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Vertical knowledge transfer from multinational enterprises (MNEs) to Chinese supplier firms: An explorative study

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**Vertical Knowledge Transfer from Multinational
Enterprises (MNEs) to Chinese Supplier Firms: An
Explorative Study**

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A thesis submitted for the degree of Doctor of Philosophy
University of Bath
School of Management
January 2006

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Juanmu Jinglin

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Any remaining errors are solely my own responsibilities.

ABSTRACT

This research investigates the vertical knowledge transfer from Multinational Enterprises (MNEs) to their indigenous Chinese suppliers. By adopting a qualitative processual methodology, the data from interview-based case studies is used to examine how the vertical supply relationship develops over time and the evolution of the knowledge transfer embedded within it. The research has yielded the following research findings:

1. An evolutionary pathway for the relationship development with three interconnected sequential stages are identified, in which MNE customers' evolving expectations and evaluations, and the supplier firms' response and commitment, jointly move the relationship up through each of the sequential phases.
2. Japanese MNEs are found to have different attitude and approach in transfer knowledge to their indigenous supplier firms from Non-Japanese MNEs. The difference is significant in the initiating stage of the relationship and decreases over time.
3. The transfer of knowledge in the relationships evolves from explicit knowledge to tacit knowledge and from technological knowledge to managerial knowledge. Different types of knowledge involved with varied aspects of technology, management and ideology were accordingly transferred at different phases of the vertical cooperation.
4. Generally, most supplier firms learn more managerial and operational techniques than products technology from their MNE customers. In addition, it is found that Private Owned Enterprises (POEs) and State owned enterprises (SOEs) have different advantages and disadvantages in their technological and managerial learning.
5. SOEs and POEs demonstrate different knowledge levels (KL) and knowledge efficiencies (KE) due to their differing abilities to attract financial support, different organizational incentive structures and correspondingly divergent endogenous development paths.

The empirical contributions of the research lie in that it is one of the first systematic investigations on MNEs' vertical knowledge spillover in China. Compared to traditional research investigating the FDI's spillovers in International Business field, this research has posed a pertinent question, adopted a penetrating methodology with fine-grained primary data, and also yielded rich and detailed explanations of the several important aspects associated with the vertical knowledge transfer. Practical implications for both firms and policymakers are also generated built upon the empirical findings.

Apart from the empirical contributions of the study, the research also advances our understanding about some important theoretical issues of transaction cost

economics (TCE).

1. A hidden assumption associated with the traditional TCE studies on ‘make’ or ‘buy’ decision is that ‘market’ is always available to provide the products and hence the decision only lies on the transaction cost. This assumption is revealed to be unrealistic when MNEs’ outsourcing strategy is constrained by the unavailable or incompetent ‘market’ in the host economy. Therefore, firms and markets are highly diversified properties across countries. They are both the evolutionary products of the division of labor and the conditions of transaction efficiency in different and segmented economies and neither of them can be treated as stylized across different contexts.
2. It is found that the transaction cost *per se* cannot fully justify the relationship specific investment in the inter-firm cooperation. A dynamic perspective is needed to incorporate the total value and cost analysis to uncover a holistic understanding of the evolution economic organization.

By basing the study upon multiple theoretical perspectives concerning the inter-firm cooperation and knowledge transfer, the empirical findings have been provided with robust theoretical explanations. It is an effort to put theory back into the central stage of empirical investigation for IB studies.

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Chapter 1 Introduction

1.1 Research background

This thesis examines the vertical knowledge transfer from Multinational Enterprises (MNEs) to their indigenous Chinese supplier firms in the Electrical and Electronics industry in Wuxi, China. By adopting a qualitative processual methodology and semi-structured interviews, the study aims to reveal the inter-firm knowledge transfer process and the conditions that either promote or demote the desired knowledge transfer. In addition, with the in-depth fieldwork investigation, it endeavors to understand how different types of knowledge are transferred in the vertical linkages and how the local indigenous Chinese supplier firms utilize and assimilate the knowledge for their long-term development and growth. This study is one of the earliest investigations that systematically explore the vertical linkage between MNEs and Chinese firms and the embedded knowledge spillovers. The research findings presented in chapter 5, 6, 7 and 8 are believed to have substantially improved our understanding of the MNEs' vertical knowledge spillover in the Chinese context. In addition, by building up the analytical framework from multiple theoretical perspectives, the thesis also provides ample elaborations of the theoretical implications of the empirical findings. As such, the research is believed to have contributed to both the empirical and theoretical understanding of the subject under investigation.

This opening chapter will introduce the research motivation of the study. Then how the research questions are refined within the general background of the spillover effect of FDI is introduced in section 1.4. The chapter ends with section 1.5 where the structure of the thesis is introduced.

1.2 Research motivation

China entered the 20th century as one of the poorest nations and entered the 21st century as the world's most rapidly developing. Since the economic reform launched by the late President Deng Xiaoping in 1978, China's economic development has attained great achievements and attracted world attention. With considerable institutional transition through increasing marketization, privatization, and decentralization (Child and Tse, 2001), the national economy has shown rapid growth and the overall strength of the country has improved noticeably. With GDP increasing at an average rate of around 10% annual in the 1990s and 8% to 10% in the 2000s¹, China became the sixth largest economy in the world.

Among the strong economic reform and development policies that the Chinese government employs, the attraction of foreign direct investment (FDI) has been put high on its agenda, with the expectation of bringing the country new technologies, know-how and increased competitiveness to domestic industries. The adoption of this determined and consistent policy is based on the widely acknowledged belief that, generally, international direct investment is able to contribute to the host's economic development, be it in Asia, North America, or elsewhere. As a matter of fact, inward FDI has been perceived as one of the most important economic engines that has stimulated the rapid economic development, industrial structural adjustment and employment in China.

Within this general economic context, FDI inflows into China dramatically increased in the 1990s. In the early 1990s, China was among the top 6 FDI recipients in the world. By 1998, it was second only to the USA. In 2002, for the first time, China replaced the USA and became the largest FDI host in the

¹ Data Source: Asian Development Banks, 2005.

world². In addition, China has also integrated herself in the world economy through her membership of the WTO, ASEAN and other trade regimes. There is no doubt that inward FDI to China will continue and its impact on China's economic development will persist. While the country is reaping the great fruits of economic liberalization and the accompanying inflow of FDI, an explicit understanding about how FDI influences the economic development becomes more imperative. It is argued that only with an explicit understanding of this matter, can the Chinese government and Chinese firms grasp how to gain, maintain, and stimulate the positive benefits of inward FDI, make effective intervention when necessary, and attempt to avoid the potential negative impacts that accompany inward FDI.

Received theory has shown that FDI can exert multiple impacts on the host economies via discrete channels. On the positive side, first, demonstration effects allow local firms to learn by observing MNEs operating higher levels of technology. After noticing a product innovation or a new form of organization adapted to local conditions, local entrepreneurs may strive to imitate the innovation (Sinani and Meyer, 2003). As local business interacts with existing technology used, information is diffused; uncertainty is reduced and imitation levels increase (Blomstrom and Kokko, 1998). Second, domestic firms may react to foreign competition by using the existing technology more efficiently or by investing in new technology in order to maintain their market share. Third, local employees trained by MNEs may move to jobs in domestic firms, taking with them with upgraded human capital. These people could make a substantial contribution by raising productivity when working for local firms or when setting up new entrepreneurial businesses. Fourth, spillovers could also take place through MNEs' backward and forward linkages through business transactions with their local suppliers and customers.

² The FDI here refers to the utilized FDI inflow into China in 2002. Data source is from MOFTEC - The Ministry of Foreign Trade and Cooperation.

However, FDI is not without potential damaging effects on the local economy. On the negative side, firstly, MNEs may lower the productivity of domestic firms by taking market share from domestic firms. Thus, competition may have a negative impact on indigenous firm's productivity, especially in the short-term (Aitken and Harrison, 1999). Secondly, due to the wage differences, the probability of human capital moving from MNEs to domestic firms is much lower than the reversed movement from local firms to MNEs. Therefore the hypothesized positive spillover from the MNEs' personnel movement is very small and could turn out to be negative when experienced personnel move from the domestic sector to MNEs and bring with them with the local knowledge and information that MNEs often lack. In this case, local firms may suffer from the difficulty in attracting and retaining the most experienced and valuable local talents. To sum up, FDI can generate a complicated set of impacts on local economy and both positive and negative net impacts are possible. Net effects depend on whether positive impacts outweigh negative ones.

Most prior studies (Kueh, 1992; Zhan, 1993; Wang, 1995; Lan, 1996; Wu, 1999; Zhu & Tan, 2000; Buckley et al., 2002; Zhou et al., 2002) investigated the impact of FDI on local economic development at aggregated economy levels without discerning between the different channels and mechanisms through which the influence of FDI is delivered. Similarly, Sinani and Meyer (2003) have criticized that most prior studies measure only the net positive effect of knowledge transfer and the negative impact of competition both due to foreign presence in the market, and few authors explore *the conditions* under which positive spillovers occur.

Consequently, the results of studies investigating the effects of FDI on local industry for both developed countries and for transition economies are mixed. For instance, Haddad and Harrison (1993) examined the effect of foreign presence on the relative productivity of local firms by comparing local firm

productivity with that of the best practice firm in the industry and find no evidence of spillovers in Morocco. In contrast, Griffith (1999) and Liu et al., (2000) found evidence that a foreign presence in the sector affects positively the productivity of domestic firms in UK. Feinberg and Majumbar (2001) found that, in India, MNEs gain from each others' R&D spillovers, but domestic firms do not. Moreover, Aitken and Harrison (1999) find that competition has a negative impact on indigenous firms' productivity in Venezuela, especially in the short-term. Similarly, Konings (2001) found negative spillovers to domestic firms in Bulgaria and Romania, which suggests that the crowding-out effect of competition dominates the positive effect of knowledge transfer. Djankov and Hoekman (2000) found a positive significant impact of FDI on the growth of sales for their entire sample for firms in Czechoslovakia; however, contrary to what is predicted, spillovers have a negative impact on the growth of sales of domestic firms. Nevertheless, a different picture is presented by Liu's (2002) investigation of the correlation between FDI presence and productivity growth in China using industry-level data: there is a positive and significant effect of spillovers for the overall sample and for the sub-sample of domestic firms. However, these results may not be robust if using more disaggregated firm-level panel data (Sinani and Meyer, 2003).

However, while not being exhaustive, the above examples have clearly indicated a complex picture of the varied mechanisms and consequences of FDI's presence in a host economy and highlighted that our understanding about *when* FDI can exert positive impacts on the host economy, and *what* are the conditions promoting the desired impacts, are far from satisfactory. It is interesting to assess FDI's impact at these aggregated levels and this stream of research will continue to generate insights into some general macroeconomic policy issues, such as whether continuous FDI policy is needed and whether FDI in general generates positive impacts on local economic development, etc. We have to recognize that without understanding the exact mechanisms and

processes through which FDI's influence occurs, positive and rational intervention at the micro economic level might be hard to propose. The literature review of this stream of research shows that very little attention has been given towards documenting the exact manner in which FDI influences local firms. This noticeable research gap spurred the decision to undertake the present study. This study will endeavor to understand and explicate the processes of how, and by what means FDI, influences local economy development at the firm level. Since all the macro-economic progress is the accumulated outcome of the performance of the micro actors within an economic system, such a grounded study is believed to be desirable, worthwhile and constructive.

1.3 Defining the research questions

Among the varied channels through which FDI can exert impacts on the local industry, MNEs' backward and forward linkages represent one of the distinct direct channels. Foreign firms may purchase intermediate goods from domestic suppliers to economize on transportation costs or to accommodate local content requirements. Development economics has emphasized the creation of what Hirschman (1958) has defined as 'backward and forward linkages', identifying the relationships that multinationals can activate with local suppliers and customers respectively. Hirschman (1958) suggested that FDI can create strong external economies in sectors that supply or buy from MNEs if new investment are undertaken to exploit them (Hirschman, 1958, p. 205-6). Lall (1978) found that MNEs improve the productivity of indigenous firms by providing technical assistance and training, by assisting them in the purchasing of raw materials and by pressuring suppliers to meet standards of reliability and speed of delivery. Evidence about the actual impact of FDI on linkage creation and on host countries' development is scarce and that which exists is, contradictory as

reported *inter alia* by Dunning (1993), Barkley and MacNamara (1994), Turok (1994), see Blomstrom and Kokko (1998) for a recent survey. Blomstrom et al. (1999, p. 29) also observed that the degree to which international linkages generate appropriable spillover benefits for the host country '*is an extremely important policy issue for which there is a disappointing amount of evidence*'. Chen (2005) also found that this topic has attracted little attention from business scholars. In his search of the literature, among 2240 items in the database ABI/INFORM, which covers roughly 200 trade magazines and over 400 academic journals, only 12 items were identified to be relevant to this topic.

The lack of research attention paid by scholars to this area is evident from the small number of articles published in academic journals, which is in sharp contrast to the prevalence of outsourcing by MNEs in the business world. One of the reasons for the lack of empirical investigations might be due to the difficulty of obtaining data. Ivarsson and Alvstam (2004) also suggested that "*owing to difficulties in collecting relevant data, there are few empirical studies of the extent to which TNCs provide their suppliers in developing host countries with technology assistance*" (p. 242). The situation has slightly improved with some empirical studies conducted in Singapore (Wong, 1992; Brown, 1998), Malaysia (Giroud, 2000) and Northern Ireland (Crone and Roper, 2001) and India (Ivarsson and Alvstam, 2004). However there are few empirical investigations focusing on MNEs' local linkages in China.

Given that China is becoming one of the most important destinations to which MNEs outsource their manufacturing and services, it provides us with a good opportunity to observe the direct linkages between MNEs and local Chinese firms and how the relationships influence the indigenous local firms' development. It is believed that foreign MNEs potentially contribute to a more viable economic climate by associating closely with local enterprises, and assisting entrepreneurs by upgrading their technology and improving their

organizational skills (Lin et al., 1999). As local enterprises face continual reform and market rationalization, productive foreign multinational–local linkages offer them a unique, yet important, alternative development path – providing employment, tax revenue, and crucial expertise needed to build market-based and competitive firms, with advanced technology and modern organizational techniques. In particular, due to the inherent competitive strengths of MNEs, MNEs’ linkages with local indigenous supplier firms have empirically proven to be significant mechanisms for promoting the local firm’s technological development, competitiveness and growth (Wong, 1992; Foray and Lundvall, 1996; Matthews, 1996). The significant potential of such a linkage between FDI and local economic development is emphasized by a UNCTAD (2001) study.

‘A key factor determining the benefits the host countries can derive from FDI are the linkages that foreign affiliates strike with domestically owned firms. Backward linkages from foreign affiliates to domestic firms are important channels through which intangible and tangible assets can be passed on from the former to the latter. They can contribute to the upgrading of domestic enterprises and embed foreign affiliates more firmly in host economies’ (p. 282).

Based on the importance of this research topic and the noticeable research gap identified, the present study attempts to provide an in-depth, scholarly examination of Chinese supplier firm’s vertical partnerships with foreign MNEs. Specifically, it endeavors to investigate the following questions:

1. How is the vertical relationship between MNEs and local suppliers formed and developed?
2. What types of knowledge are transferred in the process of such relationship development processes and why?
3. To what extent is the knowledge transferred assimilated by the local Chinese firms?
4. Does the ownership structure of the Chinese firm affect its knowledge

utilization; if so why?

The significant practical implications of the research questions in the context of China are as follows. Whilst foreign MNEs have entered China largely for market and efficiency-seeking purposes (Dunning, 1993), they also recognize that quality components, produced at a required scale, are necessary to continue and expand their global sourcing requirements. As such, the skills on the Chinese market may need upgrading to fulfill these supply needs in terms of both improving component quality and manufacturing processes. On the other hand, knowledge transfer is very desirable for the Chinese suppliers and the Chinese government because opening up the Chinese market means the economy will be subject to the forces of global competition. The Chinese government has tended to view foreign MNEs as potential sources of knowledge – technological, managerial, and organizational, recognizing that if knowledge is transferred to the indigenous Chinese economy, it can assist in China's economic growth and development. Indeed the acquisition of foreign advanced technology has long been one of the most important objectives behind China's inward FDI promotion policy. At the local firm level, it is also in the interests of the local Chinese suppliers to get access to, and absorb as much knowledge as possible from the foreign customer in order to prepare themselves to compete on the global stage. In addition, the long-term linkages with strong foreign MNEs can emphatically provide the local Chinese firms with a platform for long-term development and growth.

Despite the potential benefits of knowledge transfer to both the foreign investing company and the local host, previous research (e.g. Giroud, 2000) has demonstrated that MNEs are not always willing to transfer knowledge to develop their local partners. However, in the case of China, with the strength of government policies to control the amount and type of FDI entering its economy, and moreover, its huge potential as a market, it may be the case that foreign

MNEs are more willing to transfer knowledge to China in order to build up a degree of goodwill than they have been in other parts of Asia. Their willingness to transfer knowledge may also be heightened by the necessary, but insufficient need to establish ‘guanxi’ with various local agents, in preparation for more in-depth investment in future. Thus there are reasons to believe the knowledge transfer between foreign MNEs and their indigenous Chinese suppliers will occur. However the conditions which encourage this to occur, the extent of knowledge transferred, the processes underlying the transfer, and the implications to the growth of these Chinese supplier firms are far from clear. The understanding of these issues may have practical implications regarding how to manage inter-firm vertical knowledge transfer processes in China. More importantly, recommendations to Chinese supplier firms as to how to learn and benefit from such vertical relationships with foreign multinationals can be informed by in-depth case analysis. Finally, government policies regarding how to encourage foreign firms to transfer knowledge to their local partners are also expected.

The empirical investigation also attempts to advance our theoretical understanding of inter-firm cooperation. Both economic approaches, such as transaction cost economics (TCEs), resource-based view (RBV), and social perspectives, such as the principles of reciprocity and trust, are integrated in exploring the unfolding inter-firm relationship. Instead of treating inter-firm knowledge transfer as a solely input-output flowchart (Autio and Laamanen, 1995), the in-depth exploration of the relationship development process will provide us with a dynamic picture of how the knowledge transfer embedded in the vertical cooperation evolves. A robust and adequate explanation is expected by differentiating the development stages of the vertical relationship and integrating them with a dynamic yet unified theoretical explanation. Moreover, the study also differentiates the local indigenous suppliers by their ownership and assesses whether they have different cooperative behaviors and attitudes in

knowledge learning and utilization.

1.4 Structure of the thesis

The thesis takes the following structure. Chapter 2 presents an inter-disciplinary literature review on the central issues of inter-firm vertical cooperation and knowledge transfer. Chapter 3 presents a theoretical framework built out of the literature review, which is used to guide the empirical investigation of the present study. Chapter 4 provides a detailed justification and description of the research methodology, methods, data collection and data analysis processes. Research findings are presented in chapter 5, 6, 7 and 8. Chapter 9 presents the hypotheses developed from the research findings for future quantitative verifying. Finally chapter 10 discusses the strengths and weaknesses of the study and justifies its empirical and theoretical contributions.

Chapter 2 Literature review

2.1 Introduction

This chapter presents an inter-disciplinary literature review on the central issues of inter-firm vertical cooperation and knowledge transfer. First of all, an economic perspective based on transaction cost economics (TCE) regarding inter-firm cooperation is discussed. Weaknesses in its explanatory power are supplemented by using the resource-based view (RBV). As this research is issue driven, the two heterodox theories are therefore combined as complements. Secondly, a sociological perspective of inter-firm cooperation is compared with the economic perspective. Some empirical studies investigating the unfolding inter-firm relationship are then discussed to highlight the synergies of the two perspectives. In addition, empirical studies on knowledge transfer in varied contexts are presented to highlight the most robust empirical findings that may be relevant to the present study. Finally, a review of the impact of ownership structure on the firm's performance in the Chinese context is discussed to understand their potential differences in cooperating with and learning from their MNEs customers. The purpose of this chapter is to provide the whole empirical investigation with multiple theoretical threads. The next chapter will then display a unified analytical framework drawn upon these diversified literatures as a guide for the empirical investigation.

2.2. An economic perspective of inter-firm cooperation

Transaction Cost Economics (TCEs) was originated by Coase (1937) with the attempts to uncover the 'shadowy figure' of 'the firm' in economic theory. His rationale for the existence of firms is that: 'firms will emerge to organize what would otherwise be market transactions whenever their costs were less than the

costs of carrying out the transactions through the markets' (1937, p. 7). As such, the main reason why it is profitable to establish a firm is that there is a cost of using the price mechanism (1937, p. 390). Coase defined transaction costs as follows:

"...in order to carry out a market transaction it is necessary to discover who it is that one wishes to deal with, to inform people that one wishes to deal and on what terms, to conduct negotiations leading up to a bargain, to draw up the contract, to understand the inspection needed to make sure that the terms of the contract are being observed, and so on (1988, p.6)

Although Coase's argument is plausible, his theory suffered from a lack of operationalization and supporting empirical evidence. Only some thirty years later, with the development of the property-rights approach, transaction-cost economics, and contract theory, was a more elaborate microeconomic analysis put forward to explain the deeper problems of the firm as an enterprise, capital structure, and ownership issues (Furubotn and Richter, 1998, p. 328). Among the scholars who have contributed to the advance of TCE, Williamson's works (1975, 1985 and 1999) have made substantial contributions to the empirical development of the approach. There are two behavioural assumptions in his model: bounded rationality and opportunism and three variables featuring in 'transactions': frequency, uncertainty and asset specificity. Of these, asset specificity has been given most significant explanatory power (Williamson 1975, 1979; Klein, Crawford, and Alchian 1978; Grossman and Hart 1986). The central argument is that the greater the levels of transaction specific investment in an exchange, the greater the threat of opportunism. The greater the threat of opportunism, the less likely that market governance will effectively reduce this threat and the more likely that hierarchical forms of governance will be chosen. In short, Williamson's answer to the question 'why the firm exists' is that hierarchy arises to resolve the problems of market governance with transaction

specific investments under conditions of uncertainty. Once under common ownership, the two parties in the exchange have less incentive to seek advantage over each other. Disputes are less likely to occur because hierarchy facilitates the development of codes and language that are unique to a firm which allow for more accurate and efficient communication (Arrow, 1974; Williamson 1975). As such, TCEs focuses on cost minimization as the organizational imperative; or, as Williamson (1975, 1985) argued that economizing is the best strategy.

However, resource-based theory takes exception to this emphasis. The resource-based logic suggests that creating and exploiting transaction specific investments under conditions of uncertainty is essential if firms are to gain long-term success. Avoiding opportunism and minimizing governance costs are a secondary consideration because minimizing transaction costs is of relatively little benefit if a firm has no transaction specific assets that are highly valued by the market (Barney and Hesterly, 1996; Foss, 1999). Similarly, many scholars suggested that there are trade-offs between the optimal organization of production, transaction and innovation process and therefore economizing transaction costs cannot be the sole criteria in determining the optimal organization form (Zajac and Olsen, 1993; Demsetz, 1993; Lundvall, 1993; Campbell, 1996; Cantwell, 2000; Hennart, 2000, etc).

Empirical investigations based on Williamson's model yielded mixed results. For instance, Joskow (1987) found the structure of vertical relationships between buyers and sellers is strongly affected by variations in the importance of relationship-specific investments, which include site specificity and physical asset specificity by the supplier firms. In a similar vein, Subramani and Venkatraman (2003) also found powerful evidence of the value of intangible assets in interorganizational relationships. The intangible assets contain two components: business process specificity and domain knowledge specificity. It is argued that specific investments in intellectual capital are more influential on

governance decisions than those in physical assets. Physical asset specificity was a significant determinant of governance in the industrial age but domain knowledge specificity has the potential to be a key determinant of governance choices in the knowledge-driven economy.

However, in a very influential study conducted by Walker and Weber (1984), production cost is found to be an additional important factor in determining the decision of ‘make’ or ‘buy’. That is, the transaction cost scenario does not allow the influence of the production cost in such decision-making. In Madhok’s (1996) words: TCE literally neglects ‘production cost’ or simply treats it as ‘stylized’ across firms. Furthermore, Vang (2000) and Madhok (2002) have suggested that to study the decision of ‘make or buy’, we have to base the enquiry on a Smithian approach (Smith, 1976) explaining the learning (dis)advantages of specialization (Loasby, 1999). In transaction costs economics *the market* is supposed to be the chosen mechanism for coordination unless ‘hold up’ problems of the firm occur. In the division-of-labor approach, no such priority exists. The starting point is the division of labor between *individuals*. The individual who specializes in fewer tasks can focus his learning, thus improve the efficiency by developing new tools and techniques, as argued by Smith. Individuals freely establish and join in different firms based on the fit between their specialization and the firm’s production function. In turn, firms also improve their efficiency by focusing their learning. This means that firms should specialize in production where they have comparative advantages and buy from other firms where they possess comparative disadvantage.

While in TCE, ‘make’ refers to internal production, ‘buy’ often refers to buying from another firm although it is more often abstracted as ‘*the market*’. The completely decentralized market where every individual is acting as his own hierarchy is rare. That is what Madhok (2002) meant by ‘market exchange most amounts to exchange between firms (p. 539)’. To one firm, other firms often

represent the 'market'. As such, a complete understanding of the 'make or buy' needs the exploration of the differences between firms. The division-of-labor approach shows that firms can take advantage of their own learning environments and engage in networks relationships with other firms that will be able to deliver cheaper or better products due to the learning advantage associated with their specialization. Therefore the costs of using the market also depend on the in-house competencies that are built up through direct participation in the production. The theoretical inability of TCE in featuring the production cost into its consideration turns out to be highly significant as has been reflected in several empirical studies of inter-firm cooperation, where the transaction cost minimizing scenario is clearly unable to explain the reality about when firms are willing to invest heavily in their cooperative relationships. This will be discussed shortly.

In response to the recent proliferation of network organizational forms that do not fit neatly into either the market or hierarchy frameworks proposed by Coase (1988), Williamson (1991) has tried to come to terms with these networks forms by recognizing what he calls the hybrid form of governance. Hybrids combine aspects of market transactions and characteristics of hierarchies and fall between the two alternatives on a continuum. The paper concluded (Williamson, 1991) that the hybrid form of organization is not '*a loose amalgam of market and hierarchy but possesses its own disciplined rationale*'. However, hybrid forms are essentially the product of a combination of intermediate level incentives, adaptability and bureaucratic costs. As such, the transaction cost minimization scenario remains. As Foss (1999) pointed out, TCE has difficulty in studying inter-firm relationships; hybrid covers too broad forms at an abstract level and much microeconomic specificity is lost. Moreover, production knowledge and organizational knowledge need to be intertwined to understand the differences between firms in managing production and transactions.

The growing number of empirical studies of a variety of hybrids has substantially challenged the TCE-based view. For instance, Dyer's (1997) in-depth investigation of the automobile industry revealed how the nature of interaction between Japanese automakers and their suppliers shifted from a more safe-guarded to a more committed and mutually oriented one. This shift was characterized by a substantial increase in the investment in interfirm co-ordination mechanisms and relationship-specific assets (e.g. plants, equipment, systems, processes and people) on the part of both parties. The shift in attitude and behavior increased the value attained by the Japanese automakers through their relationships with their suppliers, both in terms of synergies, as well as, eventually lower transaction costs. Similar arguments have also been made by other numerous scholars (Joskow, 1987; Grandori, 1995; Maskell, et al., 1998; Jap and Ganssen, 2000; Dahlgren, 2002) and their common point is that increased value and benefits resulting from high asset specific investment actually helps reduce conflicts and opportunistic behavior. As such, a transaction 'cost' argument turns out to be a transaction 'value' perspective (Zajac and Olsen, 1993; Foss, 1999) in defending that joint value maximization, and the processes by which exchange partners create and claim value, are a more important concern compared to simple transaction cost minimization. Foss and Foss (2004) have insightfully summarized that we need to understand two issues about economic organizations: how economic actors increase the pie and how they divide it. The former stands for value creation and the latter concerns the value distribution. TCE exceedingly concerns the latter and RBV only studies the former (Foss, 1999). However, the two cannot be neatly separated and a sound analysis of economic organizations calls for the combination of the two.

These empirical studies, and concerns that TCE does not consider the production cost, lead to a more fundamental question: can transaction cost minimization explain the firm, the market and all sorts of hybrid organizational

forms? While division of labor is a necessary condition for trade to exist, trade can be organized by the (decentralized) market. What can explain the emergence of the firm? It seems that transaction cost economics only, at most, provides us with a partial tool in understanding the development of trade and the emergence of economic institutions, such as the firm. In addition, the empirical studies quoted above show that a complete understanding should simultaneously consider all *costs and benefits* in its analysis and reveal under what circumstances each organizational form is a better choice in organizing economic activities (Demsetz, 1993; Hennart, 2000). What the leading economists (Liu and Yang, 2000; Yang, 2003) suggested is right: endogenous transaction cost is not essential for telling the story of the firm. The essence of the story is why endogenous or exogenous transactions costs of goods are replaced with endogenous or exogenous transaction costs of labour as the institution of the firm emerges.

In addition, traditional TCE tends to understate the costs of organizing transactions within the firm (Jones and Harrison, 2001). The use of authority is assumed to resolve internal disputes more effectively than the market. Clearly, this is not always the case. Lengthy and costly haggling may often be more severe within a firm than between firms. As Eccles's (1985) study of transfer pricing showed, internal organization is often susceptible to costly bargaining and influence behavior. Indeed, TCE neglects the fact that the firm is also influenced by competition in the labor market. Theoretically, the belief that the firm, as a hierarchical form, is running with a different scenario to that of the market is only a fiction. The constitution of the firm is based on free association and employees (and employers both) can withdraw their contract subject to labor market competition. As a result, a different scenario from Williamson's is in need to assess the firm and the market as alternative forms of governance.

Therefore, the introduction of transaction costs is an important step beyond

standard (neoclassical) economics. But this advance has not yet moved completely. Yang (2003) has pointed out that the division of labour and the rendered transaction costs are the two fundamental mechanisms promoting/demoting trade. When positives outweigh the negatives, trade occurs, however trade can occur with the economic institution of the firm *and* without. Therefore it is not the transaction cost *per se* that determines the organization form. The ultimate criteria should be the ratio of economic rents based on specialization to the transaction (and coordination) costs involved. A new avenue for studying the firm has been pioneered by Liu and Yang (2000), Yang (2003), and Lam and Liu (2004), etc. However, little dialogue has been made between the newly developed economic theory and business/organization studies.

Another criticism often levied at TCE is that it understates the role of social and cultural forces in economic activity (Granovetter, 1985). While TCEs seeks to make realistic assumptions about human nature, it does take a decidedly calculative view (Williamson 1993) of humans that discounts the impact of social relationships and culture. Granovetter (1985) pointed out that, contrary to this atomistic view of economic exchange, transactions are embedded within networks of social relationships. These transactions are influenced by expectations that are formed by the history of the relationship. Abstract transaction dimensions such as aspect specificity and uncertainty do not alone determine the governance arrangements that we observe. These views from sociologists will be discussed in detail in the next section.

2.3 A sociological perspective of inter-firm cooperation

The mainstream sociological perspective of inter-firm cooperation is based on network theory. Networks are viewed as a form of governance, as social glue

that binds individuals together into a coherent system (Powell, 1987, 1990; Sabel, 1991, etc). Network governance structures characterize the webs of interdependence found in industrial districts and typify such practices as relational contracting, collaborative manufacturing, or multistranded interfirm alliances. There is an extensive division of labor in a network which means that firms are dependent on each other. Coordination between firms is not brought through a central plan or an organizational hierarchy, nor does it take place through the price mechanisms in the traditional market model. Instead coordination takes place through interaction between firms in the network, where price is just one of several influential conditions. As such, the inter-firm cooperation, as one of the most popular hybrid forms, is a special type (bilateral) of network between firms. Clearly, network theory provides a different perspective from what TCEs suggests.

One important aspect of network theory is that the firm gets access to external resources through its network positions. This idea has a profound link to exchange theory in sociology by Lin (1982). It is suggested that at any point in time, the firm holds certain positions in the network; these characterize their relations to other firms. Positions nearer to the centre of the social structure not only have greater access to, and control of the valued resources but also more valued resources are intrinsically attached to the positions. Since the development of positions takes time and effort and since the present positions define opportunities and constraints for the future strategic development of the firm, the firm's position in the network is perceived as particularly controlled by intangible market assets. Market assets generate revenues for the firm and serve to give them access to other firms' internal assets. Because of the interdependencies between firms, the use of the asset in one firm is dependent on the use of other firm's assets.

