Full Length Research Paper

The trends and features of Taiwanese enterprises in China: Localization, R&D intensity, and firm performance

Chun-Sheng Joseph Li

Department of International Business, College of Management, National Taichung University of Education, 140 Min-Shen Road, Taichung, Taiwan 40306, Email: (d1211114@yahoo.com.tw)
Tel: +886(4)2218-3959, Fax: +886(4)2218-3356

Accepted 5 December, 2013

This study intends to examine the recent trends and features of Taiwanese investment operating in China (from 2002 to 2005), in terms of localization, R&D intensity, and firm performance. The empirical findings show that from 2002-2005, the intensity of each local linkage (except local supplier linkage) manifest a very stable trend. It was suggested that from 2002 to 2005 Taiwanese investors had already learned how to exploit China’s location-specific advantages and therefore the intensity of each local linkage is nearly fixed (except local supplier linkage). Besides, it is noteworthy that strategic goals, firm’s size, and ownership type all make a difference to the extent of localization. As regards R&D, Taiwanese MNEs seem to be indifferent to conducting R&D in China. The low degree of R&D intensity is applicable to all types of Taiwanese subsidiaries. Finally, according to Taiwanese top managers’ subjective self-evaluations, their subsidiary-level firm performance in China demonstrates a positive and stable trend. This result indicates that investing in China could enable Taiwanese MNEs to strengthen their core competitiveness in the home base and enhance their firm performance in the international market.

Key words: China, Taiwanese, R&D, investors, intensity,

INTRODUCTION

The ultimate goal for foreign direct investment (FDI) is to access external resources, in host countries, to neutralize the firm weakness and improve competitiveness. On global FDI map, favourable locations usually offer MNEs investing there some location-specific advantages. The ongoing development of international business can be viewed as an unending saga of searching for location-specific advantage (Peng, 2004).

Some scholars have recently been bringing to our attention that, as a result of macro-economic and firm strategy considerations, FDI by MNEs generally followed a regional pattern (Sethi et al., 2003). In reality, MNE’s strategic objects prompting FDI operating in a specific host country might change over time. In essence, FDI patterns are a very complicated, active, and multi-dimensional phenomenon. In international business studies, FDI patterns ideally need to be investigated on a more dynamic perspective. Therefore, this study intends to explore the local business operations conducted by Taiwanese MNE subsidiaries investing in China (from 2002 to 2005).

In addition, we also aim to analyze the R&D activities of Taiwanese MNE subsidiaries in China. For MNEs, it is important to create connections to location-specific resources for innovation, including advanced manufacturing technologies and marketing know-how (Peng, 2004). Nevertheless, the very essence of a MNE may restrict the spread of its proprietary technology within its own organizational boundaries. Such proprietary technology is not easily handed over to other companies (Dicken, 2003). In addition, it is a fact that emerging markets usually feature great structural uncertainties and weaker intellectual property right (IPR) protections (Luo, 2003). Therefore, this report will shed some light on the
adaptations of R&D activities that foreign investors need to make in emerging markets.

To test our propositions regarding MNE subsidiaries investing in emerging markets, we choose the Taiwanese investment in China as a study setting. This study seeks to provide evidence to show the trends and unique features (from 2002 to 2005) of Taiwanese MNE subsidiaries investing in China, by asking the following key questions: (1) How do the subsidiary characteristics affect the degree of localization, R&D intensity, and firm performance? (2) On the perspective of Taiwanese top managers’ subjective self-assessment, how is the subsidiary-level firm performance of Taiwanese MNEs investing in China? (3) From 2002-2005, is there particular features and trend (stable or changing) of Taiwanese FDI operating in China? (4) What is the implication of the regional pattern and trend of Taiwanese FDI in China?

In this report, the Taiwan-China case represents a very interesting and worthy test example for three reasons. First, in the recent two decades, China has enjoyed amazingly fast economic growth rate and become one of the top destinations of global FDI. Second, to MNEs, however, China’s unique business environment is still very challenging. It is reflected by the unfair legal systems, frequent changes in regulations, and rampant IPR violations in China.

Third, since the early 1990’s, in order to utilize the lower-cost input factors and access China’s vast domestic market, many Taiwanese companies have been conducting FDI activities in China. Consequently, Taiwan has become one of the main contributors to the FDI flowing into China. Based on Taiwan government statistics, from 1991 to Dec. 2007, the accumulated Taiwan outward FDI toward China reached $64.86 billion (Investment Commission, Taiwan Executive Yuan). In practical terms, people from China and Taiwan share a similar cultural background, and family and social network ties are particularly important in their business transactions. In this regard, even though the Taiwan–China case cannot stand for all international investors operating in China, its dynamism will offer an abundant context in which to explore. Particularly, it is of much interest to examine whether traces of the postulated patterns in the Taiwanese FDI position can be seen, in China, over such a relatively short period of rapid growth.

THEORIES AND HYPOTHESES

Location-specific advantages

The “eclectic” paradigm (Dunning, 1988, 1993) explains that, relative to a non-MNE, a MNE will undertake FDI activities in a specific foreign location if it can benefit simultaneously a combination of ownership (O), location (L), and internalization (I) advantages. These triad variables are well known as the OLI advantages.

From Dunning’s view point (1998), for foreign investments, the location-specific advantages originate from utilizing local resource endowments or factors that a certain foreign area provides that a MNE considers beneficial to combine with its own particular firm advantages. Generally speaking, location-specific advantages are linked to economic, resource, knowledge, infrastructural, political, legal, and cultural factors in the host nations. In reality, these advantages matter to MNEs when determining the most suitable nations for locating their international investments (Galan et al., 2007). Peter Dicken (2003) suggests that in the absence of more favorable location-specific advantages abroad, a MNE would serve foreign markets by exports from a domestic base.

