entity that exists as a collectively shared subjective awareness' (Laumann et al. 1983, 21). Although it is difficult to evaluate the respective impact of tangible and intangible resources on returnees' initiatives, it seems essential to examine returnees with reference to these elements.

Returnee entrepreneurs may function as an actor who gathers the resources needed to secure and prepare his/her return to the homeland by mobilizing resources stemming from the commonality of interests which are available at the level of social and economic cross-border networks. Bonaccorsi, (1992) maintains that, especially for small firms, decisions related to committing resources to the internationalisation process are generally made on the basis of the collective experience of the firm's business networks. These

networks are important in gathering knowledge and gaining access to information and resources (Bonaccorsi, 1992; Denis and Depelteau, 1985; Welch and Luostarinen, 1988).

The network model draws entrepreneurs' attention to a firm's changing situation as a result of its position in a network of firms and associated relationships. Johanson and Mattsson (1988) contend that a highly internationalised firm is positioned within a foreign network and, thus, enjoys direct relationships with foreign actors. Having a network orientation and, consequently, identifying the roles and strengths of actors within it, provides the firm with an understanding of possible constraints and opportunities for its operations (Axelsson and Johanson, 1992; Johanson and Vahlne, 1990). Furthermore, being positioned within a foreign network allows the internationalised firm to develop relationships that, in turn, can lead to further linkages with other actors (Axelsson and Johanson, 1992; Johanson and Vahlne, 1990). Returnee entrepreneurs may take advantage, because their international networks connecting with the international market provide the critical contacts, information, and cultural know-how that link dynamic but distinct regions in the global economy (Saxenian, 2001). Therefore, the following proposition is derived:

Proposition 4: *Entrepreneurs, who have already established, developed and maintained their global networks and international contacts are more likely to adopt internationalisation at an earlier stage and have success in the international market.*

6.5 Conclusions

This chapter investigates factors affecting the process of internationalisation of returnee owned firms compared with non-returnee owned firms. The evidence from comparative case studies suggests that international entrepreneurial orientation plays an important role in the internationalisation of returnee owned firms. Returnee entrepreneurs are the early adopters of internationalisation. Entrepreneurial activities depend upon the interaction between the

characteristics of opportunities and the characteristics of people who exploit them (Casson, 2005). Returnees possess international vision and the ability to select appropriate projects. They are able to see business opportunities and projects from a global perspective. This enables them to view internationalisation as an opportunity rather than a risk. Entrepreneurs' perspectives drive them to adopt internationalisation at an early stage. As a result, their firms are more likely to enter the international market quickly compared with non-returnee SMEs.

Returnee entrepreneurs are able to adopt internationalisation strategies at an early stage because of their educational background and working experience. Those provide unique entrepreneurial competence and outlook (Autio et al., 2000; McDougall et al., 1994). Returnee entrepreneurs have had valuable experiences gained from studying and working abroad. These international experiences enable returnees to understand how to choose their own business models and integrate their global value chain. The case evidence clearly shows that returnee entrepreneurs who have had overseas working experience and gained entrepreneurial knowledge are more likely to be the early adopters of internationalisation.

The finding also suggests that returnee entrepreneurs have benefited from international knowledge spillovers which have played an important role in the process of internationalisation. When global players' strengths in tangible areas are increasingly matched by their competitors, complex intangible processes such as global learning across borders are likely to be the last frontier for competitive advantage. Returnee owned firms seem to be able to optimise knowledge-based resources and integrate those advantages across countries. The increasing intensity of competitiveness in both local and global markets has revealed the significant role of entrepreneurship in establishing companies to develop a competitive advantage and sustain them (Zahra et al., 2000). Returnee owned firms are able to combine the advantages of new knowledge, technology and know-how with the cost advantage of being based in emerging economies. This finding supports the notion of 'Born

Global'. Through international networks, global entrepreneurs in a large transition economy build bridges to connect with the outside world.

Entry to overseas markets can be considered an innovative act (Casson, 2000). It is shown that uncertainties, risks and unique challenges related to different international markets can be overcome using localised marketing knowledge and competences of foreign intermediates (Bowersox and Cooper, 1992; Rosson and Ford, 1982). An important ability of returnee owned firms is to compete in the global market because their networks help them to link to international markets. In conclusion, returnee owned firms' internationalisation path is to be close to the mode of 'Born Globals' in relation to latecomer internationalisation and is consistent with networks and knowledge-based theory (Chen, 2003). In particular, utilizing their international resources and engaging in international competition is the way for returnee owned firms to enhance international competitiveness.