Along this line of thought, the network research also suggests that position

renders power. As such, 'power' represents one of the key divergences between sociologists and economists. Sociologists believe that the more centralized position a firm takes in a network, the more advantages it has to access the resources that are needed for its development. But some economists relentlessly refute this idea. Williamson (1985, p. 238) suggested that the main problem with power is that 'the concept is invoked to explain virtually anything'. He further contended that 'power enthusiasts have not demonstrated that significant organizational innovations – those in which large transaction costs saving are in prospect – are regularly defeated by established interests' (Williamson, 1985, p. 124-125).

In addition, the trust and reciprocity principles are widely discussed in the sociological approach as well. Trust and other forms of social capital are perceived to be moral resources that coordinate economic activity in a fundamentally different manner to physical capital. However, trust does not imply blind loyalty. Indeed, thoughtful commentators stress that trust must be deliberate or even calculative (Axelrod, 1984; Sabel, 1993; Scharpf, 1993). Trust is gradually built up by cooperation, in which consensus emerges as a by-product of success rather than as a precondition for it (Sabel, 1993). Seen in this light, interfirm collaboration that exemplifies trust-based governance has an enormous advantage. Generalized expectations of cooperation radically reduce the cognitive complexity and uncertainty associated with most business dealings. But not all forms of trust-based governance operate in the same fashion. In industrial districts the bonds of community are forged out of ties of place and kinship. Hence trust builds on norms of reciprocity and civic engagement (Putman, 1993). Therefore, network approach views an interfirm relationship a mutual orientation of two firms towards each other. This implies that the firms are prepared to interact with each other and expect each other to do so too. As such, it is believed that there is an important social element, such as trust and the reciprocity principle, embedded within the relationship development process.

However, it does admit that important technical, logistical, administrative and time elements are also at work.

After reviewing the main thesis of network theory, the deficiencies of the approach are summarized as follows. Firstly, it is a very descriptive rather than analytical approach. For instance, to say firms are dependent on each other is hardly surprising. With ever-refined divisions of labor in society, who is not dependent on others? This approach does not enquire how the dependence comes into being in the first place. Secondly, its emphasis on ‘position’ and ‘power’ in getting access to required resources appears to be persuasive yet superficial. We need to make sense of what drives the firm to reach a certain position and obtain certain degree of power. If all economic agents or actors start from being identical, what explains the developed divergence? As such, a curious irony of network research is that despite its focus on the causal importance of structures of relations among actors rather than properties of actors, the research treats network positions and power as properties in themselves (Davis and Powell, 1992). The remedy for the apparent primacy of method over substance in the network approach is to bring the content of relationships, rather than the merely structure back into the analysis. Thirdly, it is silent about how the economic institutions such as the firm and the market come into being in the first place. Instead, it takes firms as given economic actors and describes inter-firm long term cooperation as special case of market behaviour.

Fourthly, to state that important concepts, such as ‘trust’, are advocated only by sociologists is not fair. As a matter of fact, economists as early as Arrow (1969, 1974) have recognized the profound difficulties of the price system. Arrow noted that trust is an important *lubricant of a social system* (Arrow, 1974, p. 23). It saves a lot of trouble to have a fair degree of reliance on other people’s word (Arrow, 1974). More importantly, Arrow suggested (1969, p. 62) that the lack of

trust is one of the causes of economic underdevelopment. The observation made by Arrow represents recognition of the instrumental role of morality - the overlap of economics and practical ethics. On the other hand, some economists do not like concepts such as trust. For example, Williamson (1993) refuted the necessity of this concept in economic studies. He ascertained that 'calculative trust' is a contradiction in terms, and non-calculative trust exists between family friends and lovers. (1993, p. 471). I believe such argument is narrow-minded because trust can be also an issue between family members and friends. In fact, game theory has wide applications in the areas of anthropology and physiology, where the relationships between family and partners are extensively studied (e.g. Darkins, 1989). In addition, the economic approach to the family has also been pioneered by Becker (1976, 1981). It implies the issue of trust does not stop at the 'conventional' economic boundary and therefore the argument that 'personal trust is too restricted to be integrated into the theory of exchange' (Williamson, 1993, p.471) does not hold. As a matter of fact, all sorts of human behaviour can be perceived as various types of exchange. The only difference is the contents of exchange are different from those in conventional economic studies; however it does not stop the economic approach studying these different phenomena. Becker (1976) suggested that economic approach can be used to seek to understand human behavior in a variety of contexts and situations and the definition of economics in terms of material goods is the narrowest and the least satisfactory.

With the point view that trust can reduce transaction costs and facilitate cooperation, no clear arguments are conclusive as to whether the social element, such as trust, can supplement or substitute the function of a contract in economic activities. Mollering (2002) provided one of the first empirical investigations to explore this question. The research found that the widely accepted transaction cost argument for trust as a parameter reducing hierarchy is dismissed. Market, hierarchy, and trust represent alternative mechanisms that

can be combined in a variety of ways for facilitating economic exchanges. It is explained that there are triadic forces (namely, hierarchy, market and trust) promoting economic coordination and economic theory has to be more complex and, notably, more pluralistic if the concept of trust is to be incorporated fruitfully. This is to a large extent due to the nature of trust, as it represents a phenomenon on the edge of reason that manifests itself in idiosyncratic ways via trust, social influences and the practical difficulties of intended but limited rationality. This affects the process of transacting more than the constitution of transactions. The author also suggested that trust is not easily quantifiable and therefore this area of research can be expected to benefit greatly from qualitative studies.

Poppos and Senger (2002) conducted similar research and concluded that formal contracts and relational governance were complements. They argued that asset specificity emerges when sourcing relationships require significant relation-specific investments in physical and/or human assets. The presence of these specific assets transforms an exchange from a world of classical contracting in which the 'identity of parties is irrelevant' into a world of neoclassical contracting in which the identity of exchange partners is of critical importance (Williamson, 1991). The continuity of an exchange becomes vital to its effectiveness. The mechanisms through which relational governance attenuates exchange hazards are both economic and sociological in nature. Economists emphasize the rational, calculative origins of relational governance, emphasizing particularly expectations of future exchanges that prompt cooperation in the present. Sociologists emphasize socially derived norms and social ties that have emerged from prior exchange (Uzzi 1997: 45). Trust is therefore considered a trait that becomes embedded in a particular exchange relation. In essence, once an exchange partner is granted 'trustworthy' status, they are expected to behave in a trustworthy fashion in the future. For economists, the trustworthy status is conditional upon the benefits that accrue

from trustworthy status over time contrasted with the benefits that accrue from self-interested moves that break from the trustworthy status). This logic, common to game theory, argues that expectations of pay-offs from future cooperative behaviour encourage cooperation in the present (Baker, Gibbons and Murphy, 2002). Although Williamson (1996, p.97) concluded that the term trust is misleading, given the above economic logic, arguing that 'because commercial relations are invariably calculative, the concept of calculated risk (rather than calculated trust) should be used to describe commercial transactions'. Nonetheless, it is not hard to see that there is considerable overlap in the arguments of sociologists and economists surrounding trust and cooperation and any systematic distinction might be fruitless. Both sociologists and economists, for instance, argue that repeated exchange encourages effective exchange, and that repeated exchange provides information about the cooperative behaviour of exchange partners that may allow for informed choices of who to 'trust' and who not to 'trust' etc.

It is noted that 'trust' as a distinct concept in economic studies represents important progress in the area. A much more complicated picture of economic organization is found to be governed by both economic and social forces, yet economic forces play a prominent role. However, concepts such as trust and power advocated by sociologists, do not sufficiently explain the difference between intra-firm exchange and inter-firm transactions. TCE has clearly made a big step out of the neoclassical production theory, where only the price and quantity are the major concern and organizations are mere actors delivering the numbers for economists to calculate the equilibriums. Yet TCE only fulfils a partial advance from neoclassical economics and it needs to be complemented with classical Smithian theory to complete a circle of the dynamic understanding of economic organizations and their interactions. Essentially, what RBV has been advocating in recent years is consistent with Smithian viewpoint of economics, where economizing is only an half of the story and the

other half is about value creation and dynamic capabilities.

2.4 Research on the development process of inter-firm relationship

This section will discuss how some studies have attempted to combine both the economist's perspective and sociologists' understanding to make sense of how the inter-firm relationships are developed and maintained over time³. Most of them are inductive, fieldwork-based investigations. The value of these studies, both conceptually and empirically speaking, is that they investigate their research questions with limited presumptions and fieldwork investigation often generates rich understanding of the issues under investigation. For instance, through an inductive field study of seven dyadic relationships established by high-growth entrepreneurial firms, Larson (1992) found that apart from economic incentives, the social dimensions of the transactions are central in explaining the formation and maintenance of the exchange structures. A process model of network formation was presented with three sequential phases: preconditions for exchange, conditions to build, and integration. The seven dyadics under investigation were found to be engaged in relatively stable sustained relationships characterized by multiple transactions and a high degree of cooperation and collaboration. Formal contracts, which might be expected to provide control, were only rarely discussed by the informants. More interestingly, the traditional picture of internally driven firm growth was replaced by the creative use by entrepreneurial organizations, of networks to gain footholds in markets and to serve as critical conduits to enhance revenues, gain information and technology, and stimulate innovation.

Claiming that process is central to managing interorganizational relationships (IORs), Ring and Van de Ven (1994) also developed a process model of

³ It is noted that both network theory and TCEs can be applied to the intra-firm context. However, as the focus of this study is on inter-firm cooperation, the theoretical discussion and empirical review have concentrated on the inter-firm context.

cooperative IOPs based on the observation of the sequence of events and interactions among organizational parties that unfold to shape and modify and IOPs over time. A three-stage and cyclical model including negotiation, commitment and execution of the relationship was developed. Following the core idea of transaction cost economics, efficiency is the major criteria underlying standard models of the unfolding relationship. On the other hand, it added 'equity' as the other important criteria for assessing a cooperative IOP. 'Equity' was defined as fair dealing, which does not require that inputs or outcomes always be divided equally between the parties. Instead, 'equality' was perceived in a processual manner. Trust is also discussed within the development of their model: (a) a business risk view based on confidence in the predictability of one's expectations and (b) a view based on confidence in another's goodwill. But the model only concerned trust of the second type, which is believed to play a very important role in initiating and facilitating the social psychological contract that binds the partners. As a conceptual effort to understand the development process of IOPs, this work has clearly considered the insights generated from both economic theories (e.g. Coase, 1937; Williamson, 1975), sociology (Coleman, 1990; Powell, 1990) and management scholars (e.g. Madhok and Tallman, 1998; Barney, 2001; Jones and Harrison, 2001, etc). In this sense, it is a very eclectic model, which, if applied in empirical studies, researchers should consider the specific contexts of cooperative IOPs. For instance, in this global economy, cooperative IOPs are increasingly occurring between parties from different nation states, culture and institutional environment. In addition, vertical IOPs and horizontal IOPs might require varied perspectives in assessing the specific cooperative motivation and activities. The authors suggested that these elements are beyond the scope of their model, but have to be considered when specific research is to be conducted based on this model.

Recently, supply chain literature starts paying attention to how the supplier

firms benefit from the cooperation with their customer firms. For instance, Bessant, et al (2003) asserted supply chain as a mechanism for upgrading and transferring appropriate practice to supplier firms. The study drew on a literature survey and a detailed study of 6 UK supply firms and found that supply chain linkage has different stages in the process of development. It is found that a setup phase where a variety of drivers converge around a commitment to action, often led by a champion individual or agency. When the relationship evolves to the operating phase, the learning framework becomes established and begins to address the chosen learning agenda concurred by two sides. However, the relationship will have to face the challenge of maintaining momentum and a high risk of failure afterwards. The research showed a dynamic and potentially divergent path for the firms that are temporarily in the supply chain cooperation.

In a different study, the same research group (Harland, et al., 2004) presented a conceptual model for the creation and operation of supply networks. It is drawn from strategic management, channel management, industrial marketing and purchasing, organizational behavior and supply-chain management. The authors identified four different types of contextual factors relating to supply networks: market environment, nature of product and manufacturing process, network structure and focal firms' network strategy. The model was tested in eight in-depth case studies and a validating survey of 58 focal firm networks. The study concluded that supply networks are nested within wider interorganizational networks and consisted of interconnected entities whose primary purpose is the procurement, use and transformation of resources to provide packages of goods and services. From this reference, it is still very much from a *'buying'* (customer) perspective.

It is found to be difficult to conduct an 'appropriate' literature review with respect to 'inter-firm' cooperation because of the large number of different types of hybrid organizations which are often based on essentially different purposes.

In contrast, qualitative studies concerning the process of relationship development are too few and scattered in completely different areas, such as supply chain management, organizational learning or marketing. Considering the extreme ‘hybrid’ nature of the area, the above review provides a selected overview of the literatures which are believed to have provided an innovative avenue in revealing a more complete account of the network organizational forms by combining both economic and social elements. They give both methodological and theoretical stimulation to my research design. Specifically, the processual perspective in understanding relationship development is stimulated by these studies. In the next chapter, a processual view hypothesising the relationship development between MNE subsidiaries and their Chinese suppliers will be presented as the important contextual background of how inter-firm knowledge transfer takes place over time in the context.

2.5 A review of empirical studies on knowledge transfer

The focus of this section is to review the empirical research on knowledge transfer. I have organised this review according to the specific contexts involved. Knowledge transfer studies in the intra-firm and inter-firm context are presented in 2.5.1 and 2.5.2. Section 2.5.3 reviews a small stream of empirical studies addressing MNEs’ vertical linkage with, and knowledge transfer to local firms in a host country. It is noted that knowledge transfer has become a significant research topic. The dedication of whole volumes of some important academic journals to this topic has clearly shown its importance. While it will be demanding to provide an exhaustive and up-to-date review, this literature review is believed to have revealed the strengths and weaknesses of the studies that are most relevant to my research with the purpose of building up a research framework for the empirical investigation.

2.5.1 Intra-firm knowledge transfer

Substantial attention has been paid to the knowledge transfer of MNEs as they face more pressure for integrating and disseminating knowledge than firms that have a more national orientation (Foss and Pedersen, 2004). This stream of research explores how knowledge transfer *within* an organization is contingent upon the characteristics of that knowledge, the sender, the recipient, and their mutual relationships (Eisenhardt and Santos, 2002). This is an important stream of research because the efficacy of knowledge transfer within the firm is a primary rationale for knowledge-based view as both a theory of organization (Kogut and Zander, 1992; Grant 1996a; Kogut and Zander, 1996) and theory of strategy (Grant, 1996b).

In pioneering the theory of the knowledge-based view of the firm, Zander and Kogut (1996) established their empirical testing on analysing the speed at which manufacturing capabilities related to product innovations were transferred across borders by Swedish firms. The impact of knowledge characteristics and the competitive environment on the speeds of both internal transfer and external imitation are simultaneously investigated using a detailed multidimensional construct for knowledge, including codifiability, teachability, complexity, system dependence and product observabilities by competitors. It was found that greater codifiability and teachability were associated with faster transfer, but not with faster imitation. The speed of imitation was positively related to the knowledge spillovers among firms and to the levels of common knowledge and competence across the industry. In addition, it was found that competition made firms more efficient in transferring capabilities and that continuous innovation impeded imitations by competitors.

Research conducted by Szulanski (1996, 1999) attempted to understand the causes of 'stickiness' in the transfer of complex best practice. Knowledge

transfer was conceptualized into four stages, and the impediments, namely, the 'stickiness' of knowledge transfer in different stages were hypothesized and tested based on descriptive data from a questionnaire survey. Important factors of knowledge transfer within MNEs, such as the attributes of knowledge (codification and ambiguity etc), transmission channels, the motivation and cognitive factors of partner units were routinely combined into research models and consistently proved to have an affect on the extent of knowledge transfer in these studies. His studies concluded that knowledge variables, instead of motivation factors, were the primary barrier to knowledge transfer within the firm's boundary. In a similar vein, in understanding the influence of the characteristics of knowledge in its transfer, Birkinshaw, et al (2002) found that knowledge characteristics had a significant influence on the communication structure needed for the smooth transfer. They conceptualized 'embeddedness' as a distinctive characteristic of knowledge different from 'tacitness'. System embeddedness refers to the extent to which the knowledge in question is a function of the system or context in which it is embedded. It consists of many interacting components, such as the level of interdependence between individuals and teams working on related activities, the level of experience of those activities, and the site specificity of an activity. They found that the more system embeddedness of the R&D unit's knowledge, the higher the level of unit autonomy. As such, their research concluded that system embeddedness was a strong predictor of organization structure.

In contrast to the body of research above that emphasized knowledge characteristics, Lord and Ranft (1998) found that organizational structure and incentives were both significant factors affecting the effectiveness of knowledge transfer. Based on a survey of 104 market entries of multinational companies, the authors analysed the impact of knowledge characteristics and organizational variables on the internal transfer of knowledge about local markets. They concluded that, alongside tacitness of knowledge, the organizational structure,

communication mechanisms, and incentives were also significant. Gupta and Govindarajan (2000) also analyzed knowledge flows across 374 subsidiaries within 75 multinational corporations in a very comprehensive study of knowledge transfer in MNEs. The independent variables included the strategic value of the knowledge, motivation and absorptive capacity of the recipient, and communication channels, as measured in the transfer of seven types of procedural knowledge. The authors found that knowledge flow from the parent to subsidiaries was the most pervasive type of internal knowledge transfer. Further, the communication channel, absorptive capacity, and strategic value of the knowledge facilitated knowledge transfer while incentives to share knowledge had no effect.

In a multiple method research on knowledge transfer in international acquisition, Bresman, et al. (1999) used both statistical methods and in-depth case studies to reveal the knowledge transfer process involved. Their findings were different from, but not in conflict with the previous findings. The more tacit form of knowledge was found to be best transferred through intensive communication with many visits and meetings. But when knowledge was relatively articulated, it could be made available to the other party with little regard for personal interaction. In addition, it was found that as time elapsed the less articulated knowledge, such as patents, was transferred from acquired unit to acquirer. Combining these different researches, the organizational and communication structure seemed to have interactive functions with the knowledge characteristics in the transfer process.

To sum up these empirical studies, three groups of factors are found to be important in intra-firm knowledge transfer: knowledge characteristics, motivational factors and the structure of the organization and communication channel/mechanisms. However the consistency is rather mixed. In addition, in the context of the present study their direct application is not possible. One

obvious reason is that, the *intra*-firm knowledge transfer may involve various types of knowledge flows in MNEs, such as marketing knowledge (Schlegelmilch, et al., 2003), best practice, (Szulanski 1996, 1999), and others. However, knowledge transfer in the present study is in the context of vertical cooperation, that is, only the knowledge and information which directly affect the *inter*-firm production relationship, are likely to be transferred. As a result, it may be narrower in scope than knowledge transfer in the *intra*-firm context. Secondly, *intra*-firm knowledge transfer may have much less need for repeated negotiations and attenuates the hazards of opportunism, and is thus more advantageous than autonomous trading. Better disclosure, easier agreement, better governance, and more effective team organization and reconfiguration all result (Teece, 1981). But, all these issues often play crucial roles in shaping *inter*-firm knowledge transfer. Thirdly, most studies from this stream rely on quantitative methodologies and descriptive data from structured questionnaires, which, to some extent, prevents them from conducting in-depth analysis of the mechanisms that either drive or impede transfer. Consequently, the vertical knowledge transfer between independent firms could be much more complex than knowledge transfer within firms. As Argote (1999, p.176) noted “a greater understanding of the *micro processes* underlying the transfer of knowledge is needed”. Considering the complicated nature of *inter*-firm knowledge transfer, an in-depth qualitative study might prove more fruitful in explicating the mechanism of the transfer process.

2.5.2 Inter-firm knowledge transfer

A second stream of research addresses knowledge transfer across firm boundaries through *alliances* (Mowery et al., 1996; Lane and Lubatkin, 1998; Inkpen and Dinur, 1998; Simonin, 1999b). Although I entitle this section ‘*inter*-firm knowledge transfer’, most studies reviewed here are actually in a

horizontal inter-firm context, whereas vertical inter-firm knowledge transfer is under represented. Nevertheless, this stream is significant because it sheds light on several fundamental theoretical assertions of KBV as a theory of strategy and of organization, namely that effective knowledge transfer is a source of sustained competitive advantage and that it is more effectively accomplished within organizations rather than markets (Eisenhardt and Santos, 2002). A key question that has been identified in the alliance literature is whether the extent to which knowledge is tacit or ambiguous affects the knowledge transfer processes (Inkpen, 1996; Simonin, 1999a). This, as discussed above, has been one of the key concerns of the studies on intra-firm knowledge transfer. Various dimensions of knowledge have been discussed primarily based on Polanyi (1966) who classified human knowledge as either ‘explicit’ or ‘tacit’. Explicit knowledge may be stored in databanks, standard operating procedures and manuals (Polanyi, 1966; Spender, 1996). Tacit knowledge however is expressed more comprehensively at individual and social levels, which may or may not be readily transferable to other individuals or groups (Spender, 1996). Simonin (1999b) empirically documented a positive and significant effect of tacitness on ambiguity and a negative and significant effect of ambiguity on knowledge transfer.

Inkpen and Dinur (1998) built on Spender’s (1996) framework by theorising that the *process* of transferring knowledge from an individual to a collective or shared state varies by level, from interpretation at the individual level to integration and institutionalisation at the level of the collective. This approach is akin to the spiral of knowledge creation that moves upward in an organisation, becoming more structurally embedded through the ongoing processes of sense making and condition (Nonaka, 1994). Their research provides important insights on the knowledge transfer process in the context of strategic alliances.

Apart from the objective characteristics of knowledge, partner characteristics on

the acquisition of new knowledge were also investigated. Lane and Lubatkin (1998) explored the impact of partner characteristics on the acquisition of new knowledge in the form of new skills and capabilities. Their study examined 31 R&D alliances between pharmaceutical and biotechnology companies, where the pharmaceutical firm was the learning entity and the biotechnology firm was the teacher. In their view, tacit knowledge requires substantial absorptive capacity in the recipient firm. The authors constructed a three-dimensional measure to indicate '*relative absorptive capacity*' and found that the similarity of basic knowledge was positively related to knowledge acquisition, while the similarity in specialized knowledge was negatively correlated. Presumably in the latter case, the knowledge of the sender was too similar to be of great value to the recipient. In addition, similarity in lower level management and research structures was positively related to learning, while similarity in top management and business decision structures was negatively related. Overall the results validate that knowledge transfer is dependent on measures of (knowledge base) similarity to the partner firm. Their study represents a conceptual advance on 'absorptive capacity' advocated by Cohen and Levinthal (1990) by demonstrating the importance of relative absorptive capacity in clarifying the cognitive similarities between firms that enhance learning.

Taking a slightly different avenue, Mowery et al., (1996) used data on patent citations to trace the changes in technological portfolio of partner firms as a consequence of alliances. Using a sample of 792 alliances including at least one US firm, the authors found that complex capabilities need strong ties to channel the transfer. In addition, alliances between partners with experience in related technological areas (greater sender-recipient similarity) resulted in greater knowledge transfer. The most interesting finding from this study is that the parents in a substantial subset of the alliances exhibited technological divergence. This sharply contrasted with the technological convergence that would be expected in alliances geared toward knowledge acquisitions and

capabilities transfer. Therefore one of the important conclusions was that while knowledge transfer constitutes one of the important components for strategic alliances partners, so too was the coevolution of the partners into increasingly unique roles. In this latter situation, knowledge transfer evolved into knowledge integration, while the overall system of relationships could not resemble a complex adaptive system based on partially connected and specialized partners (Anderson, 1999; Eisenhardt and Bhatia, 2001).

Taken together, these studies also indicate that knowledge transfer is affected by knowledge characteristics and by the relationship between the partners. For the former, they actually replicate the studies of internal knowledge transfer. For the latter, the 'relationship' essentially refers to the degree of similarity in the knowledge base between partners in facilitating smooth knowledge transfer and leaning. In this sense, the 'relationship' still represents relative cognitive/knowledge characteristics that influence transfer process. It therefore signals one of the deficiencies of the empirical enquiries, that is, the incentive aspect on the knowledge transfer is under-studied, which makes these studies rather theoretically barren (Eisenhardt and Santos, 2002). Clearly knowledge especially those containing competitive advantage has strategic implications for the firm. Inter-firm knowledge transfer is always faced with both costs and benefits, so that the transferor has to weigh up what knowledge and how much can be transferred. Therefore the motivation of transfer and the evolving inter-firm relationship should be critical factor shaping the boundary and intensity of knowledge transfer. It is argued that only by incorporating the analysis of this incentive component associated with inter-firm knowledge transfer, can this stream of research advance its theoretical insights as to the critical economic factors determining knowledge transfer.

At another theoretical level, most knowledge transfer studies are primarily derived from resource-based view of the firm, however, this research stream

does not sharply answer the critical questions of whether external knowledge transfer is either more difficult than or qualitatively different from internal knowledge transfer. Yet the essential assumption of KBV as a theory of organization is that knowledge transfer is facilitated within organizations as compared with markets. Few studies actually compared intra- and inter-firm knowledge transfer *per se* and thus the core theoretical tenets of KBV have not been greatly advanced by the empirical investigations. This shortcoming renders the KBV a weak theory of organization and of strategic management (Eisenhardt and Santos, 2002). In addition, Mowery et al. (1996, p.90) lamented the fact that despite a substantial literature on these topics, the empirical analysis of strategic alliances and inter-organisational knowledge transfer relies on a great extent on poor indicators of the constructs in question.

Last but not least, most of the studies quoted above concentrate on the Western context, where strategic alliances and multinational corporations are the major foci of scholars' attention. In fact, not surprisingly, most empirical investigations and the papers are from strategic management and knowledge management areas, where giant corporations could naturally be the main subjects of these researches. Studies in developing countries context and on small- and medium-sized firms seem to be insufficient. The following section therefore addresses a small number of studies researching knowledge transfer from MNEs to their local partners firms in developing countries' context.

2.5.3 Empirical studies on MNEs' knowledge transfer to local suppliers

Chung et al, (2003) investigated the two mechanisms through which FDI influences host industry productivity - technology transfer through direct linkage and the competitive pressure. Using unique data on interfirm linkages, they assessed these two mechanisms' relative importance by investigating the productivity of US component suppliers from 1982 to 1991. They found that

Japanese auto-transplants' increased presence in North America significantly influenced the industry's productivity's growth during this period. But they also found that the productivity of local suppliers that sold components to the Japanese transplants did not grow faster than the productivity of unaffiliated suppliers. It was therefore concluded that competitive pressure appears to be the primary cause of the productivity growth of local supplier firms. Nevertheless, the investigation based on differentiation between the local supplier firms with and without connections to MNEs is innovative and pointed out the importance of the competition mechanism in improving the local component industry's productivity. Rather than differentiating the local firms into MNEs connected and non-MNE connected groups, Smarzynska (2002) examines FDI's spillovers through vertical and horizontal channels. Based on a firm-level dataset from Lithuania, the author found evidence of positive spillovers from FDI taking place through MNEs' backward linkages. The results also showed that spillovers through backward linkages take place only if the technological gap between domestic and foreign enterprises in the supply industries is moderate in size. In addition, it was suggested that there was no evidence of positive spillovers taking place through multinational presence in the same sector. These two studies partially overlap with the focus of the present study although they cover a broader range of issues associated with FDI and adopt different methodologies. However, the innovative research design and sharp contrast of FDI's impact on non-affiliated suppliers and affiliated suppliers and on MNE's vertical and horizontal impacts suggest that more systematic investigation focusing on the sub-categorized component of FDI is desired to provide a more adequate and explicit understanding.

Cyhn (2002) examined technology transfer in 'original equipment manufacturing' (OEM). It was argued that the key to Korea's spectacular growth has been through its participation and learning from inter-firm arrangements with foreign MNEs. A number of firm-level case studies on the Korean

electronics industry support this argument. It was also found that the government was effective in providing financial incentives for the firms' technological upgrading efforts, but its supplying of direct technological assistance had limited success. However the investigation is largely descriptive and there are no conclusions defining the key factors either facilitating or prompting the inter-firm knowledge transfer. Another study conducted in Singapore by Brown (1998) also provided scattered evidence of MNE's knowledge transfer to their local supplier firms, but the research suffers from a similar problem, that is, the research design and methods appear to be very descriptive and research findings lack of theoretical explanations.

Giroud (2000) provided one of the first systematic investigations of foreign MNE's linkage with local firms and knowledge transfer in recent years. Based on Malaysia' electrical and electronics industry, a very (MNE) *customer-related* perspective is adopted in her study. In particular, a number of stable traits of the foreign customer firms in influencing their transfer of knowledge to local suppliers were tested. The country of origin of the customer firms received specific attention and was empirically tested as a significant factor in explaining the degree of transfer. Japanese, European and U.S.A firms were found to have various degree of willingness to transfer knowledge to their local suppliers. The differences are largely due to their different strategies in Malaysia. The research concluded that the knowledge transfer from the foreign investors to their local suppliers is quite limited. With structured-questionnaires as the main method, the research offers us important insights into the different behaviour and strategy of foreign investors in Malaysia.

However, the research neglected an important aspect governing the inter-firm knowledge transfer, namely, the inter-firm transaction and relationships characteristics, which embody the actual transfer process. Although transaction cost economics (TCE), as one of the relevant theories, was discussed in her

theoretical review, the central idea of TCEs was not incorporated into the hypothesis generation. There is a gap between the theoretical review and empirical design of the research. It is argued that stable traits of the customer firms matter, but to capture the underlying and possibly dynamic inter-firm knowledge transfer process, it is indispensable to observe the repeated inter-firm transaction, long-term co-operation, and co-ordination. Only by doing so is it possible to theoretically identify the fundamental mechanisms of the inter-firm knowledge transfer. Another limitation of the study is that the measure of the inter-firm knowledge transfer is primarily based on the existence of transfer channels, which can hardly represent the degree of the realisation of the inter-firm knowledge transfer. It might be an inherited disadvantage associated with quantitative methods in tackling the question, as some concepts, such as knowledge, and knowledge transfer are very difficult to accurately operationalize and quantify.

Wong's study (1992) drew on 'network theory' in investigating technological development through subcontracting with foreign customer firms in Singapore. Based on case study methods, he found that the position of the supplier firms in the network play a key role in determining the inter-firm knowledge transfer. That is, supplier firms with higher volume and more value-added activities gain more in technological development from the co-operative relationship. Across the data of 16 interviews, five processes of technology development are nicely summarised. But the development process of inter-firm dyadic relationship and the transfer influence on the local firms still did not receive sufficient analysis. The adoption of qualitative methods facilitated this research to provide very rich information about this topic; however, the small sample size of cases makes it impossible to make statistically valid generalisations (Wong, 1992 p.38).

Based on the opinions of senior managers within MNEs operating in Northern Ireland, Crone and Roper studied (2000) the potential for local learning from

multinational plants. They argued that 'intentional' knowledge transfers by foreign MNEs (supplier development efforts) are only likely to occur where MNE plants perceive there to be some benefits, such as improved quality, reduced costs or improved service (Dunning, 1993). From the local supplier's point of view, however, knowledge transfer from MNE customers may ultimately enable them to compete more effectively for business with other customers (Dicken, 1992). In this situation, the social benefits of knowledge transfers from MNE plant (accruing both to the MNE plant and its supplier) may exceed the private benefits (accruing to the MNE plant only). They found that quality audits, contractual arrangements and visits to suppliers are helpful to transfer knowledge. However they concluded that although the main empirical objective was to measure the impact of knowledge transfer activities on the business performance and competitiveness of local suppliers, this was a methodologically challenging exercise. Without a detailed analysis of individual supplier firms, which was beyond the resources of the study, it was difficult to make an objective assessment of these impacts.

In summary, a critical deficiency associated with these studies is that inter-firm transactions and interaction have not been explicitly identified as a core construct of analysis in studying inter-firm knowledge transfer (an exception is Wong, 1992). This dearth is serious because the long-term vertical material linkage and co-operation is both the impetus and media of the vertical knowledge transfer. The under-exploration of this dimension prevents us from having both a theoretical and practical appreciation of this phenomenon. Secondly, the vertical division of labour between firms may vary accordingly over time, and consequently the inter-firm relationship and transactions are actually a living entity. Insufficient understanding about this may prohibit us from observing the dynamic aspects associated with the corresponding inter-firm knowledge transfer. To emphasise this view, it is argued that in actuality it is not the *firms* themselves that attract each other; it is what they can

offer to each other that facilitates and sustains the relationships, and knowledge transfer. Therefore focusing on some stable traits of firms can neglect important dynamic factors influencing the vertical cooperation and knowledge transfer. The possibility of dynamic inter-firm cooperation and embedded knowledge transfer also pose a challenge to choosing an appropriate methodology to study this phenomenon. The methodological implication for this thesis will be discussed in chapter 4.