Local linkages

As regards FDI activities, local presence is critical in host countries, because it offers MNEs gravitational proximity to the foreign interconnections in which business transactions are evolved over time. Moreover, local presence promotes direct contact with the local partners to enhance mutual trust (Dyer and Chu, 2000), and yields easy access to the flow of local knowledge that results in more business opportunities. MNEs, in the host country, utilize relational capital to establish local linkages with local suppliers, distributors, customers, government agencies, research institutes and so on, to exploit the location-specific factors. Relational capital refers to the goodwill and mutual trust that arise out of close interaction between a company and its alliance partners (Kale et al., 2000).

In principle, the function of external networks is to support this intra-firm relational capital (Dunning, 2002). Furthermore, the agglomeration impact of FDI is a manifestation of dynamic local networks attracting more network partner firms (Harrison, 1994). Besides, the priority local linkages built by MNEs differ by the industry features of investors, location of FDI, entry mode, and the firm size.

Hakansson (1992) regarded FDI as a proactive endeavour to recombine location-specific factors and rearrange business activities through local linkages in the host country. In terms of local linkages, Tsai (2000) highlighted the particular importance of social networks, and suggested that they impact the rate of creation of inter-firm linkages of a MNE. In essence, creating local linkages is a complicated process which requires interdependent production, development, logistics, and administration activities and therefore resources need to be adjusted to generate more effective cooperation between the institutes in the local connections (Hallen et al., 1991).

However, for any MNEs embedded in the local linkages, there are some business exchange relationships that are considered primary. It is understandable that the primary
exchange relationships are crucial to the subsidiary-level firm performance of the MNE, and hence carry large relation-specific value for the local business operations in the host country (Asanuma, 1989; Dyer, 1996).

In the local networks, all institutes operate in cooperation with others to provide their products or services in the market. Even the largest MNE cannot stand alone and needs to work with other local institutes with complementary capabilities. Apparently, the more diverse resources that foreign investor needs to utilize, the more local linkages the foreign investor has to establish.

The definition of local linkages, in this study, is a web of interconnected networks upon which business activities between actors are conducted. Some economists suggest that exchange connections in local networks may be examined on the basis either of activities or of actors (Hakansson and Johanson, 1993). However, in this empirical analysis, we explore the local networking behaviors based on activity exchange relationships that tend to reflect the subsidiary strategies in the host nation. This study emphasizes the local linkages that underline particular business activities without considering how many actors are involved in the local connections. Chen et al. (2004) include six business activities in their report of local linkages: sourcing of local components and parts; local marketing of final products; product design and innovation; hiring of local workers; sourcing of local production capacities; and obtaining local financial resources. These six categories, in nature, reflect effectively the fields and importance of location-specific factors in the context of FDI. Therefore, this study will analyze these local linkages in the empirical part.

The degree of ‘localization’

In terms of the measurement of localization, this report primarily focuses on the business exchanges between MNE subsidiaries and local institutes, which constitute local networks in the host country. As regards ‘internationalization’, in several studies, the extent of ‘internationalization’ is defined as ‘the size of internalized international operations relative to total operations.’ (Tallman and Li, 1996; Ramaswamy, 1993; Geringer et al., 1989) Referring to the measurement of ‘internationalization’, in this empirical analysis, we define ‘the degree of localization’- or ‘the intensity of local linkages’- as ‘the percentage of local operations that account for overall operations’. To MNE subsidiaries, in essence, the degree of localization presents the strategic importance of local operations and also suggests the need to utilize local resources through foreign direct investment. Thus, in this study, we gauge the degree of localization in five categories. They are defined as follows:

1. Local employment ratio: the percentage of the workforce that is accounted for by local workers (worker linkage);
2. Local sales ratio: the percentage of final products that are sold in host country’s domestic market (sales linkage);
3. Local capital ratio: the percentage of financial resources (working capital) that are acquired from local institutions (financial linkage);
4. Local content ratio: the percentage of components, parts, and semi-final products that are procured from local firms (supplier linkage);
5. Firm’s age: the length of time the MNE subsidiary invests in the host country (firm’s experience)

It can be seen that worker linkage is included as one of the local linkages because, compared with the employment of low-skilled labors, the hiring of high-skilled workers might contain more relational capital. Nevertheless, it is noted that the intensity index gauges the degree to which local resources contribute to the overall operations of a MNE subsidiary investing in the host country. In other words, it is not a strict measure of the frequency of exchanges, but rather of the share of activities that draw upon external resources.

Factors impacting FDI trends and features

According to international business theory, local linkages are dyadic between each MNE subsidiary and its unique strategic purpose in the host country. Analyzing location decisions of various MNEs collectively, it was suggested that FDI generally follows a specific regional pattern in the context of the firm’s size, entry mode, and the nature of the production network in which the investor is embedded.

Moreover, based on the studies of the investment development path (IDP) (Dunning, 1981, 1986), ‘countries tend to go through five main stages of development and these stages can be usefully classified according to the propensity of those countries to be outward and/or inward direct investors’ (Dunning and Narula, 1996). Apparently IDP theory is an important application of the OLI paradigm to explain the changing level and pattern of MNEs’ business activity and their interactions with the host country’s investment path. It is noted that the FDI flowing into less developed countries mostly aims at seeking basic resources (the labor and natural resources) in low-technology, labor-intensive production tasks. However, over time, as these countries advance and upgrade their economies, public infrastructure, and knowledge resources, more and more MNEs are likely to be attracted to conduct highly value-added investment activities in these countries. In other words, the FDI trends and features will change as a result of the technological progress and human resource development of the host country. Nevertheless, in reality, the capability of a country to significantly upgrade its technological and work force quality is an extremely complicated function of its own location-specific
endowments, natural assets, strategies of business development, and, in particular, the characteristics of its society and government (Dunning and Narula, 1996).

