
Network Resources for Internationalization: The Case of Taiwan's Electronics Firms*

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ABSTRACT This paper illustrates foreign direct investment (FDI) as the management of important network relations, using Taiwan's electronics firms as an example. Through FDI, seemingly small and weak firms propel the process of internationalization by making maximum use of external resources to which they have access. FDI often starts at a location close to the home base where support from the domestic networks can be drawn, subsequently moving on to more distant locations after investors have accumulated new network resources. The location chosen is usually an area rich in network resources or in close proximity to such rich networks. FDI enables the investors to construct a regional, or even global, sub-network under their control to supply a set of wide-ranging, differentiated and low-cost products in a flexible fashion, and sometimes within close proximity to the markets. With this capacity for versatility, investors become valuable partners for multinational firms that offer global services.

INTRODUCTION

A number of scholars have recently brought a network perspective to the study of foreign direct investment (FDI) (see for example, Gulati and Gargiulo, 1999; Johanson and Mattson, 1992; Johanson and Wiedersheim-Paul, 1975). From a network perspective, FDI is viewed as an effort by investors to forge linkages with foreign networks by establishing a presence in the foreign country. Although it is not always necessary to establish such a presence to build the linkages, as extensive international networking can be undertaken from the home base, local presence provides many advantages in networking, including proximity to the place where network activities are centralized, and close contact with the network partners. The former provides ease of access to the flow of information, and the latter is conducive to the cultivation of mutual trust.

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An important aspect of FDI networking is that FDI often entails a commitment to some important network relationships. Linkages to foreign networks through FDI represent management of these relationships (Holm et al., 1996). Foreign linkages are made in order to preserve, strengthen and increase the value of these relationships. They may also be made to tilt the balance of power in such relationships in favour of the investor.

From the network perspective, a firm exploits external resources, as opposed to firm-specific assets, for internationalization with the key strategy for this exploitation being leverage. Even a small and weak firm can undertake FDI if it can leverage external resources, but the leverage will be successful only if the network relations so involved are competently managed by the investor. This condition shapes the process of internationalization and confines the choice of FDI locations. But networking is a dynamic process. The successful leverage of external resources increases the power of the investor, whose position in the network improves, which in turn, enables the investor to increase his leverage. The degree of internationalization deepens as the network relations become more complex and encompassing.

The purpose of this paper is to study the process of internationalization based on the leverage of external resources, taking Taiwanese firms as an example. Taiwanese firms represent perfect examples of weak organizations with strong network linkages (Redding 1990); however, the lessons from the Taiwanese case go beyond Taiwan as they exemplify the general role of network relationships in FDI.

We find that internationalization propelled by the leverage of external resources is typically a gradual process in which the investor slowly expands its network reach from the home base. The investor often chooses a location close to the home base before gradually moving to more distant locations. Wherever it goes, the investment location is always in the areas where network resources are abundant. In the process of internationalization, the investor makes maximum use of network resources that it can access, including human skills, financial resources, market opportunities, technological capabilities, and so on. Through this cumulative approach, the investor constructs a regional or global production network to serve its partners. The investor's position in the network will be improved by FDI as it now offers a broader range of products, at a lower cost, in a more flexible fashion, and from a location closer to consumers than before, but the basic relationship with the primary partners has not fundamentally changed. In the case of Taiwanese investors, for example, they remain subcontractors for international brand-marketers.

The rest of this paper is arranged as follows. In the next section, we draw out the theoretical implications of the network approach to FDI. The subsequent section provides a description of the nature of the sample and presents a company case in some detail. The penultimate section provides a discussion on the net-

working strategies of the sample firms, reflecting on the theoretical implications discussed in the second section. Concluding remarks are made in the final section.

THE NETWORK APPROACH TO FDI

From a network perspective, FDI is made to preserve, strengthen and enhance the value of some important network relationships. The pursuit of FDI implies a strong commitment to these relationships because overseas investment is a risky venture, and such commitment is warranted only if the exchange partner believes that the relationships are worth developing further to ensure that they can endure indefinitely (Morgan and Hunt, 1994). The more an exchange partner values these relationships, the more it will commit to them. Moreover, when a partner makes such a commitment, it usually expects its counterpart to reciprocate. This expectation is based on the mutual trust that underlies the relationship (Uzzi, 1997). Trust leads a firm to believe that in response to its initiative, the partner will perform actions that will result in positive outcomes for the initiative, whilst refraining from taking unexpected actions that may result in negative outcomes (Anderson and Narus, 1990). The more a firm believes that its partner will reciprocate, the more it will commit itself to the relationship because reciprocity increases the returns to any investment in the relationship. An investor will therefore be willing to assume more risks in overseas investments if its partner's reciprocal commitment is more apparent and trustworthy.

Since FDI is a manifestation of the management of network relationships, its success depends on the reactions of the partners in such relationships. For example, when a firm relocates its production to an overseas location through FDI, the success is contingent on the willingness of its buyers and suppliers to coordinate relevant activities (Holm et al., 1999). Therefore, FDI is likely to be a joint decision by the partners rather than any unilateral decision by the investor. The more important the partners to the investor, the more they can influence the investor's decision on when, where or whether to invest.

However, FDI serves to achieve something more than simply maintaining existing relationships; the intention is also to change the relationships in favour of the investors. As argued by Madhavan et al. (1998), the struggle for position in the network is the main driving force for network evolution. According to Hakansson (1992), there are two main forces driving the network change: one is a new activity and the other is a new actor. FDI changes network relationships by introducing new activities and by embracing new actors.

New activities may be introduced by mobilizing new resources available to the investors, including resources released from the headquarters after the transfer of certain production activities abroad, and resources newly acquired from overseas locations. New resources can be used for product upgrading, product innovation, and the like, which improve the quality or increase the scope of the product lines.

As a result, the investor will be able to serve more buyers, or more powerful buyers, hence promoting its position in the network.

Overseas resources can also be mobilized for new activities that the home resources do not offer. For example, proximity to the market allows the investor to provide after-sale services that may be out of reach of the home base. Through the introduction of new activities, or simply through performing the activities more efficiently with a new combination of resources, the investor increases its value to the partners, thus encouraging their reciprocal investment. The virtuous circle rolls on as investment induces reciprocal investment through the provision of new resources, new opportunities and increased benefits. As a result, there is an increase in relationship-specific assets, which serve as an entry barrier to the network to protect the position of the investor.