The study also finds that non-returnee entrepreneurs may achieve internationalisation in a gradual and sequential manner, depending on their perception, experience and managerial capacity (Autio, 2005) in terms of international experience and entrepreneurial orientation, technology spillovers and international networks. Non-returnee owned firms would rather consolidate their position in China and then gradually enter the international market. This is not only because they are under competitive pressure, but also because they position in the sphere of knowledge and technology in their industry. It may reflect the fact that many non-returnee owned firms in ZSP have not established core technologies, and their industrial position still lies at a low level in the international industrial chain. Moreover, they lack international networks which take time to build and require firms to invest and maintain relationships in order to learn from the outside world and to do business across borders.

The main findings of this chapter suggest that the perception of internationalisation is reflected by entrepreneurs' international entrepreneurial orientation with regard to the

external international business environment. The early adoption of internationalisation by firms is likely driven by characteristics of entrepreneurs and internal competences. The possession of technology and commercial business knowledge, entrepreneurs' international experiences and international networks are believed to be the main internal factors for the successful early stage of internationalisation. The case studies' goal is not to statistically generalise, but to examine the cases in order to bring out the substance of the phenomenon. This chapter adopts a process perspective to investigate the research questions specified in Chapter 3 based on case studies of four returnees and four non-returnees SMEs' activities in ZSP. Some theoretical propositions have been derived to enrich theories of internationalisation.

Chapter 7: Conclusions

7.1 Introduction

As a new phenomenon, returnee entrepreneurs have played an important role in knowledge spillovers, innovation and internationalisation in emerging economies, such as China. This thesis has intensively examined returnee entrepreneurs in Chinese high-tech industries from different theoretical perspectives and has generated interesting and insightful findings. This chapter pulls together the main findings and contributions of this research. Specially, this chapter focuses on answering two questions: first, what has been achieved in this thesis? Second, what theoretical and policy implications can be drawn from this study? Answering these questions involves eliciting and examining various macro and micro elements which form the in-depth picture of this empirical study. The chapter is organised as follows. Section 7.2 is a summary of what this study has accomplished, compared with the objectives addressed in Chapter 1 and it presents the main findings and contributions of this study. Section 7.3 discusses the implications of the study. Section 7.4 considers the limitations of this study, both in theoretical and methodological aspects.

7.2 The Main Conclusions of This Study

7.2.1 The main findings

This study has attempted to explore and examine the influential factors of returnee entrepreneurs and non-returnees entrepreneurs' activities in terms of their innovation, economic performance and internationalisation process. In doing so, three themes have emerged to direct the research strategy employed to transform the ideas into practice.

In line with the first objective of this research, which was *to examine the relationship between returnee entrepreneurs firms' innovative performance and their role in knowledge*

spillovers in high-tech SMEs, a comprehensive review of the literature on entrepreneurship, spillovers, networks and KBV studies was carried out in order to form a framework. It was proposed to test whether returnee entrepreneurs act as a new channel for international knowledge and technology spillovers. Previous studies mainly either focused on entrepreneurs' pursuit of opportunists in terms of an objective view (opportunities are *exogenous*) or focused on entrepreneurs' personal characteristics and a subjective view (opportunities are *endogenous*).

This empirical study has investigated the linkages between the presence of returnees and knowledge spillovers in high-tech SMEs in the largest emerging economy – China. It enables the author to bridge the recognised research gaps defined in Chapter 1 and carry out a rigorous investigation into the role of returnee entrepreneurs.

As the topic of this thesis implies, this empirical study focuses on relationships between several constructs. Based on a comprehensive review of the literature, a judgment has been made to employ a frequently used research strategy to explore the significance and relationship between the variables and activities. To improve the understanding of the linkage between knowledge spillovers and innovation performance, the author has estimated two empirical equations for both returnee and non-returnee owned firms in order to find empirical evidence of the relationship between knowledge spillovers and innovation performance in Chapter 4.