It is important to bear in mind that both macro-economic and subsidiary strategy factors need to be brought together and considered in order to explain the changing patterns and characteristics of FDI flows. Some studies derived specific propositions that tried to explore the phenomenon, and then empirically verified these propositions by statistical computing. Reuber et al. (1973) conducted a comprehensive study of FDI volume and trends in different countries. That conclusion showed that global FDI flowing into developed countries was excessively high when compared to developing countries. However, Sethi et al. (2003) examined US FDI into Western European and Asian countries over the 20-year period 1981-2000. Results suggest that US outward FDI has generally demonstrated a regional pattern and the primary recipient since the 1950s has been Western Europe. However, in recent years, US MNEs have also increasingly made significant investments in Asian countries to take advantage of the low wage levels (efficiency-seeking FDI) and exploit their domestic markets (local-market-seeking FDI). It is evident that the development of these countries’ economic and the upgrades in their infrastructure have activated a shift in US FDI and have contributed to a change in the FDI trend over time.

According to IB theory, FDI could be viewed as an attempt to exploit location-specific resources in the host country. In terms of the trend of localization, newly established local networks must be incorporated, adjusted and trained before they can be integrated into the business circumstances of the host country. Johanson and Mattson (1988) conclude that, over time, the investment activities undertaken by MNE subsidiaries in the host country become increasingly embedded in the local networks. In other words, as time passes by, the intensity of each local linkage (the extent of localization) for Taiwanese MNE subsidiaries investing in China is likely to increase gradually. Thus the hypothesis:

Hypothesis 1: From 2002-2005, the degree of localization (the intensity of each local linkage) for Taiwanese MNE subsidiaries investing in China demonstrates a gradually increasing trend.

Depending on the nature of the advantages MNEs are pursuing, the strategic motives for MNEs to conduct FDI activities in foreign countries include: natural resources seeking, market seeking (import-substituting), efficiency (labor) seeking, and strategic asset seeking (Dunning, 2001). Nevertheless, some scholars suggest that MNEs in emerging markets (e.g., China and Southeast Asia) are much more earnest in seeking basic resources rather than pursuing strategic assets (Chen et al., 2004; Sethi et al., 2003).

In this study, the Taiwanese MNEs investing in China were classified into two groups: an export-oriented (vertical FDI strategy) group and a local-market-seeking (horizontal FDI strategy) group. Some IB reports have found that the ultimate purpose for export oriented MNEs is to utilize international factor-cost differences. For local-market-seeking MNEs, the strategic objective is to access and exploit the host country’s local markets (Hanson et al., 2001, Markusen and Maskus, 2001).

An essential aim for MNEs engaged in vertical-FDI activities is to take advantage of the host country’s cheap input factors, reduce the cost of production, and improve their competitiveness in the global market. It is particularly evident that Taiwanese export-oriented MNEs, investing in China, divide the production process into several stages and utilize cross-nation absolute and comparative advantages by creating subsidiaries in China. Therefore, Taiwanese MNEs usually export components or semi-finished goods to their Chinese subsidiaries and then ship them to the international markets. It follows naturally from the aforementioned concept that, for them, Chinese market local responsiveness is assessed much less than the crucial resources controlled by the parent companies.

On the other hand, sales-expansion in the host country undoubtedly is the major objective for most local-market-seeking MNEs (Dunning, 1995; Luo and Peng, 1999). Not surprisingly, in addition to production tasks, local-market-seeking MNE subsidiaries, in host countries, need to put forth much more effort to promote local marketing, establish local distribution networks and local sales linkages (Luo, 2003). Therefore, it is expected that local-market-seeking FDI is more affected by the host nation’s local business environment than is export-oriented FDI. In light of the aforementioned, thus the hypothesis:

Hypothesis 2: The degree of localization of local-market-seeking Taiwanese MNE subsidiaries investing in China is higher than that of export-oriented Taiwanese MNE subsidiaries investing in China.

As noted before, FDI can be considered as an effort to access external resources in the host country, in order to offset weakness and enhance the competitiveness of the investor. However, due to the liability of foreignness, for MNE subsidiaries, it is expectably more costly to establish new local networks in a host country than at home. Therefore, as regards ownership type, a joint venture (JV) is preferable to a wholly owned subsidiary (WOS) if the MNE aims to make use of local alliance partner firms to exploit location-specific advantages. It is evident that local alliance partner firms in the host country can serve as an interface to reduce the costs of accessing local networks. Overall, local partners offer location-specific knowledge, play an intermediary role in relationship creating and lower costs leading to more investment (Chen et al., 2004).

Nevertheless, MNEs need to make a strategic decision concerning whether to form cooperative inter-firm
relationships (JV) or operate independently (WOS) in the host country. In general, the fewer local alliance partner firms the MNE subsidiary works in cooperation with, the less dependent on the host country’s local settings the MNE subsidiary is likely to be. In reality, many host governments restrict, even ban, wholly foreign-owned subsidiaries investing in certain critical industries. For instance, in America, foreign airlines are not permitted to operate wholly owned subsidiaries or acquire US airliners (Peng, 2004). Therefore, according to the above, it is expected that:

Hypothesis 3: The degree of localization of JV-type Taiwanese MNE subsidiaries investing in China is higher than that of WOS-type Taiwanese MNE subsidiaries investing in China.

In terms of the firm’s size effect, large-sized MNE subsidiaries possessing more benefit-yielding resources are usually better able to overcome the liability of foreignness and operate independently in the host country. Therefore, it is presumable that local third-party connections are particularly important for small-sized investors that usually fall short of the capability to go it alone in foreign countries (Shaver and Flyer, 2000).