FDI also brings new actors to the network through new contacts. Foreign networks provide venues for new contacts because they represent weak ties for the investor (Granovetter, 1982). Weak ties provide good opportunities for new partnerships. New actors may enhance the bargaining power of the investor in two ways. Firstly, they increase the centrality of the investor in the network as the investor serves as the connecting point of the new and existing relations (Brass and Burkhardt, 1992). The investor has the power to mediate the needs of the new and existing actors as well as the power to play one against the other in the case of conflicting interests. This is known as *tertius quadens*, or 'the third who benefits' (Burt, 1992). Secondly, new actors from the host country increase the embeddedness of the investor in local networks. To the extent that local embeddedness improves the performance of the investor through integrative production and innovation, the investor increases its power in the whole industry (Coviello and Munro, 1995). The implication is that network-minded investors are always keen to attract new actors over to their side rather than operating in 'enclaves'. This will drive an agglomeration process, resulting in industrial clusters.

New actors also bring with them some risks, however, as network relationships are interdependent and changes in one relationship may affect the stability, functioning or the value of the other relationships. In building new relationships abroad, an investor must ensure that these relationships integrate well with the domestic network. There seem to be two approaches to reducing the risks of network integration failure. One is relocating the backbones of the domestic network abroad and then picking up individual local actors to supplant the empty structures. The other is rebuilding a production system abroad, undertaken entirely by local actors in a piecemeal process that minimizes the adverse impact on the home networks. In either case, the home networks will have to serve as a backup to the partially relocated or partially rebuilt overseas networks. This implies that FDI always starts with a location where network support from the home base is good enough to maintain the investor's competitive advantage. That is, an investor always takes a 'gradual' approach to FDI by first investing in a 'close' loca-

tion and progressively moving to more 'distant' areas, where this relative distance refers to 'network' distance. Network distance is measured by the difficulty to provide the network support from the home base, taking into account physical distance, shipping convenience, official barriers to the mobility of goods and services, and the compatibility of the network structures between the home base and the host country.

The network approach to FDI asserts that network resources facilitate the internationalization process of firms by providing information, circumventing market-entry barriers, and making linkages to local establishments to reduce the risks of FDI (Bell, 1995; Coviello and Munro, 1995). Network relations also condition the internationalization process because the value of network resources is often location specific (Chen and Chen, 1998). This implies that the location choice for a start-up overseas investor is often limited, and investors from the same network background tend to make similar choices. Once the investor becomes established in a new location, new network resources will be accumulated (Johanson and Vahlne, 1990), which in turn, may propel new investments. An investor is able to assume greater risks as its network resources become richer and more diversified. This suggests, therefore, that internationalization is possible only if the investor accumulates new and distinct network resources during the process of FDI. Network resources include local suppliers, buyer relationships, financial resources, technological know-how, and so on. If the investor fails to accumulate new network resources, FDI merely drives a process of migration of the firm from place to place like a nomad, rather than a process of internationalization whereby the investor establishes multi-country production bases.

Networking is a dynamic process and the role of an investor may change along with its internationalization, but the aim of internationalization is always to offer better services, making itself an indispensable partner in the networks. The investor is keen to secure and improve his position in the network, but not to the extent that the basic relationships with the chief partners will be upset. This is because all choices pertinent to FDI, including timing, location, external resources sought, new actors and new activities brought in, are made with the view of serving the original relationships that are deemed critical. But as the network relationships become more complex due to the inclusion of new actors and new activities, the investor, who is the chief architect in rekindling new linkages, becomes pivotal in making the system work. Each investor has his own way of making linkages and managing relationships, each sub-network so constructed is likely to be unique and can hardly be replicated. FDI, therefore, creates an entry barrier to the network, in which the investor's position is more secure than before. FDI does not necessarily gain market share or increase monopoly rent for the investor, but it always protects the investor's valuable network position, where the protection comes from the investor's unique way of mobilizing resources, especially those in foreign countries.

SAMPLE AND CASE STUDY

Our sample consists of ten electronics firms making computer devices, calculators and computer-related electronic components. All of these investors had extensive experience in the international subcontracting business before undertaking FDI and invested overseas mainly in an effort to maintain their relationships with the buyers. The samples are in fact chosen in such a way that the primary relationship to be managed through FDI is identical across the whole sample. All FDI took the form of green-field investment rather than mergers and acquisition activity, and the overseas subsidiaries so established were all wholly owned rather than joint ventures. These investors are keen to construct overseas plants that mimic their parent-firm operations such that overseas activities are fully compatible with the production networks in Taiwan. Acquisition of local firms or local ownership may compromise this objective. All firms in our sample made their first overseas investment in 1987–89 with the exception of one firm, which did not embark upon the course of FDI until 1994.

Information is gathered through repeated interviews over the years from 1994 to 2000, at both the headquarters and the subsidiaries. We then examine the pattern of internationalization and the networking strategies of these firms against the theoretical implications of the network approach to FDI as drawn out in the previous section. We present below one company case in detail, and in the subsequent section we will discuss this case in view of the network perspectives of FDI and complement it by the rest of the sample without detailed documentation.

For the sake of expediency, let us call the company to be presented Falcon. Falcon is one of Taiwan's major manufacturers of computer peripherals, including keyboards, monitors, CD-ROM drives, scanners, and the like. It serves as a contract manufacturer for branded computer system makers such as IBM, HP, Philips, Viewsonic, and so on. Contracts with the system makers are normally negotiated and renewed on an order by order basis; long-term deals are rare, but over the longer term, the buyer list is fairly stable. In 1989, Falcon undertook its first overseas investment in Penang, Malaysia. The manager cited the clustering of multinational firms in the electronics industry in Penang as the major determinant for this choice of location. Falcon successively relocated keyboard and monitor production lines to Penang to combat the rising labour costs in Taiwan. The relocation went smoothly and the turnover of the Penang subsidiary quickly rose from US\$16 million in 1990, to US\$67 million in 1991, US\$160 million in 1992, US\$220 million in 1993, and over US\$300 million in 1994. The rapid increase in turnover was due mainly to cost competitiveness that allowed Falcon to obtain additional orders from the buyers.

