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

Tain-Jy Chen
Department of Economics
National Taiwan University

Working Paper Series Vol. 2000-03
March 2000

The International Centre for the Study of East Asian Development, Kitakyushu

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

Tain-Jy Chen*
Department of Economics
National Taiwan University
and
International Center for the Study
of East Asian Development

February 2000

* I am indebted to William James, Eric Ramstetter and other participants at the ICSEAD workshop for useful comments.

Abstract

Taiwan's foreign direct investment (FDI) is undertaken with the purpose of maintaining a number of important network relations. Taiwanese firms propel their internationalization process by making maximum usage of network resources to which they have access. FDI often starts at a location close to the home base where support from the Taiwanese network can be drawn. FDI then moves on to more distant locations after investors have accumulated more network resources. Through FDI, Taiwanese firms construct a regional or even global production network to supply a set of wide-ranging, differentiated, and low-cost products, in a flexible fashion, and sometimes from near the markets. With this versatile production network, they dominate in a small segment of the niche market. They become indispensable partners for large multinational firms that perform system integration, control marketing channels and set the technological standards. This network-based FDI exhibits a high degree of local embeddedness and a high degree of local autonomy.

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

I. Introduction

A number of scholars have recently brought a network perspective to the study of foreign direct investment (Johanson & Wiedersheim-Paul, 1975; Johanson & Mattson, 1992; Gulati & Gargiulo, 1999; Chen & Chen, 1998). From the network perspective, FDI is viewed as an effort by the investor to forge linkages with foreign networks by establishing a presence in the foreign country. It is not always necessary to establish a presence to build the linkages, as extensive international networking can be undertaken from the home base. Local presence, however, provides many advantages in networking, including proximity to the gravity of the network in which activities are centralized, and close contact with the network partners. The former provides easy access to the flow of information, and the latter is conducive to the cultivation of mutual trust.

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

This paper examines the FDI activities of ten Taiwanese electronics firms from the network perspective. All of these investors had extensive experience in the international subcontracting business before undertaking FDI and they invested overseas mainly to maintain these subcontracting relationships. These relationships, however, evolve further following FDI as a result of reconfiguration of production

networks.

Such export-oriented, subcontracting-based FDI exhibits two distinctive characteristics. First of all, the core strength of Taiwanese firms in the subcontracting business rests with the flexibility of the production process; this is derived from a closely knit production network in Taiwan, encompassing hundreds of small suppliers. This kind of highly adaptable and responsive small-firm network rarely exists in other countries and in order to maintain their core strength in export competition, Taiwanese firms have to rely on network resources at home to support their offshore production operations. This network linkage has generated a boom in the bilateral trade between Taiwan and the recipient countries of its FDI. We may say, therefore, that Taiwan's FDI is trade-creating rather than trade-substituting (Lin 1995).

Secondly, Taiwanese firms are small by international standards and they typically lack managerial and financial resources, shortages which hinder their ability to internationalize. Taiwanese firms therefore tap into network resources to aid their internationalization effort, taking a gradual approach to internationalization: they first choose a location close to the home base and gradually move to distant locations. In the process, they make maximum usage of network resources, including human skills, financial resources, market access and technological capabilities.

Taiwanese firms specialize in small niche markets, in which they strive for a leadership position. Through FDI, they construct a regional or even global production network to supply a broad range of differentiated products at competitive prices. With the support of this production network, they can more readily respond to shifting demand from the global market and maintain a leadership position in a small segment of the market.

The purpose of this paper is to examine the networking strategies of Taiwanese firms in details to illuminate the network perspectives of FDI. In the next section, we

draw out the theoretical implications of the network approach to FDI. In Section III, we describe the general pattern of Taiwanese FDI in Southeast Asia. In Section IV, we discuss the networking strategies of Taiwanese firms. Concluding remarks are made in Section V.

II. The Network Approach to FDI

The network approach to FDI views FDI as a move to manage important network relationships. For Taiwan's subcontractors, the focal relationships to be managed are those with international buyers. To move production from Taiwan to other overseas locations means a change in these relationships, and its success is contingent on the willingness of the buyers to coordinate relevant activities (Holm, Eriksson and Johansson 1999). Therefore, consent of the buyers is almost a prerequisite for FDI in these cases. For the buyers that face constant competitive pressure, the subcontractors' attempt to reduce production costs is, of course, consistent with their own interests. Since the mid-1980s, major US integrated device makers (IDM) in the computer industry, which constitute the major buyer group of our sample firms, have unilaterally invested in Southeast Asia, particularly in Singapore, in an attempt to reduce their production costs. These investors include Apple, HP, Compaq, and Dell (Borrus 1997). Taiwanese investment in Malaysia and Thailand, which took place around the same time, not only lowered the cost of parts for their buyers' operations in the US, but also provided hands-on supply of parts to the buyers' Singapore assembly operations, thus increasing their contribution to the partnership.

FDI implies a commitment to the network relationship and clearly, when an investor makes such a commitment, it expects its partner to reciprocate. The more it perceives the likelihood that the partner will reciprocate, the more the investor will

commit itself to the relationship. An investor, therefore, will be willing to assume more risks in FDI if its partner's commitment is more apparent and trustworthy.

FDI, however, serves to achieve more than simply maintaining existing relationships; it is also intended to change the relationships in favor of the investors. As Madhavan, Kada, and Prescott (1998) argue, the struggle for position is the main driving force for network evolution. According to Hakansson (1992), there are two main forces driving the network change: one is new activity and the other is new actors. FDI changes network relations by introducing new activities and embracing new actors.

New activities may be initiated by mobilizing new resources available to the investors. This includes resources released from the parent firms after the transfer of certain production activities abroad, and resources newly acquired from overseas locations. Home resources can be used for product upgrading, product innovation, and the like, which increase the quality and the scope of the product lines. As a result, the investor will be able to provide a wider spectrum of differentiated products to the buyer and hence increase its bargaining power. 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 from Taiwan.