The research shows that international knowledge spillover more often occurs in returnee owned firms and is strongly associated with innovation performance of their firms. Knowledge has been circulated intensively through the formation of new firms. International knowledge, as an exogenous factor, flows with human mobility through global networks. In the context of emerging economies, the results show that these returnee entrepreneurs not only absorbed international knowledge, but also indirectly transferred their knowledge to

non-returnee owned firms.

Besides showing that returnee entrepreneurs act as a new channel for international knowledge and technology spillovers, this study also estimates the impact of multiple spillover channels, such as MNC working experience, exports and imports, on the innovation performance of Chinese firms in high-tech industries. The important role of internal factors in innovation performance is considered in the study. The results indicate that investment in internal R&D plays an important role in firms' innovation performance and such investment still represents an important factor affecting firms' innovation activities. Learning-by-exporting and previous MNC work experience has a positive impact on firms' innovation performance.

In addition, this study also investigated social networks in terms of entrepreneurs' global networks impacting on knowledge spillovers and innovation performance. The results show that the variable of 'global networks' is a significant mechanism in empowering knowledge spillovers through the interaction of returnees and prior established global networks, reflecting the competitive advantages of returnees with established international networks. A comprehensive review of the literature and the statistical analysis at firm level have jointly delivered the results to satisfy the first objective of this research i.e. establishing which factors influence knowledge spillovers through returnee entrepreneurs in China.

The second objective of this research was *to examines and compare firm economic performance for both returnee owned firms and non-returnee owned firms*. Based on an integrated framework of KBV and social capital theories, Chapter 5 has followed similar empirical procedures to examine the links between entrepreneurial characteristics and firm performance. In particular, it has investigated how the human and social capital factors of entrepreneurs affect the business success of high-tech SME. The process of hypothesising and testing has satisfied the assumption that SMEs of returnee entrepreneurs perform better than

those owned by home grown entrepreneurs.

This empirical study not only considers the role of individual internal and external factors in firm performance, but also the interaction of these factors in terms of the combination of technological knowledge, commercial knowledge and networks, and their effects on entrepreneurial venture success. A significant finding is that returnee-firms' perform better than non-returnee-firms due to the differences in technological and commercial knowledge as well as their international entrepreneurial orientation. The results also indicate that international networks positively affect firm performance in high-tech industries. The evidence suggests that returnee entrepreneurs gain competitive advantages through utilising their intangible assets to exploit business opportunities and business development in an emerging economy.

The findings from the study help broaden an understanding of entrepreneurship in emerging economies and provide new insights into the existing literature by considering the new phenomenon of returnee entrepreneurs and their role in firm performance. In particular, the findings advance our understanding of the importance of complementary resources in creating sustained competitive advantage in high-tech industries.

The third objective of this thesis was *to develop a conceptual framework of internationalisation process and differentiate returnee and non-returnee models*. The thesis has examined the motives and factors affecting returnee-firms and non-returnee owned firms' internationalisation based on the case study method. The study aims to fill a research gap, where relatively little research attention has been paid to the driving forces and the process of internationalisation of returnee owned firms, by investigating factors affecting their firms' internationalisation compared with non-returnee owned firms.

The evidence from comparative case studies suggests that returnee entrepreneurs have a positive association with international entrepreneurial orientation, indicating that these

entrepreneurs are the early adopters of internationalisation. Entrepreneurial activities depend upon the interaction between opportunities and the characteristics of the people who exploit them (Casson, 2005). Returnees possess international vision and the ability to select appropriate projects. They are able to see business opportunities and projects from a global perspective. This enables them to view internationalisation as an opportunity rather than a risk and their entrepreneurial perspective drive them to adopt internationalisation at an early stage. As a result, their firms are more likely to enter the international market quickly compared with non-returnee SMEs.

Returnee entrepreneurs are able to adopt internationalisation strategies at an early stage because of their educational background and working experience. Those provide unique entrepreneurial competence and outlook (e.g., Autio et al., 2000; McDougall et al., 1994). Returnee entrepreneurs have valuable experiences gained from studying and working abroad. These international experiences enable returnees to understand how to choose their own business models and integrate their global value chain. The case evidence clearly shows that returnee entrepreneurs who have had overseas working experience and possess entrepreneurial skills are more likely to be the early adopters of internationalisation.