Falcon originally had more than one hundred parts suppliers in Taiwan, but it brought none of them to Malaysia. Production uncertainty in Malaysia, wherein

Falcon had no previous trading experience, had deterred the company from inviting any suppliers to move with it, since such invitation would inevitably have to be accompanied by a certain degree of commitment. Taking advantage of local supplier networks that had been cultivated by multinational firms since the 1970s, Falcon was able to procure an increasing amount of components and parts from local sources. At the time of our first interview (August 1994), Falcon's subsidiary reported that 60 per cent of components and parts were obtained locally. At the time of our second interview (January 1999), local content exceeded 80 per cent. Its suppliers consist of firms from various national origins. For example, in terms of parts for computer monitors: metal mouldings, resistors, capacitors, wire rods, iron bars, ABS, power cores, etc., were all bought from Taiwanese suppliers operating in Malaysia; plastic mouldings were sourced from local Chinese firms; high-end capacitors and perk coils were supplied by Japanese subsidiaries; and cathode ray tubes, the most valuable parts for computer monitors, were split between a Korean subsidiary (based in Malacca) and a Taiwanese subsidiary (based in Kuala Lumpur).

Falcon's second overseas investment was made in Suzhou in China in 1993. The general manager cited the geographical proximity to Shanghai, China's major industrial centre, as the major reason for choosing Suzhou over the other Chinese coastal cities such as Guangzhou and Xiamen. Unlike the 'go it alone' approach in its previous Malaysian expedition, this time Falcon took 14 Taiwanese parts suppliers with it into China. These suppliers eventually chose to locate collectively in Wujiang, a small town 27 kilometres away from Suzhou, for the sake of cheaper land prices. These suppliers provide coils, wire rods, printed circuit boards and essential electronic parts to Falcon. In addition to these suppliers, Falcon also sources from other suppliers which located themselves farther away from Suzhou; for example, it receives cathode ray tubes from Philips based in Nanking (about 200 kilometres away). After Falcon invested in Suzhou, several Taiwanese computer device manufacturers followed in its footsteps to Suzhou, Wujiang, or nearby Kunshan, which in turn, attracted more parts suppliers to locate in the same regions, forming a dense local supply network that was virtually all Taiwanese. At the time of our interview (April 2000), Falcon's Suzhou manager claimed that about 90 per cent of parts could be procured inside China.

Two forces drove Falcon to invest in China, the first being the rising labour costs in the mid-1990s in Malaysia, which resulted in keyboard production in Penang becoming uncompetitive. The second was the increasing pressure from some of Falcon's major clients who had established operations in China and began to demand on-site supply of monitors to complement their local computer sales. Although it was close to Shanghai, Suzhou was by no means an industrial city in 1994; both local supply chains and human resources were inadequate. As an early starter in this ancient city, Falcon had spent three years training local engineers and managers, cultivating local suppliers and coordinating work with the

Taiwanese suppliers who had relocated along with it. During this three-year period, semi-finished products were shipped from Malaysia to China for simple processing into final goods, but as soon as the production efficiency in China had achieved a satisfactory level, the volume of production was quickly expanded. By 1996, keyboard production was totally removed from Penang to Suzhou and monitor production in China had exceeded the volume of the Malaysian operation. In order to fulfil the void left behind in the Penang plant, in 1996, Falcon introduced CD-ROM drives to Malaysia. Having obtained technologies partly from its own research team and partly on licence from Philips, Falcon began producing CD-ROM drives for brand name marketers, including Philips. As a result of the rising labour costs in Malaysia, Philips closed its consumer electronics manufacturing facility in Penang in 1999, and Falcon was contracted to provide a full line of CD-ROM drives to Philips' regional operations centre in Singapore under an original equipment manufacturer (OEM) contract. The volume of production was greatly expanded as a result of this deal and Falcon subsequently went on to introduce video compact disc (VCD) drives to the Penang plant whilst most of its monitor production was shifted to China.

With the production in both Malaysia and China going smoothly, Falcon's share of the contract manufacturing market increased, along with the deepening of the interdependency between Falcon and its clients. Whilst Falcon depended on its clients for marketing, the clients depended on Falcon for its manufacturing capacities. In 1998, following the solicitation of its clients, Falcon made its third overseas investment in Mexicali of Mexico, close to the US border. The aim of this investment was to upgrade the services extended to the North American market, in consortium with its clients. At the time of our interview at the headquarters (April 2000), the function of the Mexican plant was final assembly of computer monitors, with printed circuit boards being shipped from the Suzhou plant, to be incorporated with other parts (such as CRTs and housings) procured from the US and Mexican suppliers, into final products.

When asked about the most valuable assets obtained through internationalization, Falcon's managers cited human resources. Both Malaysian and Chinese workers are willing to work overtime, making Falcon's production scheduling flexible enough to meet the buyer's increasing demand for flexibility and promptness. Moreover, location-specific talents are great assets for the company's internationalization drive. For example, the Malaysian managers, with their fluency in English, are good negotiators with Western buyers; multilingual Malaysian engineers are superior to their monolingual Taiwanese counterparts as shop-floor leaders in the Chinese factories; and Chinese engineers can be sent to Mexico and Malaysia to perform technical support at low cost. As of April 2000, at least eight Malaysian engineers were working at the Suzhou factory and Falcon also recruited about 200 Chinese engineers to conduct research in Suzhou. Although the local technological capabilities are limited, these premier Chinese college graduates do

an excellent job in undertaking the sub-divided research projects organized by Taiwan's R&D headquarters. They are engaged mainly in software development to accommodate new products such as scanners, Internet appliances and cellular phone handsets, which Falcon has recently introduced to the market.

DISCUSSION

Location Choice and the Process of Internationalization

Location choice. Falcon started its overseas investment in Malaysia. The rest of the sample also started with Malaysia or Thailand, with the exception of one company, which started in Mexico. This one exception, which produces switching power supply for computer systems, said that the investment in Mexico was undertaken to help a major buyer fulfil the local content requirement of its Mexican operation in order to qualify for duty-free export to the US market. Investment in Mexico is inherently riskier than in Southeast Asia in terms of physical, psychological and network distance, but the buyer invited the company to join in such investment with an explicit purchase guarantee. This case exemplifies the assertion that a partner's more resolute commitment can prompt the investor to assume greater risks in FDI.