Through the introduction of new activities, or simply through performing the activities more efficiently with a new combination of resources, the investor promotes its value in the network. Even if their partners fail to recognize this value and are reluctant to make reciprocal commitments, the investors can easily capitalize on this asset by forming new alliances with the partners' competitors.

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

investors (Granovetter 1982). In Southeast Asia, for example, investors have the opportunity to interact with the Japanese and European multinationals with which they are less familiar, as compared to the American buyers. Investors also have the opportunity to ally with major international parts suppliers in Singapore, or with Korean producers in the same region. From the viewpoint of Taiwanese subcontractors, if the new actors are buyers, it reduces their dependence on the original buyers. If the new actors are parts suppliers, incorporating them in the network may prove to be a valuable asset and, as a result, may increase their leverage in the network.

To maximize the opportunities for new contacts, an investor will choose a location that is resourceful in network connections. Moreover, a location that provides non-redundant contacts is more attractive than a location that provides redundant contacts. Redundant contacts refer to contacts that can be reached from the existing relationships, albeit indirectly (Burt 1992). For example, despite higher labor costs, Malaysia was more attractive than Thailand to Taiwan's electronics firms because of the rich embeddedness of its multinational community.

III. Patterns of Investment

Our sample consists of eight computer-related device makers (including two calculator makers) and two parts suppliers. With the exception of one company, all FDI started in Malaysia or Thailand, and with a further exception of one company, all took place in 1988-1989. The one company that initiated its FDI with Mexico said the investment was motivated by circumvention of trade barriers in the United States and that the investment was made with the buyers' explicit purchase guarantee. Investment in Mexico is more risky than in Southeast Asia in terms of physical, psychological, or network distance. This case exemplifies the assertion that the

partner's commitment prompts the investor to assume more risks in FDI.

All FDI took the form of greenfield investment rather than merger and acquisition and they were all wholly owned subsidiaries rather than joint ventures. Taiwanese investors are keen to construct plants that mimic their parent-firm operations and which are fully compatible with the production networks in Taiwan. Acquisition of local firms or local ownership may well compromise this objective.

The driving force for Taiwan's FDI is the rising wage rate and currency value in Taiwan. The firms were beginning to feel the competitive pressure and needed to invest in low-wage countries to regain their competitiveness. Most companies also considered China as a potential investment target at that time although FDI in China remained officially illegal until 1992. Some chose Southeast Asia over China for legal reasons, but most did so because of the high political risk and policy ambiguity that they associated with China. This risk was greatly reduced after Deng Hsiao-Ping's reaffirmation in 1992 to forge ahead with the reform and open-door policy. Although China is closer to Taiwan than Southeast Asia, prohibition of direct trade hinders network support from Taiwan. Moreover, at that time most buyers for the Taiwanese investors did not feel confident that China had the technological capabilities to produce the products that Taiwanese firms intended to transfer abroad, given the lack of industrial infrastructure.

At the time of the first FDI, no one would have planned or even foreseen a second phase of FDI. All they had in mind was to succeed in their first overseas endeavor to stay in the subcontracting business and they knew that there would be no future if the first attempt had ended in failure.

Once the investment site was decided, Taiwanese firms moved swiftly to establish their plants. All the firms in our sample managed to commence production within one year of the approval of the investment applications, clearly indicating their

urgency in undertaking the production transition from Taiwan to overseas. It was not something well planned ahead of time, but something which needed to be done in a hurry.

In 1994-1995, most companies undertook their second phase of FDI, and all did so in China. As in the first phase of their FDI, the investment made in China was also an attempt to strengthen the buyer-supplier relationship, but the second phase was more "expansionary" than "defensive" in nature. One manager whose company produces calculators said, "we invested in China because we now had extra capacity to move somewhere else and we wanted to grow. Our buyers were making entry to 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 when we made the investment in China, and Compaq and Dell were our largest 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 Shenchun and Dell will soon follow suit, so we build our SPS plant in nearby Tungkuan. This is to serve our clients better."

The other SPS producer, which made its first FDI in Mexico, said of their FDI in China (which is the third FDI for this company), " for years, we have not been able to get the production costs in our Mexican plant down. When we invested in China in 1992, it was mainly experimental. We wanted to see whether the true production cost is as low as their wage rate indicates. We succeeded. This was before most major computer firms came in. Now we use our Chinese plants to support our Mexican operations. Semi-finished products made in China were sent to Mexico for final assembly before they are headed for the U.S. market. This saves our Mexico investment."

However, almost without exception, those investing in China transferred their

first products, produced in Southeast Asian plants, to China for continuing production. Therefore the investment was also an effort to extend the length of the product life cycle, whilst taking advantage of low-cost labor in China. The risk of production failure was much lower this time around, because of the production experience gained in Southeast Asia, not to mention that China offers cultural affinity and identical language. Nevertheless, due to the under-development of industrial infrastructure, getting established in China has proven more difficult. One manager of a monitor producer said, " when we first invested in Malaysia, we were fully operational within a year. Managerial personnel, technicians, and parts suppliers were not difficult to find. When we went into China, we had to spend three years training managers, technicians, and nurturing local suppliers before we had a self-contained operation. During these three years, we only shipped semi-finished products from Malaysia and did very simple assembly."

The third wave of FDI came around 1998 and the destination was Mexico, with the target being the North American market. Three firms in our sample had already invested in Mexico and completed the configuration of a triad-supply base—Southeast Asia, China, and Mexico. There are no apparent "push" factors for investing in Mexico: the trade barriers in the U.S. have not been raised and Mexico is not a low-cost production site. However, investment in Mexico provides proximity to the U.S. market whereby better services can be offered to the buyers, such as direct delivery of products to the customers and after-sales service.

After Mexico, the next natural step would seem to be Europe. However, Taiwanese firms were more cautious about the European endeavor, because of their lack of understanding of Europe in general, and their lack of network contacts in particular. One of the firms did invest in Scotland after China.