Moreover, Tsai (1998, 2000) suggests that the strategic linkage capability of a MNE subsidiary may restrict a firm’s effectiveness in utilizing inter-organization or inter-firm linkages for interchanging resources and transferring knowledge. This strategic linkage capability may also be positively (while imperfectly) associated with the firm's size (Chen et al., 2004). Consequently, due to different strategic linkage capabilities, a small-sized company may cease at components and parts sourcing whereas a large-sized company may advance to the highest level of obtaining new strategic and knowledge resources. However, this conclusion cannot be applied to the Taiwan-China case. In essence, China possesses abundant basic resources; on the other hand, it has a shortage of strategic and knowledge resources. The situation is clear that, for large-sized MNE subsidiaries investing in China, the capacity to progress to exchange strategic resources and acquire new knowledge might be limited. Therefore, according to the aforementioned statement, the degree of localization for small-sized subsidiaries is expected to be higher. Besides, in emerging markets, the relational webs of large-sized MNEs are usually likely to be international in nature and less location-specific. Thus we hypothesize:

Hypothesis 4: The degree of localization of Taiwanese small-sized MNE subsidiaries investing in China is higher than that of Taiwanese large-sized MNE subsidiaries investing in China.

R&D Intensity

In addition to seeking basic resources, an essential objective for MNEs is to create connections to location-specific resources for innovation, including advanced manufacturing technologies and marketing know-how (Peng, 2004). In reality, compared with basic resources, innovations are usually much more profitable if the MNE subsidiary has the capability to upgrade them within the network and have them adopted by all the organizations of the network.

In principle, such knowledge resources in the host country could generate information spill overs that might lead to more critical opportunities for the firms to remarkably grow and develop. Nevertheless, this type of location-specific advantage is often firm-specific and very difficult to imitate (Porter, 1991).

As a result, the very nature of the MNE may restrict the distribution of its proprietary technology beyond its own institutional boundaries. In other words, knowledge resources are not usually lightly handed over to other firms. 'Control over its use is jealously guarded: the terms under which the technology is transferred are dictated primarily by the MNE itself in the light of its own overall interests.' (Peter Dicken, 2003)

In the case of China, in particular, a major issue is the appropriateness of the technology transferred via the MNE subsidiaries. As earlier discussed, in China the most plentiful factor is cheaper basic resources while the knowledge resources are relatively scarce. Moreover, at present, intellectual property right (IPR) infringement is still very prevalent in China. Despite stronger statutory protection after joining the World Trade Organization (WTO), 'China continues to be a haven for counterfeiters and pirates. According to one copyright industry association, the piracy rate remains one of the highest in the world (over 90 percent) and U.S. companies lose over one billion dollars in legitimate business each year to piracy. On average, 20 percent of all consumer products in the Chinese market are counterfeit.' (US Department of Commerce, 2003) Therefore, due to weak intellectual property right (IPR) protections, foreign investors are not usually enthusiastic about undertaking R&D activities in China.

In China, due to geographical proximity, similar culture, and identical language, the R&D coordination costs for Taiwanese MNE subsidiaries are relatively low. Nevertheless, for international investors investing in China, the safest way to reduce IPR risk is to keep critical technologies and manufacturing processes that can be pirated outside the country (Harvard Business Review on Doing Business in China, 2004). Therefore, in light of the aforementioned, it is expected that Taiwanese MNE subsidiaries do not intend to increase expenditure on R&D activities in China. Hence we have the following hypothesis:

Hypothesis 5-a: From 2002-2005, the R&D intensity of Taiwanese MNE subsidiaries investing in China is very low and demonstrates a stable (or even slightly decreasing) trend.
In addition, on the issue of R&D intensity, since China’s intellectual IPR protections’ environment is fairly risky, it is presumable that overall, in order to retain core competitiveness, Taiwanese MNEs mostly conduct R&D activities in Taiwan. Thus there is no significant difference between local-market-seeking and export-oriented Taiwanese MNE subsidiaries investing in China. Similarly, there is not much difference between large-sized and small-sized, or wholly owned subsidiaries (WOS) and joint venture (JV) Taiwanese MNE subsidiaries either. For all types of subsidiaries, the R&D intensity is very low. Thus, the hypothesis:

Hypothesis 5-b: From 2002-2005, the R&D intensity of local-market-seeking Taiwanese MNE subsidiaries investing in China is not significantly different from that of export-oriented Taiwanese MNE subsidiaries investing in China.

Hypothesis 5-c: From 2002-2005, the R&D intensity of WOS-type Taiwanese MNE subsidiaries investing in China is not significantly different from that of JV-type Taiwanese MNE subsidiaries investing in China.

Hypothesis 5-d: From 2002-2005, the R&D intensity of large-sized Taiwanese MNE subsidiaries investing in China is not significantly different from that of small-sized Taiwanese MNE subsidiaries investing in China.

**Subjective self-assessment of firm performance**

In this study, top manager’s (top manager of the Taiwanese parent company) subjective self-assessment was used as an indicator of firm performance. A subjective self-assessment, adopted by Bae, Chen, and Lawler (1998), is an alternative measure for firm performance. In China, the accounting systems are ambiguous and unreliable. Besides, in the field survey of Taiwanese investment in China, it is likely that a remarkable percentage of the respondent firms were reluctant to reveal financial information (e.g. profits) due to the company business secret; therefore, subjective self-evaluation of the firm performance becomes another choice to the objective performance data.

As discussed, Taiwanese firms continue to invest heavily in China. Taiwan has been one of the main contributors to China’s impressively high economic development in recent years. Therefore, it is presumable that investing in China enables Taiwanese MNEs to enhance their firm performance. It follows naturally from the aforementioned concepts that, as regards the top manager’s subjective self-evaluation, overall the subsidiary-level firm performance of Taiwanese MNEs investing in China is expected to be positive to their headquarters in Taiwan. Such logic suggests the following hypotheses:

Hypothesis 6-a: From 2002-2005, overall, the subjective self-assessment of firm performance of Taiwanese MNE subsidiaries investing in China is positive by their headquarters in Taiwan.