Although FDI in China remained prohibited by the Taiwanese government until 1992, the sample firms, including Falcon, had nevertheless considered China as a potential location at the time of their initial overseas investment. Falcon chose Malaysia over China because of the high political risk and policy ambiguity associated with China. More importantly, although geographically closer to Taiwan than Southeast Asia, China was rather distant from Taiwan from a network perspective. This was because of the hindrance to network support from Taiwan as a result of the Taiwanese government's prohibition of direct trade with China. Moreover, in the late 1980s, given the under-development of industrial infrastructures in China, most Western buyers still lacked confidence in China's technological capabilities to manufacture the products that the Taiwanese subcontractors intended to transfer abroad. They also doubted China's commitment to the so-called 'open door' policy and hence were not enthusiastic about potential Chinese ventures by Taiwanese partners.

At the time of its first FDI, Falcon had no plans for a second phase of FDI. What the company had in mind was to succeed in its first overseas endeavour, to stay in the subcontracting business and to prevent the major buyers from drifting to other low-wage countries. It knew very well that there would be no future if the first attempt at FDI had ended in failure. The second investment in China was made because the first venture had in fact been so successful that Falcon's share in the subcontracting market had increased and there was potential demand for new production capacities.

Like its first phase FDI, the investment in China was also an attempt to strengthen the buyer-supplier relationship, but the second phase was more 'expansionary' than 'defensive' in nature. In addition to cutting labour costs, Falcon also wanted to explore the Chinese market in consortium with its major clients. The other sample firms showed similar aspirations in their Chinese investments. One manager whose company produces calculators, said, 'we invested in China because we now had extra resources to move somewhere else (other than Southeast Asia) and we wanted to grow. Our buyers were making entry into the Chinese market, so we followed'. A manager whose company produces switching power supply (SPS), said, 'we were already one of the world's largest producers of SPS before we made the investment in China, and Compaq and Dell were our major buyers . . . they took up about a half of our production capacity. We used to serve their Malaysian and Singapore assembly operations from the Penang plant. Now Compaq has built a plant in Shenzhen (in China) and Dell will soon follow suit, so we built our SPS plant in nearby Dongguan. This will serve our clients better'.

When investing in China, Falcon transferred its initial product lines from the Malaysian plant to China for continuing production. Therefore the investment was also an effort to extend the length of the product life cycle, whilst serving the same group of clients. The risk of production failure was much lower this time around, given the overseas production experience gained in Southeast Asia, not to mention the identical language and cultural affinity that China had to offer.

By 2000, Falcon and two other companies – which represented the three largest companies in the sample – had embarked upon their third wave of FDI in Mexico. There were no apparent 'push' factors for Falcon to invest in Mexico since the trade barriers in the USA had not been raised and Mexico was not a low-cost production site. However, investment in Mexico provided proximity to the US market whereby better services could be offered to the clients, such as direct delivery of products to the customers and after-sales service. In addition to the Mexican plant, Falcon also operates several warehouses in the USA from which products can be delivered to the places designated by the clients in a 'just-in-time' fashion. After Mexico, the next natural step would seem to be Europe. Falcon is currently contemplating an investment project in Scotland. However, Taiwanese firms are cautious about the European endeavour, because of their lack of understanding of the European market and their lack of network contacts in Europe. One of the sample firms did invest in Europe but later withdrew. The smaller firms in the sample stopped at the Southeast Asian and Chinese investments without further venturing.

Gradualism in internationalization. Two distinctive features stand out in the FDI pattern of our sample firms. First, FDI always starts at a nearby location which facilitates the receipt of support from the Taiwan network. This ensures that the initial overseas operation is viable even if it is completely detached from the local

networks. After the first phase of FDI, there is a gradual move towards more distant locations where support from Taiwan becomes more difficult. Investors are willing to take greater risks as their network resources become richer. In the second stage of internationalization, network support from the first overseas production base is possible. Falcon, as well as other investors, sent their semi-finished products from Southeast Asia to China to support their second-phase expeditions, just as the Taiwan headquarters had done for their initial operations in Southeast Asia.

Secondly, an FDI location is invariably one which is rich in network resources in its own right, or at least accessible to rich network resources nearby. When investing in Southeast Asia, Falcon chose Penang where an agglomeration of electronics industries already existed, because of continuous investments by Western multinational firms since the 1970s. When investing in China, Suzhou was chosen for its rich endowment of human resources and ease of access to industrial networks in Shanghai. When investing in Mexico, Falcon chose the US-Mexican border area (Mexicali) which enabled it to access US supplier networks.

This 'gradualism' in traveling distance from the home network base stands in interesting contrast to the Uppsala school's cumulative process of internationalization (Johanson and Vahlne, 1977, 1990; Johanson and Wiedersheim-Paul, 1975). From the Uppsala school perspective of internationalization, firms travel 'psychic distance', starting with 'close' host countries which have business cultures similar to those of the source country, gradually moving to more 'distant' countries where business cultures are distinct. Firms overcome psychic distance by cumulating their internationalization-related knowledge. In our case, firms travel 'network distance', which is measured by the difficulty of providing network support from the home base. Mexico is distant from Taiwan's network not only geographically, but also because it is plagued by high tariff barriers, which hinder the mobility of goods, and a network structure which lacks flexibility and is hence incompatible with Taiwan's own. China is more distant from Taiwan than Malaysia because of high tariffs, bureaucratic red tape (in customs procedures, for example) and Taiwan's prohibition on direct trade that results in difficulties, in terms of obtaining materials from Taiwan and exporting the final goods to the rest of world.

According to the Uppsala school of internationalization, firms increase their market commitment as they gain more knowledge about the market, since better market knowledge enhances the value of resources that are to be committed to the market (Andersen, 1993; Johanson and Vahlne, 1990). In our case, firms increase their commitment to an overseas venture on the expectation of reciprocal commitment from their partners. Commitment to a relationship drives FDI, and this tends to further enhance the relationship. A large and risky FDI makes both partners a hostage to the relationship.

Our study also shows that globalization is possible only if investors accumulate network resources in the process of FDI. Network resources include local suppli-

ers, local managerial and technical skills, local technological capabilities, new buyer relationships, financial resources, and so on. If investors fail to accumulate these resources, they will only be relocating rather than internationalizing. Indeed, two of our sample firms fall into this category. Both were relatively isolated from the local economy in Malaysia. When the Malaysian labour costs rose to an unbearable level in the 1990s, the firms in question closed their Malaysian operations and moved to China, as opposed to running two production sites simultaneously through product realignment. This was because they did not have the capacity to run a multi-country operation and there were no synergies in pursuing such a strategy. For them, FDI is more like the migrating nomad, moving from one place to another in search of cheap labour, rather than a process of internationalization to rationalize production.