Two distinctive features stand out in this FDI pattern. First of all, FDI always

started with a close location where support from Taiwan's network was possible. This was to make sure that the initial overseas operation was viable even if it was completely detached from the local networks. After the first FDI, there is an obvious gradual move to more distant locations where support from Taiwan becomes more difficult. The investors are willing to take greater risks as their network resources become richer. In the second step of internationalization, network support from the fist overseas production base is possible. For example, many investors sent their semi-finished products from Southeast Asia to China to support their initial operations there, just as the Taiwan headquarters did for their initial operations in Southeast Asia.

Secondly, a location is invariably chosen that is rich in network resources in its own right, or at least accessible to rich network resources nearby. When investing in Southeast Asia, the firms chose Malaysia and Thailand where an agglomeration of electronics industries was already in existence. Penang is particularly favored for that reason. When investing in China, Tungkuan in Kuantung Province and Suchou in Chiangsu Province were favorite targets. Again, this is because of the agglomeration of the electronics industry. When investing in Mexico, the firms chose the U.S.-Mexican border areas which enabled them to access the U.S. networks. In short, they always chose a location that was close to the gravity centers of the networks.

This 'gradualism' in traveling distance from the home network stands in interesting contrast to the Uppsala School's cumulative process of internationalization (Johanson and Wiedersheim-Paul 1975; Johanson and Vahlne 1977,1990). In the Upssala School of internationalization, firms travel 'psychic distance, starting with 'close' host countries which have business cultures similar to the source country's and gradually move to more 'distant' countries where business cultures are distinct. Firms overcome psychic distance by cumulating internationalization-related knowledge. In our case, firms travel 'network distance', which 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 the compatibility of the network structure. Mexico is distant from Taiwan's network not only geographically, but also because it is plagued by high tariff barriers, and a network structure which lacks flexibility. Although Fukien is closer to Taiwan geographically and culturally (where the same dialect is spoken), Kuantung is a preferable target for FDI in China because of its proximity to Hong Kong, a free port for shipping materials from Taiwan and for exporting final goods to the rest of world.

Globalization is possible only if the investors accumulate network resources in the process of FDI. Network resources include local suppliers, local managerial and technical skills, local technological capabilities, new buyer relationships, financial resources, and so on. If the investors fail to accumulate network resources, they can only relocate rather than internationalize. For example, as the Malaysian labor costs rose, the firms would close the Malaysian plant and move to China instead of holding two production sites at the same time through product realignment. This is because they do not have the capacity to run a multi-country operation and there are no synergies in doing so. For them, FDI is more like migration in search of cheap labor than internationalization to rationalize production and to improve competitiveness.

IV. Networking Strategies

The export-oriented, subcontracting-based FDI of Taiwanese firms exhibits two distinctive characteristics. Firstly, overseas subsidiaries maintain a close linkage to production networks in Taiwan in order to sustain their core strength of flexibility and responsiveness to market demand. Secondly, Taiwanese firms 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, while the second manifests itself in an effort to offset weaknesses. These two characteristics together reflect a network approach to FDI by Taiwan's small firms. In this section, we will discuss the strategies that go hand in hand with this approach to FDI.

Proximity to Taiwan's Networks

The core strength of Taiwanese firms in export competition lies with their low cost and flexible production. As the low-cost advantage began to be eroded by rising wages at home, Taiwanese firms embarked upon overseas production in order to regain this advantage. However, flexibility cannot be sacrificed in production relocation, otherwise export orders may be lost to indigenous firms. In Taiwan, the flexibility of production is supported by an extensive and inter-locked network, in which small and specialized suppliers coordinate horizontally and vertically to achieve quick production in a concerted fashion. The suppliers and subcontractors in the network can be switched and recombined in response to changing volumes and specifications in export orders. This kind of network rarely exists in other countries, therefore close linkage to networks at home is essential to the maintenance of flexibility for Taiwanese firms.

For Taiwanese firms, Southeast Asia is a natural choice for FDI because of its geographical proximity to Taiwan. Among our ten interviewees, nine made their first overseas investment in Southeast Asia, whilst the other one started with Mexico, mainly in an attempt to circumvent trade barriers in the US, but its later investment in Southeast Asia entailed much larger resource commitments. Overseas subsidiaries in Southeast Asia can readily draw from Taiwan's networks for parts, raw materials and other logistical support, but although geographically close, customs procedures and other bureaucratic redtape may still hinder the importation process. For this reason,

government efficiency in the host country is an important determinant of Taiwanese firms' choice of where to direct their FDI. Some firms in our sample chose to locate in export processing zones for the expediency of customs procedures.

In general, overseas subsidiaries depend on parent firms for the supply of parts and raw materials in the initial stage of offshore production. All interviewees indicated that at the initial stage of production, virtually 100-percent of parts and components were supplied from Taiwan. Furnishing all components and parts from Taiwan allows the managers of overseas subsidiaries to concentrate on training workers and fine-tuning the production process to make sure that product quality meets the buyers' demand, an essential factor in the retention of export orders. At this stage, the transfer of technology at the shop-floor level was conducted intensively and a large group of expatriate technicians may have been present at the subsidiaries. Only after the product quality had reached a satisfactory level and the production procedures had been routinized would 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 always acts as a kind of safety valve. Even when a mature local supply network is established, which takes three to four years, it is often limited in scope and needs to be supplemented by supply from Taiwan and from the rest of the world. When local procurement is being conducted, a logistic support center in Taiwan may still provide useful information on price movements and the sources of supply around the globe. Production networks in Taiwan also serve the useful function of meeting rush orders. Being able to meet rush orders makes Taiwanese firms valuable partners for international buyers that perform system integration, strengthening their position in the subcontracting business.