Hypothesis 6-b: From 2002-2005, the subjective self-assessment of firm performance of Taiwanese MNE subsidiaries investing in China demonstrates a stable trend.

Moreover, since overall Taiwanese enterprises are still very enthusiastic about undertaking investment activities in China, it is expected that, in terms of the degree of subjective self-evaluation of firm performance, there is no significant difference between local-market-seeking and export-oriented Taiwanese MNE subsidiaries. Similarly, there is not much discord between large-sized and small-sized, wholly owned subsidiaries (WOS) and joint ventures (JV), or established and new entrant Taiwanese MNE subsidiaries either. (In this study, we define established firms as those subsidiaries with firm’s age longer than 5 years; new entrant firms as those subsidiaries with firm’s age between 2-5 years.) In light of the above, we have the following hypotheses:

Hypothesis 6-c: From 2002-2005, the degree of subjective self-assessment of firm performance of local-market-seeking Taiwanese MNE subsidiaries investing in China is not significantly different from that of export-oriented Taiwanese MNE subsidiaries investing in China.

Hypothesis 6-d: From 2002-2005, the degree of subjective self-assessment of firm performance of WOS-type Taiwanese MNE subsidiaries investing in China is not significantly different from that of JV-type Taiwanese MNE subsidiaries investing in China.

Hypothesis 6-e: From 2002-2005, the degree of subjective self-assessment of firm performance of large-sized Taiwanese MNE subsidiaries investing in China is not significantly different from that of small-sized Taiwanese MNE subsidiaries investing in China.

Hypothesis 6-f: From 2002-2005, the degree of subjective self-assessment of firm performance of established Taiwanese MNE subsidiaries investing in China is not significantly different from that of new entrant Taiwanese MNE subsidiaries investing in China.

**RESEARCH METHODOLOGY**

**Data source**

The data set for this study were derived from the surveys of the annual reports: “Analysis of the Operations of Taiwanese Subsidiaries Investing in China” from 2002 to
of the 162 valid sample firms, 70 are of the local-market-seeking group and 92 are of the export-oriented group; 71 are large-sized firms and 91 are SMEs; 118 are wholly owned subsidiaries (WOS) and 44 are joint ventures (JVs). Third, in the 2004 survey, of the 190 valid sample firms, 108 are of the local-market-seeking group and 82 are of the export-oriented group; 79 are large-sized firms and 111 are SMEs; 138 are wholly owned subsidiaries (WOS) and 52 are joint ventures (JVs). Finally, in the 2005 survey, of the 162 valid sample firms, 85 are of the local-market-seeking group and 77 are of the export-oriented group; 70 are large-sized firms and 92 are SMEs; 111 are wholly owned subsidiaries (WOS) and 51 are joint ventures (JVs).

Variables

As discussed, five localization variables were employed: local employment ratio (local worker linkage), local content ratio (local supplier linkage), local capital ratio (local financial linkage), local sales ratio (local sales linkage), and firm’s age to measure the scope and degree of localization. Basically, exchange relationships contained in each local linkage involve trading and collaborations. For instance, local sales ratio includes direct sales to local Chinese buyers and indirect sales via local agents and trading companies. Local capital ratio includes the working capital (except share capital) of the Taiwanese subsidiary investing in China which is borrowed from Chinese indigenous financial institutions or provided by a local joint-venture alliance enterprise. The definition of each localization variable is summarized in Table 1:

In this study, ‘R&D intensity of a subsidiary’ is defined as ‘the percentage of R&D expenditures of a subsidiary account for total annual sales of a subsidiary.’ The R&D expenditures to sales ratio is a commonly used measure in studies of R&D intensity. (Zhang et al., 2007; Belderbos, 2003; Kotabe, et al., 2002). The subjective self-assessment of firm performance is measured on a 3-point Likert-type scale including the nine categories of investment scale, production scale, export market extension, product quality upgrading, production technology upgrading, R&D expenditure, staff employment, alliance with foreign enterprises, and operation diversifications (Table 2). In this survey, every respondent top manager is required to evaluate the impact of its investment in China on the parent company in Taiwan. The extent of impact is measured, in each category, under a 3-point Likert scale: ‘beneficial or increase’ (scale 1), ‘no impact’ (scale 0), and ‘damaging or decrease’ (scale -1). The composite impact index ranges from 9 to -9. The internal reliability of this construct, from 2002-2005, is validated by Cronbach’s α (> 0.7).

Note: Every respondent firm is asked to evaluate the impact of its investment in China on the Taiwan
Table 1. The Definition of Localization Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local employment ratio</td>
<td>the percentage of local Chinese workers out of the total workers employed by the Taiwanese subsidiary in China</td>
</tr>
<tr>
<td>Local content ratio</td>
<td>the percentage of raw materials, components, and semi-final products, the Taiwanese subsidiary in China procures from local firms</td>
</tr>
<tr>
<td>Local capital ratio</td>
<td>the percentage of the working capital (except share capital) of the Taiwanese subsidiary in China borrowed from local Chinese financial institutions or provided by local joint-venture alliance enterprises</td>
</tr>
<tr>
<td>Local sales ratio</td>
<td>the percentage of the products of the Taiwanese subsidiary in China sold in China’s local market</td>
</tr>
<tr>
<td>Firm’s age</td>
<td>the firm’s age of the Taiwanese subsidiary investing in China</td>
</tr>
</tbody>
</table>

Table 2. The Subjective Self-assessment of Subsidiary-level Firm Performance (The Impact of Taiwanese Investment in China on the Headquarters in Taiwan).