Networking Strategies

Our sample firms exhibit two distinctive characteristics in networking. First, overseas subsidiaries maintain close linkages to the production networks in Taiwan in order to sustain their core strength of flexibility and responsiveness to market demand. Secondly, they localize quickly in order to tap into the local resource pool as a means of promoting growth and technological upgrading. The first characteristic manifests itself in an effort to preserve inbuilt advantages, whilst the second manifests itself in an effort to offset weaknesses. In this section, we will discuss some strategies that manifest the management of network relationships in FDI.

Governance of networks. There are three important network relationships that a Taiwanese investor needs to maintain: the relationships with buyers, with domestic (Taiwanese) suppliers, and with local suppliers; however, the buyer relationship dominates the other two. When asked about their most valuable assets that allowed them to invest abroad in the first place, our sample firms almost unanimously pointed to their buyer relationships. FDI serves primarily to maintain the buyer relationship, whereas relationships with both domestic and local suppliers are managed in such a way that the buyer relationship is strengthened rather than weakened.

Most of our sample firms produce goods for more than one buyer as contract manufacturers, but there are usually one or two predominant buyers controlling their destiny. Most buyers also work with more than one contractor, but the cost of switching contractors is relatively low. Therefore, buyers dominate contractors in the network relationship and they may dictate the timing and location of their contractors' FDI.

The power structure of a contractor's relationship with domestic suppliers is completely different. Contractors within our sample usually work with more than

a hundred suppliers, which are typically small firms and only loosely connected to each other. Equity cross-holdings between contractors and suppliers are not common. Most procurement orders from contractors are placed through phone calls or fax communications, implemented without a formal contract, and switching between suppliers from one order to the next is quite the norm within the industry. Therefore, when contractors invest abroad, they may wish to bring with them certain suppliers, particularly those producing components and parts that are essential to the quality of the product, but their suppliers may not be of the same mind because of the uncertainty in demand and production costs. Joint investment can only occur if the contractor offers some purchase guarantee, which of course, burdens the contractor with higher risks. Some suppliers will invest abroad of their own volition if sufficient demand has accumulated in the overseas locations, which invariably happens when assemblers cluster within the same regions. None of our sample firms brought any suppliers to Southeast Asia in their first overseas ventures, but two of them, including Falcon, brought certain suppliers into China in their second wave of FDI. This was because small suppliers see China as a less risky investment area due to cultural proximity, and because these two large contractors, as a result of their success in Southeast Asia, increased their risk-absorption capacity.

Relationships with local suppliers are further subordinated to both buyer relationships and relationships with domestic suppliers, at least during the early stages of overseas production. Local suppliers are brought into the production network only if they do not adversely affect the working relationships with the domestic suppliers, but since Taiwanese contractors' relationships with domestic suppliers are non-committal, and there is little relation-specific investment involved, switching supply sources from Taiwan to the host country entails little cost. The greatest hurdle in establishing local-supplier relationships is the lack of trust with local firms, which needs to be cultivated over time. Amongst different kinds of local suppliers, Taiwanese investors invariably prefer Taiwanese suppliers operating locally, even if they have never previously traded with them in Taiwan.

Proximity to Taiwan's networks. The core strength of our sample firms' international competitiveness lies with their low costs and flexible production. As the low-cost advantage began to be eroded by rising wages at home, they embarked upon overseas production in order to regain this advantage. However, flexibility cannot be sacrificed in decisions on production relocation, otherwise export orders may be lost to indigenous firms, which are in a better position to take advantage of low-cost local labour. In Taiwan, production flexibility is supported by an extensive and interlocked network, in which small and specialized suppliers coordinate horizontally and vertically to achieve rapid production in a concerted fashion. The suppliers and subcontractors within the network can be switched and recombined in response to changing volumes and specifications of export orders. This kind of

network rarely exists in other countries, therefore, close linkages to networks at home are essential to the continuing flexibility of Taiwanese investors.

In the initial stage of offshore production, Falcon's Malaysian subsidiary depended on parent firms for the supply of most raw materials and parts. Furnishing all components and parts from Taiwan allowed Falcon's overseas subsidiary managers to concentrate on training workers and fine-tuning the production process, in order to ensure that product quality met the demands of the buyers, an essential element of the retention of export orders. At this stage, there was intensive transference of technology at the shop-floor level and a large group of expatriate technicians were on hand at the subsidiary. Only after product quality had reached satisfactory levels, and the production processes had become routine, did the subsidiary embark upon local procurement and technological modifications in an attempt to reduce production costs.

It takes time to establish a local network of suppliers, and in the process of doing so, supply from Taiwan invariably acts as a kind of safety valve. Even when a mature local supply network is established – which took around four years in the case of Falcon's move into Malaysia – it is often limited in scope and needs to be supplemented by supply from Taiwan as well as the rest of the world. In our first interview in 1994, four years after Malaysian production had commenced, Falcon was still obtaining certain sophisticated printed circuit boards and electronic components from Taiwan, with some integrated circuits (IC) being sourced from Singapore. Even when local procurement is under way, a logistic support center in Taiwan still provides useful information on price movements and global sources of supply. Production networks in Taiwan also serve a useful function of being able to meet rush orders, an ability which makes Falcon a valuable partner for international buyers who need to respond rapidly to market fluctuations. Other firms in the sample show similar dependence on Taiwan's networks despite a trend of increasing local procurement.

Buyer relationships. Along with other interviewees in the sample, Falcon indicated that they had talked to major buyers about the transfer of production to overseas locations before making their final decision on foreign investment. A buyer's consent is virtually a prerequisite for FDI, but there is no explicit commitment from the buyer regarding order placement. One Falcon manager noted that: 'there is a tacit agreement that the order will be forthcoming if our quality is satisfactory, but the buyer is not going to make any explicit commitment. No buyer is going to make a firm commitment because they do not even know whether the product lines that we are currently offering will survive the market competition. And competition is so fierce. For ourselves, we work for three to five buyers at a time, we do not do what a single buyer tells us to do either'.