The finding also suggests that returnee entrepreneurs have benefited from international knowledge spillovers which have played an important role in the process of internationalisation. When global players' strengths in tangible areas are increasingly matched by their competitors, complex intangible processes such as global learning across borders are likely to be the last frontier for competitive advantage. Returnee owned firms seem to be able to optimise knowledge-based resources and integrate those advantages across countries. The increasing intensity of competitiveness in both local and global markets has revealed the significant role of entrepreneurship in creating a sustainable competitive advantage (Zahra et al., 2000). Returnee owned firms are able to combine advantages of new

knowledge, technology and know-how with the cost advantage of being based in emerging economies. This finding supports the notion of 'Born Global'. Through international networks, global entrepreneurs in a large emerging economy are able to build bridges to connect with the outside world.

The case evidence shows that uncertainties, risks and unique challenges related to different international markets can be overcome using localised marketing knowledge and competences of foreign intermediates. An important ability of returnee owned firms is to compete in the global market because their networks help them link to international markets. Hence, returnee owned firms' internationalisation path is close to the mode of 'Born Global' in relation to latecomer internationalisation, and is consistent with networks and KBV. In particular, utilizing their international resources and engaging in international competition is the way for returnee owned firms to enhance international competitiveness.

The research also finds that non-returnee entrepreneurs may achieve internationalisation in a gradual and sequential manner, depending on their perception, experience and managerial capacity in terms of international experience, entrepreneurial orientation, technology spillovers and international networks. Non-returnee owned firms would rather consolidate their position in China, and then gradually enter the international market. This is not only because they are under competitive pressure, but also because they position themselves in the sphere of knowledge and technology in their industry. This may reflect the fact that many non-returnee owned firms in ZSP have not established core technologies, and their industrial position still lies at a low level in the international industrial chain. Moreover, they lack international networks which take time to build and require firms to invest and maintain relationships in order to learn from the outside world and to do business across borders.

The main findings of this study suggest that the perception of internationalisation is

reflected in entrepreneurs' international entrepreneurial orientation with regard to the external international business environment. The early adoption of internationalisation by firms is likely to be driven by characteristics of entrepreneurs and internal competences. The possession of technology and commercial business knowledge, entrepreneurs' international experiences and international networks are believed to be the main internal factors affecting SMEs' internationalisation.

7.2.2. A summary of the main contributions of the thesis

This thesis makes a number of contributions to the existing studies. First, it is among a few studies which examine the role of returnees in knowledge spillovers, innovation and internationalisation in Chinese high-tech industries. It proposes and empirically examines whether returnee entrepreneurs are a new channel for international knowledge and technology spillovers. The research extends the literature on international knowledge spillovers by adding a new channel for knowledge spillovers. The author not only considers human mobility, such as returnee entrepreneurs and MNE work experience, but also incorporates social capital theory into the existing literature. This helps broaden the mechanisms which facilitate international knowledge spillovers. The findings from the thesis provide new insights into the role of human mobility in technological development in emerging economies and help advance the theoretical development of the new channel for knowledge spillovers, and broaden our understanding of the factors affecting international knowledge flows.

Second, a complementary approach is developed which combines technological knowledge and commercial knowledge to examine how characteristics of entrepreneurs affect firm performance. This perspective may be extended usefully to other emerging economies where returnee entrepreneurs have also increased substantially. This investigation contributes

to the KBV and network literature by linking knowledge and social capital together. These two types of complementary factors enable returnee entrepreneurs to establish an effective mechanism to integrate knowledge into business activities and gain sustainable competitive advantage in high-tech industries. The findings shed light on the relationship between performance, knowledge and social capital, and provide evidence that emphasises the need to consider the impact of a wide range of factors such as social capital and networks on a firm's performance.

Third, the findings based on the eight case studies suggest that the perception of internationalisation is reflected by entrepreneurs' international entrepreneurial orientation with regard to the external international business environment. The early adoption of internationalisation by firms is likely to be driven by characteristics of entrepreneurs and internal competences. The possession of technology and commercial business knowledge, entrepreneurs' international experiences and international networks are believed to be the main internal factors for the successful early stages of internationalisation. Hence, the study provides a new insight into the factors determining the early adoption of internationalisation by Chinese firms.