The Buyer Connections

Almost all interviewees indicated that they talked to their buyers about the transfer of production to overseas locations before they made the final decision on foreign investment. A buyer's consent is almost a prerequisite, but there is usually no explicit commitment from the buyer side. One manager said: "certain understanding is needed, but the buyer is not going to make an explicit commitment, only a tacit agreement that the order will be forthcoming if our quality is satisfactory. No buyer is going to make a firm commitment because they do not even know whether the product lines that we are offering now will survive the 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. When we went to Malaysia, there was a common perception that Malaysia would be a good place to make our products then." Although there is no firm commitment from the buyers, when the overseas plant is completed, the initial production always commences with some order negotiated in Taiwan and transferred overseas. The investor may have to take a price cut to make the production transfer, and the parent firm needs to serve the back-up role if anything goes wrong in the new venture. But the buyers are usually willing to go along with the transfer because their partners have committed to the new venture and after all, cutting costs is to their own advantage. To justify the production transfer, Taiwanese investors concentrate their entire efforts on making sure the quality is right to meet the buyer's standard, even if this has to be achieved at higher costs. Only when the quality is satisfied, will the search for measures to reduce costs begin.

Buyers come and go, but they never totally disappear. The working relationship is there, so is the trust. Each buyer usually works with multiple subcontractors at any point in time and they switch partners from time to time. Although it is a stable group of buyers dealing with a stable group of suppliers, the match constantly evolves.

When we asked the Taiwanese subcontractors who their major competitors were, the typical answer was “the other Taiwanese subcontractors”—those located in the same area, other countries, or back in Taiwan. If some subcontractor offers a lower price from a new location, the buyer may just take it and switch partners. The competition is fierce, and as one manager said, “we are like a group of reindeers living in the African forest. As soon as the sun rises, we started running. If we fall behind the peers, we are destined to be swallowed by the tigers and lions chasing after us. So, efficiency, efficiency, and efficiency. Everyday I come to the factory earlier than the first worker arrives to make sure everything is in right place and people are doing the right things on second one.”

Although cost efficiency is the first management priority in a subcontractor’s overseas operations, the buyer considers the factor of geographical diversification as well as the production costs in deciding where to buy. The key for a subcontractor to gain an upper hand position in this type of network is to possess a low-cost, large, diversified and flexible production capacity. This capacity reduces the buyer’s cost of contracting, monitoring and coordination in placing orders for an assortment of differentiated products. FDI is an important mechanism to build that capacity.

After the Taiwanese subcontractors sorted out the most efficient way of carrying out production in an overseas location, their next objective was often the pursuit of enlargement of their production scale. This has to come with new orders as the ones transferred from Taiwan are insufficient. But why do investors become so conscious about production scale and market share once they go abroad? The reason is, the product they are making has become mature and the profit margin has shrunk. There is not much scope for product differentiation (otherwise the product could have been kept at home), and scale enlargement is the only way to bring down the cost. The number of competitors in the industry has decreased as those failing to undertake FDI

exit the market, however, competition for market share intensifies among the remaining players.

Porter (1991) argues that the most important drivers of competitive advantage in an activity are, *inter alia* scale, cumulative learning in the activity, linkage between the activity and others, the ability to share the activity with other business units and the timing of investment. Taiwanese investors seem to have them all. They first achieve cost efficiency, and with cost efficiency, they expand the production scale. It is typical that a Taiwanese overseas subsidiary outgrows its parent firm within a few years. But unlike Western multinational firms where scale is an important stimulus for FDI (Kogut 1985), Taiwanese firms pursue scale expansion as a part of their networking strategy. They expand production scale to gain market share in the OEM business, and their bargaining power in the subcontracting network increases along with market share.

Timing of investment is also an important factor for competitive advantage. FDI in Malaysia's electronic industry, in particular, was perfectly timed with the activities of major multinational firms. It took place when demand from international buyers toward Malaysia was increasing following rising wages and currency value in the newly industrialized econonies (NIEs) of Taiwan, Korea, Singapore, and Hong Kong. Firms investing in Malaysia saw their turnover and employment rise in leaps and bounds in the first few years of investment. The boom, however, quickly peaked out around 1994 and 1995 as the Malaysian labor cost rose to a level beyond that commensurate with labor-intensive electronics assembly, despite massive import of foreign labor. The tide then turned to China, as major international buyers started to make serious investments there. As Taiwanese investors followed their footsteps, this constituted the second wave of FDI.

One stunning feature of this evolution of production configuration is that the

buyer-supplier relationship at the beginning of FDI is maintained throughout, and in most cases, strengthened after 10 years of FDI. All firms in our sample continued to supply to these buyers, with virtually the same products, but from China, after 1995. In addition to keeping the original buyers, the investors introduced new products to their line-ups and established relations with new buyers.

The value of any buyer-supplier relationship would have depreciated over time without reinvestment. In the case we have just examined, both the American buyers and the Taiwanese suppliers invested in the relationship. They invested separately with their own strategic objectives, sometimes even seemingly confrontational, but in the end, the investments served to reinforce the relationship. Taiwanese suppliers invest in global production capability. Their buyers, particularly the American buyers, while delegating the production functions to their Taiwanese subcontractors, have focussed their efforts on new product definition and standards competition, systems integration, software value-added and distribution, and also on gaining their position in the world market (Borrus 1997, p.157). With the aid of the Taiwanese supply network, the buyers were able to reduce turn-around time and speed up product shifts.

In recent years, the American buyers have asked their Taiwanese subcontractors to deliver products directly to the markets, and to offer after-sale services to customers. The so-called “global logistics” services provided by the subcontractors eliminate warehousing in the value chain, greatly shortening the time to market and enabling the operation of a “Build to Order” production system. This is made possible by subcontractors holding a global supply capacity and Taiwanese subcontractors are among the few that remain in this game. Partner scarcity serves to prevent the relation-specific economic rent from deteriorating (Dyer and Singh 1998). As a result, interdependency between the buyers and suppliers deepens. Said one manager “ in order to deliver the products to the market and service the customers, the buyers have

to share with us the customers information. There is no secret now. We need to trust each other to do so. Our partnerships are more stable now because the buyers do not want to share this kind of information with everyone."

