

Locational flexibility of the manufacturing multinational enterprise: a framework and two case studies

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Abstract

In this paper, I try to develop a framework, which presents the factors influencing the locational flexibility of a multinational enterprise (the difficulty/ease with which it can transfer its manufacturing activity from the initial host territory to another territory). I differentiate five factors: (1) the nature (generic vs. specific) of the territorial resources used by the multinational's subsidiary; (2) market access offered by production in the host territory; (3) the durability and specificity of the assets owned by the multinational enterprise in the host territory; (4) other barriers making exit out of the host territory difficult (redundancy costs, interrelatedness of the subsidiary's activity with other units of the multinational enterprise, etc.); and (5) the availability of substitute plants by the multinational enterprise that can take over the production of the host territory's subsidiary. Once the framework is presented, I use it to analyse the mobility potential of the activities of two multinational enterprises: a Taiwanese company (Nien Hsing Textile Co.) that was assembling trousers in Nicaragua (fieldwork in 1998 and 2007) and a Japanese company (Sony) that was assembling television sets and manufacturing cathode ray tubes in Wales (fieldwork in 2000-2001). The study shows the importance, in the short run, of the heaviness of the capital goods used in production as factor limiting mobility. In the long run, however, the degree of specificity (uniqueness) of the territorial resources employed by the multinational enterprise (qualified labour, specialised suppliers, etc.) is crucial. The study shows also the risk of the "no-upgrading trap" of inward manufacturing investment for peripheral host territories. Indeed, multinational enterprises that realise small profit margin activities, and in which labour costs occupy an important share in total production costs, will want to maintain their international locational flexibility to be able to respond swiftly to changes in the configuration of location advantages. Therefore, they will restrict their sunk investments (in fixed assets, in training, in collaborations with local suppliers, etc.) in the host territory. This strategy counters the local embeddedness of the subsidiary and limits its structural economic impact on the host territory.

Keywords: *delocalisation*, foreign direct investment, clothing industry, maquiladora industry, consumer electronics, Nicaragua, Wales.

1. Question and methodology

1.1. Question

Economic globalisation is associated with volatility of the firm's environment and within that environment short term profitability, speed of reaction and flexibility¹ of the firm are crucial (Krugman, 2005; Michalet, 2004; Buckley and Casson, 1998). In this paper, we look more closely at one kind of flexibility: *locational* flexibility or mobility capacity of the manufacturing multinational enterprise (MNE) (the difficulty/ease with which it can transfer its manufacturing activity from the initial host territory to another territory²). The wish of the MNE to maintain its *locational* flexibility can counter the integration of its production facility (the subsidiary) into the host territory (Krifa and Héran, 1999; Fröbel *et al.*, 1980).

In order to study the question of the *locational* flexibility of the MNE, I will first present a framework which describes the factors this capacity depends on. I will then use it to analyse two very different subsidiaries:

- 1/ The *maquiladora* subsidiary of a Taiwanese clothing manufacturing company (Nien Hsing Textile Co.) in Nicaragua (assembly of trousers) in 1998 and 2007.
- 2/ Sony's manufacturing subsidiary in Wales (Sony Manufacturing UK) (assembly of television sets and manufacturing of cathode ray tubes) in 2000-2001.

I realized the fieldwork (corporate and expert interviews, recollecting data) during various stays in Nicaragua and Wales in the years mentioned above. This allowed me to directly observe the subsidiary and its context, and to speak with the actors involved (managers, trade union representatives, government workers, researchers, etc.) and get their feedback (see Helper, 2000; Schoenberger, 1991)³.

¹ Buckley and Casson (1998: 23) define flexibility as "the ability to reallocate resources quickly and smoothly in response to change".

² Such a transfer of the manufacturing activity can have very different implications for the plant of the MNE: it may suppose the transfer of one of its various product lines (i.e. a multi-product plant losing the assignment to manufacture one product) or, in the worst case, it may imply the closure of the plant (i.e. a mono-product plant losing the assignment of the only product it was manufacturing).

³ As S. Helper (2000) pertinently observes in her defence of field research as a research method, one of A. Smith's "The wealth of nations" central ideas – the advantages of the division of labour – originate from the visit by the author to a pin factory.

As for the use of two cases, I think that the distance that separates them – different subsidiaries, MNEs, industries and territories – can be an element that enriches our analysis. As K. Eisenhardt (1989) remarks, use of extreme cases can render the process or phenomenon of interest more easily “observable.” Furthermore, studying two cases can make you think about new questions that would not have come forward analysing only one. Finally, the similarities found in the study of two (very) different cases may reveal something more general, something common to many manufacturing subsidiaries.

2. Framework

In this paper, I will concentrate on *selective closure*⁴, not only of a site, but also of a product line/volume (i.e. the transfer of one of the subsidiary’s product line or volume to another plant of the MNE without implying the closure of the host territory’s plant).