7.3 Implications of This Thesis

The findings will be of benefit to the academic community as well as to practitioners and policy makers. The outcomes offer some important managerial and policy implications which are not only relevant to China but also to other emerging economies such as India, Brazil and Russia. For local entrepreneur owned firms, returnee owned firms may represent a source of advanced knowledge and valuable information. Hence, local firms may gain some benefit from building linkages with returnee owned firms. In particular, the findings show the importance of the complementary effect between knowledge and social networks. Managers

need to consider the combined impact of different factors on a firm's performance. For policy-makers, the evidence of returnees as an effective channel for international knowledge spillovers and better performance by returnee owned firms obtained in the thesis justifies government policies that aim to encourage more returnees to set up their own businesses. Attracting returnees from OECD countries may be an effective way of catching up with technological leaders in developed countries. Hence, providing incentives to induce returnees back to their home country will benefit local firms. Policy makers may also extend policies to attract returnees to invest in local enterprises and, importantly, may also need to design incentives to retain the expertise of returnees.

7.4 Limitations and Future Research

Some limitations of this thesis should be acknowledged which suggest further research possibilities. First, the author has used various proxies, such as patent citations or R&D expenditure to measure innovation. However, such indirect measures have shortcomings. As noted in the existing studies, patent counts have several shortcomings as a measure of innovation (Pavitt, 1985; Griliches, 1989; Archibugi, 1992). With respect to innovation performance, for instance, patents do not cover all the outcomes of innovative activity. Thus, using patents as proxies in this research would pose a risk of misrepresenting innovative activity. The same applies for R&D proxies. Much of firms' innovation is informal, and does not feature in any statistical database (Bell, 1984). Consequently, studies that simply focusing on R&D investments may underestimate what firms actually do.

Second, with respect to performance, the study was constrained by the lack of published information and sensitivity on the part of respondents to report details on levels of profitability. Future research may better use multi-dimensional measures for the performance of SMEs such as sales, profitability and employment growth. In the questionnaire survey, the

respondents were asked to evaluate different types of commercial knowledge obtained abroad and in their home country, but the author did not ask the respondents to rank the importance of different types of commercial knowledge. Future research should consider the importance of different types of commercial knowledge in business success. Future studies should also differentiate the impact of new knowledge from that of returnee entrepreneurs' past international experience on their firms' performance.

Third, the data used in the thesis were drawn from ZSP. Hence, the study was restricted to a single science park in a Chinese context. Returnee entrepreneurs may also play an important role in other emerging market contexts, such as India and Russia. The role of returnee entrepreneurs may differ in other contexts. For example, there may be different responses in those countries emerging from Communism, and thus Russia may be another interesting research area.

Fourth, based on four returnees and four non-returnees SMEs' activities in ZSP, the findings derived from the case studies generate a new theoretical framework with propositions. However, it is not possible in a study of this nature to cover every issue. For example, this research has explored how international entrepreneurial orientation in terms of four elements (vision, proactivity, risk-taking, and competitor behaviours) impacts on whether entrepreneurs decide to adopt internationalisation early on. The results seem to find a positive loop and positive effects between IEO and internationalisation. However, further studies are needed to find out the weight of these four elements and the extent of their impact on making decisions about internationalisation and the process of internationalisation.

The work has only partially investigated entrepreneurs' backgrounds, particularly their experience. The investigation supports the notion that that the international experience of returnee entrepreneurs has generally contributed to their firms' speed of internationalisation from start-up compared with the non-returnee group. However, there may be some extreme

cases of non-returnee owned firms that are able to internationalise rapidly. Also, international experience may imply that entrepreneurs accumulate commercial and technological knowledge to help them start-up internationally at a very early stage. There may be two-way causal effects.

In addition, international networks have also been shown to positively influence the decision and process of internationalisation. However, the study did not differentiate formal and informal networks or how these two types of different networks impact on these firms' internationalisation. Further studies are probably needed to cover some key aspects of networks from economic and social perspectives such as size, diversity, types of networks and configuration of the networks, as proposed by Casson (2006).

Finally, there are other external forces driving firms around the world to internationalise, such as political, economic, market, competition, and environmental forces. This study has mainly focused on entrepreneurs and their characteristics. Further studies are needed to incorporate both external and internal factors to examine the factors affecting internationalisation.