Linking with Local Networks

In making linkages to the local networks, investors have to consider the adjustment and adaptation costs involved in network integration. New relations have to be invested in, rather than obtained for free, and these new relations may strengthen or weaken the existing relations. The rule of thumb is to take a step-by-step approach, linking first to local relations that carry the lowest risk to the entire network. For example, an investor usually starts with training local workers to perform the production routines transferred intact from Taiwan. After the production routines are stabilized, the investor will start looking for local suppliers for components and parts. Among various components and parts searched, those which are inconsequential to the quality of the products are picked up first. Only after production activities are fully integrated with locally sourced inputs will the investor start looking for contacts that are intrinsically more risky, such as R&D and technology transfer for the purpose of innovations. The last contacts that an investor will make are new buyer connections that may hinder their primary relations with the original buyers. The process is gradual because it takes cumulative learning and integration in foreign environments to reduce the perceived risks (Eriksson, Johanson, Mijkgand and Sharma, 1997). But in any event, increased local connections 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.

Firms in the subcontracting business are under constant pressure to localize because they need to cut production costs. If cost competitiveness is undermined,

subcontracting orders may slip away at any time. As soon as Taiwanese firms get established locally, they start actively seeking for local suppliers to reduce the costs of inputs. Being small in size, and only loosely connected with their suppliers in Taiwan, it is only in exceptional cases that Taiwanese firms invest overseas in a joint effort with their suppliers from Taiwan. In our sample, two firms brought with them major suppliers from Taiwan to invest in the same location to provide on-site supplies, one with 35 suppliers and the other, 8 suppliers. In fact, these two firms provided factory space on the same compound to their suppliers and guaranteed a minimum amount of purchase. They also took care of the administrative procedures in making investment applications on behalf of the suppliers.

In locating local suppliers, Taiwanese firms include indigenous firms, locally incorporated multinational firms, and other local Taiwanese firms in the perimeters of search. A supply network so constructed is multinational in nature and the sources of supply are sometimes multiple. Take a monitor producer in Malaysia as an example; in 1998, it regularly procured metal mould, capacitors, resistors, connecting wires, steel frames, ABS, nuts and bolts, and power cores from local Taiwanese subsidiaries; plastic mould from local Chinese merchants (90%) and a Taiwanese subsidiary (10%); high-end capacitors from Matsushita (Japan), pert coil from TTK (Japan) and CRT from Chunghwa Picture Tube (Taiwan) and Samsung (Korea).

An important feature of Taiwan's subcontracting industry is that parts are standardized and made interchangeable to the maximum extent possible so as to facilitate the division of labor within the production networks. This feature makes integration with local production networks easy. The Taiwanese network can be partially transplanted and still work reasonably well across borders. Suppliers and subcontractors in the network can be removed and reconnected to maintain vitality.

In contrast, production of Korean firms is highly integrated and Korea's supplier

network is not easily permeable. When Korean firms invest in Southeast Asia, parent firms have to furnish most of the parts to the subsidiaries to preserve the advantage of vertical integration. Japanese FDI shows yet another pattern. Japanese firms spread their subsidiaries throughout Southeast Asia in order to pursue a division of labor within the organization. Their interactions with local firms are limited; at most, they encourage Japanese suppliers within the *keiretsu* group to invest locally to provide needed parts and components. But even with the blessing of major assembly firms, many small Japanese suppliers still lack the capacity to invest abroad, therefore, replication of a *keiretsu*-based network in Southeast Asia is not feasible Ernst (1997) argued that failure to take advantage of local production capabilities is a major contributor to the disadvantageous high costs of Japanese electronics firms, as opposed to American firms, in global competition.

However, if essential components and parts need to be provided from close proximity and local suppliers are not available, then the Taiwanese investors may be forced to integrate them in-house. At least two interviewees have indicated that they are forced to invest in production of printed circuit boards that they normally out-source in Taiwan. The need for vertical integration of some parts and components also leads Taiwanese firms to pursue a large volume of production to guarantee scale economies. This reduces their flexibility in switching product lines. Compared to the production at the headquarters, in overseas subsidiaries product lines are much more concentrated. And unlike Taiwan, subcontractors in overseas locations are limited, making adjustment to short-run demand volatility through subcontracting unfeasible.

To make up for the loss in production flexibility due to the structural weakness of local networks, Taiwanese investors try to increase flexibility in two ways. Firstly, they increase internal training of workers to increase worker versatility. The flexibility is enhanced through reallocating labor among divisions, or through arranging

overtime work. The willingness of the workers to work overtime and the legal provisions of the host country that encourage, rather than hinder such work efforts, are considered an important labor market condition in Taiwanese firms' decisions on FDI. Secondly, flexibility is increased by pooling production capacities in several FDI locations to respond to demand volatility. As Buckley and Casson (1998) argue, switching product lines among different locations as circumstances change is an important factor in multinational firms maintaining flexibility.

Taiwanese firms source from all kinds of local suppliers, but Taiwanese subsidiaries operating in the same area still dominate the supplier list. Most buyer-supplier relationships are newly established locally, without previous working relationships in Taiwan. Operating in a foreign investment context requires increased learning from each other as both the buyer and supplier face more environment-related uncertainty. Compared to the supplier-buyer relationship back in Taiwan, the local relationship is more stable and symmetric where price plays a smaller role in guiding transactions. Even large firms lose some of their bargaining power because there is a shorter list of suppliers to choose from.

In the electronics industry, there are more investments by device makers than parts makers because parts makers are generally smaller in size and less able to cross national boarders. For parts makers successfully undertaking FDI, their bargaining power is much larger when compared to their counterparts in the more mature industrialized areas.

As previously indicated, the Taiwanese investors procured virtually everything from Taiwan at the beginning of their overseas operations. By the time the production system was fully integrated with the local infrastructure in Southeast Asia, the ratio of local procurements, including those obtained from neighboring countries such as Singapore, was around 60 to 70 percent. Increased local procurement, of course,

reduces procurement from the Taiwan networks. However, for key components that are essential to the quality of products, the overseas subsidiaries usually maintain certain links to the suppliers in Taiwan. For example, monitor producers in Malaysia or Thailand procure most CRTs from Chunghwa Picture Tube (Taiwanese) or Samsung (Korean) in Malaysia for cost-saving reasons, but they also buy a proportion from Philips and Hitachi in Taiwan for high-quality products, in order to preserve the supply relationship that they consider valuable. Buying from top-notch producers is useful to keep up with the technological changes occurring in the key components. Unlike the Japanese multinationals which maintain internal production of their key components (Ernst 1997), Taiwanese investors tend to maintain active linkages to major producers of key components.