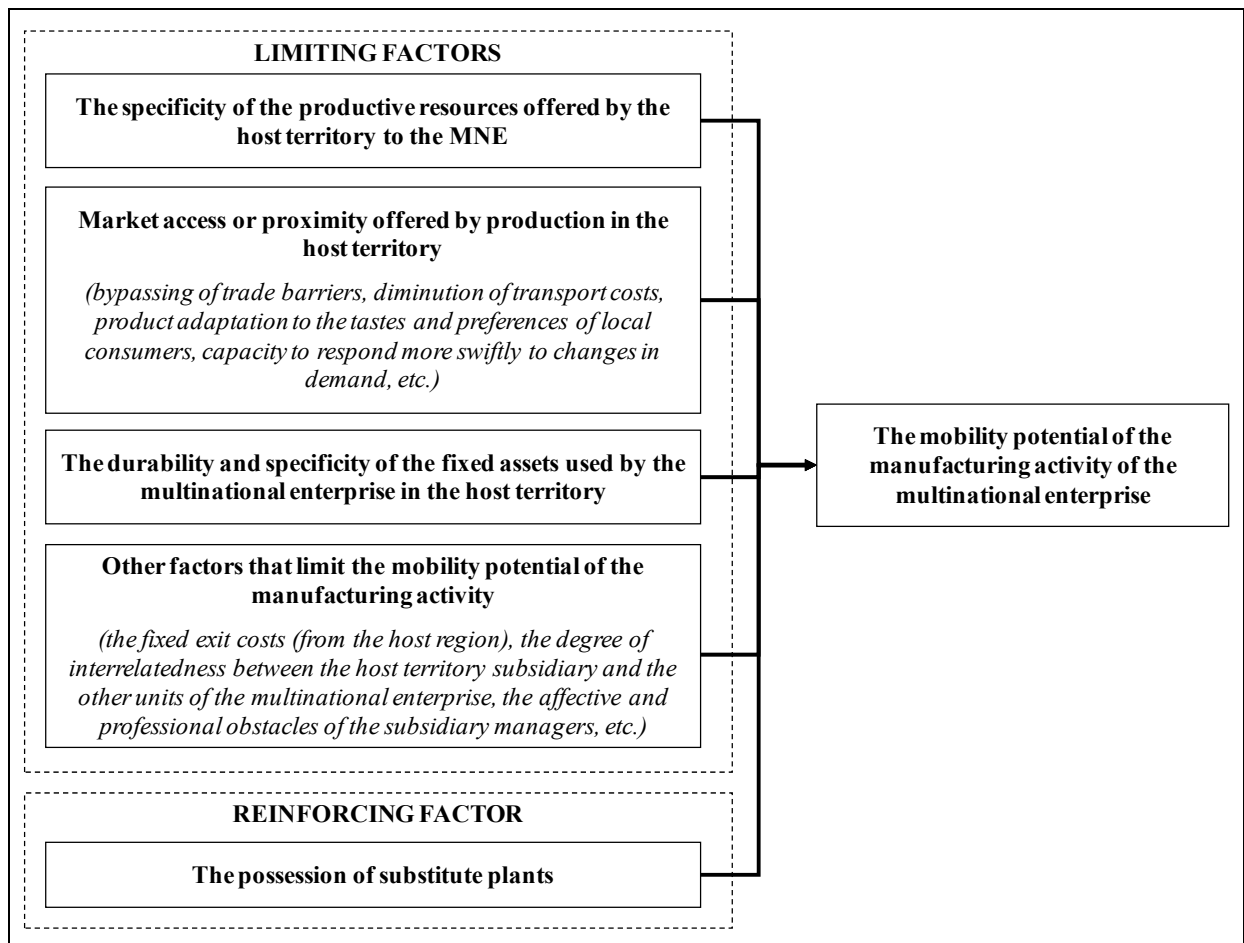
The theoretical foundation used to build this framework on are Dunning’s eclectic paradigm of international production⁵, a paper of M. Porter (1976) on exit barriers and, finally, B. Kogut’s (1985) explanation of the “operational flexibility” of the MNE (i.e. the capability of the MNE to shift its production from one place to another in response to currency changes).

Figure 1 shows the different factors influencing the mobility potential of the manufacturing activity of the MNE. I have singled out four factors limiting this potential and one reinforcing it.

⁴ Selective closure refers to the decision of a multiplant enterprise to abandon the manufacturing of a product in one of its plants while maintaining it in one or more of its other plants (Stafford, 1991).

⁵ J. Dunning’s eclectic paradigm explains why a MNE decides to produce in other country. This occurs when there is a combination of three categories of advantages: *ownership advantages* (the competitive advantage of the MNE with respect to the domestic firms of the host territory), *internalization advantages* (it must be interesting for the MNE to realize itself the production in the host territory and not subcontract it to another firm) and *location advantages* (the host territory must offer advantages to the MNE for the latter to realize production in this territory and not in another one) (Dunning, 1993). The desinvestment decision would be the other way round: when one of these three advantages ceases to exist, the MNE will, in the long run, stop its production in the host territory (Boddewyn, 1983).

Figure 1: The factors influencing the mobility potential of the manufacturing activity of the MNE



Let us explain some of these factors influencing the *locational* flexibility of the MNE.

2.1. Territorial resources: specific or generic?

We are in the presence of *specific territorial resources* when the activity carried out by the MNE depends on resources that are specific to the host territory (e.g. particular knowledge and skills of the workforce, collaboration with suppliers of complex components or with research centres) (Benko and Pecqueur, 2001). M. Storper (1997: 21) talks about a “territorialized” activity: an activity whose economic viability depends on resources “that are not available in many places and that cannot easily or quickly be created or imitated in places that lack them”. If the activity of the MNE uses such specific territorial resources, it will be difficult to transfer it to another territory.

The *generic territorial resources*, on the other hand, do not enable the host territory to differentiate itself from other territories in the field of the inputs needed by the MNE. The territorial resources employed by the enterprise exist in many other regions. For example,

unskilled labour doing a simple and routine task, such as sewing a T-shirt, is a typical generic (ubiquitous) territorial resource which can be found nearly everywhere in the world (Benko, 2001). As a result, such a territorial resource does not restrict the locational flexibility of the activity of the MNE.

The entirely generic and entirely specific territorial resources are at both ends of a scale on which the degree of specificity of the territorial resources can be measured. The higher the specificity of the territorial resources used by the MNE, the more limited the number of places capable of hosting its activity.