In addition, the absorption process of new knowledge in the supplier firms and its implications for their growth have not received sufficient analysis in these studies, which renders few practical recommendations to the supplier firms as how to cooperate with, and benefit from, such valuable yet demanding external linkages. As I have discussed, supply chain management studies have generated abundant recommendations for the *buyer firms* to benefit from suppliers, so it is reasonable to expect that studies taking a more supplier-related perspective should generate the same practical recommendations for the supplier firms to benefit from their customers. These weaknesses identified from current research will be considered in my conceptual framework that will be presented in next chapter.

2.6 Ownership structures of the indigenous Chinese firms – Will it make a difference?

The transition economy of China gives rise to firms with a variety of ownership structures. Apart from foreign invested firms with inflowing FDI, state-owned firms (SOEs), domestic private-owned firms (POEs), collectively owned firms (COEs) and township-owned firms (TOEs) have co-existed in this transition market dominated by the Chinese gradualist reform policy. However, it is often found that there is some degree of ambiguity with the ownership of domestic

firms. For instance, Kyngé (2000) noted that about half of all firms that call themselves collective should be relabelled as private. In addition, some SOEs having undertaken comprehensive privatisation often still identify themselves SOEs rather than POEs and lots of TOEs are literally private firms but stick to the label of TOEs for taxation reasons or other potential political and economic advantages that can be gained from the government regulations. Pyke et al. (2002) also found some confusion regarding the identification of COEs (specifically POEs may identify themselves as COEs) and dropped the differentiation in the analysis of their study. This raises a caution in identifying the real ownership of the firm under investigation. Therefore some studies (e.g. Fulin, 2001) simply categorized the domestic firms into SOEs and non-SOEs for a contrasting study of SOEs.

It is noted that with the mass privatisation of the state sector, booming FDI and a developing private sector, the private sector is playing an increasingly important role in the country's economy (Koretz, 2001). However, despite the phenomenal growth of the private sector, it is also believed that the Chinese government will not give up its manipulation of large scaled SOEs, especially those in so-called 'pillar industries' to sustain their financial domination (Yang, 2003). While the debate of the role and function of SOEs is ongoing, it should be safe to assume that for a quite long time, SOEs will retain quite a stable status in the Chinese economy. Consequently, SOEs and other ownership structured firms have often been the subject of comparison in the search for the understanding of the inefficient state sector. For example, Zheng et al (1998) found that, with regarding to technical efficiency⁴, relatively large TOEs surpassed SOEs by a large margin during their study period (1986-1990). COEs are less efficient than TOEs, but more efficient than SOEs. Meyer (2001) found that overcapacity, a persistent problem in China's state sector, means that China

⁴ Technical efficiency is defined as the ratio of observed input to output on the production frontier, given the input levels.

needs technology that leads to innovation and improvement, rather than the traditional turnkey factories employed by foreign firms. In a series of studies focusing on the industrial reform and economic growth in China, Zhang (2003) found that SOEs have the lowest profitability compared to both POEs and foreign invested firms in China. The penetrating insight is that SOEs' high capital-labour ratio negatively correlates with their profitability level. It confirmed what Meyer (2001) argued as the overcapacity problem with SOEs. However, some studies found that many assumed differences among ownership types are reducing, which suggested that SOEs have and are making progress in their management and resource utilization in the early part of this century (Pyke, et al., 2002). To sum up, there has been some scholarly consensus regarding the contrasting performance of state sector and non-state sector in China.

However, few studies examine the different behaviour of SOEs and non-SOEs in their relations with MNEs. The literature review shows that three studies explored the link between ownership structure, spillovers and absorptive capacity. Buckley, et al (2002) found that foreign presence does not positively affect the productivity of state-owned firms, in contrast to its positive effect on collectively owned firms in China. The authors inferred that SOEs exhibit a lower level of competitiveness, absorptive capability, and motivation to learn relative to COEs. Another example is from a study on Poland. Zukowska-Gagelmann (2001) found that foreign presence has a significant negative impact on both state-owned and private firms in industries with high competition in Poland. In contrast, state-owned firms benefit from spillovers if competition is low. Sinani and Meyer (2003) found that spillover is positive and significant for all types of firm ownerships in Estonia; however the magnitude of the coefficient is significantly larger for outside-owned firms⁵. Their results are consistent with the conclusion that privatisation to outside firms is beneficial for firm restructuring and corporate performance. Outside-owned firms may

⁵ Outside-owned firms refer to privately owned firms.

benefit more from spillovers because they are restructuring proactively and seeking new ideas about business management from foreign competitors. Absorptive capability depends not only on human capital but also on organizational structures and cultures (Lane and Lubatkin, 1998) and SOEs have comparatively lower absorptive capability even though they may possess advantages in terms of human capital. These studies shed light on the differences between SOEs and POEs in their learning ability and reaction to increased competition due to the presence of MNEs.

However, none of the studies above directly addresses the domestic firms' cooperation with MNEs. Since the present study primarily concerns how the domestic firms, including both SOEs and non-SOEs, cooperate with and learn from MNEs, this will be one of the first empirical investigations addressing the differences between SOEs and non-SOEs in their vertical linkages with MNEs. Similar patterns between SOEs and non-SOEs to those found in the prior studies might occur, however, it is not clear to what extent the linkage with MNEs will increase or reduce the divergent performance between SOEs and non-SOEs. The reason is that, for instance, the direct cooperation between domestic firms and MNEs might provide a convergent mechanism for the indigenous firms, despite their different ownership structures, to assimilate new knowledge from their MNE partners and therefore the differences resulting from the ownership structure might be much smaller than in the context of being influenced by competition from MNEs' presence. Or, SOEs will experience difficulty in cooperating with MNEs due to their inherited bureaucratic administrative system while non-SOEs may demonstrate higher commitment and flexibility in their cooperation with and learning from their MNE partners. As such, the ownership structure of the Chinese supplier firms is another observation angle in studying their cooperation with MNEs. It is hoped that the framed inductive fieldwork will not only show the differences between them but also can explain what accounts for these differences.

2.7 A summary

Literatures have been reviewed from both theoretical and empirical angles relating to the topic of inter-firm knowledge transfer in order to provide the empirical investigation with a reference or thread and yet allow new and inductive insights to emerge from the data. The next chapter will clarify the ‘eclectic framework’ drawn upon these literatures as guidance for the conduct of the research.

Chapter 3 Research framework

3.1 Introduction

Chapter 2 has provided a review of literatures on the central issues of inter-firm vertical cooperation and knowledge transfer. While not being repetitive, this chapter presents an ‘eclectic’ analytical framework built from those literatures as guidance for the conduct of the study. First of all, a *process-oriented* framework of the unfolding relationship is proposed to reveal the process of inter-firm relationship. The second line for the investigation is to understand how knowledge of different nature is transferred in this unfolding context. Thirdly, observation will be made as to whether the Chinese firms with different ownership structures cooperate with, and learn from their MNE partner differently. The purpose of the framework is to provide multiple observational angles for studying the central issue of inter-firm knowledge transfer. Therefore, it should be distinguished from pure deductive hypotheses generation.

3.2 Inter-firm knowledge transfer process

Among various forms of inter-firm cooperation, or in Williamson’s terms, ‘hybrid forms of organization’ (1991), vertical linkage represents one of the most significant channels where firms can capitalize on the economics of complementarity (Hirschman, 1958; Meyer, 2004). The linkage between MNEs and local firms in a host country allows even more potential for such complementarity due to the fact that they come from dramatically different (level) networks of division of labor. While developing countries have comparatively underdeveloped division of labor and specialization, MNEs from developed economies often find that either there are no such ‘local’ (host) markets for them to source required periphery products and components, or the

'local markets' are not mature enough where the local firms have inadequate production ability due to their underdeveloped specialization. Therefore a certain degree of knowledge transfer and assistance from MNEs (subsidiaries) to their local partners becomes necessary if the MNEs want to capitalize on the advantage of focusing on their core competences by sourcing periphery products from local suppliers. For the local firms, supplying the MNEs provides them with a platform upon which to developing their specialization of production capability. As such, high motivation of learning is expected. As all relationships start at certain point of time and develop with the expectations and efforts of both sides, a processual perspective to understand the unfolding relationship development between firms can help reveal the important contextual factors that either promote or deter the knowledge transfer embedded in the business relations.

Based on prior empirical investigations on inter-firm cooperation (Larson, 1992; Ring and Van de Ven, 1994; Bessant, et al. 2003) and relevant theories, such as TCE, some stages of the relationship development can be hypothesized. Transaction cost economics (TCE) suggests that for the firm to 'buy' rather than 'make', the transaction cost involved from the 'buy' scenario must be lower than that from the 'make' decision. A relaxed discussion on the hybrid forms of organization (Williamson, 1991) suggested that hybrid forms represent an intermediate level of asset specificity, market power and administrative costs. As such, the asset specificity of the inter-firm exchange is supposed to be lower than that within the firm and also with relatively lower frequency and uncertainty. This might portray the initial stage of the relationship, where firms have a limited amount of relationship-specific investment and an intermediate degree of transaction frequency. This view seems to make sense for the MNEs which pursue local sourcing strategies to capitalize on transportation costs and production costs, but it implicitly takes the local firms ('market' or 'buy' solution) for granted, which means whenever the MNE decides to buy, local

firms are able to provide them with the desired components and products. However, reality is not always this simple.

As a matter of fact, Chi (1994), Ismail (1999) and Sutton (2004) suggested that despite of the increasing amount of MNE's local sourcing in Malaysia, China and India, the local availability has been a common bottle-neck preventing MNEs from more aggressive scales of local sourcing. As such, the 'buy' or 'make' scenario of TCE contains an implicit assumption that to a certain firm (MNE in this case), other firms (represented as 'market') have similar abilities in production and thus the decision of 'make' or 'buy' naturally falls on the transaction costs alone since production ability and costs are treated equal across firms (Madhok, 2002). However, MNEs from developed countries might find a different degree of specialization and networks of division of labor in the host developing country, where the local 'market' is available yet incompetent or simply unavailable. None of the traditional TCE studies have considered this situation. The reason probably is that most TCE studies focus on a 'single market or single country' context, where the network economy of the division of labor develops on a unified social/economic infrastructure and the 'firms' as an abstract category, as opposed to the 'market', are assumed to have unified production abilities. Cross-country studies, however, will face the additional difference of the firms' production ability/competence of the host country which results from a dramatically different country/market context and the subsequent different degree of specialization. This renders the traditional scenario of transaction cost studies incomplete in studying such 'make' or 'buy' decision of MNEs. While TCE has been focused on the 'transaction cost' alone, the substantial cost advantage of developing countries which has been responsible for the large scale outsourcing of MNEs seems to make the TCE scenarios less relevant. Therefore, a complete understanding should include both the TCE thesis and the dramatic difference of production cost/ability between countries into a cohesive analysis.

Accordingly, MNEs either have to ‘make’ in the foreign market even if they have the intention to outsource; or ‘outsource’ and provide some assistance to the local supplier firm to improve their competence. It does not exclude the possibility that the local firms happen to be competent in certain area of production. However, the logic suggests that the former two situations might be the rule rather than exception. It is believed both these two situations co-exist depending on the extant degree of specialization that the local firms have achieved. Since the focus of the thesis is on the MNE-local vertical linkage, the situation of unavailable components from local market is not studied here.

Combining the traditional TCEs (Williamson, 1985, 1991) and the special case of developing countries (Chi, 1994; Ismail, 1999; Sutton, 2004) such as China, it is hypothesized that the relationship also starts with an intermediate degree of uncertainty. The MNEs have to identify the local firms which have the *potential* to produce qualified components for them. Accordingly the early stage of the relationship has to consider both economizing transaction costs and production ability of the local firms. Catellani and Zanfei (2002) found that the experience accumulation multinationals' subsidiary in a host environment has a positive and significant impact on collaborative linkages with local firms because it enhances their capacity to select, and interact with, local partners and institutions. The process of selecting the supplier firms is so that the MNEs can reduce the ‘uncertainty’ associated with the supplier firm’s production ability. ‘Uncertainty’ could also come from the behavioral attributes of the supplier, however since the linkage with MNEs represent an important channel for them to upgrade their production ability, the opportunism that can jeopardize cooperation and learning opportunity is supposed to be low. On the other hand, due to the weak intellectual property right enforcement in China, the opportunism of the local supplier firms to approach the unwanted contagion of technology and information can be expected. Although the two mechanisms both can enhance the local supplier firms’ capability, the foreign MNEs need to

have proper control of the unwanted information leakage.

In addition, local firms that have already possessed strong ability should have an advantage in attracting the MNEs, while those that do not may have difficulty in convincing MNEs to give them the chance to be a supplier. However, even for competent suppliers, communication and learning are needed for them to know the specific requirements that MNEs have for the products. As such, the knowledge transfer may start from the supplier firms learning the specific requirements that MNEs have for the components. Therefore, some increase in transaction costs may be unavoidable if closely complementary capabilities are to be developed (Loasby, 1999), and it is no accident that transaction costs, as well as distinctive transaction capabilities, are more prominent in highly productive economic activities. Such considerations do not diminish the importance of the effective management of transaction costs; but they do indicate the need to manage transaction and production costs together, especially when seeking to increase productivity through the Marshallian combination of differentiation and integration (Loasby, 1999).

Adam Smith declared that the division of labor is important as a more efficient means of using varied skills than as a means of *developing* them (Loasby, 2002)⁶. In this inter-firm knowledge transfer, the assistance of MNEs represents an effort to refine the division of labor with the local firms. Only by improving the production competence of the supplier firm, can the MNE focus on its core competence and both sides benefit from the economics of specialization based on a refined division of labor and so further develop comparative advantage. Therefore the co-ordination of the specialized activities which result from the

⁶ To ascertain that division of labor results from the differences between individuals make the differences between individuals unanswered. A more profound theory should start from treating all individuals being identical and the specialization based on division of labor is a developed economic strategy for economic actors to obtain the end of improving wealth and overall well-being (Yang, 2003). Therefore the degree of internalization is a criterion to assess the explanatory power of theories, that is to say, the explanatory power of a theory depends on to what extent it can explain the differences by starting from identical.

division of knowledge between firms by communication and learning require the development of what is called a firm's 'external organization' (especially MNE), a source of transaction costs which are deliberately incurred in order to obtain productivity benefits (Loasby, 1999).

Once the relationship can be initiated, the healthy development largely depends on the performance of the firms. Satisfactory performance of the supplier firm can encourage the MNEs to give more assistance, facilitate open communication and probably favorable sourcing deals. Good market performance of MNEs can also favor the inter-firm cooperation because the end product demand can deliver the positive impacts of the demand of MNEs from local suppliers. Booming vertical linkage is very important in promoting knowledge transfer because by producing more products for the MNEs, supplier firms obtain more opportunities to learn about the specific requirements of products. It represents a deeper division of labor between firms, where supplier firms will eventually master more knowledge and techniques in the production. In contrast, poor performance will drag the business development and hamper the learning opportunity. Apart from economic incentives, social elements may also incrementally increase in influence over time (Powell, 1990; Ring and Van de Ven, 1994). Personal networks between firms may solidify the communication structure and therefore promote information and knowledge transfer. Another social element studied in Van de Ven (1994) is 'equity'. In the MNE-local linkage, power asymmetry may be prevalent, but it is not clear whether power asymmetry will always translate into 'inequity' in the relationship. However, it can be imagined that chronic inequality will damage the motivation of business partners and will demote open communication and trust, while comparatively equitable relationships should be more beneficial for the long-term development of both sides. It will be interesting to observe whether power asymmetrical business partners can develop and sustain comparative equal relationships and why. If not, what other counterpart

mechanisms are helping sustain the relationship?

The local supplier firms' technological sophistication and capability increase with the previous success of knowledge transfers, which makes it possible for partners to pursue higher value added activity. Also in sharing more congruent goals, concerns about a partner's opportunism may be surpassed by the trust and the desire for joint value creation. Empirical investigations such as that by Dyer (1997) found such evidence. In this case these incentives can further promote inter-firm knowledge transfer that is needed for the higher value added activity. This can take the form of joint supplier-buyer R&D programmes (Wong, 1992), contractual cross-licensing of technologies, or information cooperation (Hakansson and Laage-Hellman, 1989). Renegotiations and new supplemental agreements may emerge to resolve only the contestable issues and all other terms and understandings contained in the relational contract remain in effect. In this way, the ongoing knowledge transfer can be preserved and promoted. Thus a new cycle of knowledge transfer starts, but presents more value-creating opportunities.

However the opposite situation can occur as well. That is inter-firm knowledge transfer can decline over time. The seeds of the decline are:

(1): the knowledge gap diminishes. This can occur as a natural outcome of the inter-firm division of labor. The supplier becomes more knowledgeable in a certain component's production, design and development. The 'student' develops a level of expertise in the area of the production. However the vertical exchange can continue where firms can fully realize the economic of specialization which is developed by prior effort and cooperation.

(2): the knowledge gap exists, however the existing level of knowledge transfer to the supplier firm and its subsequent performance has been able to sufficiently meet the foreign MNE's needs and its incentive to further transfer knowledge

declines. This is largely contingent upon the MNE's motivation for outsourcing. When the advantageous production cost of the local firms is the major incentive for the outsourcing arrangement, knowledge transfer may stop when the MNEs find the product quality and cost structure of the supplier firm have reached their expected level. However inter-firm cooperation can be dynamic and firms can adjust their cooperation purpose over time. If the desire to engage in more cooperative activities, such as joint product development, is enticed with the deepening relationship, knowledge transfer can continue.

(3): a potential paradoxical situation will arise between the degree of complementarity and potential substitution of MNEs and their indigenous suppliers. As the inter-firm vertical linkage is the means for the firms to capitalize on their comparative advantage, the lower production cost in China and the improved technology capability of the supplier firms may lead the Chinese firms to desire downstream integration and in that case they will become MNE's competitors. With this potential of the indigenous supplier firms, MNEs are reasonably expected to have concern over this and try to protect their knowledge. As it is not practical to calculate to an accurate degree what knowledge can be passed onto the supplier firm and what cannot, the MNEs have to address the paradox of providing necessary assistance to the supplier firms and also protect their core-competence to avoid creating potential competitors. This may become a barrier preventing further knowledge transfer from MNEs to the local suppliers even though some proportion of knowledge transfer may still remain within the domain of complementarity rather than substitution.

3.3 Knowledge attributes

Theoretically, the general understanding of knowledge is that much technical

knowledge is inarticulate and tacit (Polanyi, 1966) and can be transmitted only at a cost through imitation and apprenticeship. This passive perspective creates a difficulty for knowledge-based theories of growth to the extent that when knowledge is tacit in this way, it behaves like an ordinary private good, and its role in generating increasing returns is lost. One response to the problem of tacit knowledge has been to create a clear distinction between knowledge that is tacit and that which is codified (Nonaka, 1994; Kogut and Zander, 1996). Codified knowledge is knowledge that has been, or can be, converted into symbols for easy transmission, replication and storage. Such knowledge thus partakes of Arrowian public-good properties (Arrow, 1974), which makes it a potential source of increasing returns. Under this stratagem, the significant role of tacit knowledge in social learning does not invalidate growth theory so long as there also exists codified knowledge in suitable quantities. In fact, technological change and economic growth have had the effect of tipping the balance between tacit and codified knowledge. More knowledge is becoming codified and accelerated the pace of social learning and economic growth.

Apart from this dualistic view of codified/tacit knowledge, Hayek (1978) provided a more integrated understanding of knowledge. He suggested that all knowledge is primarily a system of rules of action, assisted and modified by rules indicating equivalences or differences of various combinations of stimuli (p.41). To study the growth of knowledge is thus to study the evolution of systems of rules of actions. The conceptualization of knowledge as involving rule-following systems is certainly consistent with the general understanding of tacit knowledge. Nelson and Winter (1982) have associated Polanyi's concept with the notion of routines, which they see as the basic element of human action. Routines are habitual patterns of behavior that embody skill-like knowledge. Such knowledge cannot be articulated or transmitted explicitly but must be acquired over time through a process of apprenticeship and trial-and-error learning. A structure of routines - in an individual, an organization, or a wider

institution - is clearly a system of rules of action and a knowledge structure (Langlois and Foss, 1997). Tacit knowledge need not, in fact, be idiosyncratic. There is no compelling ground for associating the tacit knowledge of either technologists or scientists necessarily with skills that are specific rather than generic in their applicability. Knowledge is not simply a body of abstract information, but is inherently social, embedded in terminology, in procedures, in physical equipment and in products. Well-functioning teams and organizations can operate effectively with little communication. In the case of organizations and institutions as in the case of technology, standardization is arguably the fundamental source of increasing returns. In fundamental sense, institutions are standards that orient behavior (North 1990).

Meanwhile, knowledge's attributes have been acknowledged to influence its transfer in most empirical studies (see chapter 2.5). The above understanding of knowledge shows that both tacit and codified knowledge are important and both can be transferred from MNEs to local firms. However, empirical studies on knowledge transfer have persistently found that tacit knowledge is more difficult to transfer. A processual perspective should be able to highlight how the firms cope with different types of knowledge and learning and what types of behaviour can help speed up the desired knowledge transfer (Langlois, 2000). In addition, combining Hayek's view on knowledge, both tacit and codified knowledge will eventually be integrated into the supplier firm's system for proper utilization. Therefore knowledge transfer will also help them adjust their internal system of learning and utilizing, in which case, the inter-firm knowledge transfer can deliver long-term implications to the supplier firms.

Apart from the cognitive difficulties that are associated with transferring knowledge, especially tacit knowledge, deliberate effort can reduce the difficulty of knowledge transfer. Lundvall (2002) has suggested that codification can be understood as a process of generalizing the specific, and

translating messages into a common and shared language. It involves the establishment of technical standards and of basing technical development on general scientific principles. Therefore, appropriate action can be taken to increase the codification of knowledge for its transfer. For example, knowledge codification is found to be a very effective mechanism for integrating the acquired unit in post-acquisition management practices in the U.S. commercial banking industry (Zollo, 1998). As such, observations can be made as to how the firms deal with the tacit problem in transferring knowledge, and what measures are taken to promote desired knowledge transfer.

Secondly, as Lord and Ranft (1998) and Birkinshaw et al. (2002) pointed out knowledge is a contingency variable predicting organizational structure. This implies that the attributes of knowledge can impose constraints and requirements on inter-firm cooperation such that the firms must adapt certain management and communication structures to facilitate its transfer. For instance, when the knowledge involved is highly tacit, close face-to-face communication and interaction becomes not only necessary but also critical in realizing the smooth transfer. Therefore the attribute of knowledge, communication structure and the effort of codifying knowledge may have interactive functions in promoting knowledge transfer.

3.4 Supplier firms as knowledge recipients

A third observation angle is the ownership structure of the indigenous supplier firms. Certain difference between SOEs and non-SOEs are expected with both positive and negative implications. SOEs are generally bigger and more bureaucratic than non-SOEs in China. But it is not clear whether SOEs will be bureaucratic in dealing with MNEs. The reason is that China is adopting a dual track legal system in treating and attracting FDI (Huang, 2005) and therefore

MNEs have privileged status compare to most indigenous firms. Will SOEs, which are primarily run by the government be ‘hostile’ to and threatened by the MNEs, which the government deliberately attempts attract, or will they embrace them because of their prestige? Will SOEs treat the cooperation with MNEs differently to those with other indigenous Chinese firms? If so, will the SOEs’ inherited administrative systems allow them to do so? This question will be brought up in the fieldwork. Secondly, observation needs to reveal whether non-SOEs are generally more efficient than SOEs. If so, what makes them so? Is it due to superior human capital, technology, their entrepreneurship, or private ownership or anything else?

Moreover, caution needs to be taken to investigate the real ownership structure of the firm since China is undergoing large-scale privatization. There is a certain degree of ambiguity and chaos with the ownership of Chinese firms. In addition, for firms that have completed or are undergoing privatization, analytical attention should consider the inertia that is inherited from their previous ownership structure rather than expect them to immediately behave as firms that have always been privately owned. For firms in a transition period, research needs to explore what are the advantages of the privatization process and what are the difficulties and how these connect to their cooperation with MNEs?

3.5 A summary

Three analytical threads drawn upon the literatures have been summarized in this chapter as the guidance for the conduct of the research. However some space is also left to allow induction through fieldwork data. As such, the research combines both deductive and inductive approaches to the enquiry of the inter-firm knowledge transfer. The next chapter will explain the research ontology, methodology and the research design.

Chapter 4 Research methodology

4.1 Introduction

This chapter firstly clarifies that a research ontology based on realism is held up in the study. Its implications in studying social reality are then discussed. Secondly, a qualitative methodology and multiple case study method are justified for the conduct of this research based on its strengths in studying the research questions rather than based on a refutation of quantitative methodology *per se*. The research setting and data collection process are described in the third section and the final section explains the qualitative data analysis process.

4.2 Research philosophy - what is social reality?

The distinguishing feature that separates science from art and philosophy is methodology. Methodology is the intelligent tool that science utilizes to search for the explanation and comprehension of mankind and his environment. Different methodologies often reflect varying ontological and epistemological beliefs. In this research, philosophical realism is held up as the ontological stance. Realism, as Searle (1995, p. 153) defined it, is simply '*the view that the world exists independently of our representation of it.*' Based on this stance, I believe that science, to be science, must have a real object of enquiry (Hodgson, 2001).

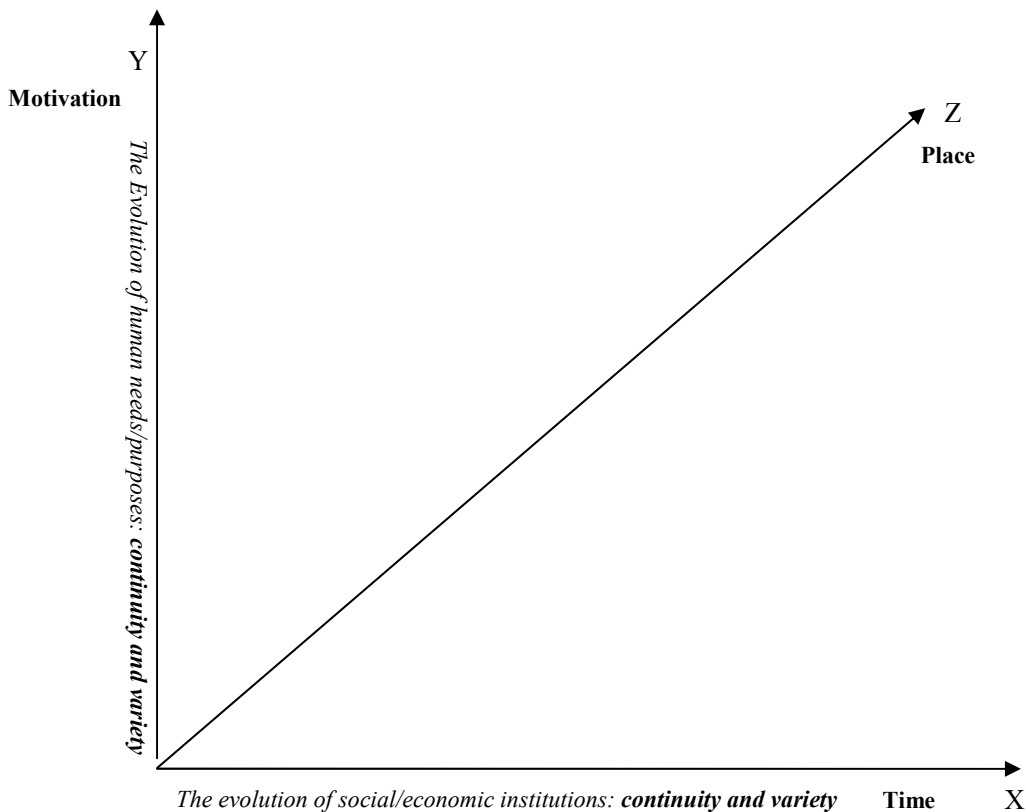
Although the enquiry that science takes in investigating reality is always fallible and provisional, it is not a refutation of the existence of the real world. The difficulties of objectively mirroring reality result from both the human being's limited cognitive ability and the complexity of the reality (Tsoukas, 1989). In turn, science is an ongoing enterprise for searching for the truth, even though

the absolute truth is beyond our immediate grasp. In fact, the continuity in the search for truth itself justifies the sustainable being of science. An analogy can be derived from economics, where Richardson (2002), for instance, suggested that markets generally operate not despite, but *because of* some imperfections of competition. And ‘perfect competition’ is therefore a state of ‘rest’ compared to the continuity that our daily life experiences and demonstrates (Loasby, 1999). In a similar logic, if science could deliver us the absolute and perfect truth for once and for all, it is the time that science ceases to exist.

In contrast to the natural world, social reality is even more complex. The following figure illustrates my understanding of social reality. The X-axis represents the flow of time. If we put it in a broader context, it can represent the evolving history of human society, from primary society, feudalism, capitalism (and/or socialism) to the unfolding future. The Z-axis refers to the geographical dispersion of societies. Although physical reality also contains time and place dimensions, the general laws that natural science is searching for and developing are constant across time and place. A vivid example from Williams can bring this point home:

‘...in the 19th century, two scientists independently in France and England, using observed anomalies in the orbit of the planet Uranus, predicted that a detailed examination of a certain part of the sky would reveal a previously unknown planet. When they carried out the investigation and found the planet (Neptune), this was not the prediction of a future planet, or of any future event, but merely a prediction of what would be found when and if certain actions were carried out’. (Williams 1996, p. 3)

Figure 4.1: Social reality: continuity and variety



Therefore the departure between social reality and physical reality lies in the fact that human beings are not only the constituting element of social reality (like a particle of matter in a physical world), but also are *motivated* beings which can actively initiate (and react to continuously reconstitute) the social reality which they are part of (Rothbard, 1972; Giddens, 1984; North, 1990; Williams, 1996). Motivation, represented by the Y-axis in Figure 4.1, is therefore the distinguishing characteristic associated with human action and the constituted social reality. In addition, the motivations of human actions are not static or constant. Instead, they change and evolve with time and place and become the principle force behind the evolving continuity and variety of social reality.

The important difference between physical reality and social reality has a

threefold implication on the methodology of studying social reality. First is the need for caution in the imitation of the methods and language of natural science in the study of social reality. For example, Hayek (1977) suggested that human society is the product of human action but not human design; as a society is not a system of quantities but a system of relationships and its essentials cannot be measured. Similar views can be found from Rothbard (1972). In discussing the limitation of using mathematics in studying social reality, Rothbard suggested that mathematics is of greatest importance in physics because it deals with certain observed regularities of motion by particles of matter that we must regard as *unmotivated*. As such, in physics, causal relations can only be assumed hypothetically and later approximately verified by referring to precise observable regularities. Furthermore, in physics the quantitative relationships or laws are constant and are considered to be valid for any point in human history. In contrast, the causal force in social reality is motivated, purposeful human action directed towards certain ends. In addition, social actors can define and redefine their purposes over time. Consequently, Rothbard came to a very similar conclusion to that of Hayek: that the only natural laws in human action are qualitative rather than quantitative. As such, quantitative research contains the risk of ignoring the differences between the natural and social world by failing to understand the 'meanings' that are brought to social life (Silverman, 2000).

On the other hand, to fairly assess the credit of mathematics in studying social science, we cannot forget that mathematics, as a branch of science itself, also has its own evolving process and therefore its application in social science (into science generally as well) could be often conditioned by its own development. For instance, Yang (2003) suggested that

'Since the application of mathematics in the research of economic development is a gradual evolutionary process, usually the most simple and thereby very unrealistic mathematics models are developed before

more sophisticated and realistic ones. Hence it is common that very ingenious ideas are too complicated to be formalized by any mathematical models that economists can command, while tractable models are too simple and naïve. Therefore the following two extremes are both inappropriate: one is to worship mathematical formalism and ignore nonmathematical insights into economic development. The other is to totally ignore the implications of mathematical formalism.’ (p.18)

The second is the limitation of general theory in social science. Hodgson (2001) suggested that while general theories or unified explanation is desirable, some of them are based on high abstraction and therefore could be of low empirical relevance: *“A theory that every event is caused by the gods is an explanatory unification, but it is of little scientific significance. Likewise, as a non-fallible general theory such as ‘everyone is a utility maximizer’ is also of little explanatory value”* (p.4). Similarly in studying evolutionary theory of economics, Vromen (2004) suggested *“if a study of proximate cause leads to a better understanding both of processes in which new variants appear and of processes in which some of the extent variants are selectively retained, that this, rather than Universal Darwinist’s general formula, gives us a profound insights into the ‘beef’ or the ‘crux of the matter’”* (p.27).

