



The determinants of foreign direct investment in China: The case of Taiwanese firms in the IT industry

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ABSTRACT

This study illustrates the factors that affect a firm's intention to engage in foreign direct investment (FDI) in China, using Taiwanese firms in the Information Technology (IT) sector as an example. By building upon the literature, we investigate a firm's decision to engage in FDI by taking industry and firm factors into consideration. This study applies an event history technique to perform an empirical analysis, taking into account the conditional probability of the element of time. These factors are analyzed in a dynamic context using a sample of 667 Taiwanese firms in 10 industries between 1996 and 2005. We find that network linkages, the expansion of markets, and China's incentive policies positively affect the intention to engage in FDI. A firm with a higher degree of export orientation and larger firm size also has a strong effect on motivating FDI.

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1. Introduction

As one of the newly-industrialized countries (NICs), Taiwan has been successful in its economic development, especially in terms of the technological upgrading of its information technology (IT) sector. Researchers argue that its clear industrial priorities and government intervention have served as the driving force behind this development (Amsden, 1989; Wade, 1990; Rodrik, 1995). The state in Taiwan has played a key role in creating a competitive industrial structure to coordinate public and private technological development. The most important role of state-led industrialization in advanced electronics has been to build technological competence (Wade, 1990). By the late 1970s, the government had made the development of the IT industry a very high priority. Around that time, the Taiwanese government formed the publicly-owned Electronic Research and Service Organization (ERSO) under the Industrial Technology Research Institute (ITRI) to acquire semiconductor design and production capability. The initial responsibility of ERSO was to recruit a foreign partner to help develop and commercialize the technology, and as a result of government-supported research institutions engaging in technology- and technical staff-transfer programs (Hsu and Chiang, 2001), the government established the Taiwan Semiconductor Manufacturing Corporation (TSMC) and United Microelectronics Corporation (UMC), the world's leading foundry plants. These have subsequently given rise to a series of innovative information technology industries that have enhanced Taiwan's position in the world's technological leadership (Mathews, 1997).

In the 1980s, the competitiveness of Taiwanese firms eroded due to increased operating costs, such as those of labor and real estate. Due to the worsening business environment in Taiwan in the 1980s, many manufacturing firms, especially those that were labor-intensive, relocated their operations in other developing countries (Wei and Christodoulou, 1997). The total foreign direct investment (FDI) approved by the Taiwanese government amounted to only US \$374.58 million in 1987, but by the end of 1998 it had surged to US \$18.61 billion. In 2006, Taiwan also jumped significantly in the world rankings for FDI according to the United Nations' Conference on Trade and Development's (UNCTAD) World Investment Report 2007. Taiwan ranked 31st out of 218 countries in 2006, up from 62nd place in 2005. Taiwan also ranked sixth among Asian countries in terms of its FDI. Most of the recent overseas investment has been directed to China.

By the end of the 1970s, China had engaged in a massive reorientation of its economy and it began its transition from a planned to a market economy. It began to aggressively engage in overseas FDI, with a view to increasing its influence on the international stage. While China formally permitted foreign investors to participate in 1979, there was relatively little foreign investment activity until 1991. The Chinese government adjusted its economic policy in order to speed up its economic reforms and to further open up its economy to foreign investment. The sources of FDI in China have been highly concentrated in the Greater China Circle, including Taiwan, Hong Kong, and Singapore. Their cumulative FDI alone constitutes over 70% of the total FDI in China over 1979–2001. In 1992, China still largely exported textiles, raw materials, and other traditional products. However, in 1999, the output of the IT sector began to dominate and has become the leading export item. Moreover, China replaced Taiwan as the third largest IT producer in the world in 2000, next to the U.S. and Japan.

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Taiwanese small and medium enterprises (SMEs) in the traditional sectors, such as those in footwear and garments, first went to China. A decade later, in the mid-1990s, the majority of investment shifted to the information technology sector, especially personal computer components and peripherals. Taiwan has long limited investments in China by domestic chip makers because of concerns that their technologies might be used by the Chinese military. However, the government of Taiwan has more recently approved plans by chip makers to invest in China. This signals a significant relaxing of regulations for the Taiwanese IT industry. According to statistics compiled by the Ministry of Economic Affairs' Investment Commission in Taiwan, investment in China amounting to \$13.97 billion hit a record high in 2006. Total IT industry FDI in China now accounts for over one third of FDI in China. The record number of Taiwanese investment projects going to China also reflects a trend towards larger-scale investment. This raises an interesting question. What factors drive the large amount of Taiwanese IT industry FDI in China?

By building upon the literature, we investigate a firm's decision to undergo FDI by taking both industry and firm factors into consideration. This study applies an event history technique to perform an empirical analysis, taking into account the conditional probability of the element of time. We examine the longitudinal data of 667 Taiwanese firms that belonged to 12 distinctive IT industries between 1996 and 2005. A unique feature of this study is that the data cover a large cross-industry of firms, thereby allowing us to investigate both firm and industry characteristics that induce FDI in China. By analyzing panel data covering a long time span in a dynamic context, we can investigate the process of a firm's learning and how learning affects subsequent movements in FDI.