2.2. Market access or proximity

Market access (e.g. the bypassing of trade barriers, the diminution of transport costs) or market proximity (e.g. the reduction of the time needed to respond to changes in demand, the adaptation of the product to the preferences of local consumers) that the production in the host territory offers to the MNE may limit the range of places where its manufacturing activity may be located. This factor is often the first condition that must be satisfied for the MNE to consider producing in the host territory (Michalet, 1999).

2.3. Durable and specific assets

When the MNE considers leaving a territory, it must think of what it will do with the fixed assets (such as equipments and buildings) it owns in that territory and that are not yet depreciated. It may resell them or transfer them (use them in another place), but this is not always possible. Some fixed assets are specific to a particular enterprise and to a particular location⁶ (Porter, 1976).

The more specific the fixed assets used in the host territory, the higher the cost implied by their resale (book losses) or their transfer to another place (dismantling, transporting and reinstalling) is, in proportion to the net book value of the assets in question⁷. The more durable the specific fixed assets are, i.e. the longer their useful economic life is, the greater the number of years during which this effect of specificity will be felt.

⁶ The typical example of a durable and specific asset is that of some heavy indivisible equipment used to make a particular product with its own design.

⁷ The net book value of a fixed asset corresponds to its purchase value minus its depreciation. The book losses are the difference between the net book value and the resale value.

These exit costs may force the MNE to stay, in the short run, in the host territory even if the latter has lost, as a result of a change in the economic and political environment (e.g. an enlargement of the trading block which the host territory is part of, an appreciation of the currency of the host country) its location advantages for the MNE⁸. Only once the specific fixed assets are depreciated, can the MNE respond, without book losses, to the changes in the configuration of the location advantages⁹.

2.4. Other factors limiting the mobility potential of the manufacturing activity of the MNE

By relying upon M. Porter (1976), J. Boddewyn (1983) and H. Krifa and F. Héran (1999), we can mention other factors that hinder exit of the MNE activity from the host territory – factors that impede the enterprise to respond swiftly to a new configuration of location advantages – namely:

- *The “fixed exit costs” from the host territory.* That is, the costs associated with the closure or sale of the subsidiary or the shutdown of one of its manufacturing activities (e.g. redundancy payments, (partial) refund of the grants given by the authorities).
- *The interrelatedness of the subsidiary activity with other units of the MNE.* If the subsidiary realizes an activity, which other units of the MNE depend on (it is, for example, the only unit making an essential component), the shutdown of the latter will require an important reorganization within the MNE.
- *Affective and professional obstacles of the managers* (e.g. the subsidiary managers’ attachment to a site, their reluctance to make workers redundant)¹⁰.
- *The pressures (restrictive measures or threats) of the host territory authorities.*

⁸ The MNE will decide to produce in a territory insofar as the latter offers location advantages, i.e. advantages in comparison with other territories in the fields (1) of the cost and of the quality of the territorial resources (labour cost, competitiveness of the local suppliers, presence of skilled and experienced technicians for the maintenance of the machines, etc.) and/or (2) of the access to a market (reduction in transport costs, bypassing of trade barriers, etc.).

⁹ I use M. Porter’s explanation (1976) of the role played by durable and specific assets as barrier to exit from a business. This explanation can also be applied to the exit from a territory (see Boddewyn, 1983; Krifa and Héran, 1999).

¹⁰ Let us note, however, that the final decision as regards the closure of a production line or a subsidiary is generally taken in the corporate headquarters by people who are far away from the victims of the closure (see Layan, 2005).

2.5. Possession of substitute plants

The MNE will be able to transfer its production more easily out of the host territory, if it possesses plants in other territories, which (1) make the same kind of products as the plant in the host territory and (2) have access to the same market as the latter. Centralization of product development (so that the different plants produce a relatively homogeneous product) and of the sourcing of components (so that the key components are provided by the same suppliers to the different plants) will facilitate this *locational* flexibility within the MNE (Rangan, 1998).

Plant scale economies¹¹ may forbid the existence of substitute plants. Indeed, if plant scale economies are important, it can be better for the MNE to concentrate its production in one single plant (at the level of the regional economic block or at the world level) to be able to reach a sufficiently high level of production to use up these economies (Kogut, 1985).

3. Two case studies

This section presents each host territory and subsidiary and explains the parent's company motivations to produce in the host territory. Table 1 presents an overview of the two cases.

Table 1: The two subsidiaries: an overview

	The <i>maquiladora</i> subsidiary (Nien Hsing Textile Co.) (2007)	Sony Manufacturing UK (2000-2001)
Realization of the field study	Summer 1998 and March 2007	Summer 2000 till summer 2001
Host country	Developing country (Nicaragua)	Developed country (United Kingdom)
Policy for attracting FDI	Active policy via preferential advantages offered to the foreign investor in the framework of the export processing zone regime.	Active policy via, among other things, subsidies, loans and preferential conditions, site development, training of employees and local suppliers to subsidiaries
Industry	Textile-clothing	Consumer electronics
MNE to which the subsidiary belongs	Taiwanese subcontracting company that manufactures clothing (jeans) for retailers, branded manufacturers and branded marketers	One of the largest global consumer electronics companies
Degree of competition in the MNE's product market	Strong competition (in price) in the market for the apparel assembly service	<ul style="list-style-type: none"> – Strong competition in the market for televisions and computer monitors – Less strong competition in the

¹¹ There are plant scale economies when an increase in the size of the plant (and therefore of the plant's production level) allows a reduction in the average production costs. These plant scale economies differ from the firm scale economies that refer to the relations between the average costs and the size of the legal unit (the firm) instead of the production unit (the plant) (Morvan, 1991: 224).