Therefore, instead of simply stating ‘self-interest’ as the driving force of every single observable behavior, adequate explanations have to contain the concrete analysis of the varied contexts where people find themselves and the varied motivations that they have for in engaging in certain (self-interested) activities. That is, ‘particularities’ have to be captured and explained under the acknowledged general principle. So general law, instead of being the ultimate target that we pursue, should be better seen as the guidance that we use to direct our exploration for particularities to achieve adequate scientific explanation and understanding. This is particularly important for social science considering that

we are faced with the problem that social/economic reality changes in a way that physical reality does not. This point is also borne out in the example given by North (1994):

'Since all motivation comes out with certain reasoning and perception, what determines the actor's perception of the world and reasoning about it? That they vary as between say a communist party official in the former Soviet union, a Papuan tribesman and a business woman in the United States is obvious; more important for us is that faced with identifiable problems these actors would frequently make different choices. (p. 2).'

The limitation of general theory also gives rise to the consideration of the role of deduction and induction in social research. It is often believed that the two approaches have a division of labor into deductive theory testing and inductive theory building (Eisenhardt, 1989). The deductive method is a process attempting to derive universal conclusions from a few professionally general and fundamental propositions (Hodgson, 2001). Most of them are based on mathematics in reaching their research results. It is certainly ignorant to deny the substantial contributions of those successful quantitative studies in social/economic areas. But to leverage the advantage of this research technique requires a considerable level of understanding and careful research design to formulate relevant and meaningful hypotheses and correspondingly sophisticated (or suitable) mathematical knowledge to conduct robust analysis. When these conditions are not well met, qualitative investigation and induction⁷ need to be blended into the process of research.

Philosophical realism does support that theory has primacy over facts (Hodgson, 2001), because concepts and theories are required to formulate any factual statement. However, that does not mean that science always works by first

⁷ However there is no implication here to state that qualitative methodology is always associated with induction while quantitative methodology is associated with deduction even though in most cases they are closely connected.

formulating a theoretical explanation and then testing it. There are many cases in the history of science where facts have first emerged without a theory that explains them. Science may subsequently triumph by supplying a theoretical explanation. In this manner, facts may proceed or impel the formation of theories (Hodgson, 2001). As such, deduction and induction are genuinely complementary to each other and could well be combined in a single research to pursue a better understanding of the research questions.

From an opposite angle, in discussing how deduction can supplement induction, Pettigrew (1997) suggested that the real creative process of research takes place in a constantly iterating cycle of deduction and induction. In this interactive process, where the researcher is constantly going back and forth from one type of research activity to another, the preliminary analytical framework will be affected by what is discovered during the data generation and sense-making process (Coffey and Atkinson, 1996). This kind of process sounds more convincing than pure induction since few researchers enter the field with an empty head waiting to be filled with evidence. On the other hand, predetermined conceptual frameworks may restrict the researcher and create a gap between the perspectives of the researcher and the persons in the reality under scrutiny (Miles and Huberman, 1994). Therefore research should not be unnecessarily constrained by having to adhere to previously developed theory. On the other hand, too loose a framework might lead to indiscriminate data collection and data overload. As a result, it is important to enter into research settings with some theoretical background (Strauss and Corbin, 1990). To summarize the two streams of argument that these scholars have on the role of induction and deduction, I follow what Miles and Huberman (1994) suggested: induction and deduction are linked research approaches. In searching for the answers to our research questions, different research approaches, whether inductive, deductive or a blend of both, should be selected in a way that is productive in investigating and discovering the truth.

Thirdly, due to the complex nature of social reality, it is crucial to choose an appropriate level to analyze research questions because reality should be conceived as consisting of different ontological levels. This is what Hodgson (2001) suggested that in studying social/economic phenomena, different levels of analysis and varying degrees of abstraction should be adopted to fit in with the particularity of the research questions:

“There may be a level relating to matter addressed by physics, a level relating to molecules addressed by chemistry, a level relating to living organisms addressed by biology and so on. These levels may themselves be subdivided. Within physics, for example, quantum physics and mechanics address different levels. Accordingly, different scientific theorists maybe relate to different levels of reality” (p. 11)

Similarly, Yang (2003) has clearly spelled out that there are five levels in studying economics development. The first level is geopolitical structure, which determines the evolution of ideology, norms, moral codes and political and legal institutions. The second level determines the evolution of commercial institutions, industrial organization and business practices. The third level determines the evolution of the division of labor and related economic structure. The fourth level determines aggregate productivity and welfare and the fifth level affects the evolution of ideology, norms, and institutions (North, 1994). Simon (1991) also suggested that since most natural and social systems do have hierarchical structures, different levels of analytical focus need to be adopted to fit with the research subjects and purpose. Therefore it is crucial to choose an appropriate observational level to investigate specific questions. In sum, social reality is context-bounded, multi-level and evolving phenomena. In searching for the ‘truth’ of social reality, choosing the appropriate observational level is critical to ensure theoretical groundedness and the empirical relevance.

4.3 Research methodology and methods

Based on the above discussion of the realist social ontology and its methodological implications, this section justifies why a qualitative processual methodology is adopted in this study. This will be followed by an explanation of the choice of a multiple case study research method. Prominently, the purpose of the research is to explore a few important issues associated with inter-firm knowledge transfers. It can be hypothesized that change is an evident part of any inter-organizational relationship. Organizations interact with each other and develop relationships in order to exploit and develop their resources. As a consequence of interaction between the parties, relationships evolve over time. They are inherently dynamic and characterized by continuous processes which make them living structures. Therefore a processual perspective, which means inter-firm relationships are perceived to emerge, evolve and (possibly) dissolve in a continuous and interactive process, is adopted. My intention is to identify and examine the features and mechanisms of relationship development and assess the knowledge transfer embedded in the unfolding relationships. In some studies, the interest is only in the *result* of the process, not in the process itself. By describing how things develop over time, the processual research is capable of generating sound knowledge not only of the outcomes but also of *why* and *how* outcomes are shaped by processes (Van de Ven, 1992; Pettigrew, 1997).

On the other hand, my literature review has shown that the evolving inter-firm relationships are under-studied with only a small number of empirical studies investigating the inter-firm knowledge transfer (see chapter 2.4). Clearly, our understanding of the internal working of such relationships is limited. In addition, no previous empirical investigation has been identified in the Chinese context, which makes quantitative analysis (deduction) even harder and may prove to be fruitless if attempted before a sensible understanding has been reached to generate a sound model and pertinent hypotheses. As such, a

qualitative and processual research strategy based on a combination of induction and deduction is deemed to be able to provide me with an opportunity to collect 'rich' and 'real' data revealing the 'depth' and 'scope' of the research questions under investigation. It should prove useful especially when the research focus is on the 'process' of instead of mere 'input-output' correlations of the inter-firm knowledge transfer (Autio and Laamanen, 1995).

Secondly, the qualitative methodology facilitates a flexible research process where inconsistent theoretical viewpoints could be debated (or combined) and improved understandings can be built upon. As a result, on the one hand, in the deductive manner, prior theories and literatures have been critically appropriated into an analytical framework of the study (chapter 3). They are valuable to inform the initial data collection and incrementally induce a more systematic apprehension of the research questions. On the other hand, more inductively, new concepts and theories will be incorporated based on what is to be revealed in the data collection with convincing and sufficient data in an effort to understand the research questions by integrating the existing theory with new empirical evidence and thus facilitate theory development. It is suggested that both (prior theory and theory emerging from the data) are always involved, often simultaneously, and that it is impossible to go theory-free into any study. It is consistent with what Miles and Huberman (1994) concluded, that induction and deduction are linked research approaches. In addition, the ultimate purpose is to achieve explanatory adequacy of the interested research questions. Preoccupied attitudes that either methodology is superior to the other are wrong. Instead, methodology should be chosen based on criteria that determine which is more appropriate or effective in reaching objectives the set on the way to a distant goal (Homans, 1961). As such, a blend of deduction and induction are perceived as appropriate and potentially effective.

Based on the qualitative and processual principle explained above, a multiple

case studies approach is chosen as the research method to search for a holistic understanding of the research questions. Specifically, semi-structured interviews will be used to collect data from both customer firm and supplier firm to facilitate the analytical focus of the inter-firm relationship. The strengths of using the case method is significant when

- (1) 'how' or 'why' questions are posed (Yin, 2003)
- (2) causal links are complex
- (3) research focuses on 'process' (Stoecker, 1991)
- (4) the main goal of the study is to refine and generate novel theory that is empirically valid and testable (Eisenhardt, 1989; Yin, 2003).

As described by Yin (2003) multiple case design contains more than one single case of analysis in the same investigation, and thereby permits a comparison across cases. The evidence from multiple cases is often considered more compelling and the overall study is therefore regarded as being more robust (Herriott, and Firestone, 1983); however, each case's integrity and idiosyncrasies need to be maintained to avoid the risk of simplistic and the linear logic of thinking which may or may not be the case (Stoecker, 1991). In addition, case comparisons which attempt to preserve the integrity of each case typically also create a situation where we have the accumulation of numerous variables typically greater in number, by an order of magnitude, than the number of cases being studied, which makes traditional statistical techniques irrelevant (Yin, 2003). Compared to a structured statistical approach, the in-depth and 'intensive' research methods will allow me to observe the causal interconnection between actual properties and people within an actual setting, probe the dialectical and dynamic process of the phenomena under investigation, better grasp its complexity and suggest possible new theoretical and generalizable principles (Stoecker, 1991). In addition, a retrospective study makes possible the identification of continuities, different development periods and cycles (Halimen and Tornroos, 1995) of inter-firm knowledge transfer. An

intensive investigation of the historical causal process that reveals the commonalities of the vertical knowledge transfer across cases is also expected. The following section explains the research setting and data collection process. Data analysis will be presented in 4.5 of this chapter.

4.4. Research setting and data collection

4.4.1 Justification of the research setting

First of all a decision was made to focus on the electrical and electronics (EE) industry in the city of Wuxi as the research setting. The decision is based on the following considerations. Since the research looks into the vertical cooperation between MNEs and their local indigenous Chinese suppliers, an industry with ample linkages between MNEs and local firms needs to be chosen to ensure that there are sufficient research resources to be drawn upon. According to the industrial statistics, EE industry is not only one of the identified ‘pillar-industries’ by the Chinese government, but also attracts the highest amount of FDI with a growing rate of 25% annually in the last ten years. Massive incentives are being provided for electronics development projects and customs duties have been reduced on all electronics equipment, as a result, the total value of industrial output was over US\$ 140 billion and total electronics export value was over \$80 billion in 2002. Up to 2002, this industry has absorbed foreign investment value of US \$ 70 billion, and the number of related joint ventures reached over 10,000 accounting for 15% of Chinese total joint ventures.

A study conducted by the US National Science Foundation’s World Technology Evaluation Center (WTEC, 1997) concluded that “this industry in China had developed significantly and plants there are now assembling a growing number of final products”. In addition, the current global slow-down actually benefits

China. The search for a low cost and flexible production base has encouraged more companies to shift manufacturing to China. China has become the largest producer of color TV sets, recorders, VCD players, telephones, calculators, refrigerators and air conditioners. China is also the world's number one cellular phone market and third largest PC producer. Through her membership of the WTO, ASEAN and other trade regimes, China is poised to become the world's largest electrical and electronics manufacturing site. With the large amount of inward FDI and rapid development of this industry the demand for parts/components suppliers is significant. The growth of the local Chinese subcontracting industries has been boosted by the increasing role of China as an important manufacturing center of the world.

Wuxi City is geographically located beside mainland China's economic center – Shanghai. As one of the most important integrated circuit design and manufacturing centers in China, it has a strong electronics industrial manufacturing base and has attracted substantial investment into this sector. In fact, of the foreign direct investment flows into the city, electrical and electronic investors generated over half the total amount of industrial output value in the past five years, making this industry the most important sector for the city's economic development (Wuxi statistics, 2003). The strong industrial base of Wuxi attracts highly qualified foreign electrical and electronics (customer) firms, such as Siemens, Panasonic, Toshiba, Sony, GE, etc, which increasingly create opportunities for local firms to produce peripheral components and products for them. Trade between them and the local Chinese supplier firms has gone beyond simple spot market transactions and thus provide local firms valuable opportunities to develop their capabilities and build up competitiveness. As such, the electrical and electronics foreign multinationals clustered in Wuxi Electronics Industry Zone provides us with a rich setting to investigate the research questions of the study. Another reason for choosing this city is out of pragmatic considerations, that is, my personal contacts in the city provides

advantageous access for the data collection. In turn, it is hoped that the research outcomes will give rise to numerous propositions about the vertical cooperation between foreign multinationals and their local indigenous suppliers in other regions and industries in China.

4.4.2 Data collection process

The data collection proceeded in three stages. First, in April 2003, with the assistance from Wuxi New District Committee, a questionnaire survey was distributed in Wuxi Industrial Zone by fax to identify the foreign electrical and electronics multinationals *with* local procurement⁸. Altogether 52 electrical and electronics foreign multinationals were identified and contacted, 50 responded and 28 of them were found to have local purchasing arrangement with 93 main local suppliers⁹. Of these 93 local suppliers however only 22 were indigenous Chinese firms¹⁰. Thus these MNEs with relationships with the 22 indigenous suppliers were selected for my study. Since I only identified MNEs with on-going supply relationships with indigenous Chinese suppliers, this introduced selection bias into the sample and I am unable to report on failures.

In the second stage, the research framework and interview questions generated from the literature review were refined through four pilot interviews that were conducted in May 2003 (see appendix 1: pilot interview questionnaire). Finally, extensive fieldwork was conducted from November 2003 to March 2004 where semi-structured interviews were used to gather retrospective information for the case study analyses (see appendix 2: interview questionnaire). Interviews were

⁸ The data of the MNEs in EE industry in Wuxi was accessed from Wuxi Statistics report, 2003.

⁹ It is noted some giant MNEs have hundreds of suppliers, supplying all sorts of products and services from product package to computer chips. The information on their local supplier firms provided by the MNEs was certainly not complete and no MNEs' purchasing department would like to provide an exclusive list of all their suppliers. As such, the information they provided in the survey included main suppliers they have. This was found out in the subsequent interview, where some purchasing managers showed me their exclusive supplier lists. The 'local' sourcing refers to MNEs' sourcing in China.

¹⁰ I make a deliberate distinction between local firms and indigenous firms because 'local' includes foreign suppliers who have located in China and who partner MNE customers. 'Indigenous' suppliers are firms with Chinese origins and ownership.

conducted in Mandarin and all interviews were then simultaneously transcribed and translated into English. Access was gained to 17 of the 22 indigenous Chinese suppliers identified (5 SOEs, 2 COEs and 10 POEs) and to 16 foreign MNEs (11 Japanese, 3 European and 2 American firms). Appendix 3 provides a list of interviewed companies where companies' names are kept anonymous.

There are 16 complete sets of data. By 'complete' it means that access to both the customer and supplier side of a dyadic relationship were obtained. Each set of complete data contained between 2 to 6 interviews depending upon access to personnel. In some instances data is not complete when access was only obtained from either the customer side or the supply side. In spite of their 'incompleteness' they are treated as an additional source of data when considering the perspectives of one side of the relationship where appropriate. This information is also included in appendix 3. Purchasing managers and general managers of the customer firms and supplier managers are the key interviewees and relevant staff such as technology supervisors and middle level management were interviewed when possible. Altogether 49 interviews were conducted giving 67 hours of interviews. NVivo (Bazeley and Richards, 2000) was used as the supporting software package to categorize and analyze data.

4.5 Qualitative data analysis – opportunities and challenges

Case selection is supposed to follow the following three principles in case study research: (1) theoretical sampling, i.e. cases are selected for the replication or extension of the emergent theory, not for statistical randomization purposes (Eisenhardt, 1989); (2) maximization of variance in construct to enhance the explanatory power of cases (Stoecker, 1991); and (3) capitalization on personal relationship between the researcher and the key respondents from companies to ensure interview access and high quality of data (Inkpen, 1997). In this research,

effort has been made on all aspects, but with more success in (1) and (3) and less in (2). The locational focus of Wuxi is responsible for the biased over-presence of Japanese firms compared to American firms and European firms in the research sample¹¹ which in turn makes the maximization of the variance of the origin of foreign MNEs not possible in the study. Since the country of origin of the MNEs has been an important aspect in studying inward FDI's behavior in a host country (which could also involve some different managerial styles of Japanese firms and non-Japanese firms), this has been one of the limitations associated with data constraining a more pronounced comparison across cases. This will be discussed in chapter 5.3.

The data analysis is based on three procedures from coding, within case analysis to cross case comparison (Sutton and Staw, 1995; Denzin and Lincoln, 1998; Floger and Turillo 1999; Langley, 1999; and Pentland, 1999). The coding process was both open- and close-ended. Those concepts from the analytical framework (see chapter 3) are the guidance for the initial coding. As such, the study distinguishes itself from grounded theory advocated by (Strauss and Corbin, 1990) where pure induction is the major process for coding. However, when new data emerged and where the analytical framework did not provide a clear clue, open coding is used to capture the fresh insights from the data. Axial coding (Floger and Turillo, 1999) is then used to summarize the interconnections between codes to reach a holistic understanding of each case. In the coding process, tremendous effort was made to make sense of the first few sets of data to get a holistic understanding of the inter-firm knowledge transfer story. It is important because only by capturing a solid understanding of the research questions as a whole, as represented in the first few sets of data, is meaningful comparison across cases possible. There is a risk of being lost in so much rich data both within a single case and cross 16 cases. In this sense, a high level of theoretical sensitivity (Floger and Turillo, 1999) and solid

¹¹ Wuxi is reported to have the largest number of Japanese invested firms in China in 2004.

understanding of the first pieces of data are both very important to facilitate a structured yet creative analysis of the rest. Without the former, the data analysis will become a pure storing telling process with no core theoretical guidance intertwined for its direction and the advantages associated with qualitative investigations of generating fresh insights from rich data may be lost.

After the in-depth sense making of each case, a more general picture emerged which mapped out the main patterns across all the cases in the study, including their *similarities* and *differences*. As such, the cross-case comparison imposed the final orderliness on the data, with a certain degree of abstraction and theorizing. It was also felt that since qualitative data analysis is an ongoing activity through all phases of the research, continuing the literature review after the completion of fieldwork was also helpful for theorizing the data. In the end, the first two findings strongly reflect a process-oriented understanding of the context and content of the knowledge transfer (please see chapter 5 and chapter 6); and the other two findings presented in chapter 7 represent the aggregated outcomes of the impact of the inter-firm knowledge transfer on the local supplier firms.

One interesting aspect of collecting data is that my focus was on factual events - 'doing' or 'happenings' rather than what the interviewees were 'thinking' or 'perceiving'. Certainly a hard line was difficult to draw in some cases, but whenever possible, I asked what they *did* instead of what they *thought*. I believe it is the researcher's role to make sense of, and possibly theorize, the data. Perceptions from interviewees could be of help in some cases, but could be misleading in others. It is also noted that similar to the difficulty of presenting a 'how-to' manual in analyzing qualitative data, it is also demanding to comprehensively describe qualitative data processes. However, the main purpose of the above is to show the logic of the data analysis process to demonstrate that the data has been processed and studied in a scientific way.

In the next three chapters, research findings will be presented and discussed in an order consistent with that of the research questions posed in chapter 1. Chapter 5 is dedicated to decipher the evolutionary process of the relationship development; the build-up process and function of different types of trust are also discussed. In addition, the difference between Japanese MNEs and non-Japanese MNEs in their style of assisting local suppliers is also discussed as tentative summary from the fieldwork data. Chapter 6 presents the different types of knowledge transfer at the different stages of the vertical cooperation; in particular, it is reported that the knowledge transferred mainly follows two main directions: from explicit knowledge to tacit knowledge transfer and from technological knowledge to managerial knowledge transfer. Theoretical explanations are provided to make sense of the empirical evidence. Chapter 7 focuses on the different level of technological knowledge learning and managerial knowledge learning by the Chinese suppliers; in addition, the differences between SOEs and POEs in their knowledge level and knowledge efficiency are compared and contrasted.

Chapter 5 Assessing the context of vertical knowledge transfer

5.1 Introduction

This chapter presents an evolutionary path of the relationship development between MNEs and their local Chinese suppliers. Three interconnected, sequential cooperation stages are identified and it is found that the customers' evolving expectation and the supplier's commitment jointly move the relationship into different stages. Secondly, the MNEs' different 'teaching' attitudes and styles along the evolutionary path of the relationship development are addressed and the explanation concentrates on how the knowledge transfer intensity is associated with different cooperation stages with Japanese and non-Japanese firms.

5.2 Is there a common relationship development pattern?

As a processual¹² study, a common relationship development pattern across all the dyadic relationships emerges from the empirical data. This answers the question raised by Abbott (1990)¹³ as to whether a typical pattern in the development process exists or not. The empirical data shows a strong order of important events knitting the development paths of the vertical relationships from the past to their present. The associated knowledge transfers within the cooperation are correspondingly found to serve different purposes initiated by the customer firms, and the supplier firm's positive reaction and commitment would in turn materialize different knowledge transfers at different stages.

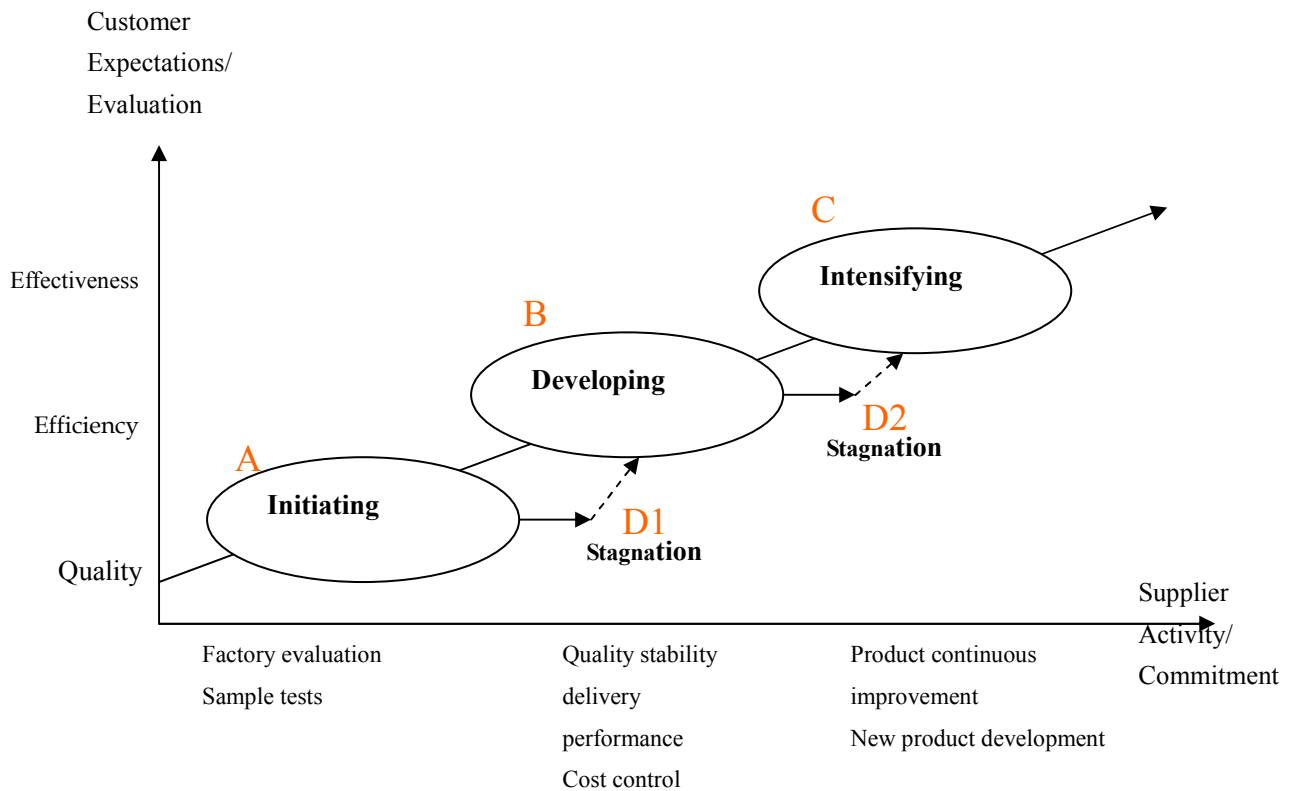
¹² It is noted that the interview data is not longitudinal data, which would be ideal as a data collection method but practically difficult to conduct due to the geographical distance between China and England. The time scale permitted for PhD and restricted financial resources. However interview questions were designed to deliberately collect the historical data relating to the development of the relationship (See appendix 2).

¹³ Abbott (1990) suggested that the pattern questions begin with the central issue of existence. Basically it needs to answer whether a typical sequence exists in a certain system.

The importance of such processual understanding is clear. First of all, it reveals the fundamental economic motivations of the inter-firm knowledge transfer in various situations. Economic actors, it is found, are not merely passive reactors but also true actors who continuously define and redefine their purposes and behaviors to either initiate, or adapt to, the changing environment that they found themselves in (Langlois, 1986). Secondly, with a picture containing both the ‘depth’ and the ‘order’ of the on-going business cooperation, preferable knowledge transfers that are associated with a particular sequence of activities can be captured as good references for the Chinese supplier firms which want to promote favorable business cooperations with foreign MNEs and stimulate their learning opportunity. Thirdly, as one of the early empirical studies on foreign multinational’s supply chain activities in China, the processual investigation is also expected to provide an apprehension of the special Chinese business context, which can be a unique benchmark for those MNEs with intentions to develop and foster their local sourcing strategies in China. These practical implications will be further discussed after the presenting the research findings.

The analysis shows that in spite of considerable variety in across the sets of data, such as the nationality and ownership structure of the foreign customer firms, the duration of the relationship, the products sourced from suppliers, etc, strong consistency in the evolutionary paths of relationship development emerges. Figure 5.1, derived from the fieldwork, represents the conceptual framework about how a successful cooperation might develop. It shows that the relationships incrementally unfold with the evolving expectations of MNE customer firms on the one hand (Y axis) and the type of activity executed by the supplier on the other (X axis). The interaction of the two leads the relationship into new phases over time (from A to B to C).

Figure 5. 1: The evolutionary path of supply-chain relationship development



The common evolutionary path reveals that the customer's expectations (Y axis) provide an incentive and direction for the supplier firms to invest in knowledge absorption and learning. Moreover, demonstration of commitment and the successful fulfillment of these expectations by suppliers provide the customer firms with further motivation to raise their expectations of the supplier firms and also give them greater responsibilities in the inter-firm cooperation. Clearly both expectations on the customer side and activities developed on the supplier side interact and evolve with time. As such, the extent to which a cooperative relationship might be deemed successful is represented by the gradual movement up the diagonal trend line from phase A to phase C¹⁴. These represent the movement through what are called the 'initiating', 'developing' and 'intensifying' stages of relationship development. The movement from one phase to another is not always smooth and may be punctuated with periods of

¹⁴ It is recognized that given the relative temporal dimension on our axes, it may be that the trend line is exponential rather than linear as presented here.

stagnation. However stagnation of the relationship at a certain phase does not necessarily imply the underperformance of the vertical cooperation. Stagnation might be due to the causes from either, or both sides since customer's motivation and the supplier's reaction play equal role in the evolution of the relationship. For instance, if the customer faced stagnated market share, this would restrain the demand of certain components sourced from local suppliers. A worse situation could be that some end products become obsolete and the business relationship would terminate unless the customer firm decided to source different components from the supplier to rescue a 'good' business partner. The reasons on the supplier side include limited manufacturing capacity making it impossible to substantially increase the magnitude of exchange. The other possibility is that the limited technology capability of the supplier firm makes it hard for the vertical cooperation to move up to a technology cooperation stage. To sum up, there are various causes for the stagnation of the business relationship. Also, any relationship, once initiated, shows a varying degree of inertia.

All the relationships in the study have moved up to the second stage of cooperation, but only three of the bilateral relationships were explicitly identified as having reached phase C. It is found that whether a relationship can move to phase C seems contingent upon both the dynamics of the end market and the capability of the supplier firms to learn. In addition, the customer's desire to establish a more value-added cooperation is also a promoting factor. The following is a detailed discussion of each stage of the evolving vertical cooperation.

5.2.1 Phase A – Initiating

Initiating describes the first stage of relationship establishment where a 'cognitive distance' (Foss, 1999) exists between the firms and they must get to

know each other to reduce the distance. This generally proceeded in two steps. First the customer firm visited the supplier firm and conducted a 'spot' evaluation of the potential supplier i.e. potential productive capacity, age of equipment and facilities, the enthusiasm and commitment of personnel, ISO 9000, 9001 certification potential or its maintenance. Secondly, sample tests would proceed. Meeting the customers' expectations on output quality standards was the basic condition for further exchanges to occur and was the primary issue of concern to both parties at this stage. This is consistent with the empirical evidence from Ivarsson and Alvstam (2004). In their research, it is also found that "*Indian suppliers were visited and evaluated regularly in the early*" stage (p.252).

The audit process included two elements. First of all their technical staff had a check of our 'hardware' capability, namely the availability of the appropriate manufacturing facilities, second they check if we have the quality control systems. And thirdly they checked if all the quality system was truly implemented and maintained. The second element is sample test. (Dataset 2, customer firm).

The assessment process includes checking technology, manufacturing & quality management. (Dataset 4, supplier firm)

Their relevant staff visited us. They checked out our manufacturing facilities. After that, we provided them with sample products based on the blueprints they provided. (Dataset 8, supplier firm).

"The assessment started from our visit. Our general manager, vice manager, and quality manager visited them. We felt they are generally OK. After that we sent them the blueprints to do sample products. The results of sample tests assessed by the headquarters were satisfactory. In fact their sample products failed two times before the final approval. It took them so long time

because of some of their equipment could not achieve the required degree of precision. They had to do lots of manual work to compensate that. (Dataset 10, customer firm).

“The main content of the assessment was about the operation control. They examined detailed operation procedures, including the materials we use, operation equipment, and maintenance of the quality system... Yes we got much improvement in operation at the initial state of the relationship”.
(Dataset 10, supplier firm)

Our multiple-task team visited their factory for spot assessment. It was to see their manufacturing equipment, quality system, and control ability of the operation process, etc. We assessed according to a detailed ‘supplier evaluation book’. They would be provided the chance to submit a bid price if the final market was approved. If we think the price is acceptable, we would ask them to produce sample. Our engineering personnel will inform them the technical requirements of the sample products and there were discussions between engineering personnel to ensure the production of the components were feasible. If they passed the sample test, formal relationship could be set up. If not, they were probably asked to do the sample again, but if they failed again, we would give up. (Dataset 15, customer firm).

Bresman et al.’s study (1999) of international acquisitions found that in the early stage, communication is mostly one-way from the acquiring firm to the acquired firm. Similarly, the communication pattern between foreign MNE customers and indigenous Chinese suppliers also appeared to be very one way – from customer to supplier. The customer firm provided the supplier with their technological requirements for the sample products. The necessity for the MNE customer firms to provide the lead is expressed as below:

“Basically the supplier firm needs to achieve what we require to step into

the supplier chain. We have developed a mature supplier selection process and what they need to do is to achieve the basic criteria” (Dataset 3, customer firm)

“We need to communicate and we need to lead the suppliers. We cannot follow them as we need to lead them. We need to have a good plan and forecast to let them have enough time to prepare. We gave them instructions” (Dataset 4, customer firm).

“In the cooperation, customer’s expectations and requirements are our targets. It is understandable. The components we produce will be part of their end products. If we cannot achieve what they require, how can they accept our products? We understand this, and always cooperate with them. We both wish the final products gain more market share and profit. We are in a same boat. So whatever they wanted, we strive to do, especially at the beginning, we did not have much experience and were not able to provide our own ideas. So we just followed them” (Dataset 9, supplier firm)

It is difficult to provide a concrete estimate of the duration of this phase of relationship development, but the cases identified a period varying from 2 to 12 months. There are two contingent factors that may either reduce or prolong the time scale of this stage. One is the partner’s previous cooperating experience. Communication appeared relatively easy to establish between firms which previously cooperated with each other or who have prior experience of other international supply relationships. In contrast, indigenous firms which have little experience in cooperating with foreign firms may undergo a lengthy assessment process. The difficulties were reflected in two aspects. The first was the difficulty in communication and coordination. For Chinese firms with little experience and limited human resources, they find it difficult to adapt to the

sudden language requirements (such as blueprints translation) and business cultural difference. The demanding criteria of the foreign customers made it hard for them to make sense as to why a simple sample product could involve such a complicated checking process. A second difficulty was normally associated with the low standard of operation equipment of the supplier firms. Degree of precision was repeatedly reported to be the key problem preventing the supplier firms from rapidly accomplishing the sample product quality required by the customer firms. However these difficulties and challenges provide these inexperienced suppliers with valuable opportunity to learn. This evidence is consistent with what Ivarsson and Alvstam (2004) found that the technological assistance by Volvo to large experienced international suppliers with substantial in-house resource has less impact on performance as compared with the same assistance provided to small, inexperienced suppliers.