7.5 Conclusion

The internationalisation activities of China's high-tech SMEs are still in the start-up stage. In particular, this can be observed from local-grown entrepreneur firms. However, internationalisation has speeded up due to three decades of the open-door policy and the availability of the latest technology, such as Internet and easy travel connecting China with the outside world. China has also become one of the largest emerging markets to attract returnee entrepreneurs to do business across national borders as there are emerging opportunities in China even though there are still some uncertainties and risks.

This thesis investigates the different aspects of returnees and non- returnees activities in

ZSP. The findings indicate that the degree of a firm's innovation performance is impacted by knowledge spillovers via entrepreneurs, R&D investment, importing, exporting, MNCs work experience and entrepreneurs' global networks at firms' level. Innovation performance does influence, and is positively associated with, firms' economic performance based on the empirical results. This thesis also emphasises the importance of international networks in affecting knowledge spillovers, innovation and economic performance. The international process of returnee and non-returnee owned firms were analysed based on case studies. The case evidence indicates that returnee owned firms have a different international path compared with non-returnee owned firms. Entrepreneurs' backgrounds and international experiences contribute to the effectiveness of internationalisation in high-tech SMEs in China. Specifically, the international experience and background of returnees help them accelerate the process of internationalisation, whereas non-returnee entrepreneurs suffer from a lack of international experience and networks which may limit their firms ability and/or interest in taking an early step into internationalisation. This thesis provides a pioneering picture of returnee entrepreneurs' activity through both quantitative and qualitative analysis. It also gives a complementary line of research which provides novel explanations for the new phenomenon of returnee entrepreneurs worldwide.

Appendix

Zhongguancun Science Park Survey of Returning Entrepreneurs and Scientists

Section A Establishment Name: _____

1. Address: _____

2. Respondent's Name _____
 - a) Position _____
 - b) Email address _____
 - c) Age _____

3. Date of Survey: _____

4. What are the main products or service provided by your company?

5. How many employees does the company have currently?

6. How many years has the company been established?

7. What was the level of total sales in the last financial year: (Renminbi)

8. Is the company wholly privately-owned? Yes No

9. Was this establishment founded by a returning entrepreneur or scientist after at least two years' education or business experience abroad? Yes No (If no, go straight to Section D)

10. Did the founder of the company set up a company abroad before returning to China?
 - a. Full ownership
 - b. Partial ownership
 - c. Equity ownership

11. How is the Chinese firm managed?
 - a. Single owner-entrepreneur?
 - b. Shared ownership and control with other returnees?
 - c. Shared ownership and control with local entrepreneur(s)?

12. What is the size of your executive board?

13. How many are returnees?

Section B (Returning Founders)

1. How long did you spend outside China before founding this establishment?

2. Were these years spent in

a. education?

b. business?

c. business and education?

3. Any qualifications gained? (Qualification and awarding institution)

4. Have you gained residence status abroad? Yes No

5. Years of work experience abroad?

6. Years since return to China?

7. To what extent do you think the following factors were important for your decision to return to China?

Exploit Chinese market	1	2	3	4	5	6	6
Exploit both Chinese and foreign markets	1	2	3	4	5	6	7
Exploit networks established abroad	1	2	3	4	5	6	7
Exploit new technology obtained abroad	1	2	3	4	5	6	7
Government incentives for returnees	1	2	3	4	5	6	7
Achieve synergy between international and local networks	1	2	3	4	5	6	7
Exploit lower costs in China	1	2	3	4	5	6	7
Access local skills	1	2	3	4	5	6	7
Family links	1	2	3	4	5	6	7

8. Did you work for a multinational firm before setting up your own company?

Yes No

9. Is your Chinese venture a subsidiary of an overseas company? Yes No

10. What approximate percentage of your overseas contacts has a commercial relationship with your company?

11. The locations of your main overseas business networks:

a. China

b. Abroad: the US, or the EU or Asia

c. Both in China and abroad

12. Approximately how many hours per month do you spend on the telephone or email communicating with people outside the country in relation to business development and opportunity identification?

13. How many times do you travel abroad each year, on average?

14. Has your company hired employees outside China? Yes No

15. If Yes, Chinese nationals outside China? Yes No

If Yes, how many employees

Where?

- a. North America
- b. EU
- c. HMT³
- d. Rest of Asia

16. To what extent have your global networks contributed to the following aspects of your business (scale 1: least important and scale 7: most important)?