Although there is no firm commitment from buyers, there is nevertheless trust on the part of the investors that buyers will act in favour of the relationship to

which the investors are committed, because cost reductions achieved through FDI ultimately benefit the buyers. This expectation is substantiated by the fact that when Falcon's Malaysian plant was completed, initial production commenced with orders negotiated in Taiwan's headquarters and transferred abroad. Falcon had to take a price cut to undertake the production transfer, and the parent firm promised to serve the back-up role if anything went wrong in the new venture. The buyers were willing to go along with the transfer because Falcon had made substantial investments in Malaysia, which could not be recovered, and they knew that the stake in any production failure was much larger for Falcon than for themselves. In order to justify the production transfer, Falcon concentrated its entire efforts on ensuring that the quality met the buyer's expectations, even if this had to be achieved at higher cost.

Buyers came and went, but they never totally disappeared. One stunning feature of the evolution of networks amongst our sample firms was that the buyer relationship at the beginning of FDI was maintained throughout, and in most cases, strengthened after ten years of FDI. All of our sample firms continued to supply to their original buyers, with virtually the same products, albeit from different locations. Falcon signed a strategic alliance agreement with IBM, its biggest client, in 1999, whereby the two partners agreed to cross-license computer-related technologies and to share production capacities.

The value of any buyer-supplier relationship would have been devalued over time without reinvestment. FDI is tantamount to a reinvestment in the supplier-buyer relationship, and this action serves the strategic objectives of the buyers well enough to induce reciprocal investment. A subcontractor, such as Falcon, invests in global production capacity, whilst their buyers, particularly the American buyers, when delegating the production functions to Taiwanese subcontractors, focus their efforts on competing in new product definition and standards, systems integration, software value-added and distribution (Borras, 1997, p. 157). With the aid of the global production capacity developed by their subcontractors, the American buyers were able to reduce turnaround time and speed up production shifts, gaining a competitive edge over their chief Japanese rivals.

Struggle for network position. Although cost efficiency is the first management priority in a contract manufacturers' overseas operations, low cost may not be enough to hold on to the buyers. The key to a contract manufacturer gaining the upper hand in this type of network is the possession of large-scale, diversified and flexible production capacity, in addition to low costs. For example, as of 1999, Falcon supplied narrow-screen (below 17 inches) computer monitors from China, wide-screen (17 inches and above) monitors from Malaysia, and liquid crystal display (LCD) monitors from Taiwan. This capacity reduced the buyer's costs of contracting, monitoring and coordinating orders for an assortment of differentiated products.

In addition to product differentiation, Falcon also pursued enlargement of its production scale. By 1999, the company's monthly computer monitor production capacity was exceeding 600,000 units, a level of production that was one of the largest in the world. So why did Falcon become so conscious about production scale? The reason was that the products it was producing at that time had become mature and the profit margins had shrunk. Falcon reported that for its most competitive computer monitor model, on an FOB price of around \$90, the gross margin was only \$3.00. There was little scope for product upgrading, and thus, scale enlargement was the only way to bring down costs. Other firms in our sample also adopted similar strategies of product differentiation and scale enlargement to improve their network position.

Porter (1991) argued that the most important drivers of competitive advantage in an activity were, *inter alia*, scale, cumulative learning in the activity, the ability to share the activity with other business units and the timing of investment. Taiwanese investors seem to have followed this rule in their struggle for network position. They first achieve cost efficiency and then expand their production scale. It is common for a Taiwanese subsidiary overseas to outgrow its parent firm within a few years of FDI. As of 1999, Falcon employed more than 4,000 workers in China, and an additional workforce in excess of 2,000 in Malaysia, whilst employing only 1,600 workers in Taiwan. However, unlike Western multinational firms where scale is an important stimulus for FDI (Kogut, 1985), Taiwanese firms pursue scale expansion as part of their bargaining chip against buyers.

The timing of investment is also an important factor for gaining network position. Falcon's FDI in Malaysia was perfectly timed to coincide with the activities of American multinational firms. It took place when the demand by international buyers for computer products was shifting to Malaysia following rising wages and currency values in the newly industrialized countries (NICs) of Taiwan, Korea and Singapore. Falcon's turnover rose in leaps and bounds in the first few years of its Malaysian operations as documented in the previous section. The boom, however, quickly peaked out around 1995 as Malaysian labour costs rose to levels beyond what was commensurate with labour-intensive assembly activities, despite the massive importation of foreign workers. The tide then turned to China, as major international buyers started to make serious headway there. When Falcon followed in the footsteps of its clients, this constituted its second wave of FDI. The third-wave of FDI in Mexico took place after the inauguration of the North American Free Trade Area agreement, which threatened to take away subcontracting businesses from East Asia to Mexico (Gereffi, 1998). The investments by other sample firms are closely timed so they constituted several waves of capital outflow from Taiwan.

The sharing of activities between Taiwanese investors and their partners also serves to enhance the power of the investors. In recent years, American buyers have asked Falcon to deliver products directly to their US customers, and to offer

after-sales services at nearby locations. Falcon agreed, and the so-called 'global logistics' services provided by Falcon eliminated the need for brand marketers' warehousing in the value chain, significantly shortening the time to market and enabling the operation of 'build to order' production methods. This was made possible by Falcon's global supply capacity, which is not feasible without FDI. In the 1980s, there were hundreds of contract manufacturers of computer monitors in Taiwan; however, the number was drastically reduced in the 1990s. In 1995, the four-firm concentration ratio for colour monitors in Taiwan (in terms of the value of production) had reached 52.9 per cent (Chen et al., 2001). Partner scarcity serves to prevent the relation-specific economic rent from deteriorating (Dyer and Singh, 1998), and as a result, interdependency between the buyers and suppliers deepens. A Falcon manager said, 'in order to deliver the products to the market and service the customers, the buyers have to share with us their customer information. There is no secret now. We need to trust each other to do so. Our partnerships are more stable now than ever because the buyers do not want to share this kind of information with everyone'.

Because of direct contact with consumers, Falcon was able to detect any defects or shortcomings of the products earlier than before. This knowledge allowed Falcon to identify problems in product designs or in production engineering, and to offer solutions to eradicate the problems before it was too late. As another manager commented, 'no manufacturer is problem-free, and problems are almost inevitable in the case of new products. You have about three months to correct them after the first piece of product hits the market, otherwise you will be dumped by the consumers. We have a better chance now because we hear complaints directly from the consumers.'