The second contingent factor is the foreign customer firm's assessment style. Japanese firms appeared to be more cautious in their assessment process compared to US and European firms. They demonstrated concern not only for the ultimate quality of the sample products, but also of the whole manufacturing system of the supplier firm from which the sample products were sourced. Such concern called for them to have a more comprehensive examination of the supplier firms in the first stage of cooperation, which is the major factor leading to a lengthy assessment process. The difference between Japanese MNEs and non-Japanese MNEs and their influence upon the vertical knowledge transfer will be shortly discussed in section 5.3.

It is noted that the relationships where the supplier firm failed to pass sample tests could not proceed to the next stage. It is similar with what Ivarsson and Alvstam (2004) found that those Indian firms failed to reach Volvo's standards and were excluded from their supplier list. In other words, such relationships simply terminated. Therefore, the present study is only able to capture those

‘survived’ relations.

5.2.2 Phase B – Developing

All the relationships in the research proceeded to the second stage. Having evaluated the supplier’s basic capability and sample tests, the expectations of the customers clearly evolved. Suppliers were now expected to demonstrate the ability to maintain product quality standards within mass production operations. Mass production has higher requirements on the stability of product quality, satisfactory delivery performance and cost control.

They must have the manufacturing capacity; keep quality stability and price advantage. It becomes a more comprehensive requirement. (Dataset 8, customer firm)

Mass production demands systematic attention. We need to ensure quality, price control, delivery performance (Dataset 13, supplier firm)

The apparent change with the relationship is we only discussed the sample quality initially. But afterwards, things are not so simple. A few departments need to communicate and coordinate to ensure the delivery service, quality and quantity. (Dataset 15, supplier firm)

At the beginning we only required them to have qualified sample production. But now we want them to keep the stability of quality and delivery performance. Actually our requirements were comparatively tougher over time. We could not set too high requirements at the beginning; otherwise we would not get any supplier. But now we are ‘coaching’ them, and the incremental changes in them would make big difference over time. (Dataset 16, customer firm)

Naturally problems emerged which were mainly due to the knowledge gaps associated with moving from piecemeal output that could pass sample tests to a fully integrated manufacturing system. Accompanying this, numerous managerial deficiencies were found to be the reason for failed products or low delivery performance. As a result, supplier firms were required to comprehensively upgrade their system capabilities - technologically and more importantly managerially. This required greater input from both sides and were found to be facilitated in a number of ways.

5.2.2.1 Face to face communication

One way was by using face-to-face discussion of emergent problems in production and subsequent joint-problem solving to ensure successful technological knowledge transfer. A common communication 'code' began to develop as an output effect of cooperation in the earlier phase and was incrementally developed by face-to-face meetings in this phase. Clearer communication facilitated more cooperation because the two parties gained familiarity with each other and were able to express their need and wants more explicitly. As transfers became more frequent the content of the knowledge was likely to become more sophisticated and be accompanied by more tacit knowledge. Importantly, supplier firms were gradually required to be able to analyze technical problems and provide elaborate technical analysis reports and action plans for problem-solving. These activities are crucial in that it not only forces the supplier firms to solve specific problems that emerged in the production process, but also induce the development of the more general analytical and problem solving capabilities and support the supplier firm's growing independence. It is these types of capabilities that lead to the Chinese supplier's fundamental, long-term technological capability development.

*Relevant staffs in different departments get familiar with each other.
Communication become more frequent and tacit than before (Dataset 4,
supplier firm)*

We hold quite a few seminars to make them understand the design of our end product and how the component they produce is supposed to function with the main product...such knowledge may make them understand why we are so demanding about quality. They will understand a failed component may lead to the total failure of the end product. It helps improve their sense of what 'quality' means to us (Dataset 5, customer firm)

What we learned from the cooperation is efficiency and accumulation of skills. We cannot stop at any time. Continuous improvements are always expected and over time we get used to it and internalize such external requirements into internal routines.....we were asked to prepare false product report to present an analysis of the problem identified and an action plan. It was hard at the beginning, but now it is one of our technical routine for us to evaluate and assess quality (Dataset 10, supplier firm)

5.2.2.2 International standards criteria

Managerially, if they are not already in place, the attainment and maintenance of quality systems such as ISO 9000, 9001, 14000, QS, etc., becomes a target for suppliers set by the customer's expectations. Such internationally adopted standards are an important acknowledgement of the knowledge and experience possessed by the firm (Boiral, 2003). In this study, 16 out of 17 Chinese suppliers interviewed were ISO 9000/9001 certificated at the time of interviewing, 9 having attained this prior to the partnership with the identified MNE and 7 as a result of the relationship with the MNE.

The concept of managerial systems has not been taken seriously by Chinese managers until recently, but is now recognized as not only important in itself, but also for the fact that it is intimately connected to the technological capability of the firm. Operationally speaking, the quality systems require the systematic maintenance of operations documents and process reports. All Chinese suppliers

felt that they greatly benefited from such practices, although they were painful and costly to implement at the beginning. It is clear that such management upgrading has multiple direct implications for indigenous firms' organizational systems. For one, it helped these organizations to 'codify' their knowledge and experience and embed them into durable organization structures. The codification and routinization became important 'knowledge' retention mechanisms (Argote, 1999). Secondly, better and more consistently recorded documentation helped train operations personnel and speeded up the diffusion of new work tasks based on articulated instructions. That is, knowledge 'codification' promotes knowledge 'dissemination'. Finally, it also makes it easier to trace problems and allocate employee's responsibilities and rewards along the whole production process. Additionally, the achievement of internationally recognized quality standards clearly enhances the probability of the indigenous supplier's ability to win potential cooperation with other multinationals in any bid situation and also greatly reduces the transaction costs at the initial stage of the relationship by allowing the initiating phase to be completed more rapidly (Nobeoka et al., 2002; Ivaesson and Alvstam, 2004).

5.2.2.3 Cost control

Once stable product quality and satisfactory delivery performance have been achieved, continuous cost control is put on the agenda. Most end products of the vertical supply chain within the electrical and electronics sector face fierce price competition and fast changing technological conditions. This compels the entire chain to achieve high cost efficiencies with much pressure being placed on suppliers for continual price reduction. In fact, MNEs' expectations for indigenous Chinese suppliers to generate annual price reductions have become routine in most of the relationships in the study. The Chinese suppliers, learned, through exchanges with their MNE customers, how cost reduction can be realized through numerous avenues apart from salary or wage cutting. Such alternatives included: altering product design, altering input materials, more

effective and economical means of materials sourcing, and cost analysis of product portfolios. Cost management of this more eclectic sort demands that the supplier firm has efficient management across multiple aspects of the firm. Supplier firms gradually learned to control cost from effectively managing their own suppliers, adopting effective management practices and reducing unnecessary waste, etc. Clearly the downward pressure for cost reduction is finite and the stagnation of the relationship would ensue when the cost space became exhausted. However, the relationships could get reinvigorated by eventual requests for new product exchanges from the MNE. Thus, with the stabilization of inter-firm cooperation during the 'developing' phase, not only did the purchasing volume increase but also the product scope provided by suppliers. This virtuous circle of increasing scale and scope in the cooperation can only continue as long as the market situation for the end products of the MNE customer continues to be favourable. When the foreign MNEs hit hard times themselves, the cooperation magnitude, namely both scale and scope are likely to be negatively influenced.

The duration of this phase of the relationship's evolution is even harder to quantify than the initiating phase. As mentioned above, the majority were still within this phase at the time of interviewing. Only three relationships have subsequently entered the intensifying phase. On average, the developing stage lasted 3.5 years which shows that time is a necessary but not sufficient factor in the movement of the relationship development into the third phase. The development of relationships from one stage to another is not a simple function of time, but it depends on a number of other factors.¹⁵

¹⁵ Thanks to an anonymous reviewer for this comment on a conference paper presented at EIBA 2004.

5.2.3 Phase C - Intensifying

3 of the 16 relationships indicated that they had advanced to the intensifying phase. They either recognized that there is ‘a significant qualitative change in their cooperation’ or that there was ‘important technology cooperation’. The expectations of the customers and the basis upon which they evaluate suppliers shifted towards relationship effectiveness and value added. Greater technological cooperation and increased interdependence resulting from a mutual desire to develop new products or markets signalled a qualitative change in the relationship; in particular, the indigenous supplier’s strengthening technological capability has a significant influence here.

Once the MNE customer identified the potential of fruitful technological cooperation, conversions of the supply relationship into strategic partners were explicitly sought. Firms sought to pursue greater added value in production from the combination of their different capabilities. To facilitate the strategic partnership some investments by the supplier of the more generic type (such as building more sophisticated information platforms) and highly specific type (such as tailored manufacturing facilities and equipment) were made. This enabled the joint design and development of products by the partners.

Communication in the intensifying phase became very reciprocal and had greater tacit content. However surprisingly, in contrast to our expectations as derived from Bresman, et al (1999) and Gupta and Govindarajan (2000) that communication frequency would be higher, the three cases indicated that the communication frequency between partners actually fell. This is because communication has two functions within supplier relationship development: one is to transfer important information and knowledge to improve the efficiency and effectiveness of cooperation; the other is to reduce conflicts, misunderstandings and solve errors. Only the former is positively associated

with vertical knowledge transfer. For established relationships, the latter often reflects the low efficiency of vertical linkages, especially if it is still present in the later stage of cooperation where an effective communication pattern is supposed to have already developed. In older supply relationships, over-loaded communications could actually be interpreted as a signal of inferior cooperation. Of course a certain amount of communication is necessary in the intensifying stages, but it can be very tacitly and intimately embedded within the relevant staffs and in their communication 'codes'. In addition, such close technology cooperation often occurs in parallel with high-level strategic communication regarding the development direction of the relationship. Communication patterns became very straightforward and developed with the division of labour for operational/technological cooperations and strategic integration between the different levels of the firms.

5.2.4 A Summary

Based on the above illustration, a potential limitation of this finding is discussed. It is noted that this stage model built upon the in-depth qualitative data can reflect the foreign multinationals' local sourcing behaviour in the late 1990s and early 2000s in China. Although China has been open to foreign direct investment since late 1970s, the large scale sourcing from China by large manufacturing MNEs only started in 1990s. This evolutionary model is a good demonstration of how both foreign MNEs and local Chinese firms started to develop such cooperation and that relationship development tends to be cautious, incremental, and phased. Over time, with the dissemination of the cooperation experience and knowledge on both sides, there is the possibility that some of the foreign-local linkage development may skip some of the stages that have been observed in this study. For example, some MNEs might have clearer targets as to what type of local firms and what type of vertical cooperation they need, either focusing on cost efficiency or on more value-added activity. Accordingly

some of the inter-firm cooperation might quickly leap to the second stage and remain in the second stage if manufacturing capacity and lower costs are the major drivers behind local sourcing. Or in some other cases, some MNEs might skip the second stage and quickly move the relationship to the third stage where technology ability is the target that they are looking for from local firms. While not excluding such possibilities in the future, it is suggested that this staged model provides us with a comprehensive understanding about the general development path that most vertical cooperation underwent in late 1990s and early 2000s in China, at least in the Electrical and Electronics industry in China.

5.3 Does the customer firm's country of origin (COO) matter?¹⁶

In the International Business field, the COO effect has been found to affect MNEs' location decisions (He, 2003), entry mode choice (e.g. Zhao, 2004), business performance (e.g. Kessapidou and Varsakelis, 2002) and HR management (e.g. Ferner, et al., 2001). Other studies have pointed out the country of origin should be an important construct in examining knowledge transfer (e.g. Young and Lan, 1995; Giroud 2000). However, some studies found limited COO effects. For example, Child and Yan (2001) discovered very limited COO effects on MNEs' strategic orientation, training, management controls and other management dimensions among the multiple countries from which the foreign partners in JVs in China originate.

Giroud (2000) provided one of the first systematic investigations of foreign MNE's linkages with local firms with a specific emphasis on the COO effect. COO is found to be significant in explaining the *existence* of vertical knowledge

¹⁶ This section has been published as Duanmu, J.L. (2006) Country of origin effects on knowledge transfers from MNEs to their Chinese Suppliers: an explorative investigation, in *F.M. Fai and E.J. Morgan (Eds) Managerial Issues in International Business*. Chippenham and Eastbourne: Palgrave MacMillan (forthcoming).

transfer, but less so in the explanation of the *degree* of transfer. Transfers by Japanese firms are reported to be scarce compared to European MNEs and U.S. MNEs, and Western MNEs are more likely to transfer knowledge to the local economy compared to their Asian counterparts. The research concluded that overall, the knowledge transfer from the foreign investors to their local suppliers is limited.

Nevertheless, our understanding of the COO effect on the knowledge transfer issue is not satisfactory. The problem is that the COO effect could be interpreted differently depending on the perspectives taken. We are not clear whether the COO effect is in essence indicative of managerial preferences arising from difficult cultural traits of decision makers of the MNEs; is it more a reflection of MNEs' business strategy in a host country, or are there any other reasons? We are also not clear about the possible paths through which the country of origin actually influences knowledge transfer. Is it through cultural distance that makes effective communication for knowledge transfer difficult, or is it MNEs' attitude in protecting or exposing relevant information and knowledge to their suppliers, or a combination of both? As such, a micro-level examination is needed to reveal the actual mechanisms associated with MNEs' knowledge transfer to their local suppliers and then in turn we can see whether and how the COO exerts influence upon the process.

Figure 5.2: Knowledge transfer intensity and relationship development

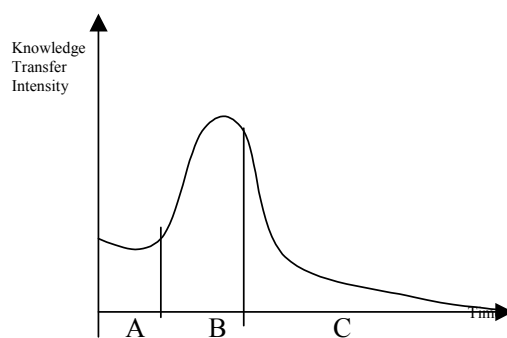


Figure 5.2a: U.S. firms

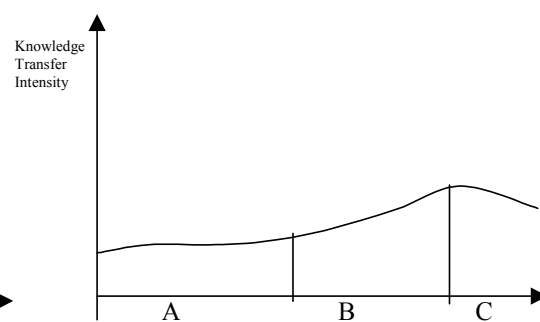


Figure 5.2b: Japanese firms

The section will summarize what is found in this study regarding the COO effect on knowledge transfer. First of all, it is found that Japanese multinationals do behave differently to those from other countries, especially US ones¹⁷. As only 16 dyadic relationships are sampled in the study and being a qualitative investigation, there is no intention to produce generalized results. But since the sample of the study is strongly biased towards Japanese firms due to their higher concentration in the city of Wuxi, it is worthwhile to examine the different behavior between Japanese MNEs from those of other countries. As such, Japanese and U.S. multinationals here stand for two camps of customer firms and European firms are located between the two ends.

The horizontal axis of Figure 5.2 is derived from Figure 5. 1, showing the stages of the developing relationships and knowledge benefits associated with the stages. The vertical axis represents the intensity of knowledge transfer of the customer firms. The study found that US firms prefer local firms with higher initial technology capability (see the dotted line in Figure 2b). In such cases, they can quickly set up a vertical relationship. Therefore the initiating stage A in the Figure 2b is often very brief, and relationship will soon move to the developing stage where both the quantity and quality of purchasing volume is rapidly increasing. To ensure the quality stability of the supplied components from suppliers, US firms are very willing to provide intensive and systematic training and relevant assistance to nurture the supplier firms. Such training does not simply focus on the technical details; instead managerial training is surprisingly abundant with the aim of infusing their management culture into the suppliers'. As a result, the developing stage B is very knowledge transfer intensive and the occurrence of knowledge transfer appears to have a relatively short time span.

¹⁷ Although only two American firms were sampled in the fieldwork, they show very distinctive and strong management style from other firms. In addition, American firms' style is frequently mentioned by any other Chinese firms who have had cooperation experience with them. Thus it is perceived to be worthwhile to establish such comparison.

However it can be demanding to sustain long-term cooperation with U.S. firms, especially because they are particularly focused on cost reduction measures. So even if the cooperation goes well with American firms, the relationship can be terminated when the customer firm finds a ‘better’ candidate, i.e. a new supplier which can provide similar products at lower price level. As a result the stability of vertical relations is relatively low. For example, one American firm’s purchasing manager reported that:

*“Yes, we keep searching better suppliers. We often switch to better ones’.
(Incomplete dataset 1, customer firm)*

As a result, it is demanding for the local Chinese firms to move the relationships up to the intensifying stage and knowledge transfer intensity can drop dramatically once the relationship stabilizes or simply replaced by new suppliers. In contrast, Japanese firms are willing to engage with indigenous firms which do not possess strong existing competence. What counts is whether the supplier firms can pass the sample product assessment. Supplier firms normally had to go through longer and stricter assessment process in the initial phase. Japanese firms were described as very ‘passive’ in providing necessary technical information and assistance in the early stage. It seems that the interviewed Japanese firms’ perception is that if the Chinese supplier firm wanted to build up the relationship, it is supposed to reach the requirements mainly by itself.

“We were kind of passive at the beginning; they were supposed to be active if they want to be our supplier”. (Dataset 6, customer firm)

“We are happy to provide assistance. But in the beginning we would like to see the supplier firm put much effort in achieving our standards. So initially it is their job to get things done. Once they passed the sample test, we would have more confidence in both their motivation and capability and we are happy to provide more assistance” (Dataset 9, customer firm).

Relevant technical information needed was generally obtained by perceived 'relevant' request from supplier firms. Such a passive 'teaching' attitude is one of the reasons that the initiating stage for supplier relations with Japanese customer firms is lengthy and for this reason the initial stage is a critical period for the supplier firms to upgrade and learn. Despite these difficulties, no Chinese supplier firms gave up the opportunity of becoming these Japanese firms' supplier in the study¹⁸ because of the potential benefits for sustainable survival also arose. Chinese firms reported that once they are able to involve into the Japanese firms' value chain system, relationships are more dependable and stable compared those with American firms. The evidence on one hand shows very high learning commitment of local indigenous firms, especially those from private sector. All the supplier firms were actually reported to be willing to afford the cost involved with the initial assessment and sample production; in fact a strong awareness of 'backwardness' permeates among Chinese firms and their eagerness to build up relationships with and learn from foreign multinationals cannot be more obvious. On the other hand the data vividly shows the different style of Japanese firms from U.S. firms. During the cooperation process, Japanese customer firms would also raise their expectations and requirements. But they appeared to be more likely to patiently assist the supplier firm to achieve the improvement that they require. Numerous Chinese firms have sensed such differences and reported as follows:

“Western firms have shorter assessment process once they get satisfactory sample, that is all. But Japanese firms are fussy; they tend to be more conservative. They not only check the sample products, but also the whole processes that delivered the products. But once you become their partner it is difficult to break up. But western firms tend to be more changeable. They are always seeking cheaper or more capable

¹⁸ Again it might reflect the unavoidable bias of the sampled research subjects, where failed relations simply slide away from possible access.

supplier. But if the same situation occurs to Japanese customers they will help extant suppliers to reduce price but not change the suppliers". (Dataset 9, supplier firm)

"This Japanese firm monitors all our manufacturing process from material purchase, self assessment-book to quality system etc. they are different from Western firms. We could not understand why they cared about so many details, but we now know it is so important". (Dataset 8, supplier firm)

"Japanese firms are more bureaucratic and conservative; but once we become their supplier, the relationship will not easily break up. They care about long-term cooperation. When they get (market) information that there are other firms that can provide cheaper (same) components or with higher quality standard, they won't easily dump us. What they do is set those standards as the new requirements and help us to improve" (dataset 11, supplier firm)

The evidence and analysis probably help solve the puzzle that emerged in Giroud (2000, 2002) that Japanese firms were found to have little technology transfer to their indigenous Malaysian suppliers compared to U.S. firms, although in supply chain literature Japanese firms have established reputation for their long-term commitment to suppliers (Sako, 1992; 2004). Context-free studies derived from cross-sectional study might have difficulty revealing the context-bounded fact. The fact displayed here is that in the short-term very able local supplier firms can get a good deal of knowledge from their US partners. Such benefits are based on extensive managerial training and intensive technical communication. To sustain such source of benefits and the relationship, local firms have to keep very high standards of operational efficiency and product quality. Although renewed quality requirements or/and delivery performance

actually can be achieved by extant supplier firms, the time scale that US firms can bear for the suppliers to progress is limited, which often drives them to shift from extant suppliers to new ones. Thus longer-term cooperation with American firms is demanding for local suppliers. It is just as Chinese firms managers expressed,

“We feel uncertain. We do not know when they may find better ones.”

(Dataset 15, supplier firm)

Consequently in the short- to medium-term, U.S. firms appear to have rapid knowledge transfer to their local supplier firms. The substantial benefit can be sustained if the local firms are able to quickly improve their competitive performance. This evidence is fully in line with other investigations about US firm attitudes to cost and capabilities. For example, Helper and Kiehl (2004) found that financing is a constant pressure for U.S. on supplier firms which often lead them to ‘fight fires’ instead of building capabilities for the long-run. Sako (2002) also expressed similar views and she quoted Hajim Ohba, director of the Toyota Supplier Support Centre in the USA:

“My experience is that much of American’s revitalization has been focused on short-term cost reductions to improve profitability. This has resulted in an emphasis on ‘quick fix’ programs and applying technical tools on the shop floor. While these technical tools are part of TPS (Toyota Production System), taken alone they are isolated islands. (Ohba 1997, Cited in Sako, 2002, quoted from Helper and Kiehl, 2004, 104).”

By contrast, Japanese firms are willing to engage with some relatively ‘weak’ local firms to be their suppliers once they can achieve their initial requirements¹⁹. Passive ‘teaching’ attitude will turn out to be positive after the suppliers went through all the assessment, and would become more positive

¹⁹ This evidence is similar with what Chung et al., (2003) found: Japanese assemblers often purchased components from local suppliers that had lower initial productivity levels, and in turn, the relationship with Japanese transplants extended the survival of low productivity tie-in suppliers.

with more patience in assisting over time. Such practice appears to be more beneficial to local economy in that it actually gives ordinary firms extraordinary opportunity. Thus we can see that in the short-term perspective, U.S. firms tend to transfer more knowledge to the supplier firms than Japanese firms. However if a long-term perspective is taken, the difference between U.S. firms and Japanese firms in their transfer of knowledge to local suppliers firms diminishes. In addition, in the longer-run, Japanese firms are more likely to establish close and stable cooperation with local suppliers, which in turn can promote the potential for continuous knowledge transfer. Consequently the time dimension needs to be appropriately considered when assessing the extent of knowledge transfer by MNEs of different nationalities in a host country.

This study also finds that European MNEs have no distinguishable ‘European’ supply chain management practice. It seems practices differ by European nation: some of them attempt to imitate the Japanese model because of the great success that Japanese MNEs have achieved in the automobile and electronics industry since 1980s; some of them keep a close affiliation with U.S. practices due to cultural and language similarities; and some of them are found to be highly ‘localized’ to the context of the Chinese market. It is quite hard to generalize them as a highly unified group as highlighted in the two interview extracts below:

“The Italian firm is much less rigid than, for example, our German customer. German firms barely change their design once they give you the components blueprints. It is helpful for us to produce. However, the Italian firm is much less strict and often changes their design. It makes our job difficult and sometimes the sample products we produced become obsolete because they have changed their ideas! ...They are different but at the same time, they all require good quality products’ (Dataset 5, supplier firm).

“I find the Swedish firm is so localized. Sometimes we joke they are becoming very ‘Chinese’. I feel U.S. customer firms seem to deliberately keep their original style because they are big and very successful. But this Swedish firm is not big and seems to be willing to adapt to our (Chinese) culture”. (Dataset 13, customer firm).

Generally, it seems European firms are less easily distinguishable in their development of relationships with suppliers than Japanese or U.S. firms and therefore I suggest that their behaviours and attitudes lie between the Japanese and US positions presented here. The limitation of the finding is that sampled dyadic relationships are biased towards Japanese firms, which makes representation of the above discussion hard to generalize. But on the other hand, the higher concentration of Japanese firms represents a general picture of MNEs in Wuxi’s electrical and electronics industry. As a result, the above discussion can be an avenue for future empirical studies on the behavior of MNEs of different country origins. As illustrated above, time dimension needs to be appropriately considered in future empirical investigation since it has been revealed as an important moderating factor, which might conceal the real differences of different MNEs.

5.4 A summary

This chapter has discussed the evolutionary path of the relationship development between MNEs and their local suppliers. A comparison between Japanese MNEs and non-Japanese MNEs in their approach and attitude in transferring knowledge to their local suppliers is also discussed. The next chapter will present the second finding regarding the types of knowledge transferred at the different stages of the vertical cooperation.

Chapter 6 Assessing the types of vertical knowledge transfer

6.1 Introduction

The previous chapter has focused on the process of relationship development and the differences of the knowledge transfer behaviour between Japanese and non-Japanese MNEs. This chapter will concentrate on identifying the knowledge content transferred at different phases. First of all, knowledge is categorized into technical knowledge and managerial knowledge for the simplicity of analysis. Technological knowledge is understood as the bodies of knowledge, or understanding and practice that underpin product *design* and *manufacturing* (Brusoni, et al., 2001). Managerial knowledge is defined as the skills and techniques for managing and organizing production and transaction²⁰. This conceptualization was induced from the empirical data where interviewees' response has strongly demonstrated a need to put this dimension in when analyzing the knowledge in transfers.

The knowledge transfer process was time-consuming and filled with trials and errors. Learning was found to occur in an incremental manner and as such the types of knowledge transferred evolved over time as learning both deepened and broadened. Consistent with theories, difficulties were found to arise from the learning of unarticulated or unarticulable aspects of knowledge. Therefore, following the analytical framework in chapter 3, tacit/explicit is another dimension for the analysis of the knowledge in transfer. Consequently a typology of knowledge types is shown in Table 6.1. Table 6.1 contains two dimensions of the knowledge that are transferred in the vertical relations, namely technological and managerial knowledge; tacit and explicit knowledge. At the same time, within this typology I have tried to indicate the evolutionary

²⁰ Very good examples of this include JIT, EPR practice in management. Evolutionary theory in effect perceives the two as '*productive routines*' and suggest that they are closely interconnected and co-evolve with each other.

pathway of knowledge transfer. What the two arrows show are the two patterns of knowledge transfer in the vertical cooperation. One is from technological knowledge to managerial knowledge transfer and the other is from explicit knowledge and tacit knowledge transfer.

Table 6.1: four components of knowledge in transfer

Knowledge	Technological	Managerial
Explicit	1. product blueprints; 2. product assessment reports; 3. product analysis reports, etc 4. new facilities/equipment use ²¹	5. <i>quality system maintenance</i> ; 6. <i>Product cost portfolio analysis</i> ; 7. <i>environment protection requirements</i> 8. <i>material sourcing information</i> 9. <i>market information</i>
Tacit	14. <i>product quality analysis skills</i> 15. <i>operation techniques (material processing skills; machine maintenance tips, etc)</i> 16. Product design knowledge 17. New product test knowledge 18. R&D management	10. <i>Material management</i> ; 11. <i>Supplier management</i> ; 12. <i>Customer management</i> ; 13. Ideology

Key: normal font = identified in **initiating stage**
 Italic font = identified in the **developing stage**
 Bold font = identified in the **intensifying stage**

6.2 Knowledge content – *imitating stage*

It is found that in the early stage of vertical cooperation, knowledge transfer started from explicit technical information, such as types 1, 2, 3 and 4 in the upper left zone in table 6.1. This type of knowledge transfer was highly relevant to the sample test process where product specifications and standards were the major concern. The transfer was mainly realized by the blueprints sent by the customer firm, and occasionally accompanied with physical samples as reference. Technical personnel had moderate degree of contacts, depending on

²¹ This is relevant to those that invested in hardware equipment or facilities.

the degree of product complexity and their prior experience. Since technical language is relatively objective and standard, misunderstanding is limited. However miscommunication did occur in some circumstances. It is found that language can be an issue at this stage. Some blueprints need to be properly translated, but due to the lack of human resource, the process was often delayed by the supplier firm. Chinese employees of the foreign firms often play an important role in handling this issue by offering the lacked resources of the supplier firm. On the other hand, in reviewing literature, cultural distance (Mowery et al., 1996; Simonin, 1999) is also often quoted as an important factor affecting inter-firm communication. No firm in this study, however, acknowledged the significant influence of cultural differences in their cooperations, especially those which have had relevant prior experience. For those firms which have not had such prior experience, they reported that they sensed differences in working attitude and business practice between each other. But due to most contactable personnel from the foreign firms are Chinese, such differences can be quickly explained to and adapted by the local Chinese suppliers and therefore the so called 'cultural distance' often quickly diminished and did not cause difficulty for the desired knowledge transfer. At the same time, some managerial knowledge transfer occurred, but generally was limited due to the constrained managerial personnel contact.

6.3 Knowledge content – developing stage

This stage has a broad time scale compared to the others and thus unsurprisingly most knowledge is transferred during this stage. Relationship-specific technological investments undertaken by some Chinese suppliers started. However although the investment may be associated with a particular MNE partner, this is not generally in highly specified, partner-tailored equipment. In fact most investments made by suppliers at this stage acted as key attributes to

attract other similar customer firms. This is consistent with what Nobeoka et al., (2002) suggested that lots of knowledge that supplier firms learn from the cooperation with their customers are re-deployable knowledge, which helps them expand their customer base in the long-run. Hence these technological investments provide a foundation for growth for most suppliers in the study. For instance:

“I do not think the investment that we made can only serve this one customer firm. No. Actually we have a few customers and we provide them with very similar products, so most investment we made in our hardware can be utilized for serving multiple customers. (Dataset 5, supplier firm)

“They require us to have pressing parts with smoother surface. They also requested us to improve the precision degree of our equipment. It was about upgrading the hardware. We invested about 40,000 RMB to reach the requirements. But the investment can be used to serve other customer firms”. (Dataset 11, supplier firm)

As the vertical supply relationship evolved from the initiating to the developing stage, shared communication codes between staff responsible for coordinating activities began to develop. Staff from both sides worked together to improve extant products and face-to-face discussion and joint problem solving activities started to facilitate knowledge transfers with a greater tacit component. Therefore the type of technological knowledge transferred gradually expanded to include product quality analysis and operation techniques, etc. Simultaneously with the shift from piecemeal production for sample testing in the initiating phase to fully integrated mass manufacturing operations in the developing phase, smooth value chain cooperation was required. This calls for a partially ‘channelled’ administrative system between firms (Foss, 1999). Thus in addition to both codified and tacit technological knowledge transfers, various

types of managerial knowledge (types 5 to 11) were either deliberately transferred through ‘teaching and coaching’ by the customer firms or indirectly gained by supplier firms through ‘imitation’ and ‘adaptation’. As a result, the system upgrading is repeatedly emphasized as the major benefit of their cooperation with foreign MNEs.

“Since the cooperation with XXXX, we paid enormous attention in implementation and maintaining the quality control and system” (Dataset7, supplier firm)

“On a soft aspect, we adopted EPR²² in 2003 to be consistent with their managerial practice” (Dataset 10, supplier firm)

“Eventually we found what counts is the formal quality system. It was a completely new concept to us but we learned the importance of it in ensuring good quality products. ...the most significant benefit that we get from cooperating with XXX is that the quality system has accomplished a substantial improvement.” (Dataset 11, supplier firm).

“The results of the joint projects were reflected in the quality improvement of the starting cabinet we produce. The production cycle has been optimized and shortened; the stock has been greatly reduced and the productivity has been elevated through the adjustment of operation processes.” (Dataset 15, supplier firm)

“The quality system is vital for us and for our customers. Any trivial quality problem can lead to serious failure of the end products. We therefore need to control each process in our production and so we did. The overall quality system helps us realize this purpose.” (Dataset 16, supplier firm)

²² EPR refers to enterprise resource planning.

With the sustained infiltration and adoption of manufacturing and management knowledge from MNE customers, in many cases, the ideology of the indigenous Chinese suppliers altered over time (type 12). While the process of this change in ideology was incremental, the impact of the process was fundamental and significant. In fact all the suppliers firms mentioned and recognized its significance, although the speed of transformation in ideology in these firms may vary from one to the other.