Contact with new customers	1	2	3	4	5	6	7
Marketing information	1	2	3	4	5	6	7
New business ideas	1	2	3	4	5	6	7
Access to distribution channels	1	2	3	4	5	6	7
New contacts	1	2	3	4	5	6	7
Advertising by word of mouth	1	2	3	4	5	6	7
General advice	1	2	3	4	5	6	7
New product and service development	1	2	3	4	5	6	7
Assistance in obtaining business loans or investors	1	2	3	4	5	6	7

Section C (Knowledge Spillover by Returnees)

1. How many patents or licences have been transferred?

2. How much has your company spent on R&D expenditure?

3. To what extent do you think the following aspects are important to the funding of your venture?

Technological knowledge transferred?	1	2	3	4	5	6	7
Commercial skills, new business ideas transferred?	1	2	3	4	5	6	7
Personal contacts, networks?	1	2	3	4	5	6	7
International venture capital	1	2	3	4	5	6	7
Family and relatives	1	2	3	4	5	6	7
Special loans from local banks	1	2	3	4	5	6	7
Government financial support	1	2	3	4	5	6	7

4. To what extent do you think the following types of knowledge have been important in the growth of your venture?

New technological ideas and contacts	1	2	3	4	5	6	7
New business ideas, opportunities and contacts	1	2	3	4	5	6	7

³ Hong Kong, Macao and Taiwan.

Marketing knowledge and contacts	1	2	3	4	5	6	7
Financial knowledge and contacts	1	2	3	4	5	6	7
New technological ideas and contacts – International	1	2	3	4	5	6	7
New technological ideas and contacts – Local	1	2	3	4	5	6	7
New business ideas, opportunities and contacts – International	1	2	3	4	5	6	7
New business ideas, opportunities and contacts – Local	1	2	3	4	5	6	7
Marketing knowledge and contacts - International	1	2	3	4	5	6	7
Marketing knowledge and contacts - Local	1	2	3	4	5	6	7
Financial knowledge and contacts - International	1	2	3	4	5	6	7
Financial knowledge and contacts – Local	1	2	3	4	5	6	7

5. Please tick in the yes or no box for each statement

	Yes	No
Technology used in Chinese business was imported from the host country		
Your company is high-tech		
Your company invented a lot of the technology embedded in your main product		
Compared with local firms (competitors), you are often first to introduce product innovations or new operating approaches		
Your company is recognised in your main export market for products that are technologically superior.		

Section D (Export Performance)

1. Where do you sell your main products or services?

- a. China
- b. Abroad
- c. Both China and abroad

2. When did your company start exporting?

3. Which is your main foreign market? Please tick one box

- a. North American market
- b. The EU market
- c. The Asian market
- d. Others

4. To what extent do you agree with the following statements?

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Your company sees the world instead of just China as its	1	2	3	4	5

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
marketplace					
Top management is experienced in international business	1	2	3	4	5
Your company has marketed its main products in foreign markets	1	2	3	4	5
Your company has marketed its main products in HMT	1	2	3	4	5
Management communicates information throughout the company in relation to your successful and unsuccessful customer experiences abroad	1	2	3	4	5
The vision and drive of top management are important in the company's decisions to enter foreign markets	1	2	3	4	5
When confronted with international decision-making situations, top management adopts a cautious, 'wait-and-see' posture in order to minimise the chance of making costly mistakes	1	2	3	4	5
In international markets, top management has a proclivity for high-risks projects (with chances for high returns)	1	2	3	4	5

5. To what extent have you been satisfied over the past few years with the following aspects of your main products?

Market share in international markets	1	2	3	4	5	6	7
Sales growth in local markets	1	2	3	4	5	6	7
Sales growth in international markets	1	2	3	4	5	6	7
Pre-tax profitability in local markets	1	2	3	4	5	6	7
Pre-tax profitability in international markets is high	1	2	3	4	5	6	7

6. To what extent have the following aspects contributed to the success of your company's exports?

Your own experience in foreign countries	1	2	3	4	5	6	7
Networks established in the major markets	1	2	3	4	5	6	7
Contacts maintained with people in foreign countries	1	2	3	4	5	6	7
Membership of different associations abroad	1	2	3	4	5	6	7
New products and services developed	1	2	3	4	5	6	7
Low costs of production	1	2	3	4	5	6	7

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