(1) Investment scale
(2) Production scale
(3) Export market extension
(4) Product quality upgrade
(5) Production technology upgrade
(6) R&D expenditure
(7) Staff employment
(8) Alliance with foreign enterprises
(9) Operation diversifications

Note: Every respondent firm is asked to evaluate the impact of its investment in China on the Taiwan headquarters. ‘The extent of impact’ is measured, in each category, under a three-point Likert scale: ‘beneficial or increase’ (scale 1), ‘no impact’ (scale 0), and ‘damaging or decrease’ (scale -1). The composite impact index ranges from 9 to -9.

Table 3. The Means of Localization Variables (from year 2002-2005).

<table>
<thead>
<tr>
<th></th>
<th>Local employment ratio (%)</th>
<th>Chinese local sales ratio (%)</th>
<th>Local content ratio (%)</th>
<th>Local capital ratio (%)</th>
<th>Firm’s age (year)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2002</td>
<td>96.0011 (0.81)</td>
<td>54.9158 (3.07)</td>
<td>42.6772 (2.50)</td>
<td>33.5444 (2.87)</td>
<td>6.2056 (0.33)</td>
</tr>
<tr>
<td>2003</td>
<td>96.7894 (0.34)</td>
<td>53.5762 (3.31)</td>
<td>50.7369 (2.66)</td>
<td>35.6895 (3.44)</td>
<td>6.3642 (0.26)</td>
</tr>
<tr>
<td>2004</td>
<td>95.5913 (0.69)</td>
<td>50.174 (3.10)</td>
<td>49.2789 (2.62)</td>
<td>32.9973 (2.94)</td>
<td>6.27 (0.26)</td>
</tr>
<tr>
<td>2005</td>
<td>96.6033 (0.34)</td>
<td>54.2183 (3.23)</td>
<td>55.0936 (2.60)</td>
<td>31.0988 (3.24)</td>
<td>6.28 (0.30)</td>
</tr>
</tbody>
</table>

Note: figures in parentheses represent S.E. (Standard Error) values

headquarters. ‘The extent of impact’ is measured, in each category, under a three-point Likert scale: ‘beneficial or increase’ (scale 1), ‘no impact’ (scale 0), and ‘damaging or decrease’ (scale -1). The composite impact index ranges from 9 to -9.

EMPIRICAL RESULTS

Empirical findings

Table 3 presents the statistics of the five localization
local content ratio appears to be on an increasing trend, embedded in the local business networks in China (the 2005 only the local procurement becomes increasingly though it is based solely on 4 figures). Nevertheless, the other four localization variables (local employment ratio, Chinese local sales ratio, local capital ratio, and firm’s age) from 2002 to 2005 demonstrate a very stable trend. Therefore, Hypothesis 1 is not fully supported.

In the period from 2002 to 2005, as China’s economy grew, it might be expected that the average age of firms would decrease (as more and more new Taiwanese MNE subsidiaries invested in China). In addition, some long-term Taiwanese MNE subsidiaries moved out of China and invested in other countries (due to the change of their strategic goals or the transformation of company organization, etc.). Therefore, in Table 3, the average firm age manifests a very stable trend.

The five localization variables were compressed into one single measure of the degree of localization by the principal component method (PCM), and then estimate the population marginal means of the degree of localization according to subsidiary type, ownership type and firm’s size. These results, shown in Table 4, suggest that subsidiary type makes a significant difference to the degree of localization. It can be seen that the extent of localization of local-market-seeking Taiwanese MNE subsidiaries is significantly higher than that of export-oriented Taiwanese MNE subsidiaries investing in China. This is true for each year (2002-2005). Therefore, Hypothesis 2 is supported. Moreover, the results of Table 4 also demonstrate the effect of ownership type on the extent of localization, where joint ventures (JV) are shown to be more enthusiastic than wholly owned subsidiaries (WOS) about pursuing local linkages (except the year 2003). For MNEs, the choice of ownership type is related to the investment plan for local networks. The more a MNE aims at local business connections, the more likely the MNE will be to select a joint-venture mode of ownership. Thus the degree of localization of joint-venture (JV) type MNE subsidiaries is greater than that of wholly owned subsidiaries (WOS). Hypothesis 3 is confirmed.

As regards the effect of firm’s size on the degree of localization, in Table 4, small-sized firms are shown to create stronger local ties than large-sized firms (except the year 2005). Significant differences in local linkages between large-sized and small-sized subsidiaries manifest themselves mainly in local sourcing of materials and components, and subcontracting with local institutes. However, due to the lack of resources to overcome the liability of foreignness, small-sized investors are usually expected to have less autonomy in local networking and rely more heavily on their alliance partner firms in the host county. On the other hand, large-sized MNE subsidiaries, possessing more benefit-producing resources, are usually better able to absorb the risks involved in establishing new relationships and go it alone in the host country. Therefore, it is concluded that the degree of localization of small-sized Taiwanese MNE subsidiaries investing in China is higher than that of large-sized Taiwanese MNE subsidiaries investing in China. Hypothesis 4 is supported.

In the area of R&D activities, as discussed before, it is a fact that China’s current intellectual property right (IPR) environment is not yet well-established. Although MNEs are finding business opportunities in China, there are many potential pitfalls foreign investors should notice, including issues relevant to intellectual property right (IPR) infringements.

In general, it is very difficult to precisely measure the R&D expenditures of a company. However, in this study, since the dataset originates from government annual surveys, we might expect the definition of R&D intensity to be consistent over years. Table 5 lists the estimated population marginal means of R&D intensity. The statistical results show that, for Taiwanese MNE subsidiaries investing in China, from 2002 to 2005 the R&D intensity is very low and even manifests a slightly decreasing trend (from 1.683% to 0.66%). After all, it is evident that despite China’s astonishingly high economic growth and exploding domestic market in recent years, Taiwanese MNEs have made risk assessments and do not intend to put many resources for R&D activities in China. In reality, since entering the World Trade Organization (WTO), China has improved its legal system and changed its IPR related laws to conform to the WTO Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPs). Nevertheless, ‘there are several

Table 4. Estimated population marginal means of localization index (year 2002-2005).