“In the past much effort was not put on problem solving, but on ‘Guanxi’. The cooperation with XXX waged us a new understanding of business. Business is business. Guanxi should be after business. Generally speaking, we have to reconstruct our concepts about what is business and shift our attention and effort on the real issues in companies”.
(Dataset 2, supplier firm)

The benefits that we gained from such cooperation mainly lie on the management ideology. It is not about what technology we have learned. It is about the way of thinking. (Dataset 9, supplier firm)

“Plan economy dominated China for long time and some notions, concepts and ideologies have subsequently dominated our thinking, changes in this aspect need time. The cooperation with the American firm over these years has gradually changed my thinking and I informed these ideas to our management team and employees. I feel our company has been changed. (Dataset 14, supplier firm)

“It is our (the supplier firm) new ideology that leads us to achieved continuous good performance.” (Dataset 15, supplier firm)

In some cases, the change in ideology is also explicitly acknowledged by the MNE customers:

“They (the supplier firm) are a new firm now. A lots of practices have been improved and I think their managers understand better what is market competition, what is long-term cooperation, etc. it is an important aspect for our cooperation. “(Dataset 8, customer firm)

“Their (the supplier) managers’ concept and ideology have changed. With such changes, their effort is put to the right direction. What they got from us is not only profit, but also these changed conceptions and notions”. (Dataset 15, customer firm)

Such fundamental changes in ideology undoubtedly alter both the supplier firm’s strategy and behaviour in facing market competition and its internal responses in terms of structural organization (Chandler, 1990). In this sense, cooperation with multinationals moves these indigenous supplier firms into a distinctive market ‘zone’ which is a dramatically different sub-environment from doing business with indigenous Chinese customer firms even though both exist within the overarching Chinese macro-economy. This evidence confirms Lin, et al’s assertion (1999) that MNEs can convey real benefits to the host economy by introducing and demonstrating not only best practice techniques, managerial competence, product quality and market efficiency but also more importantly, new commercial and work ethics into Chinese business firms. In this way they incrementally contribute to the creation of a more viable economic climate in the host country.

However prior empirical studies either focusing on intra-firm or inter-firm knowledge transfer did not pay attention to this subtle yet important aspect. According to new institutional economics (North, 1999), such changes are more important and fundamental than the influence of mere technology learning. One of the reasons for such neglect might be because the influence brought by ideological change does not show itself in the short-term, even though this can

have a substantial impact on the long-term transition of the firm (North, 1990). However, more studies need to devote some attention to this issue since, as North (1990) suggested, while technology provides an upper-bound to realisable economic growth, *incentives* that are intimately associated with ideology are the underlying determinates of economic performance. An in-depth understanding of the economic development and growth of Chinese firms cannot be satisfactory without considering this aspect. The implication of ideology on economic performance will be discussed in section 7.3.

6.4 Knowledge content – intensifying stage

In this stage, knowledge transfers related to R&D management, new product design development and prototype/design and testing knowledge got the chance to be transferred to and integrated by the supplier firms (Types 15-17). The interviewees reported that as new product development is always associated with uncertainty, no concrete knowledge was readily ‘picked up from shelf’ and transferred to them. Instead, intensive communications between the technical staff of the respective firms became the major mechanism for the information exchanges. Supplier firms reported that almost all the new product development projects will end up with design proposals which are joint products of the partner’s cooperation, but importantly, the supplier firms found the technology cooperative processes subtly provided them with the knowledge of ‘managing’ R&D activity within their organizations system:

‘For example we know how foreign firms control the procedure from the product proposal, evaluation of the proposal, R&D effort to sample production. I mean the whole process. Such learning helps us integrate our practice and system; such knowledge has wide implications to our technology development. It is not an assimilation of a new technology A or B; it is a learning of the methodology’. (Dataset 9, supplier firm)

We obtain much knowledge on the R&D processes.....Because it is our first time to produce the PC chip for fridge; we have got great benefit from it. The cooperation process helps us standardize our technology development process. Although we have had our own practice, some of them are not standard enough. And such learning from the foreign customer helps us gradually build up a standard and more scientific technology development processes. (Dataset10, supplier firm)

Such ‘methodological’ knowledge is different from concrete knowledge or skills about specific problems. It is more general and highly valuable in that it can be widely used and reused. It is an important source of increasing returns that generates firm’s growth (Langlois, 2000; Nobeoka et al, 2002). Compared to other specific knowledge transfer, this type of ‘methodological’ learning is helping the supplier firms build up a R&D system and accumulate more experience and expertise in controlling and promoting their technology capability development. In this sense, this type of knowledge has more system features (Hayek, 1978) which can facilitate increasing return for the development of the supplier firms.

To sum up, the main patterns of knowledge transfer within the vertical cooperations, first of all, the transfer of knowledge started from technical and articulated knowledge; in the second developing phase, the transfer of tacit technical knowledge and articulated managerial practice started to emerge. After certain time scale, both tacit technical and managerial knowledge transfer increased. Relatively speaking, tacit managerial knowledge, such as ideological adaptation took longer time for the suppliers to fully digest and integrate. It is because managerial knowledge is often system-related and its full implementation will involve systematic effort. Technical knowledge transfer was centered on operation skills and techniques, which is not surprising that for a mature manufacturing industry innovation efforts might lie more on the

incremental improvements. For those vertical relations going up to technology cooperation stage, R&D knowledge and its management were the significant benefit for the supplier firms. Such tacit yet general knowledge is a fundamental engine to the long-term technology development and growth of the supplier firms.

Although in the short term, tacit knowledge appears to be hard to transfer (Inkpen and Dinur, 1998; Ranft and Lord, 1998; Simonin, 1999), it does not necessarily lead to a lower transfer level, as found in this research. Time is an important mediator to deviate the linear relationship between the difficulty of transfer and the transfer outcome. As a matter of fact, even if it is relatively simple to transfer 'explicit' knowledge; such transfer of 'off-the-shelf' knowledge does not last long because the customer firms do not have so much knowledge, which is both pertinent to the vertical cooperation and non-threatening to their competitive advantage, to 'teach'. That is, explicit knowledge learning will level up to a 'saturation' state, whereas 'tacit' knowledge is often more subtle, less concrete, and not strategy-relevant yet fundamental to the long-term performance of the firm.

As such, the data does not show the linear connection between the characteristics of knowledge and its transfer; instead time and motivation can overcome the difficulty of tacit knowledge transfer. It is also noted that the influence of different types of knowledge transferred on the firm is interactive with and interdependent on each other. This finding supports Birkinshaw et al's (2002) study that knowledge is a contingency factor influencing its transfer process. Their study uses 'system embeddedness' to categorize knowledge and find that the deeper the knowledge is embedded in organizational system, the longer times it takes to transfer. Although they claimed that system embeddedness is a distinguished dimension of knowledge from tacitness, it is felt in this study that system embedded knowledge, especially those are related

to organizational structure and ideology, are tacit in nature and their transfer takes relatively more time than the transfer of specific knowledge.

From another angle, these evidence also support the organizational learning literature (e.g. Argyris and Schon, 1970; Senge, 1990; Argote, 1999, etc) that knowledge is embedded in the different levels of the organization structure and in turn different types of learning, such as ‘single loop’ and ‘double loop’ learning enhance different types of knowledge of the organization. Although organizational learning is not the primary theoretical perspective that this research takes in understanding the knowledge transfer process, with the reason that these literatures take an internal perspective in understanding learning in organization while the present study focuses more on the inter-firm process of knowledge transfer; nevertheless, the data emerged in the fieldwork, especially those on how the supplier firms learned and assimilated knowledge, does show supporting evidence of these literatures.

6.5 A summary

This chapter has presented the second major finding of the research, namely the types of knowledge that were transferred to the local Chinese suppliers at the different phases of the unfolding vertical cooperations. The in-depth information on the knowledge transferred at different stages is an important contribution to this research topic since most studies only concern the aggregated outcomes for the supplier firms in their cooperation with foreign MNEs. The in-depth analysis above provides suppliers (and MNEs) with a clear picture of the occurrence of knowledge transfer at different cooperation stages, therefore can be of important practical relevance to as what they can expect from the cooperation and how they can proactively adjust their practices and strategies to promote desired knowledge transfer. This further confirms the strength of using

qualitative processual methodology in investigation the research issue.

Apart from these received and assimilated knowledge from their MNE customers, a by-product for all these suppliers are that their improved capability, both technological and managerial, and their successful cooperation with MNEs, substantially improve their business opportunities with these extant customers and also improve their business opportunities with other customers. Over 50% suppliers reported that their business deals with the MNE customers are increasing and for some of them even gain business opportunities with MNEs abroad. This, in turn, becomes an export promotion for these suppliers and therefore for the whole economy. As a result, the vertical linkage between MNEs and local suppliers can promote export by improving the local supplier's technological capability and market credit. This evidence is consistent with Ivarsson and Alvstam (2004) that most Indian supplier firms have improved business opportunities with Volvo after establishing cooperative relationship and satisfactory performance. In addition, these Indian firms get more business opportunities with other customers due to their improved manufacturing capability and credit.

The two chapters (chapter 5 and this chapter) have summarized the general evolutionary pathway of relationship development between MNEs and Chinese local suppliers and the types of knowledge transferred. Section 5.3 has distinguished MNEs of different country of origin in their influence of vertical knowledge transfer. The following chapter (chapter 7) will discuss trust and ideology issues emerged from the interview data and demonstrate that how trust at inter-firm level and ideology at the macroeconomic level can both affect economic performance. Chapter 8 will then assess which, technological knowledge or managerial knowledge, is more easily to be learned and assimilated by local Chinese suppliers. The Chinese suppliers firms are then categorized into State-Owned Enterprises (SOEs) and Private-Owned-Enterprise

(POEs) and their different learning behaviour and aggregated learning outcome are compared and contrasted.

Chapter 7 Trust and Ideology

7.1 introduction

This chapter aims to summarize the development process and function of ‘trust’ in the inter-firm cooperation that has emerged from the fieldwork data. Secondly the ideology adjustments occurring in the supplier firms are discussed in line with how this can, in a large scale, affect the economic performance of the economy. The purpose of the chapter is to highlight the ‘motivational’ issue at both microeconomic (inter-firm) and macroeconomic level and how they can affect the economic performance in their respective domain.

7.2 Think Twice about ‘Trust’

The discussion of ‘trust’ at the inter-firm level follows the conceptual framework of three types of ‘trust’ outlined by Sako (1992). The reason is that her conceptual framework on trust considers legal, cognitive and social aspect of trust in economic activities and is one of the most clarifying conceptual frameworks of studying trust in this area. The three aspects are as follow:

1. Contractual trust -*Mutual trust may exist such that each adheres to specific written or oral agreements. For want of a better label this type of trust may be called contractual trust predicted on both trading partners upholding a universal ethical standard, namely that of keeping promises. Any business transaction relies on contractual trust for its successful execution.*
2. Competence trust-*This type of trust concerns the expectation of a trading partner performing its role competently. Technical and managerial competence is at issue here and this type of trust may therefore be labeled competence trust²³.*

²³ Competence trust in Sako’s (1992) theorizing is similar to ‘economic trust’ in Larson (1992) empirical

3. Goodwill -*A third type of trust is of a more diffused kind and refers to mutual expectations of open commitment to each other. Commitment may be defined as the willingness to do more than is formally expected. This trust in open commitment is labeled good will trust.*

The following section will connect this framework with the fieldwork data to explain how the trust of various types develops over time and what the function of them is in promoting the vertical cooperative relationships.

7.2.1 Initiating stage: development of competence trust

In the first stage, the customer firms were faced with a ‘competence uncertainty’ problem of the supplier firm. This is the best explanation for the procedure involved in executing ‘quality evaluation and sample tests’ with suppliers. The partner selection process helped build up the bottom-line ‘competence trust’ and therefore reduced the ‘competence uncertainty’ to an acceptable degree so that the customer firm could reap enough confidence when initiating the relationship. This clearly shows that the objective of product quality is too important to be left to market forces (Coriat and Guennif, 1996) - the visible hand of organizational arrangement which acts as a common horizon is, in this case, preferred by both partners to the solutions offered by the free market.

“We need to visit the company, evaluate them. Before that, there is not much to say trust or not trust. We simply do not know yet” (Dataset 4, customer firm).

“Supplier selection process is very important for choosing a right supplier and sustains a long-term relation. We do not concern whether they will like to work hard. Normally they will. Mostly we concern if they can do what they like to promise. So we need to assess them step by step. That is why we

have such complicated and detailed evaluation database....” (Dataset 9, customer firm)

At the beginning, I cannot say much about trust because we did not know each other yet. Trust is more build up in the process of our cooperation. For instance the evaluation process at the beginning is a very importance source to build up our trust in their ability...of course more trust was built over time”. (Dataset 7, customer firm)

In contrast to the customer firms’ concern with ‘competence uncertainty’, the supplier’s competence concern is not relevant in this case as most MNEs are perceived as ‘competent’ market players. In addition, both sides show insignificant concern about the incentives of the partner. For most Chinese supplier firms, foreign multinationals from mature market economies and often with international reputations are easily trusted as ‘reliable’ partners. The foreign multinationals often have a certain degree of acknowledged authority in the inter-firm cooperation despite of the separate ownership of their independent local suppliers. In this sense, the (western) market economy institution has built up substantial trust due to its relatively successful legal system and economic performance. This evidence confirms Zucker’s (1986) view on the distinction between personal, social and institutional trust. It also shows that high trust can be derived from different resources. It does not always require long-term, personal or relationship exchanges (Bennett and Robson, 2004); but it has to be admitted this kind of institutional trust itself takes long time to build up. However, once it has been established, it becomes an intangible valuable resource that organizations can utilize and leverage. While power asymmetry exists in all the relationships studied in this research, most Chinese firms felt this, even existing, does not negatively influence the cooperation. Ten suppliers firms explicitly expressed their trust in their customer firms and positive perception about the ‘equality’ of their relations with their customer firms while

other supplier firms mentioned it in an indirect way.

“We trust the customer firm. It is an international brand name. They have good business practice....and we found they are! We need to learn from them”
(Dataset 5, supplier firm)

“The relationship is based on equality...they are much better than most SOEs we used to work with, I have to say” (Dataset 10, supplier firm)

“It is not that they are stronger so we have to follow whatever they asked. Communication between us is friendly and interactive....we are very equal. They have good business ethics, which impressed us”. (Dataset 15, supplier firm)

“To sustain a healthy vertical relation, equality is the most important thing. Without it the relation will be short-lived. There is always possibility for the powerful side to treat the weak side as their branch or something like that. Asymmetry in the size between us is prevalent. But business relationships have to be equal. Otherwise one side’s benefit will be hurt and no side can afford to be repeatedly hurt.... The reason we have good relation is that we care each others benefits. In the end it has nothing to do with the company’s size. It (whether the relation is equal) actually depends on the company’s strategy and thinking”. (Dataset 16)

For a country moving out from a socialist economic system, with still prevalent low efficient economic infrastructure, the chance to cooperate with foreign firms is frequently perceived as a shortcut to a highway of fast development. Therefore, the question of opportunistic behaviour of the foreign partner is surpassed by the incentives to learn and benefit. Moreover, all the foreign customers are indeed reported to be ‘trustworthy’ in their business relations with these indigenous Chinese firms. On the other hand, the foreign multinationals

seemed to have even lower concern about the motivation (or the willing to work hard) of the potential Chinese suppliers. Most foreign managers were impressed by the eagerness of Chinese supplier's commitment and learning attitude. The concern of technology leakage is also moderate as most foreign multinationals located in China are executing the manufacturing function, whereas their R&D centres are mostly in their home country. As a relatively weak side, most Chinese firms were believed to have high motivation to work with them if their capability reaches a certain acceptable level.

Overall the empirical data shows that effort in information collection helped reduce information asymmetry, particularly in the process of building up of 'competence trust' in partners. Nevertheless a comprehensive trust is largely found to be incrementally built up via the process of the contacts and communications between firms, rather than being a *prior condition*. Any game may start with some degree of 'uncertainty' about the partner's *competence* and *motivation*²⁴. The persistent residual uncertainty requires both sides to take some risk in stepping into the transaction relationship in the first place. On the other hand, once the communication between partners started, trust began to be built up, whilst those relationships that cannot get the necessary level of trust simply would not be able to proceed. Therefore, the dyadic relationships that most research can get access to (including the present study) are those that have been developed into certain stage while those relationships that did not proceed with trust simply dissolve at very early phase.

Contractual trust has not appeared to be obvious at this stage. All the relationships initiated with contract after satisfactory sample test and factory evaluation. The degree of formality varies from case to case, however none of

²⁴ As trust can be categorized as competence trust, contractual and good will trust, it will not be surprising that broadly speaking, cognition and incentives are two distinct issues associated with contract, be it within the firm or in inter-firm cooperation. Clearly Williamson's TCE puts focused attention to the latter and recently literatures such as Madhok (1996) Love (2005) have started developing opportunism-independent theory of the firm.

the relationships denied the necessity of the legal process. Contractual trust probably needs more time to build up in repeated transactions. Goodwill trust is even vaguer since the partners have not known each other well at this stage.

7.2.2 Developing stage: enhancement of competence trust

The developing stage shows that trust is incrementally built up via the process of transacting. All the dyadics signed contracts after passing the sample test process, although the extent of the complexity of ‘contracts’ varied from one case to the other. Japanese firms are reported to have ‘thick’ contracts delivered to the supplier firm and it is hard for these firms to make good sense of the clauses listed. But some European firms have quite simple contracts signed as a signal of the official start of the relations. Nevertheless contract was preferred by the majority of the firms in question even though only a very small number of them perceived the ‘contract’ as an important factor in contributing to successful cooperation. In some cases, the customer firms reported that signing a contract is a necessary step to adjust to their complicated administrative system. For a certain supplier registered into their administrative system, the contract has to be present. Generally they also believe that contract only plays a moderate role in the long-term business relations. That is, it is certainty necessary to have a contract, either as a form, or as a reference, but it is not sufficient to work out a successful relation.

“Signing a contract with XXX means that we formally become their supplier. We need contract. But in daily work, we need lots of communication to make it work, and work well. (Dataset 1, supplier firm).

“Well, we have contract. It is necessary, especially for the supplier firm. But it is just a form. We need to work hard to make it work. Contract is not enough.....we need to work hard together. Communication and performance are important. If they do not perform well enough, we do not

need to talk about trust. Nothing works if our product is rejected by market, right? So performance is the key” (Dataset 2, customer firm)

“We still prefer to have contract although we won't expect us to come back to it again and again. In that case we cannot work. It is just a reference in case.....we trust each other very much now because the experience has told us we are both good....we are satisfied with the cooperation” (Dataset 5, supplier firm)

“We have quite simple contract. I know Japanese firms have kind of very formal ones. Well we do not like that. But our contract work the same way! In fact most trust is build in the process of our cooperation” (Dataset 7, supplier firm)

The data shows the use of contracts can serve multiple purposes. Although in theory, contracts seem to be most relevant for controlling opportunism or shirking, as shown above, it is also used simply as an ‘administrative requirement’ of most MNEs. The function of contract in ‘governing’ the relationship need not be belittled, but the data clearly shows that contract is only part of relationships. The data confirms Casson and Della-Guista’s (2004) propositional argument that transacting itself is seen as a process of trust-building and the performance of the supplier firms is the most important factor contributing to the healthy development of the relationship. Whereas suppliers showing high learning ability and good performance gain more favour from the customer firm, low performance suppliers either cannot even pass the sample test, or are only given a low proportion of the sourced components. Multiple sourcing is prevalingly adopted by most customer firms to reduce quality risk and keep moderate competition between supplier firms. Therefore performance determines the degree of ‘competence trust’ between the customer and the supplier firms. For most Chinese supplier firms, foreign multinationals are reported to be very ‘trustworthy’ in their payment and in their assistance offered.

However, ‘goodwill trust’ remains an ambiguous concept and difficult to be precisely captured in the empirical data. In most business relationships, performance – the universal business principle is the dominant discipline for partners to evaluate each other. Goodwill only appeared in some relationships which were embedded within some long-term personal contacts. However, most personal relationships function consistently with business principles and indeed most goodwill trust between personnel is a by-product of successful cooperation between firms. In addition, when personal goodwill is integrated with business relations, there is a certain range or ‘zone’ in which it can be acceptably involved, but it is hard to go beyond such a ‘tacitly’ agreed range. Therefore, there is no reason to either believe that personal relations will always be necessary and helpful in promoting commercial relationships or believe that commercial relationships will always have a lower level of trust than personal ones (Bennett and Robson, 2004). The reality is that different types of trust are founded differently and can be interactive with each other in some circumstances. In inter-firm cooperation, especially when the performance, such as the supplier firm’s performance can be quite objectively measured, commercial principles should be more important in determining the relationship development.

“Personal relations, well, we have some. I mean we (the managers have) known each other for ages. But mainly it is business relation. If the performance is not good enough it will be hard to ask for any personal favour” (Dataset 3, supplier firm)

“The personal relations between bosses can help a little, for instance when we need some urgent help from them. I can call him directly and he will help for the sake of friendship. But it is limited. Mainly we are business relations and personal relationship can work only when it goes along with the business relations. (Dataset 11, customer firm)

7.2.3 Intensifying stage: comprehensive upgrade of trust

For the dyadic relationships that have involved more technological cooperation, interdependence is high. Tacit communication between operational staff became quite routinized among the networked staff from the two companies. High level managers have frequent strategic discussion as to where the cooperation may go further and how to appropriate greater value through more integrated cooperation. Both sides were perceived as the ‘extended self’ of each other, and trust levels were comprehensively higher. Again, the concern about the incentive issues on the partner. Instead what they concerned with is whether the firms will continue to have a convergent perception on the development path that the firms would like to take. Therefore a shared ‘view’ of the future is the cement bounding them together. There is no guarantee that the firms will always have shared strategic development plans, but once divergent perception occurs, the cooperation might shrink to a less complicated relation, which however does not mean it is due to a lower level of trust. Instead it shows that the firms have different plans for their future which just happen to be not convergent enough. There was no such case at the time of the interviews with these companies, but this view is expressed by the managers in the interview.

“Well, if we continue to be happy with the strategic plan that we are undertaking, the technological cooperation will certainly continue. We are very good now. But we do not know how long it can last; I mean it is not realistic to expect two firms to have same strategic direction all the time. But I am positive our cooperation will be quite long-term (Dataset 14, supplier firm)”

This confirms what Mowery, et al (1996) found that in most strategic alliances with the primary purpose of knowledge transfer, the development of relationship and the realization of the desires knowledge transfer, often ended up with an exhibition of technological divergence between the strategic alliance

partners. This sharply contrasted with the technological convergence that would be expected in alliances geared toward knowledge acquisitions and capabilities transfer. However, it is consistent with the division of labour perspective that over time, the firms in an alliance will co-evolve and become more specialized in their distinctive yet divergent areas.

7.2.4 A summary

This section will compare the empirical findings with Larson (1992). Since Larson's work primarily concerns a very different research question, straightforward comparison is difficult. However, the present work shares some similarities with Larson's work (both are on vertical cooperation development) and methodology (both use the multiple case study method). It is therefore perceived to be useful to compare this research with Larson's in a general manner to reveal and summarize some common insights into governance issues and the organization of economic activities. First of all, there is no doubt that economic actors have self-interested trait, that is, their decisions and behavior are based on the consideration of their own interest. This is confirmed in the present study and Larson's. The decisions of the firms to cooperate and establish long-term cooperation are from their self-interested rationality. Only when the decision based on the self-interested rationality of one firm corresponds with that from the other, could cooperation come into being. This is often called 'double coincidence' in economics (Campbell, 1996). Therefore, it can be equally true that it is still in one's self-interest to trust another person/firm and to cooperate. The pursuit of self-interest has no inherent negative connotations because it is not to harm another person/firm (Axelrod, 1984).

Both competence trust and contractual trust are found to be instrumental to foster the development of the relationship, whereas the former appears to be

very important while the latter only shows moderate importance in the long-term relations. Moreover, pure non-calculated trust is hard to be empirically captured and therefore the ‘goodwill’ trust remains ambiguous. This evidence is close to what Williamson (1993) suggested that ‘*calculative trust*’ is a contradiction in terms (p. 471). In this case, it is hard to see non-calculative trust in these commercial relationships and ‘trust’ is largely a by-product of the evolution of cooperation.

Secondly, there is no evidence to show that ‘trust’ is an antithetical mechanism to legal contracts in facilitating inter-firm cooperation. As one of the interviewees wittily discussed:

“...If two people love each other, they might decide to get married to show their love and commitment to each other; but on the other hand, if two people genuinely love each other, why do they need a legal contract to bind them...in our cooperation, we seem to need both...” (Dataset 9, customer firm)

It is hard to provide an exclusive answer to the question that the interviewee posed, but the fieldwork shows that generally speaking, trust and legal contract exist hand in hand. This is consistent with what Larson found that both economic incentives and social dimensions are central in explaining the formation and maintenance of the exchange structures. They are two mechanisms that complement each other in smoothing and promoting cooperation. Not a single interviewee answered that since they trust each other, they do not need legal contracts at all; and not a single interviewee reported that they totally rely on legal contract and are ready to go to court once something goes wrong. Instead, a combination of trust and legal contracts are used. This evidence supports the view that contract and trust are overlapping means of controlling relational exchanges (Zucker, 1987; Arrighetti et al., 1997; Deakin and Micki, 1997; Bennett and Robson, 2004).

Thirdly, in observing how the contracts between partners were signed and renewed, it is found that the long-term inter-firm cooperation possesses some ambivalent hierarchical relationships. The contract often resulted from the implementation of routine 'rules of the game' which both sides understand and agree on. It also can be explained by the fact that once a certain relationship was initiated, it showed varying degree of inertia. Practices and routines that were adopted at the beginning will be followed again and again until one, or both, sides strongly want to revise them. In this sense, reality does contain structure which renders on enduring influence on the behaviour of actors (Giddens, 1984). In other words, the economic incentives that initiated exchange relations renders social dimension in the long-run (Larson, 1992).

To sum up, this section has shown that trust is one of the important outcomes of, rather than a major precondition of, the cooperation and it can become an intangible asset for the firms to earn more business opportunities. This is also consistent with the finding in Larson (1992) that the traditional picture of internally driven firm growth was replaced by the creative use of networks to gain footholds in markets and to serve as critical conduits to enhance revenues, gain information and technology and stimulate innovation. The *ex ante* preparations specified as the main activity of the customer firms in the first stage of the cooperation is a process by which they start to obtain first-hand knowledge of the supplier. It is a process of building-up competence trust, however even with the careful selection and testing process the customer engages in, information asymmetry problems cannot be completely sorted out and there is no guarantee that the supplier will be competent enough to fulfill all the tasks that the customer firms require. Consequently more competence trust is build up in the ongoing transaction process. In addition, there is no way to assure the motivation/goodwill of either side *ex ante*. Therefore it is suggested that cooperation always contains certain degree of risk which cannot be reduced by *ex ante* information collecting, and economic actors need to take certain a

degree of risk to initiate cooperation. Certainly they may reduce the degree of risk, however the risk is never going to be totally eliminated. Such risk contains two types of uncertainty: one is associated with actors' motivation and the other is performance – that is whether they can achieve what they expect to from each other and whether their joint efforts can bear the test of market selection. So the residual risk requires a certain degree of risk-taking from both sides of cooperation and it is not 'trust' *per se*.

7.3 Ideology, economic institutions and economic performance

As mentioned in the fieldwork data that “*cooperation with multinationals moves these indigenous supplier firms into a distinctive market 'zone' which is a dramatically different sub-environment from doing business with indigenous Chinese customer firms even though both exist within the overarching Chinese macro-economy*” (see section 6.3, page 115), this section aims to elaborate one of the by-findings of the 'trust' issue in the Chinese economy, that is, how the overarching Chinese macro-economy differs from the sub-environment created by foreign MNEs in their operation and cooperations with local Chinese firms. It is noted that the 'trust' discussed here is different from the micro-level 'trust' development within the vertical cooperation which has been presented above. The major concern here is to discuss the formation and effect of 'trust' or 'distrust', e.g. business ideology, and its impact on economic performance.

First of all, it is noticed that most supplier firms, especially those from private sector complained about the low trustworthiness of their indigenous customer firms, most of which were SOEs. Even well-known Chinese brand companies, such as Haier, did not escape from such frustrating complaints from their supplier firms which happened to be in the sample for this study. The prevailing degree of trust is perceived to be low by interviewees and most of them

expressed their ‘business shock’ in dealing with foreign multinationals, especially for those who also supply domestic Chinese customer firms. They were amazed by the ‘healthy’ business practice and ethics of the foreign MNEs.

For example:

“We trust them very much. They have sound business practice. They always pay us on time. We never doubt their trustworthiness.” (Dataset 10, supplier firm).

“We were so impressed by their work habit and practice. They never stayed here for meal after providing us with technical assistance, etc. it is pure business relation...It is much better than those Chinese indigenous customer firms” (Dataset 15, supplier firm).

Very different opinions about their domestic customer firms were equally easily to spot in the interviews from time to time.

“We prefer to have more foreign customer firms. We can learn more andBusiness is business with them, which is different from domestic Chinese firms. They are so hard to handle and unreasonable sometimes. (Dataset 5, supplier firm)

“They often delay the payment. It is like the payment is dependent on the manager’s mood rather than the business. Sometimes it is really frustrating. (Dataset 7, supplier firm)

“I know that as a SOE, they do not pay their suppliers on time sometimes, which in turn causes problems in their supply for us. (Dataset 9, customer firm).

“The technical staff from our MNE customers did not even stay for lunch.....They came to offer us technical assistance or sometimes for

meeting technical staff here for some problem solving and discussions. They came and did their work and left. I mean, lunch is not big deal. But they have strict business rule and we are not allowed to buy them lunch.if it were Chinese customers, it would be hard to say. Perhaps big meal in some expensive restaurants....? (Dataset 11, supplier firm).

At a more general level, some managers talked about their personal business experience and feeling about the Chinese business environment.

“...This involves the trust issue in the Chinese society.... we seem to advocate ‘flexibility’ among students and children and believe that people with high ‘flexibility’ are smart. However, such flexibility encourages people to break principles in doing things, people who follow principles and rules are mocked to be stupid and stubborn sometimes. As a result, students tend to be ‘flexible’ when they step into the society after graduation from universities. But from these foreign firms we can see they have strict and comprehensive system and everybody is expected to follow. It is these principles, rules that make things better. We need change. Over-flexibility only encourages dishonest, low commitment and low trust. (Dataset 11, customer firm)

Trust is low in this transition society, which is completely opposite to what its traditional culture advocates. However, Chen (2001, p. 182) has insightfully pointed out: *distrust has been the norm historically in this society*. But the question remains unanswered: why has the market economic system not generated an increasing level of institutional trust within the Chinese society? Are Chinese businessmen naturally less trustworthy than businessmen from other economies, such as Japan or US? The answer cannot be in the human nature. Indeed, human nature is universally same. The answer lies in the fact that China is adopting market-oriented economic reform *in the absence of*

capitalist constitutional order (Yang, 2003). While the market economic system implies the free market for commodities, the absence of capitalist constitutional order in China renders the society with no ‘political market’, or in another word the political market is monopolized by the Communist Party. Since a lot of transactions have to take place between individuals and the state and between business organizations and the state, the lack of trustworthiness and monopoly power of the state render the individuals and business organizations less security or bargaining power. As such, state opportunism becomes the top-bottom mechanism that generates the low trust level to the whole society. The following part will unravel the theoretical foundation for this statement.

New institutional economists, such as North (1990), have stressed that capitalist economic development is a result of capitalist institutions; the capitalist institutions affect the level of division of labour and the related extent of the market via their effects on trading efficiency; while the level of division of labour and the extent of the market affect development performance, which in turns drives institutional change. What has happened and is happening in China, like lots of other developing countries, is that it mimics successfully the efficient pattern of division of labour that developed countries have already found by gradual social experiment. The free organizational information created by capitalist developed countries creates an opportunity for big-push industrialization for latecomers. However, what makes China a departing example from other developing countries such as Taiwan and South Korea is that its political system remains largely untouched. This is often called ‘dual track’ reform approach by adopting market-oriented economic reform but sticking to the single party polity system. The unchanged polity system renders the communist party an absolute political monopoly.