		professional camera market
Principal motivation for investment in the host territory	Access to the US market (essentially to circumvent trade barriers)	Access to the European Union market (to circumvent trade barriers and to reduce transport costs)
Date of start of production in the host territory	1993 ^(a)	1974
Number of different products manufactured in the subsidiary	One (trousers or shorts)	Diverse (cathode ray tubes, televisions, computer monitors and professional cameras)
Operations performed in the subsidiary	<ul style="list-style-type: none"> – Assembly of the trouser (fabric cutting, washing, buttoning, ironing, packaging) – Dyeing and printing of fabric (for casual trousers) – Manufacturing of cardboard boxes 	<ul style="list-style-type: none"> – Manufacturing of cathode ray tubes – Assembly of televisions, computer monitors and professional cameras – Design and development (design of new television models)
Investments made in the host territory	Low and in “light” capital goods (sewing machines, button-placing machines, washing machines, etc.)	High and, in regard to cathode ray tube production, in “heavy” capital goods (ovens, etc.)
Relations with local suppliers of intermediary inputs	Nearly totally absent	Existant
Positions of responsibility in the subsidiary	Occupied by expatriates	Occupied by expatriates and national officials

Note: (a) Date of the installation of the first Nien Hsing Textile Co. plant in Nicaragua, in the “Las Mercedes” free trade zone of Managua.

3.1. The maquiladora subsidiary (Nien Hsing Textile Co.) in Nicaragua (2007)

Nicaragua is a Central American country¹² of some 5.75 million inhabitants (as of 2005). The economic situation of the country is difficult: with a GDP per capita of US\$850 in 2005, it is one of the poorest countries in Latin America¹³ (Banco Central de Nicaragua, 2007). The Nicaraguan manufacturing industry is poorly developed: the stock of capital goods is old, it imports a high proportion of intermediary inputs and capital goods, and it often has difficulties competing with foreign enterprises (including the Central Americans) (CADIN, 2001; PEMCE, 2006). Since the beginning of the 1990’s, the Nicaraguan governing authorities have used the instrument of the export processing zone or “export industrial free trade zones” (*zonas francas industriales de exportación*) to attract foreign manufacturing investments and to promote manufacturing exports. The totality of the firms of the export processing zones contributed, in 2006, to 4,7% of Nicaraguan GDP (CEPAL, 2007).

Nien Hsing Textile Co. is a large Taiwanese MNE of the textile-clothing industry. It is vertically integrated and carries out the production of denim fabric and the manufacture of

¹² Five countries form Central America: Guatemala, El Salvador, Honduras, Nicaragua and Costa Rica.

¹³ Due to its recent turbulent history (the Sandinista revolution at the end of the 1970’s, the war against the Contras, the socialization of the economy, the capital flight and the hyper-inflation in the 1980’s, the disappearance of the cotton activity, the difficult transition from a socialist to a market economy at the start of the 1990’s, etc.), Nicaragua’s real GDP in 1999 was 18% lower than it was in 1977 (CADIN, 2001).

jeans and tweed (casual) trousers. As the majority of the other Asian subcontracting enterprises in the clothing industry, it offers to its clients (VF Jeans (Lee, Wrangler), Tommy Hilfiger Jeans, Levi Strauss, The Gap, Wal-Mart, etc.) the full-package subcontracting modality¹⁴. On a world level, Nien Hsing Textile Co. had, in 2007, more than 60.000 employees distributed in seven countries¹⁵.

Nien Hsing Textile Co. had seven factories in Nicaragua (see Table 2): six in two different export processing zones¹⁶ and one (the dyeing mill) as an “isolated” factory also benefitting from the free trade zone regime. They were all situated in the outskirts of the capital Managua. The Nicaraguan plants concentrated only on manufacturing and lacked higher-level administrative functions such as sales, marketing, R&D, etc. which were done in other sites of the MNE (Taiwan, United States). In 2007, the seven plants employed in total some 16.000 workers.

Table 2: The plants of Nien Hsing Textile Co. in Nicaragua (2007)

Plants of Nien Hsing Textile Co. in the free trade zone “Las Mercedes”				
	Henry Garments	Chih Hsing	Nien Hsing Garments	
Products	Trousers, shorts (jeans)	Trousers, shorts (jeans)	Trousers, shorts (jeans)	
Employment (December 2006)	2.867	2.784	3.042	
Establishment date of the plant	1995	1997	1994	
Plants of Nien Hsing Textile Co. outside the free trade zone “Las Mercedes”				
	Plants of Nien Hsing Textile Co. in the free trade zone “Saratoga”			Alpha Textil
	Chao Hsing	John Garments	Cartonera industrial	
Products	Trousers, shorts (tweed)	Trousers, shorts (tweed)	Cardboard boxes	Dyeing and printing of fabric
Employment (December 2006)	3.412	3.856	97	238
Establishment date of the plant	1999	2001	2002	2002

Source : *Comisión Nacional de Zonas Francas and consolidated financial statements for the years 2007 and 2006 of Nien Hsing Textile Co.*

¹⁴ This is a modality where the subcontracting enterprise is responsible of the entire manufacturing of the client’s item. It receives the item’s design from the client, manufactures or buys the necessary intermediary inputs, cuts the fabric, sews the garment, and exports it to its client.

¹⁵ Webpage of Nien Hsing Textile Co. (<http://www.nht.com.tw/en/>), consolidated financial statements for the years 2007 and 2006 of Nien Hsing Textile Co.

¹⁶ “(The export processing zone is an industrial zone), the purpose of which is to attract export-oriented industries, by offering them especially favourable investment and trade conditions as compared with the remainder of the host country.” UNIDO (1980), “Export processing zones in developing countries”, *UNIDO working paper on structural change* 19 (cited in Dicken, 1998).