<table>
<thead>
<tr>
<th>Localization index</th>
<th>Subsidiary type</th>
<th>Ownership</th>
<th>Firm’s size</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Export-oriented Local-market-seeking</td>
<td>JV WOS</td>
<td>Large Small</td>
</tr>
<tr>
<td>2002</td>
<td>-0.3867</td>
<td>0.2957</td>
<td>0.2298</td>
</tr>
<tr>
<td>2003</td>
<td>-0.1547</td>
<td>0.2034</td>
<td>0.0668</td>
</tr>
<tr>
<td>2004</td>
<td>-0.3271</td>
<td>0.2483</td>
<td>0.3272</td>
</tr>
<tr>
<td>2005</td>
<td>-0.3742</td>
<td>0.3389</td>
<td>0.3983</td>
</tr>
</tbody>
</table>

a Export-oriented firms compared with local-market-seeking firms are significant at 5% level
b JV firms compared with WOS firms are significant at 5% level
c Large-sized firms compared with small-sized firms are significant at 5% level

variables (from 2002 to 2005). It can be seen that, from the perspective of the trend of localization, from 2002-2005 only the local procurement becomes increasingly embedded in the local business networks in China (the local content ratio appears to be on an increasing trend, though it is based solely on 4 figures).
Table 5. Estimated Population Marginal Means of R&D Intensity (year 2002-2005) unit : %

<table>
<thead>
<tr>
<th>R&amp;D intensity</th>
<th>Grand mean</th>
<th>MNE type</th>
<th>Ownership</th>
<th>Firm’s size</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Export-oriented</td>
<td>Local-market-seeking</td>
<td>JV</td>
</tr>
<tr>
<td>2002</td>
<td>1.6833</td>
<td>1.6154</td>
<td>1.7353</td>
<td>1.5893</td>
</tr>
<tr>
<td>2003</td>
<td>1.1975</td>
<td>1.1739</td>
<td>1.2286</td>
<td>1.5682</td>
</tr>
<tr>
<td>2004</td>
<td>0.66</td>
<td>0.66</td>
<td>0.67</td>
<td>0.62</td>
</tr>
<tr>
<td>2005</td>
<td>0.9444</td>
<td>0.9091</td>
<td>0.9765</td>
<td>1.0784</td>
</tr>
</tbody>
</table>

\(^a\) Large-sized firms compared with small-sized firms are significant at 5% level

Figure 1. R&D Intensity Box-plot (from 2002 to 2005).

factors that undermine enforcement measures, including China’s reliance on administrative instead of criminal measures to combat IPR infringements, corruption and local protectionism at the provincial levels, limited resources and training available to enforcement officials, and lack of public education regarding the economic and social impact of counterfeiting and piracy.’ ‘The best protection is prevention’ (US Department of Commerce, 2003). Consequently, in order to prevent IPR piracies, Taiwanese MNEs always keep core production processes out of China and conduct R&D activities in Taiwan. Thus, Hypothesis 5-a is supported.

In addition, the results shown in Table 5 indicate that, from 2002 to 2005, subsidiary type, ownership type, and the firm’s size respectively do not make a statistically significant difference to R&D intensity. This is true for almost each year (except the effect of firm’s size in 2004). Thus we suggest that overall, Taiwanese MNEs investing in China are keen to seek basic resources, but much less enthusiastic about attaining knowledge resources. More importantly, this is applicable to nearly all types of Taiwanese firms, including local-market-seeking, export-oriented, WOS, JV, large-sized, and small-sized subsidiaries. In summary, it is evident that Taiwanese investors are extremely cautious about knowledge resource exchanges with local Chinese institutes. Thus Hypotheses 5-b, 5-c, and 5-d are confirmed. Besides, we also use the R&D intensity box-plot (from 2002 to 2005) to demonstrate the feature and trends (Figure1).

As regards subjective self-assessment of subsidiary-level firm performance, in the survey, every respondent top manager is asked to assess the impact of the investment in China on the headquarters in Taiwan. ‘The extent of impact’ is measured, in each item (Table 2),
under a 3-point Likert scale: ‘beneficial or increase’ (scale 1), ‘no impact’ (scale 0), and ‘damaging or decrease’ (scale -1). All 9 items are equally weighted and used to create an additive scale of subsidiary-level firm performance. The scale has a theoretical range of -9 to 9. It is evident that the better the subjective self-evaluation of firm performance is, the higher the scale will be.

From 2002 to 2005, the actual observed range is -3 to 9, -9 to 9, -4 to 9, and -7 to 9 (Figure 2) respectively. The average scale of firm performance is 3.8056, 3.7469, 3.7579, and 4.07 respectively. The internal reliability for the 9 items, for each year, is validated by Cronbach’s α (> 0.7).

Table 6 shows how the respondent top managers numerically express their overall subjective level of the subsidiary firm performance. It can be seen that, for each year, the grand mean value is larger than 0 (nearly 4). This statistic clearly points out that, based on the top managers’ evaluations, the subsidiary-level firm performance demonstrates a stable and positive trend (Figure 2). In reality, for some types of subsidiaries (e.g., new entrant firms), the operations in China may not yield profits yet; however, they are able to achieve the strategic goal of the particular stage. In other words, according to the statistics, overall Taiwanese investment in China produces a significant positive impact on their headquarters in Taiwan. From a different perspective, this result could also be extended to explain why a vast amount of Taiwanese FDI is expected to continue to flow into China in the coming years. Thus Hypotheses 6-a and 6-b are confirmed.