The implication of one party monopoly in the polity system for a country is not hard to see. In China, the ideology of Marxism, Leninism and Maoism where

the legitimacy of the communist party's ruling power is based on is taken and must be accepted with no justification. Its notions on the source of power are similar to the old notion of the origin of power being Divine (Yang, 2003). It gives no indication how citizens join alone in or consent to the political system of the country. Such constitutional order is in sharp contrast with the one created in UK in 1688 with free association and an independent judiciary (Yang, 2003). As all citizens' rights, in China's system, are 'given' by the state and can therefore be 'withdrawn' by the state, which means that the constitutional system gives no solid protection of private property rights in a political sense even though it is imitating the capitalist private property rights system. Vanberg (2005) also suggested that there are two 'parallel' markets in a country: commodity market and political market. It is argued that improving commodity markets means to adopt and to maintain an economic constitution that enhances consumer sovereignty, and that improvement in the political arena means to adopt and to maintain constitutional rules that enhance citizen sovereignty. Clearly what is taking place in China is the former not the latter. Moreover, the two 'markets' are not totally separated. When the state intervenes the 'commodity market', both the consumer sovereignty (affected by commodity market competition) and citizen sovereignty (affected by political market competition) are constrained by the state power. Therefore, the institutional power structure of China gives rise to state opportunism, which in turns becomes a top-down mechanism that transmits the impact of the 'state opportunism' to every aspect of the society (He, 1997).

As illustrated in this study, most Chinese firms are used to the opportunistic behaviour and lack of trustworthiness of some SOEs and the government. The short-term implication is that low trust levels mean some cooperation opportunities that would have been taken to achieve mutual benefits are foregone. For instance, the SOEs' behaviour in squeezing their supplier is certainly an unwise behaviour if SOEs are rational profit maximizes because it

will weaken their own competitive advantage by harming their partner's motivation to cooperate. However it makes sense for those SOEs managers of doing so to appropriate private interests while sacrifice the interests of the SOEs. Therefore the high agency costs prevent SOEs behaving rationally and achieving higher organizational efficiency (Cauley and Sandler, 2005). For instance, an experienced manager of a supplier firm reported:

“Sometimes they suddenly returned our products or reduce the purchasing. We had to meet them and enquiry the exact reason. When we got no explicit answer, it might mean that we have to do some ‘homework’ by visiting and having some meal with the managers to improve our communication. In fact, it is bribery....some of them have the power to allocate their purchasing to different firms and we have to give them ‘personal favour’s to keep our business.....It is China, even big firm like Haier has such thing.” (Dataset 5, supplier firm).

“The purchasing managers of some SOEs are very wealthy, although the salary in SOEs is much lower than that in foreign firms. Lots of personal favours can be derived from their job.” (Dataset 9, supplier firm)

“...it is said to be one of Haier’s, or TCL²⁵’s supplier, you have to buy their managers with at least XXXX RMB.....I do not think we have such financial resource to do that. We are very happy to cooperate with our foreign customers. It is so straightforward and business is business”. (Dataset 13, supplier firm).

Fewer Chinese suppliers want to cooperate with SOEs whenever possible. This will render a dilemma that those SOEs within the same sector of MNEs will find it hard to find qualified suppliers to cooperate or capitalize on local

²⁵ TCL is one of the largest electrical product providers (white goods) in China.

suppliers' improving capability, unless they decide to adjust their business practices to the standard of MNEs. However, through the cooperation with MNEs, most Chinese firms started to recognize that trust is so important to facilitate 'productive cooperations', such as:

"We seem to understand that we can cooperate with another firm over long-term, even though, we are both independent firms with our own ownership. It is hard to imagine years ago, where all the practices surrounded us is that the big (such as SOEs) take advantage of the small, and the small have to work hard to survive. ...it is kind of a completely new idea that firms actually can cooperate and benefit both" (Dataset 8, supplier firm)

As such, the ideology of the most Chinese firms in the study is evolving. A 'never-cheat-first' strategy seems to be replacing 'cheat-first' strategy. 'Flexibility', which used to be kept as golden rule, is now widely suspected by these Chinese firms. However, since the state monopoly remains, the bottom-up trustworthy behaviour will be hit by opportunism from the state sector at certain point of economic activities. It is not clear that when these newly 'learned' business ethics for business organizations can remain or will fade over time. But the state monopoly will be an enduring constraint factor that makes the complete ideological adjustment in China impossible.

However the short-term benefits of such ideological adjustment in Chinese firms are various. A more fair and amicable business sub-environment can improve the X-efficiency factor within the firm (Leibenstein, 1978), especially for SOEs (Yang, 1993). Even if the technological resources remain the same, there is still much room for the firm to improve the low efficiency situation rendered by the negative aspect of the organizational incentive structure. In fact, the fieldwork found that most SOEs are learning to adjust their internal human resource management, which include personnel recruiting, training and reward

practices. These changes are helpful to improve the incentive structure within the firm and are supposed to promote the organizational efficiency. Secondly, a long-term business orientation and strategy can be encouraged, which is helpful for innovation and higher-value activity which often demand complex cooperation between economic actors, whether within, between firms or between group of firms. Thirdly while these Chinese firms will do business with other domestic firms, their business practice and ethics will be communicated to others, and therefore can produce a positive externality.

These benefits will have more significant social and economic implications in the long-term. The theoretical foundation of this empirical finding also can be found from Nee and Cao's recent research (2005). They suggested that that China's greater success in its transition period of time is driven not so much by new formal rules instituted by the central authority. Instead, the success largely lies to its bottom-up realignment of interests and power as new organizational forms, private property rights (mainly refer to the booming private-owned sector and foreign invested firms) and new market institutions evolve in an economy sharing away from state control over economy activity. In China, changes in the formal rules governing the emerging market economy have tended to follow ex post changes in the informal economic practices and the competitive environment. A parallel process has occurred in Eastern Europe and the former Soviet Union, where following failed attempts at designing capitalism in one fell swoop, a more incremental bottom-up approach tacitly replaced the big-band approach of top-down legal and regulatory changes, as political and economic actors grappled step-by-step with the concrete problems of their emergent market economy (Elster, Offe and Preuss, 1998; Sachs and Pistor, 1997; Stark and Bruszt, 1998). As such, we can see that firms are not the passive recipient of the institutional environment of a country; they can exert their voice into the adaptation of the institution by adopting more economically valuable business ethics and practices.

With the shifting ideology, a more positive and active business environment is hoped and may give the system new source of growth. What seems to be still problematic is that in China SOEs still hold a considerable proportion of economic undertaking. As a privileged group they often enjoy unfair priority in getting financial resource and other legal back-up from governments (Nee and Cao, 2005). For example, SOEs have easy access to capital in China, which means capital market in China's economy still puts high barrier for free entry, which in turns produces distorted capital competitive environment, where business organizations' access to capital is not judged by their performance but depends on their 'guanxi' with government (Yang, 1993).

In essence, the existence of SOEs is the direct participation of government into economic life, which often leads to undesired effects, such as they exploit privileged resources for their own interest. The reason is that this agent – 'the state' is an absolute monopoly which is subject to no other's competition or monitor. It is argued that social institutions such as the state and the commercial firm are supposed to have clear horizontal division of labor, with the former taking care of the issuing and enforcing the rules and norms of economic competition and other public issues, and the latter creating and competing economic wealth based on the institutional infrastructure governed by the former. Since the existence of the government/state and its intervention into economic life is widely adopted practice around the world and each country has state-owned business sector, whether there is possibility to complete privatize the state sector and dissolve the institution of the state is beyond this research. It is however suggested that, in China, effort is supposed to put to constrain the state's direct participation into economic life for its own commercial interests.

A similar viewpoint can be found from Yang (1993). Yang (1993) suggested although privatization of state owned firms is on the top priority of the agenda of China's reforms, which is a precondition for the separation between profit

seeking activities and the civil service sector and for a clean and effective government, privatization should not be used as a slogan for any reform campaign. The government should develop an independent legislation body and let it work our property law (or revise the relevant provisions of the existing civil law), fair competition law (consistent with internally recognized standard) and corporation law. The previous practice in China that assigned a government department to draft a law should be abandoned and the new practice that assigned independent scholars to draft a law for People's Congress should be encouraged. As the new legal system evolves and cases based on the new legal system are built up, a strong private sector will spontaneously emerge from the legal system even if no privatization campaign is pursued. A privatization campaign pushed by the government is inconsistent with the spirit of the rule of law and incompatible with Hayek's insight that the efficient institutional arrangements can emerge only from a spontaneous process based on fair competition and voluntary trade of property rights (Yang, 1993).

7.4 A Summary

This chapter has summarized the two aspects of the motivational issue of economic organizations and performance. Fieldwork data has revealed the process of the build-up of trust and the functions of different types of trust in promoting inter-firm cooperation. While the economic incentives are revealed to play the dominant role in such a process, a social dimension does emerge afterwards. Secondly, a theoretical discussion has provided as to why the China's economy still suffers from low levels of trust and how the Chinese supplier firms have experienced the ideology adjustment in their cooperation with MNEs and what the long-term implication can be of such adjustment for the economic performance of the country. The next chapter will be devoted to elaborating which, technological knowledge or managerial knowledge, is more

easily to be learned and assimilated by local Chinese suppliers and why. The Chinese suppliers firms are then categorized into State-Owned Enterprises (SOEs) and Private-Owned-Enterprise (POEs) and their different learning behaviour and aggregated learning outcome are compared and contrasted.

Chapter 8 Assessing the extent of knowledge transfer

8.1 Introduction

Following the conceptualization of technological and managerial knowledge in chapter 6, this chapter assesses the extent of managerial knowledge and technological knowledge integrated by the Chinese supplier firms. A refined picture is then presented to elaborate the differences between state-owned-enterprises (SOEs) and private-owned-enterprises (POEs) in their knowledge learning and assimilation.

8.2 The extent of knowledge transfer: managerial vs. technological

Much literature in international business focuses its attention largely on technological transfers. Yet chapter 6 has demonstrated that technological knowledge transfer particularly in young supply relationships is actually quite limited (blueprints, product assessment reports, sometimes new equipment etc, please see Table 6.1, p.102). In the most successful and enduring of supplier relationships, some Chinese suppliers more latterly received knowledge transfers with respect to new product designs and new product testing. In fact what was transferred more freely and intensely, and indeed most appreciated by the suppliers, was less tangible managerial knowledge (how to establish quality systems, how to meet environmental protection requirements, materials management etc). From the fieldwork interviews, it was evident that Chinese supplier firms all found that their learning about managerial processes exceeded that of regarding new technologies or techniques (see Table 8.1).

Table 8.1: The extent of knowledge transfer: managerial knowledge versus technological knowledge

	Managerial knowledge	Technological knowledge
Chinese supplier firms	High-medium	Medium-low

Generally, the supplier firms report that technological knowledge transferred by MNEs appears to be of a low level, specific to the individual component only and so relatively insignificant. The MNE customer firms who often said they did not transfer any patented knowledge to the supplier confirmed this.

“We did not get technology of a patent nature or anything like that from our customer firm. But we do believe we have technological improvement in the cooperation” (Dataset 2, supplier firm)

“We did not transfer technologies to any of our supplier I think, but for sure we have technological information exchange...I think the technological information exchange can seem quite trivial, but still important in practice.” (Dataset 2, customer firm)

“They did not transfer us any of their core technologies. Most things we learnt were about operation skills and quality management” (Dataset 10, supplier firm)

In contrast, managerial knowledge is more about the quality systems implementation, maintenance, operations control, and higher-order ideological adaptation.

“What we learned from the cooperation is efficiency and accumulation of skills. We cannot stop at any time. Continuous improvements are always expected and over time we get used to it and internalize such external

requirements into internal routines... ” (Dataset 10, supplier firm)

“At the beginning we only required them to have qualified sample production. But now we want them to keep the stability of quality and delivery performance...now we are ‘coaching’ them, and the incremental changes in them would make big difference over time”. (Dataset 16, customer firm)

It also seems that learning relevant managerial practices from the customer firm is something the supplier firm can largely control. The supplier firms can decide how much conscious effort they wish to put into improving their managerial skills and upgrading their processes and systems, but they cannot pressurise the MNEs into transferring more technology to them. Because most MNEs do not feel they are giving away core assets by sharing managerial process knowledge, and ultimately it will improve the products they receive from the supplier, they are more willing to help suppliers. In fact, when relationship has been relatively well established, the transfer and benefits of managerial knowledge is consistently reported to exceed that of technological knowledge.

This finding confirms one of the empirical conclusions of Wang et al. (2001) that management knowledge transfer largely depends on the *learning intention* of the *recipient*. More importantly, when compared to technology transfer, it can have a more fundamental influence upon the performance of the supplier firm. Yang (2001) suggested that the positive spillover effects of FDI may not only be from the direct spread of ‘hard’ technologies, but rather from the spread of ‘soft’ technologies, i.e. management knowledge.

However the finding contradicts the stereotypical perception that because management knowledge is has more tacit content and is often organizationally embedded, the difficulty of its transfer can lead to its relatively lower level

transmission. The reason for the conflicting viewpoints may lie in the fact that the time dimension is not sufficiently considered in cross-sectional studies. Whilst we do not dispute that managerial knowledge is highly embedded in firm-level or national-level systems and time-consuming to transfer, we believe the difficulty of management skills transfer or learning only represents an objective cognitive factor. That is, difficulty does not necessarily lead to less knowledge transfer and learning. Given sufficient time and effort, economic actors can manage to overcome difficulties and learn the things that they perceive to have important value (North, 1990). Therefore the logic between the difficulties of transfer leading to less learning is not always as direct as we might expect. The suppliers' motivation and effort in learning, and time-taken to do so, are the other important components.

“I feel that XXX has achieved a lot of improvement during the four years of cooperation...their general manager pays lots of attention to their development and learning.” (Dataset 3, customer firm)

“We had a learning process, from new product development to the sample test and the skill learnt in the operations process by employees. It is a chain learning process for us. Management learning is indirect...but I believe it is fundamental and has longer-term benefits for our firm (Dataset 5, supplier firm)

“Although they had low purchasing volumes from us, we treated it as a valuable opportunity to learn. Such relations can give us know how about how foreign invested firms are operated, their work practices etc. It enlarges our horizons and enables us to make improvement in the management.” (Dataset 13, supplier firm)

Additionally, some knowledge such as R&D management is recognised to be the bridging intelligence between managerial skills and technology within the firm. Most managers' perceived it as a set of general management techniques in monitoring, controlling and promoting R&D projects rather than the delivery of any specific technology. It also contributed to the perceived higher-level management knowledge learning by the supplier firms, for example:

“Management and technology are interconnected. Their products can reflect if they have good management systems. The products are collective products which include their technology and management ability” (Dataset 4, supplier form)

8.3 From knowledge transfers to sustainable firm-level capabilities

This part further elaborates upon whether supplier firms' characteristics have different influences upon their knowledge learning and capability development. Young and Lan (1997) suggested that ownership status is a factor in technology transfer in China and worthy of further investigation. In fact, the persistent differential performances between SOEs and POEs have been a major concern to both scholars and practitioners in China. Basically there are two opinions about SOEs and its relation to China's economic development. One is that SOEs need attention. Reform should improve their performance and enable them to be an important pillar to sustain the long-term and large-scale development of China. The other view is that to stimulate China's economic development, the role of SOEs should gradually be reduced so as to facilitate greater opportunities for POEs. While it is beyond this study to solve this debate, it is acknowledged that in either case, the improved performance of existing SOEs is desirable.

On analysing the interview content to address this question, it became clear that governance structures affected the way Chinese suppliers tried to upgrade themselves and the extent to which this allowed them to develop sustainable firm-level capabilities. State-owned enterprises (SOEs) and privately owned enterprises (POEs) face different barriers when improving both their managerial knowledge and technological knowledge.

SOEs are larger than those of POEs (average size of the 5 SOEs interviewed is 620 employees and only 183 employees for the 10 POEs) in the study. The large size of the SOEs appears to be an advantageous factor that allows them to imitate some managerial practices that are often utilized by large administrative systems in the firms from developed world nations. They can learn what their systems are because larger firms have a more visible presence either through the direct presence of an MNE subsidiary or through access to western management textbooks that have analysed a number of such firms. However, although most SOEs have reformed their internal incentive structures this is only partial. The people who are subject to the new management practices, such as the practice of performance-related rewards, are mainly lower level employees (e.g. shop-floor workers). The reform of the internal incentive system has not yet reached the higher-level management staff, especially the leading management team. Double standard exists; lower level employees are under strict monitoring whereas high-level employees are not subject to the same levels of scrutiny and accountability. Excess numbers of high-level managerial staff and difficulties in the decision-making process are reported in most SOEs. This inconsistent incentive structure makes the full implementation of new managerial practices problematic.

In contrast, the relatively small size of POEs means they are less able to mechanically imitate the managerial practices of these large administrative systems, as they do not suit small firms. It is also almost impossible for them to

imitate smaller advanced nation firms because often such firms do not have an extensive physical presence in the emerging economy and because the managerial systems of small firms in the West are less studied and less well documented than those of large firms. As a result, they have to take what they can from the practices of large firms and adjust this information so that it is compatible with the firm's existing system. This invokes a process of learning by-doing (Arrow, 1962; David, 1975, Rosenberg, 1976), by using (Rosenberg, 1982, Nelson and Winter, 1982) and by-failing Malerba & Orsenigo (1996). Learning allows them to develop firm-specific managerial systems and allows them to develop capabilities in these areas.

Further differences arise when assessing the amount of knowledge each type of firm receives and how they utilize it. In order to present these differences I conceptualize a pair of terms to represent two components of the potential knowledge benefits. Firstly we present the term 'Knowledge Level' (KL) which we mean to represent an abstract notion of the quantity of knowledge the supplier firm possesses. I identify it from the interview data as the instances when the interviewee mentions items like purchasing new capital equipment in order to meet the MNE's demands for the product, or the receipt of blueprints, manuals, formal training schemes etc (Basically any item that might be indicative of the capacity of the firm to produce). It is specifically relevant to technical capability of the firms. However, KL only reflects the quantitative amount of knowledge or technology a firm has, but should not necessarily be taken to be indicative of its overall effectiveness.

The second term is 'Knowledge Efficiency' (KE) by which it is to indicate a more qualitative factor – evidence that learning processes are being engaged in, the extent of knowledge utilization and its overall coherence within the firm; in other words, the use of knowledge to develop capabilities. We identify this in the interview data from instances when suppliers said they were learning, or

using the knowledge transferred to it from the MNE in secondary areas – like application of the capital equipment or knowledge to a broader scope of products or in the servicing of additional customers, or indeed extending that original knowledge into new product developments. Table 8.2 shows the differences between SOEs and POEs in terms of KL and KE from the analysis of the interview data.

Table 8.2: Extent of vertical knowledge transfer: SOEs versus POEs

	SOEs	POEs
Knowledge Level (KL)	High	Medium-low
Knowledge Efficiency (KE)	Medium-low	High

It is found that SOEs are not only bigger in terms of employees, but also have distinctive advantage in their ability to purchase capital-intensive equipment. More importantly, because SOEs have the backing of the State, they have greater access to financial capital without the pressures of having to make repayments on the loan in the short term. This makes it possible for the firm to undertake R&D investment, which should help it improve its potential technological capability in the long-term. This advantage turns out to be very important for manufacturing-oriented firms where the automated systems enable the degree of precision that is difficult to consistently achieve by manual work. In addition, SOEs are more able to dedicate funds to invest in relations-specific ‘hardware’. In fact some of the successful SOEs’ growth histories are closely related to their history of cooperation with different foreign customers, where they continuously invested in capital-intensive facilities to upgrade their technology capacity and therefore achieved continuous expansion. Thus SOEs have both extant higher technology capacities and a financial situation that allows them to purchase new capital equipment for each new customer and so relatively quickly attain high knowledge levels. This is especially advantageous

in producing technologically complex products, which often requires heavy capital investment to maintain economies of scale.

To provide an example, in two of our dyadic cases the supplier firms were in industries where high capital investment and substantial economies of scale are requisites. Unsurprisingly such an initial scale could only be obtained by SOEs. Access to financial capital through state support meant, and in many cases continues to mean, that physical, technological capacity upgrading can occur relatively quickly. Therefore the knowledge levels within SOEs are generally high.

However, it is speculated that this ability to buy-in technology in the form of new capital equipment does not necessarily reflect greater knowledge efficiency in these technological aspects. Firms may learn how to use one set of equipment to produce a certain set of products yet a new set of products may be produced by a different set of equipment. In this way the SOE learns about new technologies in a series of discrete steps, as they purchase new equipment, but these are not leading to the utilization of this knowledge into know-how and capabilities building. These only occur through incremental and cumulative learning. So the knowledge efficiency associated with the use of technology within SOEs is medium-low.

Additionally, as most SOEs in China were born big through the intervention of the State (rather than being the products of market competition) these firms have inherited administrative deficiencies from the previous era. Their cooperation with foreign multinationals has contributed somewhat to improvements in their managerial abilities but because managerial upgrading is a systemic change involving multiple aspects of the organization, improvements take place slowly and are frustrated by bureaucratic elements of the governance structure inherited from a centrally planned economic system. Both MNE customers and the SOE

managers themselves recognized this:

“Normally all the suppliers have good intentions to cooperate. But sometimes they may have difficulty in implementing their intentions. I mean their organizations are different from one another. It is related to their ownership and systems. Sometimes SOEs managers are also committed, but their commands or ideas are not easy to completely execute in their organizations. Private firms react faster to our requirements” (Dataset 3, customer firm)

“In such a structure, some important positions are taken by the assigned personnel from government, and some people cannot utilize their talent and leave the company” (Dataset 9, supplier firm)

“As a SOE it is difficult for us to adopt some good management practice as foreign firms do” (Dataset 12, supplier firm)

“It seemed that nobody could make final decision. I think it is the problem associated with the firm’s ownership structure...I think the ownership is a problem, although the recent rapid development has in some way covered this problem, it still is a problem and needs to be sorted out” (Dataset 12, customer firm)

“There are unreasonable work processes and an unclear division of labor. For example we often argued over who is supposed to take the responsibilities. In addition it is difficult to deal with personal relationships in such SOE” (Incomplete dataset 3, supplier firm)

Such imbalance in technological capability and administrative upgrading shows a lack of organizational coherence in SOEs, which in turn, brings about relatively low levels of knowledge efficiency (KE). That is, the dissonance

between technological capacities and administrative capabilities means that the firms cannot fully leverage their existing capabilities nor build up new ones effectively. In stark contrast, the advantageous characteristics possessed by SOEs are the very constraints faced by most POEs. The right hand column of Table 8.2 shows how POEs perform with respect to KL and KE.

POEs appear to be very cautious about investment decision-making and even when they did invest they did so relatively late. We believe this to be related to the difficulties POEs face in getting access to capital through standard capital markets. The banking and finance sector within China is still highly regulated and under-developed; it is not easy for POEs to get loans for the purchase of capital equipment. The banking sector in China has traditionally discriminated against private firms, based on the argument that most POEs are small so loaning to them increases transaction costs compared to loans to a few large firms. In most cases POEs deliberately maximized their usage of existing equipment by adapting it and stretching its use into new tasks. Thus, compared to the state supported SOEs, POEs have relatively low knowledge levels (KL). This has at least two implications.

For one, because these firms were often relatively capital-poor, any replication of the established manufacturing process of the other suppliers from which MNEs sourced their components from became impossible. The highlighted capital scarcity and labor abundance made it sensible for POE firms to adopt more labor-intensive techniques to make use of their existing production endowments or their ‘comparative advantage’²⁶. It also meant any efforts at imitation were complicated because they required a strong reinterpretation of technological specifications and adjustment of operational processes within the supplier firm. However, isolated adjustments in process adaptation could lead to

²⁶ The comparative advantage argument holds well at the individual firm level as well as country level (Lin 2001).

products failures. Therefore the supplier firm often had to systemically reengineer its entire manufacturing process to adapt the new production procedures. As a result the knowledge transfer process was very lengthy. It was a combination of direct ‘teaching’ from the customer side based on its technology documents and instructions, and the ‘experimental’ learning by the supplier firm to ‘fit’ these requirements into its organizational context. Thus the combination of a lack of capital but the transfer of codified technology-related documents meant that POEs have medium knowledge levels.

Despite of the downside of this lengthy process (which might be filled with trials and errors) this learning strategy, contributed to greater resource utilization and knowledge efficiency in these firms. Unencumbered by the bureaucratic structures associated with SOEs, POEs as mentioned previously, had to engage in learning processes in order to develop firm-specific managerial systems adjusted to their own circumstances, which in turn and in combination with the more effective use of technological knowledge, allowed them to develop capabilities in these areas. As a result, greater organizational coherence is apparent in POEs compared to SOEs. In the short-term these firms may appear to be relatively slow to achieve higher knowledge levels, but they enjoy far greater knowledge efficiency, which probably accords them with stronger competitive advantage and more sustainable development in the long term.

The above evidence is consistent with Nee and Cao’s (2005) argument: that SOEs face powerful forces of inertia that lock them into long-standing organizational routines limiting their ability to adapt and compete in the emergent market economy even though they still possess privileged access to financial capital, raw materials and markets. Hence for SOEs, political capital confers them advantages based on positional power. In contrast, new firms, mainly domestic POEs are faster at adapting to, and learning the new rules and approaches to competition and cooperation in an expanding economy. Yet they

are constrained by the privileged positions of SOEs with respect to access to financial capital and other resources. Compared to the superior political capital of SOEs, POEs have to choose an approach to fostering organizational rules and routines that creates other forms of capital, such as human capital (through well trained employee teams and a means for competing with SOEs for better human resource from deregulated labor markets) and social capital (trust, cooperative relationship with MNEs, etc). Variations in governance structures influence returns to investments in different forms of capital and the period of time over which investments must be made before a return on investment is seen. Both governance structures have their advantages and disadvantages right now, but in the long-term with the deepening co-evolution of socio-economic institutions in China, it is expected that POEs would be able to yield more benefits in the long run.

8.4 A summary

International business scholars have long recognised the potential contribution of inward FDI to assist in the economic development of emerging economies. What they seem to have failed to consider was the role and responsibilities of the recipient firm to utilise any transfers from such activity to develop their own capabilities. What is found through the examination of interview data in this research, is that two types of knowledge transfers occur: technological and managerial and that the latter is the one which is most immediately useful to the Chinese suppliers to electronic and electrical MNEs. The actual type of technology transferred is low-tech.

Moreover, there are large differences between the ability of state-owned and privately-owned supplier companies to utilise such transfers to generate firm-specific capabilities. In terms of knowledge levels, larger size,

state-support and freer access to capital for purchases of equipment give SOEs considerable advantages over POE suppliers. However, precisely for the lack of such characteristics and support, the POEs appear to be more innovative in their adoption of new products or processes, invest in more social and human capital and are more engaged with a process of cumulative learning. It seems that these characteristics will enable POEs to have the ability to generate firm-specific capabilities that will help sustain their longevity in a competitive environment. However, government intervention in the continued and more in-depth reform of SOEs and the financial sector are still required for POEs to attain their full potential as engines of economic growth and development in China.

This finding regarding SOEs vs. POEs in terms of KL and KE actually can also be interpreted to refute technology fundamentalism and support the core thesis of institutional economics (e.g. North 1990, Yang, 2003, etc). Technology assets and capabilities of SOEs are clearly superior to that of POEs, however the general performance of SOEs are persistently lower than POEs in China and therefore has become a central concern of the nation's economic reform. If technology fundamentalism is right, then SOEs which possessing higher technology assets and capabilities should be found to perform much better than POEs. The limitation of technology fundamentalism is that technology is largely considered as an exogenously given factor leading to economic development. It fails to address why some countries/firms possess higher technological capability than others in the first place. When developed countries have invented advanced technologies, firms from developing countries can simply buy them in or imitate to upgrade; however, what is more pertinent for us to understand is that how developing countries (with better social and economic infrastructure) especially those in transition can develop their own technology capability in an endogenous manner by adjusting their governance structure to inject the economy with sustainability. With a more profound perspective in making sense of the development of economics, institutional economics provide deeper

insights into the engine of the development of society, where technology fundamentalism only captures some permeated empirical evidence on the surface while fails to address what is behind the technology advancement of most developed economies is actually their better social and legal infrastructure which encourages and breeds more advanced and faster development of technologies that are needed for economic development.

8.5 Strategic recommendations

Following the empirical findings presented in chapter 5, 6, 7 and the above sections of this chapter, this section discusses the practical recommendations for the Chinese suppliers, the Chinese governments and the foreign MNEs. First of all, for managers of Chinese firms that are cooperating or want to step into such relationships, much more effort is required to ensure the efficient *implementation* of internal quality systems. More importantly, a clearly defined and consistent quality system combined with appropriate training and guidance can gradually shift the employee's attitude to maintaining or even raising quality standards over time. This is consistent with Hayek's (1978) view that knowledge assimilation is the evolution of system of rules of actions. Similarly, based on their empirical investigations, Helper and Kiehl (2004) have also pointed out upgrading systematic production capabilities is a complex technical and behavioral task; it involves not just streamlining flows of work through the production process, but requires changes in embedded attitudes to facilitate the required employee involvement.

Secondly, small sized POEs producing similar products and located close to each other are suggested to either establish close cooperation or merge to raise their manufacturing and financial capability. It is found that there are many small sized private firms at the very low end of the supply chain with foreign

invested firms. The components produced are mainly low technology intensive, such as metal parts or plastic parts. Customer firms sometimes source similar products from different firms due to each one's limited manufacturing capacity. For instance, a Japanese firm was found to source the metal parts from three local Chinese firms within the same city (Wuxi). It is reported that these firms produce quite similar products; but due to their small size, the customer firm claims that it has to use multiple sourcing. This, however, increases the customer's bargaining power. The viewpoints from the Chinese firms are similar. That is they are aware that their manufacturing capability lags behind the total demand required by the customer firm, which makes the multiple sourcing strategy of the customer firm a necessity. In turn, this strategy sometimes puts pressure on the supplier firms because the customer firm can adjust the procurement proportion to one from the other depending on the performance of the supplier firm. However, although, most firms in the game know each other, none of them expressed any interest in cooperation.

No, we do not consider it. One we can keep the proportion of the order from XXX, we do not care to cooperate with others. I mean, we are fine.

We are a small firm. We are not able to produce more, but the proportion is pretty enough for us to live. (Dataset 3, supplier firm)

It is noticed that most of these firms define competition in a narrow sense and therefore the strategy of cooperation is neglected. However it is argued that the close cooperation or merger of these firms with similar products could on one hand increase their manufacturing capability. By pooling their resources and business together, they can stretch their business network, which will help them increase their credit in getting financial resource. The banking sector in China has discriminated against private firms, especially those small ones based on the argument that loaning to small firms increases transaction costs compared to

that for big sized firms²⁷. Increasing size, at least, can be one of the quick recipes for them to improve the chance to get capital. On the other hand, the cooperation or merger is supposed to improve the production efficiency since they can cross-utilize the resources and complement each other. However such strategy only can be successfully implemented when both sides fully understand the potential benefits of the cooperation, and also work hard together to reduce the possible side-effects, such as the integration of management style, the communication of employees from both sides and the real cooperation of the managers to ensure that benefits of doing can be achieved. Improved manufacturing capacity, integrated management practice and pooled resources can in turn increase their bargaining power to both negotiate to (get more deal) and cooperate (perform better) with their foreign customers.

Thirdly, SOE suppliers are encouraged to deepen the reform of their incentive structures, especially at the higher levels of their organizational system, and engage in more extensive technological cooperations with MNEs, given that most of them possess higher technological capabilities than POEs. The interview data found that most SOEs have adopted performance-related reward systems; however the incentive seems to be less relevant to high-level managerial staffs. An excessive number of high-level managers and the difficulty in decision-making are reported in most SOEs. There is a double standard in most SOEs where lower level employees are strictly monitored whereas high level employees are not subject to the same monitoring. It is suggested appropriate tools to measure the performance of high level staff are needed. A large part of the challenge for China's SOEs is therefore to move high-level management teams from collective to individual accountability.

²⁷ This view of the banking sector is certainly wrong because the mere transaction cost consideration cannot justify the loan to those low performance firms, particularly SOEs. Even the (*ex ante*) transaction cost to SOEs is relatively low due to the large amount of capital loaned, the *ex post* poor financial performance of SOEs will fail the loan efficiency of the banking sector. Therefore a fair loan policy should consider the overall viability of the firm, regardless their ownership structure *per se*, because type of ownership is not a guarantee of their performance. Each type of firm, public or private can vary from best to worse and for a variety of reasons (although POEs generally perform better than SOEs in China).

In order to make this feasible another problem needs to be addressed. CEOs in big SOEs have much less power than their counterparts in developed countries as they often cannot control the promotion and compensation of their management teams (Desvaux, et al., 2004). Decisions about senior personnel still remain largely within the power of the government. Therefore the government's direct intervention into the management of SOEs needs to be further reduced. Their attention is needed to distribute to macro economic issues, such as the reform of the banking system. To sum up, a matching administrative system facilitating information flows, decision making, and performance monitoring need to be built up and a performance-oriented corporate culture is needed not only applied to low-level employees but also to the management level of SOEs.