The remainder of this paper is organized as follows. Section 2 examines the existing literature in order to develop a model that captures the effects of the motivation underlying FDI in China. Section 3 describes the data and the hazard rate approach, while taking into consideration the conditional probability of the element of time. Section 4 presents the empirical results. In Section 5, we draw implications from the findings.

2. Conceptual framework

There have been several studies on the motivations underlying engaging in FDI (Hymer, 1960; Kojima, 1978; Root, 1987; Grosse and Trevino, 1996; Chen and Chen, 1998), the entry modes of the FDI strategy (Johanson and Vahlne, 1977; Dunning, 1980; Fagre and Wells, 1982; Agarwal and Ramaswami, 1992; Kumar and Subramaniam, 1997), the relationship between entry modes and firm performance (Anderson and Gatignon, 1986; Woodcock et al., 1994; Chen, 1999), and the relationship between foreign market strategies and operating performance (Cavusgil and Zou, 1994; Chen, 1999; Knight, 2000; Zou and Cavusgil, 2002). More generally, studies on the factors driving FDI have examined the issue from the perspective of environmental uncertainty (Kim and Hwang, 1992; McNaughton and Bell, 2000), firm characteristics (Cavusgil and Zou, 1994; Bradley and Gannon, 2000; Manolova et al., 2002), and firm capabilities (Markides and Williamson, 1994; Mascarehas et al., 1998).

By building upon this strand of the literature, we are interested in knowing which factors significantly motivate Taiwanese IT firms to invest in China taking industry and firm factors into consideration. Industry factors refer to environmental factors that motivate FDI, which include network linkages, the expansion of markets, and China's incentive policies. Firm factors refer to firm-level variables, which focus on understanding the resource-based considerations that promote FDI. They are export orientation, firm size, firm performance, R&D expenditure, capital intensity, and international experience.

2.1. Industry conditions

2.1.1. Network linkages

The network approach views FDI as the construction of a link between a domestic network and a foreign network (Johanson and Mattsson, 1988; Chen and Chen, 1998). This theory views FDI as an attempt to access external resources in order to offset the weaknesses of a firm. FDI motivated by linkages is a strategic choice that enhances, maintains, or restores the firm's competitiveness in the global market. If firms are small relative to their rivals, partners, and markets, they tend to use network linkages to gain economic advantages (Gomes-Casseres, 1997). Home country firms in a production network tend to invest in foreign markets together in order to reduce uncertainty and to lessen risk (Johanson and Mattsson, 1988). Besides, manufacturers engaging in FDI may take advantage of the market assets of their business networks to infiltrate foreign markets (Kuo and Li, 2003).

The Taiwanese IT industry is unique in the domestic marketplace and is also distinct from the IT industry in Japan or Korea, where the emphasis is on vertical integration. Its strong dependence on external resources is met through cooperative partnerships (Sher and Yang, 2005). This structure is necessary to enable firms to produce goods that keep pace with the market, while the same multiple firms also share expenditures and market risks. The same phenomenon also characterizes FDI activities. As the costs and risks of investment in technology increase, firms in the IT industry are more dependent on network relationships in order to reduce and share the risks associated with FDI. This study uses the following two "network linkages". First, a firm may follow its major clients to the foreign market, thereby maintaining a close relationship with them. Secondly, a firm may engage in FDI in order to follow other suppliers or other firms in the same industry, thereby maintaining ties between the firms and reducing operational risk (Kuo and Li, 2003). Thus, we develop the following hypothesis:

Hypothesis 1. The more intense the network linkage, the more that firms engage in FDI in China.

2.1.2. Expansion of markets

The destination location of FDI is critical in developing a sustainable business model. According to location theory, FDI incentives are motivated by two considerations: (1) targeting cost savings, in order to seek a production cost edge in host countries where FDI is mainly focused on producing locally and then exporting; and (2) aiming to expand market presence through increased penetration in local markets (Na and Lightfoot, 2006). In the second case, FDI mainly focuses on local production and local sales. Such FDI places a strong emphasis on market size, market growth, and consumption ability. Market size directly affects the expected revenue of the investment, and looking for new markets is one major motivation underlying FDI. The larger the market size of a particular region, the more FDI that it should attract (Kravis and Lipsey, 1982; Blomstrom and Lipsey, 1991; Shapiro, 1998).

Chen (1992) shows that the predominant reason for firms in Taiwan to engage in FDI is to expand their market base, including the enlargement of existing markets and the exploration and development of new ones. The case for China as the FDI location of Taiwan's growing firms has increased substantially because China as a source of low-cost labor and with its attractive rapidly growing domestic market represents potential growth for many firms. SMEs in labor-intensive industries such as textiles and shoes that have sought locational advantages have led Taiwan's investment in China. They have established small factories to take advantage of cheap labor and low overhead costs. As the China market has become more open, many of Taiwan's large enterprises have moved to China (McBeath, 1999). In the 1990s, the investments in China contributed the most to Taiwan's FDI growth.

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