Finally, according to the results shown in Table 6, we suggest that, in general, subsidiary type, ownership type, firm’s size, and firm’s age respectively do not make a

---

**Table 6. Estimated population marginal means of subjective self-assessment on firm performance (year 2002-2005).**

<table>
<thead>
<tr>
<th>Year</th>
<th>Export-oriented</th>
<th>Local-market-seeking</th>
<th>Ownership</th>
<th>Firm’s size</th>
<th>Firm’s age</th>
</tr>
</thead>
</table>

---

**Figure 2. Subjective self-assessment of firm performance (from 2002-2005).**
The empirical findings also show that the low degree of R&D intensity seems to be applicable to all types of Taiwanese subsidiaries investing in China. Finally, based on Taiwanese top managers’ subjective self-evaluations, their subsidiary-level firm performance in China demonstrates a positive and stable trend. In other words, this reflects that despite huge controversies, investing in China could enable Taiwanese MNEs to strengthen their core competitiveness in the home base and improve their profitability in the global market.

In summary, it is critical to understand the nature of a host country, as MNEs investing in different locations undertake different local linkages in an attempt to access location-specific resources. Moreover, according to the investment development path (IDP) theory, both macroeconomic and subsidiary strategy factors need to be analyzed together in order to explain the dynamic patterns of FDI flows. In reality, the strategy for a MNE to utilize FDI is a very active complicated function of its own firm-specific assets, business development policies, and in particular, the characteristics of the host country.

Note: In the annual reports: “Analysis of the Operations of Taiwanese Subsidiaries Investing in China,” the food industry, chemical industry, and machinery industry are categorized as the local-market-seeking group. On the other hand, the electronic industry and textile industry are categorized as the export-oriented group. The firm classification in this study reflects the reality.

In addition, this study statistically employs an indicator to classify Taiwanese MNE subsidiaries investing in China. It is reasonable to assume the local-market-seeking group mainly sell their products in the host country’s domestic market. In this case, the percentage of the host country’s local sales to the subsidiary’s total sales is high. By contrast, the export-oriented group is primarily serving international buyers rather than the host country’s local customers. Therefore, the percentage of the host country’s local sales to the subsidiary’s total sales is low. Let C and T be the host country’s local sales and the subsidiary’s total sales, respectively. As C/T increases, a MNE subsidiary has a more local-market-seeking nature while as C/T decreases; a MNE subsidiary is expected to demonstrate more export-oriented characteristics.

Then, the sample data by the indicator C/T was classified. The Chinese local sales ratio (C/T) of the food industry tops the list, with the chemical industry following in second place, machinery industry, electronics industry, and textile industry, in descending order. This is true for every year. Thus, we can determine that the local-market-seeking group mainly sells products in the host country’s domestic market. In this case, the percentage of the host country’s local sales to the subsidiary’s total sales is high. By contrast, the export-oriented group is primarily serving international buyers rather than the host country’s local customers. Therefore, the percentage of the host country’s local sales to the subsidiary’s total sales is low. Let C and T be the host country’s local sales and the subsidiary’s total sales, respectively. As C/T increases, a MNE subsidiary has a more local-market-seeking nature while as C/T decreases; a MNE subsidiary is expected to demonstrate more export-oriented characteristics.

Conclusions

Studying Taiwan’s FDI pattern in China, it was found that Taiwanese investors are most eager to pursue local Chinese worker employment. This is because, compared with other countries, China offers cheaper labor resources that cannot be obtained from the home country (Taiwan). Besides, for Taiwanese MNE subsidiaries, local Chinese workers present the lowest risk to the original networks. In general, Taiwanese investors tend to create more linkages to the local resources that are less risky to the original local connections.

Moreover, from 2002-2005, only the local procurement became increasingly embedded in the local business networks in China. However, the other four localization variables (local employment ratio, Chinese local sales ratio, local capital ratio, and firm’s age) manifest a very stable trend. In other words, based on the findings of this study, we suggest that in the period from 2002 to 2005 Taiwanese investors had already learned how to utilize the location-specific advantages in China and therefore the intensity of each local linkage (except local supplier linkage) is nearly fixed.

Strategic goals also make a difference to local linkage: FDI targeting at the host country domestic market leads to more local linkages than FDI aiming at establishing export bases in the host country. Therefore the degree of localization of local-market-seeking MNE subsidiaries is higher than that of export-oriented MNE subsidiaries. Besides, we also find that small-sized firms are more enthusiastic than large-sized firms about pursuing local linkages because of their lack of resources and their need to collaborate with local institutes. The choice of ownership type seems to be related to the conceived plan of investment in local networks prior to conducting FDI. Those MNEs that intend to spend more resources on creating local connections are more likely to choose a joint venture (JV) over a wholly owned subsidiary (WOS). As a result, the extent of localization of JV-type MNE subsidiaries is higher than that of WOS-type MNE subsidiaries.

The empirical findings also show that the low degree of statistically significant difference to the degree of subjective self-evaluation of firm performance. This is applicable to nearly each year (except the effect of subsidiary type in 2003, the effect of firm’s size in 2004, and the effect of firm’s age in 2004). Nevertheless, it can be seen that for each year and for every type of Taiwanese subsidiary, the average scale of firm performance is positive (all higher than 3). In light of the above, we conclude that in general, based on the subjective self-evaluation for all types of Taiwanese MNE subsidiaries, investing in China is remarkably advantageous. Thus Hypotheses 6-c, 6-d, 6-e, and 6-f are supported.
sales ratio, there is a statistically significant difference between the export-oriented group and the local-market-seeking group. Evidently, this T-test result justifies our firm group classification.

ACKNOWLEDGEMENTS

The author is grateful to the Chun-Hua Institute for Economic Research (CIER) for their dataset employed in this study.

REFERENCES