Network Resources for Innovations

The initial product lines set up in overseas locations by Taiwanese firms are usually mature lines relocated from the parent firms. Even the buyers to be served by the overseas subsidiaries are transferred from the parents. Once local production efficiency reaches a satisfactory level, the subsidiaries will start exploring new markets and new customers. As the firm evolves from single-country to multiple-country production, its supply capability increases through the broadening of the product scope and quality. Such diversity makes Taiwanese firms more attractive subcontractors for large multinational firms that have to provide a wide range of products, and this attractiveness creates new market opportunities.

Typically, pilot production runs for new products are conducted at the headquarters in a search for the optimal production process. Once the process technology has become mature and cost competition has intensified, the product line will be transferred to Southeast Asian or subsequently to Chinese subsidiaries with the consent of the buyer. This forecloses potential competition by producers from other

low-wage countries and preserves the buyer-supplier relationship.

In the Taiwanese firms' overseas plant, we often observed a very rapid turnover of product lines, reflecting the sheer force of competition in the OEM market. Sometimes new products were even introduced into overseas plants without prior experimentation within Taiwan, since a rapid turnover is necessary in the subcontracting business to prevent a slim profit margin from shrinking to zero.

The turnover of product lines is particularly fast in the electronics industry as the product life cycle in this industry has become increasingly short. In order to adjust to the quick turnover of product lines, Taiwanese firms have to structure their factory space in such a way that a new production line can be installed, and that production can commence within a week or so.

The rapid turnover of product lines is driven by a combination of R&D efforts at the headquarters, and technology transfer from the buyers. Maintaining research capability at the headquarters is essential in keeping product lines rolling between domestic and overseas plants. FDI drives and supports R&D activities because it extends the product life cycle and expands the production scale.

FDI also buys time for product innovation when an unforeseen shock (e.g. a sudden rise in the wage rate or currency value) hits the company. Said a manager, we moved all our mature product lines—calculators and telephone receivers—to Malaysia in 1989 and left the parent firm to struggle with the notebook PC which was introduced in a haste. The parent firm had encountered so many technological problems to get the production going. Had we not made good money from the Malaysian investment, the company would have gone under. Luckily, our Malaysian operations have bought enough time for the technological struggles in Taiwan. We finally had a breakthrough in 1995 and our notebook PC became a hit." The company has since become a major supplier of notebook PCs to Compaq.

Innovation can also be obtained through strategic alliances. Since 1998, the same company (mentioned above) has been collaborating with Konica of Japan to develop digital video cameras in its Malaysian plant. Recognizing this as the product for the future, Konica wants the product, but has no intention of building its own production facilities. Instead, it will contract the company to undertake the work at its Malaysian plant. Konica dispatched an on-site research team to work with the latter's engineers for product development. Production is set for year 2000.

Proximity to the buyers also facilitates technology transfer and hence product innovations. Although Southeast Asia is by no means the world's major source of technology, the shortened product life cycle has brought new product lines to this region. One company supplying metal parts to Sony was invited to develop, with the assistance of Sony engineers, new metal levers for Sony's micro-disk players which were to be manufactured at Sony's Malaysian plant within two years of its introduction to the Japanese market. Another firm received Philips' technologies for CD-ROMs when Philips decided to terminate its own production in Malaysia and sourced from outside. Proximity works in the company's favor because the Philips' headquarters in Singapore would coordinate the sourcing activities after the plant closure in Malaysia.

Local Resources for Competitiveness

Clearly, even the largest Taiwanese firms are small by international standards, and their ambitions to globalize cannot be realized by their own managerial and financial resources. Taiwanese firms are consequently keen to tap into local resources as a means of achieving growth in the local entity and expansion into other countries. As the resource-based theory of competition suggests, being able to accumulate resources and capabilities that are rare, valuable, non-substitutable and difficult to imitate, is essential to the maintenance of competitive advantage of a firm

over its competitors (Barney 1991, Dicerickx and Cool 1989, Rumbelt 1984, Dyer and Singh 1998). For Taiwanese firms, these resources are not only important in surviving the local competition, but also important in their expansion into third countries. The resources must be so rare that they cannot be substituted or imitated, but they must also be new, so as to bring new impetus to internationalization. Local presence provides a good venue to explore new resources, as a foreign country may possess resources that are distinctive from those of the home country. Resources that are commonly available to all firms with a competitive price, such as labor, do not qualify as a rare resource (Barney, 1986). To make it rare, a resource has to be internalized within a firm or to be embedded in a network. The former resources become firm-specific capabilities and the latter are called network resources. Both guarantee uniqueness and limited access.

Taiwanese firms are good at developing local managerial skills within their firm-specific capability. The managerial personnel are mostly ethnic Chinese but not always. One manager said his firm was more cost efficient than the Japanese supplier operating in the same area because he had no difficulty communicating with his workers through ethnic Chinese managers, whereas his Japanese counterparts often ran into troubles. Common language facilitates knowledge transfer, and cost efficiency eventually won the firm supply contracts from Japanese major assemblers Sony and Toshiba in Malaysia, which in the past had only procured from *keiretsu* members. “It took us three years to get the first order from Sony and five years from Toshiba. They eventually recognized us as more cost-effective and dependable (in quality) than their fellow Japanese suppliers. But it is worthy of the effort, because once you become a supplier, you are here to stay. They do not force you to cut the price as often as our Taiwanese assemblers do.” The local connections also spanned to Taiwan as the Taiwan parent also started supplying to Sony and Toshiba of Taiwan.