Linking with local networks. Increased local linkages are needed not only for the purpose of cost reduction, but also to access idiosyncratic resources for the development of new technologies and new capabilities (Zander, 1999). The latter is essential to internationalization. In making linkages to local networks, investors have to consider the adjustment and adaptation costs involved in network integration. Local relations have to be invested in, rather than obtained for free, and these new relations may strengthen or weaken the existing relationships. The rule of thumb revealed by our sample firms is a step-by-step approach, first building the local relationships that carry the lowest risk to the existing network. For example, Falcon started in Malaysia with the training of local workers to perform routine production methods transferred intact from Taiwan. After this routine production had stabilized, Falcon started searching and screening potential local suppliers of components and parts to establish a quality vendor list (QVL). Amongst various components and parts searched, those which were inconsequential to the quality of the products were picked up first, such as packing materials, labels, metal and plastic parts. Only after production activities were fully integrated with locally

sourced inputs did Falcon start looking for contacts that were intrinsically more risky, such as R&D for the purpose of product innovation. The last contacts that Falcon made were new buyer connections that might damage their primary relationships with the original buyers. The process was gradual and carefully controlled because it takes cumulative learning and integration in foreign environments to reduce the risks (Eriksson et al., 1997).

Nonetheless, if there are essential components and parts that need to be provided from close proximity, but local suppliers are unavailable, then the Taiwanese investors may be forced to integrate them in-house. At least two interviewees indicated that they were forced to invest in production of printed circuit boards that they would normally have outsourced in Taiwan. The need for vertical integration of some parts and components is another factor leading Taiwanese firms to pursue larger production volume as a means of guaranteeing scale economies. However, this reduces their level of flexibility in switching product lines. Compared to production at the headquarters, overseas subsidiaries are much more concentrated in product lines, and unlike Taiwan, subcontractors in overseas locations are limited, making any adjustment to short-run demand volatility through subcontracting impracticable.

To make up for the loss in production flexibility due to the structural weakness of overseas networks, Falcon tried to increase its flexibility in two ways. Firstly, it conducted internal training of workers to increase their versatility, which allowed Falcon to enhance flexibility through labour reallocation between divisions, or through arranging overtime work. The willingness of the workers to work overtime in Malaysia and China and the legal provisions of the host countries that encourage, rather than hinder such work efforts, were considered to be an important labour market condition in its FDI decisions. Secondly, Falcon increased flexibility by pooling production capacities in several locations in order to respond to demand volatility, i.e., production orders were realigned amongst the Taiwanese, Malaysian and Chinese plants in an effort to respond to unforeseen surges and downturns in demand. As Buckley and Casson (1998) argued, switching product lines between different locations as circumstances change is an important factor in multinational firm's maintenance of flexibility. The key advantage of a network organization is that it has the ability to respond to environmental changes and uncertainties (Ensign, 1999).

Network resources for globalization. Even the largest Taiwanese firms are small by international standards, and their aspirations to globalize cannot be realized by indigenous managerial and financial resources. Taiwanese firms are keen to tap into local resources in their efforts to achieve growth within the local entity, and further expansion into other countries. The opportunities for such local linkages tend to differ across firms. Falcon, for example, is good at developing local managerial skills into its firm-specific capability for global applications. Falcon dispatched

ethnic Chinese and Indian managers from the Malaysian subsidiary to various other locations for production management and sales promotion. But the most common practice among our sample firms is to send the technicians trained in China to assist in overseas operations. As one manager of a switching power supply (SPS) company noted, 'We employ 26,000 people in China. There are bound to be some talents. We train them, and send them to Thailand, to Mexico for production support, or even to the US and Japan for sales support. A Chinese engineer's pay is no more than one-eighth of a Taiwanese engineer. We save a lot of money that way'.

Local managerial skills are valuable because they are not in abundant supply and hence fall into the category of 'rare resources' (Barney, 1991). A light emitting diode (LED) firm in our sample took the whole management team from National Semiconductor (NS) in Thailand, having just exited Thailand at the time of its entry, and integrated them with expatriate managers from Taiwan. Several years later, this ex-NS team took over the entire management responsibility and the Taiwan expatriates were deployed elsewhere to build up new plants. A manager said, 'We are wholly localized, without a single Taiwanese expatriate now'.

Financial resources are also valuable local assets. Three of the firms that we interviewed had been listed on the local stock exchanges of the host countries (all in Thailand). They viewed public listing on the local stock exchange as a benchmark for business success, which stands in stark contrast to Western multinationals which usually prefer tight hierarchical control of their overseas subsidiaries, refusing to dilute their equity ownership.

Public listing provides valuable resources for growth, supplementing the financial weakness of the parent firm. This is particularly useful if the firm is in a mature industry and has yet to introduce high-tech products that can impress domestic investors. In this case, the valuation of its stock in the home country is likely to be low, forcing the company to pay high capital costs for new investment projects. Listing in the host country where the products are still considered 'frontier' products is likely to receive a good valuation. One company producing SPS, a mature product in Taiwan, illustrates the case. Since its listing on the Bangkok Stock Exchange, it has been the leading share in the bourse (sometimes second to Thai Petroleum, a state monopoly), enjoying an 80-fold premium over its face value prior to onset of the Asian Financial Crisis in Thailand. This gave the company good financial leverage for expansion. In fact, the stock price of the parent firm in Taiwan was also boosted as a result.

Falcon did not seek public listing in Malaysia or China, but its Malaysian subsidiary has been obtaining loans from local financial institutions for capital expenditure. Leveraging on its parent's credibility, the Malaysian subsidiary first arranged an equity investment by Citibank in the form of preferred shares, as foreign banks are restricted from extending credit in Malaysia, and then borrowed

from local banks against its fixed assets. This provided the Malaysian subsidiary with total financial independence from the parent company.