Labour costs are crucial in the labour intensive clothing industry, especially of standardised garments (e.g. T-shirts, knit-shirts, jeans and tweed trousers)¹⁷. Nonetheless, Nien Hsing Textile Co. did not decide to assemble trousers in Nicaragua because of labour costs: wages were lower in China, Vietnam and Cambodia. The main reason why it located in Nicaragua was that production in this country allowed it to circumvent US trade barriers. Contrary to Asian countries, Nicaragua, as well as the other Central American countries and the Dominican Republic, benefits from a free trade agreement with the United States: the DR-CAFTA¹⁸. This agreement offers a tariff free access to the US market.

Nicaragua has an additional advantage with respect to its neighbouring countries. It is the only country in the DR-CAFTA area which can export a substantial share of its clothing items to the United States without having to respect the rule of origin. That is, a share of its clothing items may use Asian fabric (up to 100 million square metres of fabric per year) without having to pay tariffs on the value of this fabric when it enters the United States. These square metres of Asian fabric exempted from tariffs are called Trade Preferential Levels (TPLs). The TPLs will disappear in 2016. However, all the clothing categories do not benefit in the same way of the TPLs. The firm that manufactures trousers and shorts must respect “the 1:1 requirement” to qualify for the TPLs. That is, for each m² of trouser or short made with Asian fabric, it must also export one m² of pant or short made with US (more expensive) fabric until a specific annual quantity.

Another advantage provided by a production location in Nicaragua is that this country will be allowed, just as Honduras, to maintain its free trade zones regime after 2009¹⁹. The other DR-CAFTA countries will then be forced to abandon this regime (Sánchez and Vos, 2006; Padilla *et al.*, 2008).

¹⁷ The cost structure of a full-package jeans assembled in Nicaragua is approximately: 50% fabric cost; 25% assembly cost (cut, make and trim) and 25% the rest (trimmings cost (pocket, thread, zippers, buttons, etc.), transport cost, depreciation, profit margin of profit, etc.) (Interviews and O'Rourke Group, 2002, cited in Abernathy *et al.*, 2005).

¹⁸ In fact, the DR-CAFTA is a collection of specific bilateral trade agreements (involving each country with the United States) and not, as the name seems to indicate, a customs union between the seven countries. The free trade agreement between the United States and Nicaragua entered into force in April 2006.

¹⁹ The World Trade Organisation wants to prohibit the industrial export processing zones regimes, because it considers that they infringe the rules of a free international trade. They are considered as a form of export subsidy. Poor countries (GDP per capita less than US \$ 1,000 in US \$ constant of 1990) will be the only countries authorized to maintain their export processing zones after 2009 (Sánchez and Vos, 2006; Padilla *et al.*, 2008).

3.2. Sony Manufacturing UK in Wales (2000-2001)

Wales, an old mining country of some 3 million inhabitants, is one of the poorest regions of the United Kingdom²⁰. It hosted many manufacturing subsidiaries (mainly from the electric and electronic goods industry (Sony, Matsushita, LG-Philips,...) and the automobile industry (Ford, Bosch,...)) at the turn of the century. In 1999, their activities contributed to 11% of Welsh GDP²¹. The important presence of multinational enterprises in Wales was explained, in large part, by the regional development policy followed by the authorities. This policy was mainly oriented towards the attraction (through grants and financial incentives for the foreign investor) of foreign direct investment (Phelps *et al.*, 1998; Lovering, 1999; (Munday *et al.*, 1999).

Sony – the Japanese consumer electronics enterprise – owned two manufacturing plants in South Wales (see Table 3). My interest focused on what were its two main manufacturing activities in 2000-2001: the assembly of television sets²² and the manufacturing of cathode ray tubes (the main component of the television set). The subsidiary possessed also a design and development department (design of new television set models).

Table 3: Sony Manufacturing UK (2000)

	Sony-Bridgend	Sony-Pencoed
Production (2000)	Cathode ray tubes: ± 3 million units/year	Television sets: ± 800.000 units/year Computer monitors: ± 600.000 units/year Professional broadcast cameras: 5-6 units/day
Employment (December 2000)	1.300 persons	1.600 persons
Establishment date of the plant	1974	1992

Sources: Interviews at Sony and at the Welsh Development Agency and Sony-Bridgend's web page (<http://www.bgd.sony.co.uk/aboutus.htm>).

The main reasons that explain why Sony decided to manufacture its television sets (since 1974) and its cathode ray tubes (since 1982) in Europe were (Abo, 1989; Jie-A-Joen *et al.*, 1998):

²⁰ Welsh GDP per head represented around 80% of the United Kingdom GDP per head.

²¹ Slides of a presentation made by S. Hill (Changing Wales, 26/4/2000).

²² When this research was made, Sony was not yet manufacturing flat-panel television sets (liquid crystal display or plasma) in Europe. Thus, when we talk about “television set” in this article we refer to the television set using a cathode ray tube.

- the existence of European trade barriers (tariffs, the necessity to respect the minimum local contents for its television sets assembled in Europe – the cathode ray tube represents around 50% of the production cost of the television set);
- the relatively high transport costs of the television sets and the cathode ray tubes (especially the large size ones);
- the fact that European production enabled it to adapt its production to the tastes and preferences of the European consumers and to respond swiftly to changes in demand.