Local managerial skills are not limited to ethnic Chinese, they also extend to other ethnic managers. The key is that these skills are not in abundant supply. An LED firm in Thailand took the whole management team from National Semiconductor (Thailand), which had 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 for building up new plants. “We are wholly localized, without a single Taiwanese expatriate now. This saves us money because they are Thai, and are paid less than our expatriates. They are also devoted because they have autonomy over the entire operation.” The Thai operation runs as an independent profit center and the managers appropriate the bonus.

The other rare, but valuable, resources are host-country originated and Taiwan-educated engineers and managers. They share virtually the same culture and mentality as their Taiwanese counterparts. One such manger runs a company as a vice president. His president said of him, “I have no trouble working with him. He is just like another Taiwanese colleague. There is no difference. Yet he deals with everything perfectly concerning the government, labor relations, local suppliers—everything that needs local language.”

The other local resources that normally come to mind are Chinese merchants. Surprisingly, Chinese merchants do not play such an important role in fostering Taiwanese firms’ local competitiveness as most people would have thought—because they are commonly available resources. All multinational firms work with local Chinese merchants, and there is no special advantage that favors Taiwanese investors. In fact, Taiwanese firms rarely purchase special-purpose products from Chinese merchants. Their procurement is limited to general-purpose products such as packing materials.

But the resources that prove to be most valuable to Taiwanese firms operating in Thailand and Malaysia are newly established buyer relationships, although some Taiwanese firms invested abroad with the purpose of maintaining certain buyer relations established in Taiwan. Once they were present locally, they used their newly accumulated resources to seek new buyers, to introduce new products, and to reach new market frontiers. The weapons they commonly use to reach new buyers are proximity and cost advantage. For example, parts makers operating in Malaysia and Thailand all have the advantages of supplying to major computer assemblers operating in Singapore, as compared to those operating in the rest of Asia. A company located in Penang won a long-term supply contract to supply low-power transformers to Philips' consumers electronics division operating in Penang; this is mainly attributable to the proximity advantage. Philips had previously been buying from a number of Japanese and indigenous suppliers and was not satisfied with the quality. The collaboration with Philips of Malaysia went so well that the company was asked to supply Philips' other divisions in Eastern Europe and Latin America. In 1995, Philips decided to phase out its audio-video operation in Penang and move to Kuantung in China. The company was solicited to invest with it at the same location and concurred. In fact, the company had been supplying transformers from Penang to the new Philips plant in Kuantung before its own factory was operational. Now, the company is considering joining a new Philips plant in Eastern Europe.

Another company case illustrates a similar development path. This company came to Malaysia at the request of a device maker (which is also in our sample) but started to explore new buyers such as Thomson, Siemens, Sony, Sharp, and so on, located in Penang. The company produces jump wires used for connections in semiconductor products such as LED and printed circuit boards. It became a second-source of supply for some of these major western multinationals, with

intermittent orders, but since 1995, rising labor costs in Malaysia have forced these majors to seek cost reduction through local sourcing. Thus, the company was upgraded to become a primary supplier for Sony. " It was a great feeling," said the manager, "because once we became a certified supplier for Sony, Malaysia, our name was on the Sony's IPO network and we were receiving price inquiries from everywhere without a penny spent on an ad—Sony Indonesia, Sony Holland, everywhere. With this certification, we also easily hooked up with Sharp. They respected their peer's judgement."

Yet another example is a calculator-maker in Thailand. After several years of contact, this company finally won a long-term supply contract to produce computer printers for HP Singapore on an OEM basis. The company had been making printer-calculators in Thailand after shifting its product line of hand-held calculators to China. This was mainly attributable to cost advantages, as the cost in Thailand was much lower than in Singapore. The company designated a plant in Thailand to produce exclusively for HP products. At the initial stage of production, HP sent a group of engineers and technicians to undertake the technology transfer, and later a smaller group of inspectors were stationed at the plant site to scrutinize the quality before each shipment. All these activities were coordinated by the HP Singapore office. The collaboration went well and the subcontracting contract is now to be extended to include HP America and HP Australia.

Network Resources for Globalization

Local skills accumulated in Southeast Asia are not simply a cornerstone for local competitiveness, but also an important asset for globalization. For example, a Malaysian-Chinese engineer trained in the Malaysian subsidiary, may be sent to Kuantung in China to provide technological support because he speaks multiple Chinese dialects; or a Malaysian-Indian salesman may be sent to India for market

promotion, taking advantage of his cultural affinity and language skills. Of course, technicians and managers trained in China may also be dispatched to assist other subsidiaries. Said one manager, “we employ 26,000 persons in China. There is bound to be some talents. We train them, and send them to Thailand, to Mexico for technical support, or even to U.S. and Japan for sales promotion. A Chinese engineer’s pay is no more than one-eighth of a Taiwanese engineer. We save a lot of money that way.”

Financial resources are also valuable local assets. Three of the firms that we interviewed have been listed in the local stock exchanges of the host countries (all in Thailand). They view public listing in local stock exchanges as a benchmark for business success. There are also cases where the subsidiaries were listed in overseas stock exchanges before the parent firms obtained the same status in Taiwan. This stands in sharp contrast to western multinationals which usually prefer tight hierarchical control of their overseas subsidiaries and refuse 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 some high-tech products to impress Taiwanese investors. In this case, the valuation of its stock in Taiwan is likely to be low with the company facing 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 matured 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-times premium over its face value before the Asian Financial Crisis hit 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.

If public listing in the host countries is not obtainable, Taiwanese firms may still seek loans from local financial institutions. It is also common for Taiwanese firms to team up with western multinationals or international institutional investors in the pursuit of business expansion and diversification. The strategy of tapping into local resources significantly affects the management style of Taiwanese firms. Taiwanese subsidiaries typically enjoy more autonomy than their western multinational counterparts, in fact, it is a common practice for Taiwanese firms to set 'independence' as the ultimate management goal of their overseas subsidiaries. Subsidiaries are first required to become independent financially, and then to become independent in marketing and sales. Some are eventually required to become independent technologically. Striving for independence in this manner means that the subsidiaries have full autonomy over their decisions.