Although our sample firms tended to invest abroad with the purpose of maintaining original buyer relationships established in Taiwan, newly established buyer relationships have also proved valuable. Once they had local presence, they used their newly developed advantages to seek new buyers, to introduce new products, and to breach new market frontiers. The advantages commonly resorted to are proximity and cost advantage. Falcon obtained a long-term contract to produce CD-ROM drives for Philips because of its close interactions with Philips' Penang subsidiary. A metal-mould producer in our sample won long-term supply contracts from major Japanese assemblers, Sony and Toshiba, in Malaysia, which in the past had only procured from their *keiretsu* members. 'It took us three years to get the first order from Sony and five years from Toshiba. They eventually recognized us as being more cost-effective and dependable (in terms of quality) than their fellow Japanese suppliers', a company spokesman noted. The company claimed that its ability to communicate with local workers through ethnic Chinese managers made its labour force more efficient, and the Malaysian connection has also spread to Taiwan with its Taiwanese parent now undertaking supply to Sony's subsidiary in Taiwan.

Breaking away from the family business. Globalization and the need to integrate local human resources into the organization forced Taiwanese firms to break away from their traditional family-centred management style (Hamilton, 1991; Redding, 1990; Whitley, 1990). As the size of the organization increases and the management team embraces multi-cultural backgrounds, formality and rules start to supersede discretion. Direct monitoring and evaluation of subordinates by top managers becomes increasingly difficult, and the delegation of power is inevitable, particularly in overseas subsidiaries. In order to make the delegated management system work, the functions of overseas subsidiaries are simplified and the objectives of the operations clearly defined (Whitley, 1999). There is usually also a risk-sharing scheme arranged between the top managers at the headquarters and the core employees at the subsidiaries. Falcon is a public company, run by professional managers with its managerial objectives in the Malaysian and Chinese subsidiaries being defined in terms of production volume and revenues. Three chief managers of the Malaysian subsidiary who have successfully achieved the objectives stipulated by the head office, were subsequently promoted to head other independent companies spun off from Falcon.

Despite the general trend toward professional management, at least two of our sample firms remained tightly controlled family businesses. Both had invested in Malaysia and in each case the Malaysian subsidiary was run by one of the sons of the owner. The Malaysian venture represents an estate for the younger son who competes with his elder brother at the headquarters for the father's blessing. The

Malaysian subsidiary enjoys full autonomy from the headquarters in terms of personnel, procurement and finance, and there is a strong incentive to grow to overtake the headquarters. Following their successes in Malaysia, both companies subsequently invested in China in what was essentially a 'joint venture', endorsed by the father, between the subsidiaries in Malaysia and the headquarters. Globalization therefore binds the family resources together into a coherent group to avoid the splitting up of the company after the death of the patriarch, as in Biggart and Guillen's (1999) portrayal of Chinese-family business. As the groups expand their global reach, chief employees of the companies assume greater roles, particularly those at the Malaysian subsidiaries. One of these family-controlled firms was also recently listed in the Taipei Stock Exchange. It appears that the growing importance of external resources has superseded the power of the family in Taiwanese businesses.

Family power has been diminished partly because of the difficulty of converting the family-based ties to ethnic ties in the host country. Even in Southeast Asia, where Chinese ethnics dominate the local economy, Taiwanese investors have had difficulty working with Chinese merchants due to differences in market orientation and business cultures (Chen and Liu, 1998). The principal benefits of local linkages come from the assimilation of local human and financial resources, rather than the support of local ethnic groups. Local autonomy is conducive to the assimilation of indigenous resources, which in turn, opens the door to professional management.

CONCLUSIONS

Conventional theory views FDI as an attempt by investors to exploit firm-specific assets in foreign markets. FDI allows multinational firms to extract from the host country economic rent that is unobtainable through other means of trade, such as export or licensing. Due to the nature of rent extraction, FDI carries the connotation that capital-rich countries exploit capital-poor countries despite the fact that FDI may also prove to be ultimately beneficial to the host country.

In contrast, the network approach to FDI highlights the exploitation of network resources for internationalization. Even a small and seemingly weak firm may engage in FDI as long as it can successfully leverage external resources. The purpose of FDI is often to preserve and to strengthen the network relationships that are essential to the survival of the investor, as opposed to the extraction of economic rent. Through FDI, an investor builds new relationships in a foreign country in order to secure those essential relationship. We can draw several lessons from this network-based theory of FDI after studying the internationalization process of Taiwanese electronics firms.

First of all, FDI often starts with a location in close proximity to the investor's home base so that support can be drawn from the domestic networks to hedge the

risks in overseas operations. The investor will then move only gradually to more distant locations after accumulating further network resources, since distant locations carry greater risks. Therefore internationalization is a process of travelling the network distance, where the distance is measured by a host of factors that affect the ease of network interface, including the mobility of goods and services, cultural affinity, the compatibility of industrial structures, and so on. 'Leap-frogging' in network distance is possible only with extraordinary assistance from the partners.

Secondly, the choice of location for FDI is implicitly a joint decision between the investor and its chief partners. The preferable location for FDI is often an area rich in network resources in its own right, or close to rich networks to which the investor can easily build up linkages. Cheap labour is not a key determinant of the location choice because labour does not constitute a distinctive resource. Rather than the primary factors, it is often other rare resources that attract the investor. Agglomeration effects are apparent in the location choice because the depth and the variety of network resources increases with the number of investors.

Thirdly, internationalization is a dynamic process. FDI facilitates linkages between the domestic and overseas networks, allowing an investor to internalize some technical and managerial assets within its organization whilst gaining access to a pool of external resources. These new resources propel the firm to make further investments. Internationalization is, therefore, a process of resources consolidation. But no matter how many assets the investor accumulates, the external resources embodied within the networks remain its most important source of strength, because the power of a firm is maximized with a proper leverage.

Fourthly, the major effect of FDI is not cost efficiency, or market access, but rather the ability to provide better services to the partners in the network. Better services are manifested in more flexibility in offering the service, more variety and lower costs of the products, closer to the customers, and so on. Being able to offer better services secures the investors' position in the network, and enhances their bargaining power *via-à-vis* their partners, but it will not upset the original relationships. Through FDI, the investors construct sub-networks under their own control to protect themselves from rivals.

In conclusion, the network approach to FDI differs from traditional theories of FDI, which focus on 'internalization' of assets. The network approach focuses on linkages to, as well as assimilation and consolidation of, resources in a global setting. The resources that are external to the investor are more diverse and often more valuable in the internationalization process than the resources directly owned by the firm. Leverage of external resources in order to improve one's position in the industry is the key motive for FDI. Those who succeed in such direct investment gain market share and strengthen their leaderships within a particular segment of the value chain.

NOTE

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