In 1974, Sony opened the Bridgend plant – Sony’s first manufacturing subsidiary in Europe – to assemble television sets for the UK and other European countries. The choice for a Welsh location can be explained, among other things, by the fact that a British site could be used as an exportation platform to the other European Common Market countries, the British market was relatively important, and Wales was well linked to important British cities and ports. The incentives offered by the Welsh government to Sony (lease of land and buildings and low interest-rate loan) also played a significant role (Abo, 1989; Escobar Rodriguez, 1999: 60). The permanence of the benevolent attitude of the public authorities²³ contributes to explain why Sony continued to realize important investments in Wales until the end of the 1990s (setting up of the production line of cathode ray tubes in 1982, building of the Pencoed plant in 1992, etc.).

4. Mobility potential of the manufacturing activities of the two subsidiaries

Let us now analyse, with the help of the framework presented in the second section, the mobility potential of the two subsidiaries’ main manufacturing activities (on the one hand, the assembly of trousers and, on the other hand, the assembly of television sets and the manufacturing of cathode ray tubes).

4.1. Territorial resources 1: employees

Nien Hsing Textile Co.’s Nicaraguan plants employed essentially low-qualified local workers. High labour turnover by the shop floor workers²⁴ seems to indicate that losing these workers’ knowledge did not preoccupy the plants’ managers. The high and middle management posts

²³ Sony is the Japanese enterprise established in Wales that received most public grants (Regional Selective Assistance, Regional Development Grants) (Munday *et al.*, 1995).

²⁴ In January 2007, 10% of the employees of Chih Hsing plant of Nien Hsing Textile Co. were replaced.

(plant production manager, division managers, and line managers) were almost exclusively occupied by expatriates (Taiwanese and mainland Chinese).

The knowledge required by the shop floor workers of television set assembly in Sony-Pencoed differed according to the stage. In the first stage of the television set's assembly process – automatic insertion – the worker had to possess a diagnosis capacity and know how the machines worked. That is why the level of knowledge required was higher in this stage than in the two subsequent (manual) stages of the television sets' assembly – manual insertion and final assembly – where most workers were employed (Escobar Rodriguez, 1999; Wilkinson *et al.*, 2001).

For his part, the Bridgend shop floor worker, who participated in the manufacturing of cathode ray tubes, did possess a diagnosis capacity in order to see when the automatic production process had a problem. This capacity required more training and experience than that possessed by the majority of the workers on the television sets' assembly line²⁵. Given the higher complexity of the production process, more engineers and other highly skilled technical personnel had to be offered by the host territory in cathode ray tube manufacturing than in television set assembly (Kenney, 1999). Furthermore, as with the shop floor workers, this higher complexity of production made the learning process by engineers longer than in television set assembly.

4.2. Territorial resources 2: local suppliers

Nien Hsing Textile Co.'s Nicaraguan plants practically did not have any relations with local enterprises: they imported, with the exception of the pumice stone²⁶ and the cardboard boxes, the intermediary material inputs (fabric, buttons, zippers, thread, etc.) and the capital goods (sewing machines, washing machines, etc.) used in production. (The cardboard boxes were manufactured by Nien Hsing Textile Co. in its Nicaraguan plant *Cartonera Industrial* (see Table 2).) In addition, they did not carry out any process subcontracting (sewing, washing, ironing or packaging) among local enterprises or family workshops.

²⁵ Actually, we have to be careful when we generalize conclusions concerning the shop floor workers' knowledge; they do not form a homogeneous group even within the same stage of the production process: the knowledge needed by a first-line supervisor is not the same as that needed by a worker performing a simple, *routinized* assembly task. Still, we believe that, in great lines, we can distinguish the knowledge requirements of the two Sony plants.

²⁶ The pumice stone is a white volcanic stone, added to the jeans in the washing machine, that serves to discolour and age the jeans. The pumice stone comes from a Nicaraguan volcanic region.

Sony Manufacturing UK (Pencoed and Bridgend) did have local suppliers (indigenous suppliers and foreign capital suppliers set up in Wales). Experts underscored the quality of the linkages between Sony Manufacturing UK and its local suppliers (Cooke and Morgan, 1998; Potter, 2003). However, the indigenous suppliers were suppliers of relatively simple material inputs: plastic mouldings, metal pressings, packing material, and printed matter. The key components came from Sony's other plants or from global suppliers (suppliers who also sell to Sony's other manufacturing plants)²⁷. The foreign capital local suppliers (generally Japanese) were usually accompanying suppliers of one or several Japanese OEM enterprises settled in Wales (e.g. Sony, Matsushita, Sharp). They delivered glass (for the cathode ray tube), plastic mouldings, wire harnesses, electronic components, and pressure injection plastic moulds (to make the television set and monitor cabinets) to Sony Manufacturing UK. The local suppliers limited thus only slightly the mobility potential of Sony's two manufacturing activities (the indigenous suppliers offered essentially material inputs that suppliers from other regions were generally also able to offer; the key components came from Sony's other plants or from global suppliers; the Japanese suppliers' plants set up in Wales belonged to enterprises capable of accompanying their customer(s) to a new location). Furthermore, the tools that enabled the local suppliers to manufacture Sony's specific components (e.g. the mould used in the manufacture of the cabinet, the tool necessary for the production of a metal part) belonged to Sony, contributing to the latter's locational flexibility²⁸.

4.3. Market access

As we already commented, the main location advantage of Nicaragua for Nien Hsing Textile Co. was that it offered a tariff free access to the US market (DR-CAFTA and TPLs). However, before January 1, 2005, the Multi-Fibre Arrangement regulated international trade in the textile-clothing industry²⁹, and the Nicaraguan location advantage for Asian clothing firms was even stronger with respect to Asian countries than in 2007: it allowed, contrary to

²⁷ Significant economies of scale, specialized knowledge, reduction of transport costs and coordination and reduction of trade barriers encourage centralization, on a global scale, of the production of a large number of components. In addition, such global supply allows the MNE to realise purchasing economies: by buying a specific component for all of its production units from one supplier, it acquires significant negotiating power that allows negotiation of a preferential agreements (see, among others, Munday, 1995; Turok, 1993; Brown *et al.*, 2000; Sturgeon and Lester, 2003).