V. Concluding Remarks

Conventional theory views foreign direct investment 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, although FDI may prove ultimately beneficial to the host country as well.

Small Taiwanese firms do not possess the kind of intangible assets that can be exploited through FDI. Instead, the purpose of FDI by Taiwanese subcontractors is to preserve and to strengthen the network relations that are pivotal to their business success, and in the process of internationalization, they make maximum usage of the network resources. Their FDI often starts with a location in close proximity to

Taiwan's network so that support can be drawn from this network. They will then move gradually to more distant locations after accumulating greater network resources. Their choice of location is determined mainly by the richness of network resources and the relative case of connecting with external networks, especially the Taiwan network.

FDI facilitates linkage between the Taiwan network and overseas networks. Through network linkages, Taiwanese subsidiaries accumulate technical and managerial assets within their organizations, which in turn provide impetus and power for the growth of the firm. But no matter how many assets they accumulate, the external resources embodied in the networks remain their most important source of strength, notably financial resources and buyer contacts. Through intra-firm division of labor, FDI enables Taiwanese firms to offer wide-ranging yet very specialized products that can cater to international demand. Multiple production bases and their proximity to the major international markets also enable Taiwanese firms to offer new services to the market. The final aim of FDI is to excel in a niche product market, based on a versatile production network that offers differentiated, flexible and low-cost products, and to deliver these products timely to the markets. This capacity solidifies their partnership with large multinational firms and enhances their position in the relationship.

The network approach to FDI differs from traditional FDI that focuses on 'internalization' of assets. The network approach focuses on linkages to resources, assimilation of resources, and deployment of resources in a global setting. The resources that are external to the investor are more diverse and often more valuable to the internationalization process than the resources directly owned by the firm. Leverage of network resources to improve one's position in the market is therefore the key motive for FDI. Those who succeed in leveraging these resources gain market

share and strengthen their leadership in a particular segment of the value chain

References

Barney, J.B. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17, 99-120.

Borrus, Michael (1997). Left for dead : Asian production network and the revival of US electronics. in Barry Naughton (ed.) *The China Circle*, Brooking Institution for Economic Research.

Buckley, Peter and Mark Casson (1998) Models of Multinational Enterprise, *Journal of International Business Studies*, 29(1), 21-44.

Burt, Ronald. (1992). The social structure of competition. in Nitin Nohria and Robert Eccles, *Networks and organizations: Structure, form, and action*, Boston: Harvard Business School Press.

Chen, Homin & Tain-Jy Chen. (1998). Network linkages and location choice in foreign direct investment. *Journal of International Business Studies*, 29(3): 445-468.

Dierickx, I. and J. Cook (1989). Asset stock accumulation and sustainability of competitive advantage. *Management Science*, 35, 1504-1513.

Dyer, Jeffrey and Harbir Singh (1998). The relational view: cooperative strategy and sources of interorganizational competitive advantage. *Academy of Management Review*, 23(4), 660-679.

Ernst, Dieter (1997). Partners for the China circle? The East Asian production networks of Japanese electronics firms. in Barry Naughton (ed.) *The China Circle*, Brookings Institution for Economic Research.

Granovetter, M.S. (1982). The strength of weak ties: A network theory revisited. in P.V. Marsden & Nan Lin, *Social structure and network analysis*. Beverly Hills: Sage.

Gulati, R., & M. Gargiulo. (1999). Where do international networks come from?. *American Journal of Sociology*, March, 177-231.

Kogut, Bruce (1985). Designing Global Strategies: Comparative and Competitive Value Chains. *Sloan Management Review*, 26(4), 15-28.

Hakansson, Hakan. (1992). Evolution process in industrial networks. in B. Axelsson & G. Easton, *Industrial networks: A new view of reality*, London: Routledge.

Holm, Desir'ee Blankenburg, Kent Eriksson & Jan Johanson. (1996). Business networks and cooperation in international business relationships. *Journal of International Business Studies*, special issue, 1033-1049.

Holm, D.B., K. Eriksson & J. Johanson. (1999). Creating value through mutual commitment to business network relationships. *Strategic Management Journal*, 20, 467-486.

Johanson, J. & F. Weidershiem-Paul. (1975). The internationalization process of the firm - four Swedish cases. *The Journal of Management Studies*, 12(3):305-322.

Johanson, J. & L.G Mattson. (1986). International marketing and internationalization processes – A network approach. In S. Paliwoda & P. N. Turnbull, *Research in international marketing.* London: Croom Helm.

Johanson, J. & L.G Mattson. (1988). Internationalization in industrial systems-A network approach. In N. Hood & J.-E. Vahlne, *Strategies in global competition*. London: Croom Helm.

Johanson, J. & L.G Mattson. (1992). Network positions and strategic action– An analytical framework. in B. Axelsson & G. Easton, *Industrial networks: A new view of reality.* London: Routledge.

Johanson, J. & J. –E. Vahlne. (1977). The internationalization process of the firm: a model of knowledge development and increasing foreign commitments. *Journal of International Business Studies*, 8 (spring/Summer), 23-32..

Johanson, J. & J. –E. Vahlne. (1990). The mechanism of internationalization.

International Management Review, 7(4): 11-24.

Lin, An-Lon, 1995, "Trade Effects of Foreign Direct Investment: Evidence from Taiwan with Four ASEAN Countries," Weltwirtschaftliches Archiv, 131(4), pp.737-747.

Madhaven, R, B.R. Koda & J.E. Prescott. (1998). Networks in transition: How industry events reshape intrafirm relationships. *Strategic Management Journal,* 19, 439-459.

Porter, Michael (1991). Towards a dynamic theory of strategy. *Strategic Management Journal*, 12, 95-117.

Rumbelt, R.P. (1984) Toward a strategic theory of the firm. In R.B. Lamb (ed.) *Competitive Strategic Management*, Englewood Cliff, NJ: Prentice Hall, 556-571.

Zander, Ivo. (1999). Where to the multinational? The evolution of technological capabilities in the multinational network. *International Business Review*, 8, 261-291.