Fourthly, governments at various levels in China may find it beneficial to improve their function in information dissemination to both local firms and foreign MNEs, which will reduce transaction costs for both sides in searching for appropriate business partners and thus promote more potential cooperation between them. For example, only very small number of the relations in the study suggested that they got helpful information from the local government in searching local partners. The way that most relations got established was either by the foreign MNE's survey in searching local partners, or they met at some national or international commercial conferences. Local firms got to know the MNEs often by word-of-mouth information accorded by co-location. The local municipal government has clear advantages for organizing and distributing information to both foreign MNEs (since all foreign MNEs located in the city have to get registered with them) and local business organizations, and their effort of 'channelling' information for both sides could be very helpful in shortening the information gathering process and promoting the foreign-local linkages. On the other hand, more effort is required to create more transparent information and a fair competitive environment (Farrell, 2004), such as a fair

policy in providing loans for enterprises regardless their ownership status.

Finally, for the managers of US firms seeking to establish, or with existing, relationships with indigenous Chinese suppliers, they should continue to select suppliers with relatively high levels of competency if they have this luxury, but as was pointed out, more often than not, Chinese suppliers are starting with a very low base. In such instances the amount of information and knowledge that is passed on to Chinese firms is very welcome but perhaps a little overwhelming. It takes time for the Chinese firms to absorb all the information, to figure out how to adapt it from one cultural and business environment to another. It takes even more time to develop technical capabilities and managerial skills that enable firms to move down the average cost curve. It would perhaps be in the US manager's interest to develop relationships with a few Chinese suppliers at a time. They will have different phases of learning and improvement, so that slow periods of knowledge accumulation by one may be offset against a fast period of accumulation by another. This way the sunk costs of finding, selecting, and initiating supplier relationships is not completely lost when they switch between suppliers. Also it means the US firm will have a diversified portfolio of Chinese suppliers that can ensure a constant supply of components, which hopefully continually improve in quality as the suppliers enter a semi-competitive environment, in much the way Japanese firms play-off their multiple suppliers. For Japanese managers, it appears good to 'test' the potential of Chinese suppliers, but perhaps a greater proactive stance in providing assistance sooner could lead to a quicker establishment of a firm relationship so that progress to the 'developing stage' could occur earlier.

Another lesson for Chinese managers is to be aware of the temporal dimension differences between transfers from Japanese and American MNE partners. Recognition of the pattern of Japanese behaviour should mean that Chinese

firms need not necessarily be fearful that they are about to lose a partnership with a Japanese firm if transfers are not forthcoming in the early stages of the relationship, but they should endeavor to prove themselves worthy of a long-term relationship. Similarly by recognizing the American pattern of behaviour Chinese firms in the knowledge that transfer intensity drops of quite substantially in the developing stage of the relationship, the Chinese firm can either try to encourage the American firm to transfer more to them, or establish a contingency strategy whereby the next stage of their learning might have to take place with another MNE partner if no more is to be gained from the US one. Nevertheless, for all indigenous firms good relationships with multiple customer firms is recommended, since single supply relationships are rare, and on the other hand it can reduce the risk of over dependency on one firm. This may be more pertinent for those Chinese firms supplying primarily U.S. firms than those who are supplying Japanese firms because of their focus on the short-term. In addition, by supplying different MNEs, supplier firms obtain more chances to learn different competences from their customers (Bessant, et al., 2003).

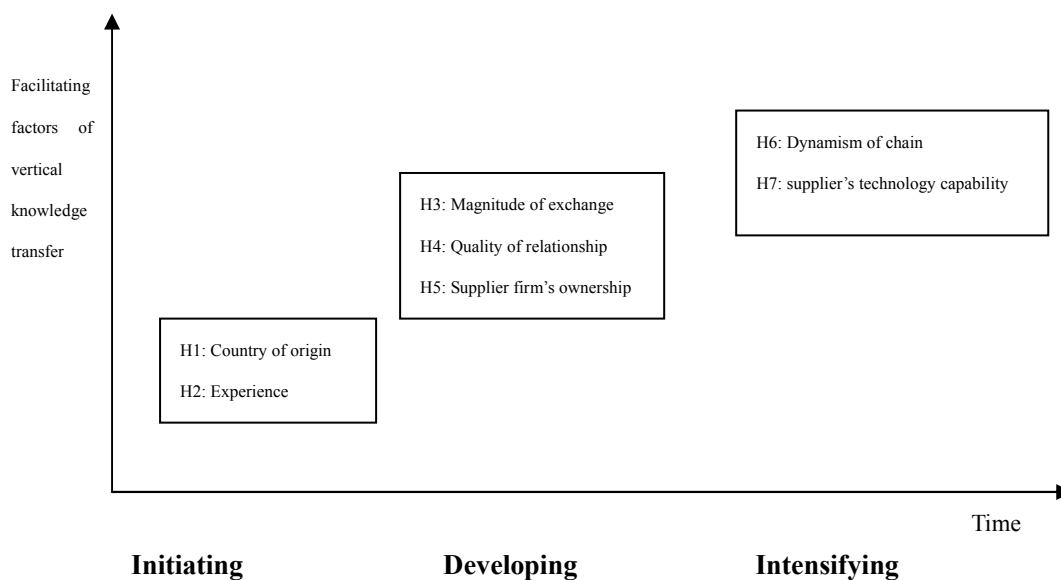
This chapter has presented the final finding of the extent of knowledge learning within the local suppliers firms. Differences of knowledge level and knowledge efficiency also have been compared between SOEs and POEs; corresponding practical recommendations to both Chinese firms and MNEs are suggested and policy implications to the Chinese government are also discussed. The next chapter will summarize the hypotheses developed on these qualitative findings and concludes the research.

Chapter 9 Hypotheses Development, Discussions and Conclusions

9.1 Hypotheses

This chapter firstly provides a model summarizing the important factors influencing the vertical inter-firm knowledge transfer. A couple of new concepts have been introduced here to facilitate a brief yet accurate presentation of the model. The purpose is to extend the qualitative conclusions for the future quantitative verification. Secondly, the strengths and weaknesses of this research will be discussed and its empirical and theoretical contributions justified. The chapter concludes with some theoretical discussion of the empirical findings.

Figure 9.1 Facilitate factors of vertical knowledge transfer



The hypotheses and the important factors are presented in Figure 9.1, in which the horizontal axis is consistent with that of Figure 5.1 and Figure 5.2, showing

the stages of the developing relationships and knowledge benefits associated with the stages. In the first stage, as has been discussed in section 5.2, the country origin of the foreign multinational influences the vertical knowledge transfer. Japanese MNEs are conservative in knowledge transfer in the early stage of cooperation whereas US firms appear to be very 'giving'. Therefore, *H1: the origin of the foreign multinationals has an impact on the vertical knowledge transfer in the short-term.*

In addition, supplier firms which have had experience in cooperating with foreign multinationals could quickly pass the initial sample tests stage because of the firms' prior experience. Therefore, the degree of learning potential with any new customer is likely to be marginally smaller with each new customer. In contrast, for those with little such experience, this stage would be longer because the gap to be bridged by learning is greater, but this in turns signifies the greater learning potential. Hence:

H2: the experience of supplier firms is inversely related to the learning potential to be gained in the vertical knowledge transfer from MNEs²⁸.

As the cooperation moves up to the developing stage, things change. The influence of the country of origin of the foreign multinationals becomes less significant over time. What becomes important are the characteristics associated with the relationship itself. First is the magnitude of the exchanges. This concept is induced from the fieldwork data and represents the scope and scale of the exchanges in the vertical relations. Scale is basic volume commitment and scope refers to the number/type of products. The magnitude is a physical mechanism that can promote the embedded vertical knowledge transfer. Exchange magnitude manifests satisfaction and interdependence on each other. Large magnitude of the relationship is necessary to build up common communication codes and to 'channel' the desired knowledge and information

²⁸ This hypothesis is consistent with the empirical evidence of Ivarsson and Alvstam (2004).

transfer. However the positive correlation between exchange magnitude and knowledge transfer may decline at a certain degree. The reason is that at a certain magnitude may have saturated the level of knowledge transfer that is realizable within the cooperation. Vertical exchanges can be maintained but not necessarily be associated with further knowledge transfer. Thus:

H3: the magnitude of cooperation is 'r' shaped with vertical knowledge transfer.

Second is the quality of the relationship which is defined as the subjective perception of the satisfaction and trust of between the firms. This should be based on the holistic feeling of the firms (interviewees). This is an indicator to show the how 'relationships' can actually contain quite different degrees of cooperation. On the one hand, it is found that relationship quality is related to the magnitude of the exchanges. That is, in the circumstances of frequent and high volume exchanges, when both sides perform well and get satisfied with each other, a good relationship can be quickly established which in turn will lead to more satisfactory and mutual beneficial cooperation. However frequent exchanges also can quickly reveal problems of the relationships; when the problems cannot get solved, relationship quality is negatively influenced. So the magnitude of exchanges alone does not lead to a high quality relationship. Magnitude of exchanges plus satisfactory performance produces it. The relationship quality is especially relevant when the customer firms have multiple choices among suppliers whose similar characteristics make them easily substitutes for each other. When suppliers are equally qualified to produce some components or get new orders, a good relationship becomes crucial for them to gain favorable deals from MNEs. Thus comes with the following hypothesis:

H4: Cooperation quality has positive influence upon the vertical knowledge transfer.

Third is the ownership of the supplier firms. This mainly refers to their different

benefit in knowledge level and knowledge efficiency, which has been discussed in details in section 6.2. Therefore:

H5: SOEs and POEs benefit differently in terms of knowledge level and knowledge efficiency via the cooperation with foreign multinationals.

If the cooperation can move up to the intensifying stage, first of all the dynamism of the end market will have significant impact upon the motivation of the technology cooperation. Facing fierce market competition, the customer firms might either have much pressure or strong motivation to maintain and achieve long-term profits. This environmental/external factor has important impact on the direction and operation of the whole value chain. On the condition that the supplier firms have the capability to cooperate, vertical chain cooperation could go up to a qualitatively new stage. With the change of cooperation content, the supplier firms will have more benefits in their R&D management and system. This has been discussed in section 6.1, therefore:

H6: The more dynamics of the end product market, the greater the positive influence on the vertical knowledge transfer.

H7: the greater the technology capability of the supplier firm, the more positive the influence upon the vertical knowledge transfer.

Last but not least, time has been found to moderate the simple linear relationship between the extent of tacitness of knowledge and its transmission in chapter 6. Longer relationship itself demonstrates the satisfactory of the MNEs and local suppliers and should help promote their cooperation and the associated knowledge transfer. However, knowledge transfer can saturate after certain time period when the possible knowledge transfer is exhausted, therefore:

H8: the duration of the relationship is 'r' shaped with the inter-firm knowledge transfer.

According to the overall empirical evidence and these hypotheses it is found that when a short-term view is taken, foreign multinationals nationality has immediate and strong influence upon the vertical knowledge transfer. However, when a medium range view is taken, the relationship quality and the magnitude of exchanges are the most determining factors of the vertical knowledge transfer. Moreover, when a long range view is taken, the dynamics of end markets has an ultimate fundamental impact on the direction of the vertical chain and the associated inter-firm knowledge transfer. As such, simple and linear causality are inappropriate and inadequate in tackling this question. What was found from the fieldwork data is rather a series of *conditional* factors influencing the vertical knowledge transfer at various stages of the cooperations. Among these summarized factors it is found that the ones in hypotheses 5, 6 and 7 are most significant factors of vertical knowledge. In particular, hypotheses 5 and 7 represent the most fundamental endogenous (endogenous to the supplier firm) factors of the vertical knowledge; while hypotheses 6 represent the market condition leading to the customers' motivations of knowledge transfer. Considered together, they actually support what Smith (1976) suggested: the division of labor and expansion of market simultaneously contribute to economic growth.

The above hypotheses constitute a proposal for a quantitative study. To my knowledge, vertical linkage between MNEs and local supplier firms in a host country is a much under-explored area. Apart from scattered studies that have been discussed in section 2.5 (p.43), such as Wong (2000) in Singapore, Gioud (2000), Crone and Roper (2000) in Northern Ireland, Gioud (2000) in Malaysia and Cyhn (2002) in South Korea, very recent systematic efforts come from Javorcik (2004) based on panel data in Lithuania and Ivasson and Alvstam's (2004) single case study of Volvo's Indian indigenous supplier firms. For the former, the author acknowledged the limitations of his research and also strongly suggested that it would be useful to use data that allow for

identification of *individual firms as suppliers to multinationals* rather than relying in on input-output matrices to measure interactions and positive spillovers between MNEs and their suppliers. Moreover, no attention has been paid to how the local supplier's ownership attributes might make difference in the vertical knowledge transfer in Javorcik's study (2004). The author indicated that future research should incorporate both the MNEs' and the suppliers' attributes in investigating the vertical knowledge transfer taking place between. It is believed that the present study has provided interesting and detailed information about how the MNEs' and local supplier's characteristics could shape the vertical knowledge transfer.

On the other hand, Ivasson and Alvstam's study (2004) has capitalized on the advantage of single case study in providing in-depth information of Volvo's technology transfer and assistance to Indian suppliers, their study is even harder to generalize than the present one. Therefore the future research plan based on the above hypotheses is hoped to overcome the shortcomings of both by obtaining bilateral data from MNEs and suppliers on a one-to-one case to systematically capture the determinants of inter-firm knowledge transfer. The data collection at the inter-firm level is bound to be painstaking, however without such effort; no reliable and valuable research outcome can be expected.

9.2 Strengths weaknesses and contributions of the research

The first strength of the research is that it poses a pertinent question and addresses it with a sensible methodology. The research gap of the vertical linkage of MNEs is pronounced and the literature review has provided ample evidence. Although this research, like many other qualitative studies, might be criticized for its lack of generalizability, the strength lies in its fine-grained data, limited presumptions and use of multiple theoretical perspectives intertwined in

the empirical investigation. Correlations will normally be found in any set of data; yet without sound theoretical foundations neither positive nor negative results would be able to explain the real effects of FDI. This has been a chronic deficiency of most spillover studies (Meyer, 2004).

It is admitted that the impact of FDI is a very complex issue, and with the networked economy based on the ever-refined division of labour in the globalization of the world economy, any effect upon one linkage has chain effects on the others. Therefore it is difficult to separate one from the others. Also sometimes conclusions might be different when a short-term perspective is taken compared to that of a long-term one. Whilst some of the difficulties in providing powerful explanations lie with the problem of obtaining reliable data (a notorious problem of research on China) another major reason for the difficulty is that lack of theoretical foundations guiding the direction of the FDI investigations. FDI studies have tended to put 'measurement ahead of theory'. The present study, by focusing on a specific channel through which the impact of MNEs on their local partner firms takes place, does not suffer from this typical limitation that most FDI studies suffer from. The rich and in-depth data provides us with an explicit understanding of the vertical impact of MNE's local sourcing on the development of the indigenous supplier firms.

The empirical contributions of the research are summarized as follows. The first finding provides us with an important conceptual framework as to how successful supply cooperation might develop over time. It also crystallises the point that the transaction cost minimizing perspective is only a partial view derived from traditional TCEs. The reality is more complex than this. Specifically, when the value added expected from increased relationship specific investment is expected to outweigh the value of the investment itself, higher transaction costs can be deliberately dedicated for developing required speciality. Moreover, economic actors are still rational in their investment

decision because the eventual ratio of the value-added to the transaction and coordination costs involved justifies the decision as economically viable. As such, this transaction-production related perspective turns out to be more comprehensive than the notion of transaction cost alone and can profoundly reveal the dynamic relationships between the value-added, coordination and transaction costs that have to be consumed and evolved in the inter-firm division of labour. In addition, the organization form, such as the inter-firm linkage, is not merely a transaction cost controlling device. The relationship itself is not only a 'medium' for the inter-firm cooperation, but also a value-added entity that itself contributes to constructive economic cooperation. As such, the firms' ability to cooperate with others represents one of the important elements of dynamic capabilities that firms have to possess to achieve and sustain competitive advantage in the network economy based on ever-refined and complex division of labour.

The second finding provides tentative evidence of the differences between Japanese MNEs and non-Japanese MNEs in their attitude and approach to transferring knowledge to supplier firms. The Japanese can be described as 'conservative' yet 'reliable' and U.S. firms are relatively 'giving' but more 'footloose'. However, it was also found that factors such as the local firm's learning ability plays an important mediating role in reducing such different behaviors. There are, as yet no apparent COO effects with respect to how cultural differences might constrain knowledge transfers to Chinese supplier firms. If there are, they are largely reduced by Chinese managers in the foreign MNEs acting as mediators or bridges that allow these cultural distances to be reduced. As a result, the differences in COO effects appear to be indicative of managerial preferences rather than cultural traits. The finding fits with what supply chain management literature suggests of the differences between Japanese firms and non-Japanese firms.

The third finding provides highly detailed information as to what types of knowledge are transferred and how they are related to the different cooperative stages in the vertical linkage. Managers of supplier firms therefore obtain a picture of what type of supplier firms they are, at what stage their relationship with the MNE is at, and how they can adjust their behaviour and strategy to promote the potential benefits of learning from MNEs.

The fourth finding refutes the stereotypical perspective that the difficulties associated with managerial knowledge necessarily leads to its low transmission level. The simple linearity can be deviated when the time dimension is considered as a mediating factor. Once the supplier firms perceive the knowledge to be of significant value and therefore worth the extra effort in their learning, they will work hard to overcome the difficulties given sufficient time and effort is allowed. Therefore the attribute of knowledge itself is only one of the cognitive factors influencing knowledge transfer; there are other factors, such as the supplier firms' motivation, also at play.

In addition, the time dimension also needs to be considered when we assess the short-term and long-term effect of knowledge transfer on the development of the local Chinese supplier firms. In the fourth finding, SOEs appear to be able to quickly benefit from such linkages with MNEs by 'buying-in' technologies. However, in the long-term perspective, POEs are believed to be able to gain higher market viability due to their incremental and cumulative endogenous development path. These research findings remind us to be cautious about the linear models that prevail in management science and calls for us to use more in-depth and penetrating analysis to reveal the underlying mechanisms and causalities behind the empirical reality that we observe.

The research also advances our understanding on the limitations of TCE. Regarding the traditional TCE studies on 'make' or 'buy' decision, a hidden

assumption is that 'market' is always available to provide the products that can be produced by the firm and hence the decision only lies on the transaction cost. This assumption is revealed to be unrealistic when MNEs' outsourcing strategy is constrained by the unavailable or incompetent 'market' in the host economy. Therefore, firms and markets are highly diversified properties across the countries. They are both the evolutionary products of the division of labor and the conditions of transaction efficiency and neither of them can be taken for granted. It is also found that the transaction cost *per se* cannot fully justify the relationship specific investment in the inter-firm cooperation. A dynamic perspective is needed to incorporate the total value and cost analysis to uncover a holistic understanding of economic organization.

In addition, there is some theoretical gap between traditional production theory and TCE. Clearly, most MNEs' outsourcing is driven by lower production cost in developing countries, such as China. This has been undisputed empirical reality. In this sense, firms buy or outsource because of the saving from production cost. However such scenario has little to do with what TCE suggests that the firm's decision of 'make' or 'buy' is dependent on which yields lower transaction cost. In this TCE scenario, firms 'buy' rather than 'make' because of the lower transaction cost of *the 'market'*. Connecting this classic mainstream microeconomic question to MNEs, we can deduce that MNEs 'buy' rather than 'make' in the host market because of the saving from the transaction cost in *the host market*. Both makes sense in their respective theoretical world, but empirical reality calls us to connect the two isolated theories into a coherent story.

The key to solve the tension or bridge the gap lies in the necessity to view the market and the firm as themselves diversified properties. After all, there is no unified market in the world and firms also cannot be treated 'styled' as if they are all the same to each other. Markets are always segmented by geographical

dispersion (by the country's boundary in particular) and by time, if not include other human-made factors. Similarly, firms are also diversified properties where each of them has their distinctive advantage and specific position in the complex networked economy and therefore contain different comparative advantage in their specialty. Consequently, the 'make' or 'buy' decision has to consider both the transaction cost element and different production cost advantage (comparative advantage) to jointly determine (1) whether the firm should buy from the market? (2) and buy from which market and which firm? The first question deals with generally whether it is worthwhile to outsource certain business activity by using market? And the second question helps shape the decision as to where (which market and which firm) to source the desired service/products?

For MNEs from developed economies where labor cost is pronounced higher than that in developing countries, the decision to outsource in developing countries certainly is very appealing. It also can be deduced that some business activities that cannot be economically outsourced (according to transaction cost criteria alone) in the same market as where the MNEs come from could be outsourced in developing countries due to the significant reduction in production cost. That is to say that sometimes slight higher transaction cost spent on 'searching and teaching' suppliers can be justified by sustainable (larger proportion) saving from lower production cost while in some other cases it could be that the saving in transaction cost by using market may not be able to sufficiently justify 'buy' decision due to the prohibitively high production (labor) cost. Therefore there are two layers for this 'make' or 'buy' question and the traditional TCE and production theory both oversimplify it by focusing only on one aspect. It is justifiable to focus on only one of the two dimensions in some studies (especially those in a single-country context where labor cost, as an important element of production cost, is largely unified); however for the question of MNEs' outsourcing in a foreign market, two dimensions

simultaneously relate to each other in shaping the decision of using ‘market’ and neglect any one of them could not yield a complete understanding of the full rationality of firms’ decision and behaviour.

The research also has its limitations. First the case selection process was constrained by the locational focus of Wuxi, which leads to an unbalanced presentation of Japanese MNEs compared to MNEs from other countries in the study. This makes the empirical finding regarding the country of origin effect a very inconclusive summary. This can be amended by including MNEs from other countries for a balanced comparison.

A second limitation of the study is that in studying the supply chain practice of MNEs in China, it deliberately excluded the non-Chinese suppliers, that is, foreign invested supplier firms. Although it is justified, given the focus the research is to understand how indigenous Chinese firms can benefit from the vertical cooperation with MNEs, an inclusion of foreign invested firms and joint ventures would have facilitated a comparison between Chinese indigenous supplier firms and foreign invested supplier firms. Indeed this exclusion has very much shrank the researchable subjects and made data collection a very tough process because a higher proportion of MNEs’ local procurement is sourced from foreign invested firms, whereas local sourcing from indigenous Chinese firms only constituted a small part. Future research can include both groups of supplier firms for a benchmark comparison.

Thirdly, by focusing the investigation on Wuxi, the study capitalized on the concentration of the location for the conduct of fieldwork, however Wuxi is not necessarily able to represent China as a whole. Generally it is acknowledged that China contains sustainable regional differences in their economic development and it is practically hard to claim any single region to be the representation of China. Wuxi, as a city located in Changjiang Delta (Yangzi

River Delta), can represent the surrounding region of China but not others.

Fourthly, the inductive feature of the research facilitated the important conceptualizations such as technological knowledge and managerial knowledge, knowledge level and knowledge efficiency, which are generated from fieldwork data. Based on the hypotheses generated in chapter 9, effort needs to be spent to transform these important conceptualizations into tangible dependable variables for quantitative verification. Therefore literature reviews on various areas such as microeconomics, international business and management studies are needed in the search for a sound operationalization of these concepts. This will be an important part of the future research.

9.3 Conclusions

This research has, as discussed above, generated valuable understanding of the vertical linkage and knowledge transfer of MNEs to indigenous Chinese firms. While not being immune to limitations, the research has made both empirical and theoretical contributions to the subject. To facilitate good quality and pertinent empirical investigation, the quality of data is one of the keys, which is one of the strengths of the present study. The quantitative investigation based on the hypotheses in chapter 9 needs to continue this principle and generate accurate verification by collecting (bilateral) firm-level data.

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Appendix 1: Pilot interview questions

The following were the questions used in the pilot fieldwork.

1.1: Interview questions to the customer firm:

1. How long have you had the relationship with the local supplier?
2. How did you select the local firm as your supplier?
3. What knowledge did you have about the local firm prior to the relationship? What affected your confidence about its potential to be a qualified supplier?
4. What does the local firm produce or your company? Would you regard this component to be technologically complex?
5. What kind of technological and organizational assistance have you offered the partner firm?
6. Did you invest in equipment, personnel training, etc, in order to ensure quality standards and other organizational requirements?
7. How do you perceive the potential benefits of these investments to your firm?
8. Has the partner assimilated the technology and other experience from you to your satisfaction? If so, what do you perceive as important factors influence their successful learning?
9. Do you have concerns about the unintentional knowledge leakage?
10. Do you think the relationship will continue?

1.2 Interview questions to the supplier firm:

1. How long have you had a relationship with the customer firm- XXX?
2. How did the relationship with the foreign firm begin?
3. What knowledge did you have about the customer firm prior to the relationship? Did you feel confident about your ability to be a qualified supplier?
4. What do you produce for the foreign partner? Would you regard the component to be technologically complex?
5. To what extent is the production process and product related to your existing capability and activities?

6. What kind of technological and organizational improvements have you made since the relationship established?
7. Did you invest in equipment, personnel training, etc in order to ensure quality standard and other operational requirements of the product?
8. To what extent did you receive assistance from the foreign customer firm? Are you satisfied with the cooperation?
9. Do you perceive the co-operation and exchange is fair and valuable in terms of finance and capability?
10. Have you been able to learn and benefit from your interaction with the foreign partner?
11. What have been the important influences on your learning process?
12. Do you believe the relationship will continue?
13. What keeps the relationships stable?

Appendix 2: Interview questionnaire

The following questions were used during the interviews based on the one used in the pilot interviews. They were used as a guide to gather factual information and generate discussion. The first questionnaire targeted at customer firm and the second, the supplier firm. There are overlapping questions which was in order to ensure the consistency of the data collected from two sides.

2.1: Interview questions to the customer firm:

1. When and how did the relationship start? On what base was the supplier chosen?
2. What are the benefits in establishing with such a local supplier? What are these benefits based on? And how did you realize such benefits?
3. How was the situation at the beginning of the relationship? Was the purchasing volume high in the initial stage? How was the quality of the product of the supplier firm?
4. Was the expected benefit obvious at the initial stage?
 - a) If yes, how did you realize it in a short period of time?
 - b) If no, why? What did you do to overcome the difficulty and sustain the development of the relationship?
5. What were the key issues during the initial stage of your relationship?
6. Did you trust each other at the stage?
 - c) If yes, what was the trust grounded on?
 - d) If no, how did you develop the trust? Do you think trust is important in your co-operation? Why?
7. How did you communicate with each other? Does relationship such as trust affect the communication? How? Examples.
8. Do you find that documented knowledge, such as instructions, manuals tend to be easy to teach compared to some knowledge based on long-year experience? Could you give me some examples?
9. How do you remedy misunderstanding between staff if you spot it? Are there regular measures to increase the interaction and feedback between each other to improve the communication accuracy?
10. What is the period of time that you feel the supplier firm learning the most from you? Could you give some examples?

11. Do you feel the importance of contract in your relationship?
 - a) If yes, how?
 - b) If no, what is more important?
12. After the formal set-up of the relationship, do you perceive any changes in co-operation attitudes, and behaviour? Is there any change of the products and volume that the supplier firm produces for you?
13. Do you have more stable and intimate relationship? Is there any change associated with the deepening relationship?
14. Is there change in the communication behaviour between each other? If yes, could you give some examples?
15. Do you have strategic integration besides operational linkage?
16. Is there continuous knowledge transfer to your suppliers at the later stage of your co-operation?
 - a) If yes, why and how?
 - b) If not, why?
17. Do you think that the information and knowledge transfer to the supplier is simply for cost reduction? If not, why other benefits can result from such information and knowledge flow?
18. Do you think that information and knowledge flow will continue? If yes, Why? If not, why?
19. Could you summarise what are important factors in building up a high quality vertical relationship? What are the implications of such relationship to your firm? What role does knowledge transfer play in enhancing interfirm relationship and the performance of the value chain?
20. How do you understand outsource? How do you think if you can make the most use of this strategy?

2.2: Interview questions to the supplier firm:

1. When and how did the relationship with the foreign firm get started?
2. What are the benefits you expect from establishing with such a foreign customer firm?
3. Could you generally describe the situation of the relationship at the initial stage? For instance, was the purchasing volume high or low? Was your customer firm satisfied with

the products and services you provided?

4. What were the key issues that you needed to cope with at the initial stage of your relationship?
5. Did you trust the customer firm at the stage?
 - a). If yes, what was the trust grounded on?
 - b). If no, how did you develop the trust? Do you think trust is important in your cooperation? Why?
6. How did you communicate with each other? Do relationship properties, such as trust, affect the communication between each other? How? Examples.
7. Did you find that documented knowledge, such as instructions, manuals from the customer side are important? Are they easy to assimilate and utilize compared to knowledge based on accumulated experience? Could you give me some examples?
8. Was there sufficient communication between each other for cooperation and coordination? If yes, is it vital for you to learn from your partner? If not, what were/are the main barriers?
9. Did you find misunderstandings between each other? How did you remedy them? Are/Were there any regular measures to increase the interaction and feedback between each other to improve the communication accuracy?
10. During the audit process by the customer firm, what were your weaknesses and strengths that were identified by your partner? How did you sort out those weaknesses? Looking into the internal firm, what are the important factors lead you to successfully passing these 'tests'?
11. How do rate the importance of contracts in governing the relationship? Are there other factors are important in governing an efficient cooperation relationship?
12. How long did it take for the relationship move from the initial set-up stage to a relatively stable cooperation stage? Were there changes in your cooperation, such as changes in attitudes and behaviour in the relationship? Was there any change in the type of products or volume that you provided for the customer firm?
13. Associated with the development of relationship, was there any change in the communication behaviour between each other? If yes, could you give some examples?
14. How did you continuously build up the operational linkage with the foreign customer firm?

15. Besides operational linkages, do you have other integration with each other?
16. Did you ever experience some difficulty in understanding what the customer firm's needs or requirements? Could you give me some examples? Are there other communication difficulties in your cooperation? What caused these problems? How did you cope with them? Could you give me some examples?
17. Do you perceive that at this stage the legal contract is important in governing the relationship? If yes, why? If no, what other factors are important?
18. Could you describe how the operational linkages gradually stabilized with time? Were there stable procedures for you to solve problems, negotiate with each other and some common procedures for staff from both firms to cooperate with each other? What are they?
19. What was the main knowledge that you have learned from your customer firm at the stage?
20. With the relationship coming into mature stage, did the stable relationship bring about stagnation of information and knowledge transfer? If yes, how was it reflected in day-to-day operation? If not, what drove your two sides to have continuous information and knowledge flow? What type of information or knowledge do you receive now?
21. Have you progressed in terms of your technological and administrative capability during the process of such cooperation? Do you feel changes in the quality of the relationship with the customer firm are associated with your improvement? If yes, could you give me some examples? If not, what prevent you making progress and improvement?
22. How do you perceive the relationship between your own capability and the cooperation with the foreign customer firm now?
23. Has there been a qualitative change in the cooperative relationship as your capabilities have improved? That is, do you feel the customer firm treats you as a partner, instead of just a 'contractor'? If not, why? If yes, what are the factors leading to it?
24. Could you summarize your experiences of building up a successful long-term relationship with the customer firm?
25. How do these experiences influence your attitude and behavior if you set up similar relationship with other firms in future?

Appendix 3 – List of Interviewed firms

Complete data	Foreign multinational			Products exchanged	Chinese supplier firm	
	Nationality	Ownership	Interview number		Ownership	Interview number
1	Sino-Japanese	JV	2	Seal-up component	Private	1
2	Sino-Japanese	JV	1	SMT	SOE	1
3	Sino-Japanese	JV	1	Chassi	Private	2
4	Japanese	WOE	1	Plastic parts	Private	1
5	Italian	WOE	3	PC controller	Private	2
6	Japanese	WOE	1	Porcelain shell	Private	1
7	Japanese	JV	1	Outer bucket	Private	1
8	Japanese	JV	1	Pressing parts	Private	2
9	Japanese	JV	3	PC controller	SOE	3
10	Japanese	JV	1	Radiator	Private	1
11	Japanese	JV	1	Component of defroster	Private	1
12	Japanese	WOE	1	Nickel foam	SOE	1
13	Sweden	WOE	1	Metal parts	Collective	2
14	Japanese	WOE	1	Manganese	SOE	2
15	U.S.	JV	1	Electrical starter	Collective	1
16	Japanese	WOE	1	Electrical parts	Private	1
Incomplete data						
1	U.S.	WOE	1	Electrical parts	No access	NA
2	German	WOE	2	Electrical parts	No access	NA
3	South Korea	No access	NA	Electronics parts	SOE	2