²⁸ If, for example, Sony decided to transfer the production of a television set model from Pencoed to Barcelona, it was also able to transfer that of the cabinet of this model. It would only need to take back the mould from its supplier in Wales to give it to one of its suppliers in Spain (see Brown *et al.*, 2000).

²⁹ To be more precise, the Agreement on Textiles and Clothing replaced the Multi-Fiber Arrangement regime in 1995 and organized the gradual phase-out of quotas over a 10-year period (from 1995 until 2005).

Asian countries, a quota free access to the US market (ILO, 1997). Proximity to the US market has never been especially relevant: unlike differentiated garments (i.e. fashion garments for women) ordered in small series, proximity of assembly to the market is not that important for a standardised garment such as jeans trousers produced in large series and where price competitiveness is crucial (Padilla *et al.*, 2008; Gereffi and Memedovic, 2003; Dicken, 2007)³⁰.

In the nineties, Wales saw one of its main location advantages for foreign investors – the preferential access to the European Union market – weaken. The Central and Eastern European countries, where wages were lower, had now the same access to this market. Sony had at its disposal a wider range of possible production locations in Europe. In this new environment, the assembly of television sets in Pencoed was still partly protected by the market proximity factor: the high transport costs of the large screen television sets (and cathode ray tubes). This explains why, in 2000, Sony's European headquarters of the television sets business unit decided that this plant, situated close to Bridgend's tube plant, would specialize in the production of large screen television sets. These sets were mostly sold in the British Isles and Northern Europe.

4.4. Durable and specific assets

As the other enterprises operating in the Nicaraguan export processing zones, Nien Hsing Textile Co. rented its buildings³¹. Only the buildings of the dyeing mill (*Alpha Textil*), located outside an export processing zone, belonged to the Taiwanese MNE. Furthermore, it used light capital goods (i.e. sewing machines, washing machines) that were often easy to transport and quickly depreciated³².

Sony's capital goods used in the assembly of television sets (essentially, the conveyor belts and the automatic insertion and control machines) were easily transportable. The trade

³⁰ The absence of local suppliers is also a factor that limits the capacity of the *maquiladora* firm to respond rapidly to changes in demand as well as to operate in just in time. Without local suppliers, it needs to maintain important inventories of intermediate goods (Padilla *et al.*, 2008; Abernathy *et al.*, 2005; Condo *et al.*, 2004).

³¹ As the former executive secretary of the manager of the public export processing zone (*zona franca Las Mercedes*) laconically commented (interview), the foreign *maquiladoras* companies have to be offered the buildings in the free trade zones for rent, because otherwise they would not come: "the building cannot be taken off elsewhere, while the machines can."

³² In this regard, an employee of the public export processing zone (*zona franca Las Mercedes*) affirmed (interview) that "if one wants it, one puts the machines in a container and they are ready to be shipped to another country".

unions' representatives³³ talked about a television sets' assembly line that was like a *meccano*: it could easily be dismantled and then reassembled in another place. The expensive and immobile capital goods (i.e. the big ovens used to weld the glass³⁴) used in the manufacturing of cathode ray tubes could not be easily sold or transferred to another place: they were specific (to a production and to a place) and durable³⁵.

4.5. Possession of substitute plants

Nien Hsing Textile Co. had plants assembling trousers in Lesotho, Mexico and opened and bought, in 2006, three factories in Vietnam and Cambodia. The latter were located farther away from the US market than the Nicaraguan plants, and these two Asian countries did not benefit from the trade policy advantages that Nicaragua offered, but they had significantly lower labour costs.

In 2000-2001, Sony possessed three European plants assembling television sets: in Wales (Pencoed), in Spain (Barcelona), and in Slovakia (Trnava). There were thus alternative sites that could take over Sony-Pencoed's activity. The transfer of the production of small and medium screen television set models from the Pencoed plant to the Barcelona and Trnava plants, which took place in 2000, corroborates this operational flexibility³⁶. For its part, Sony-Bridgend had the advantage of being Sony's only European plant manufacturing cathode ray tubes. This was due to the important plant scale economies existing in this production. Economically speaking, it did not make sense for Sony to have two plants manufacturing cathode ray tubes in Europe³⁷. Furthermore, the Bridgend plant was protected from Sony's non-European plants that manufacture cathode ray tubes, by the European tariffs and the rather high transport costs (especially for large size tubes) of this component.

³³ Interview.

³⁴ A new tube factory costed around US\$150 million (Khurana, 1999).

³⁵ As an ex-manager of Sony Manufacturing UK pointed out (interview), "you can't move Bridgend; it's a building".

³⁶ This entailed a reduction of the production of one million television sets per year in Pencoed and the loss of nearly 500 jobs..

³⁷ A. Khurana (1999) situated the optimal scale of production (at the level of the plant) of cathode ray tubes – the minimum production level that a plant must reach to be able to produce at the lowest possible unit cost – at around 2-3 million tubes per year. In the assembly of television sets, this optimal scale of production is estimated to be only about 400.000 units per year (Dicken, 1998).

4.6. Summary

We can see that if there was any change in the configuration of the location advantages, Nien Hsing Textile Co. could easily take off towards other horizons: it did not depend on specific Nicaraguan location advantages, its sunk investments³⁸ in this country were low (and redundancy costs were low (MEC, 2003)). That is why the *maquiladora* firms such as the Nien Hsing Textile Co.'s plants were frequently called "swallow firms" (*empresas golondrinas*) in the Caribbean Basin.

As for Sony, the assembly of television sets was the activity that could most easily be transferred to another territory. The manufacturing of cathode ray tubes was anchored in the host territory, in great part, thanks to the heavy capital goods used in production.

5. Final thoughts

5.1. Cost competition and absence of embeddedness

In both cases, there was a vigorous cost competition in the MNE's product market (the jeans' assembly service and the television set).

One may wonder if such a vigorous cost competition doesn't constitute a barrier to the embeddedness of the MNE's subsidiary within the host economy.

Given its narrow profit margin, Nien Hsing Textile Co. was very sensitive to small changes in wages costs in trouser assembly, the costs of intermediate inputs, and the prices of the full-package service. Besides, the location advantages of Nicaragua were fragile for Nien Hsing Textile Co.: they were "political" or artificial. All this helps to explain why Nien Hsing Textile Co. wanted to retain its locational flexibility. Making significant investments in heavy capital goods (spinning machine, weaving machine etc.), establishing long-term economic linkages with the local suppliers, and employing and training local managers would be in contradiction with this determination to maintain the international mobility of its

³⁸ Sunk cost (or investment) is a cost which, once it has been incurred, cannot be recovered by means of sale or transfer (the use, by the firm, of the acquired capital good in another activity or another place).

manufacturing activities (see Madani, 1999). This wish must partly explain why there had not been any genuine upgrading of Nien Hsing Textile Co. in Nicaragua (van Wunnik, 2001).

As for Sony Manufacturing UK, its profit margin on the production of tube television sets was also narrow. Furthermore, this production was characterized by a relatively high weight of wage costs in the production costs (they represented roughly 10% of the total production cost of a tube television set). Such a proportion forces the MNE to be able to *delocalise* the production of such a good to low-wage countries, which have access to the same market³⁹ (Pottier, 2003). Perhaps this explains why the status of Sony Manufacturing UK's indigenous suppliers did not evolve in the nineties: they remained suppliers of simple and bulky material inputs at satisfactory conditions for Sony Manufacturing UK (just in time delivery if necessary, no inward inspection and low cost) by suppliers that did not design the component (Sony came to the supplier with the blueprint) (Escobar Rodriguez, 1999; Williams, 1999). Sony did not need other indigenous suppliers. Pressures to minimize costs (the procurement costs of components represent an important part of the total production cost) favoured global sourcing. This, combined with the use of Japanese accompanying suppliers in Wales, left little room for a quantitative and qualitative development of Sony's relations with indigenous suppliers (see Brown *et al.*, 2000; Sturgeon and Lester, 2003).

5.2. FDI trap

The host territory offering specific resources to the MNE can escape, in great part, from cost competition (i.e. low wages, grants, tax exemptions, low taxes) with other territories to attract FDI. This is not the case for the host territory, which only offers generic resources. Here, competition to attract FDI will be fundamentally based on costs and market access. Furthermore, the continuation of the MNEs on its soil will also depend on "political" or artificial location advantages that are precarious, as they merely reflect a political decision. If this occurs, the MNE will not want to have an "active or constructive approach" to the host territory⁴⁰, the latter's resources will not upgrade, and the host territory will not be able to develop its resources to be able to attract another kind of MNE activities.

³⁹ Actually, this analyse should be deepened to also take into account the indirect employment wage cost – the wage costs embodied in the material inputs acquired by the MNE in the host territory (e.g. cabinets, wire harnesses).

⁴⁰ The MNE, wishing to maintain its locational flexibility, has what H. Krifa and F. Héran (1999) call a "passive approach to the territory": it limits itself to the exploitation of useful resources available in the host territory. It has no interest in building up resources in the host territory – "the active approach to the territory" – such as, for

6. Postscript

6.1. Exit of Nien Hsing Textile Co. from Nicaragua

In 2008, Nien Hsing Textile Co. closed five of its six establishments: the only one that is still open is Alpha Textile (the factory that dyes fabric and the only factory whose buildings are owned by Nien Hsing Textile Co.). Some 15.000 direct jobs were lost. It seems that the group decided to move its production base from Nicaragua to Vietnam and Cambodia (*Business Week*, 2008; Oppenheimer, 2007).

The TPLs was not a sufficient reason to continue producing in Nicaragua. Probably, the “1:1 requirement” greatly limited the advantage of the TPLs for trousers (North American fabric is more expensive than Asian fabric) (Jansen *et al.*, 2007)⁴¹. Moreover, Nicaragua has lost one of its two political location advantage over its neighbouring countries: the World Trade Organisation decided, in July 2007, to allow 19 other countries (including Costa Rica, El Salvador, Guatemala and the Dominican Republic) to keep their free trade export processing zones beyond 2009 until 2015 (Aguilera, 2007). Other factors, such as the new political context of the country (the coming to power of the Sandinista candidate, Daniel Ortega, who has good relations with Hugo Chávez) and the adverse economic situation prevalent in the United States, probably also played a part in this decision (Oppenheimer, 2007; Olivares, 2008a).

6.2. Closure of Sony-Bridgend and transfer of the television set assembly

In June 2005, tube television set assembly was transferred to Sony’s Slovakian plant in Trnava leaving Sony-Pencoed with 300 employees and the production of professional broadcast cameras and circuit boards for the flat panel television sets assembled in Sony-Barcelona (Barry, 2005a). Furthermore, cathode ray tube manufacturing had been stopped by Sony in Europe, and Sony-Bridgend closed, due to the success of the new liquid crystal and plasma display technologies. Only new investments in new product lines would have authorised a restructuring of Sony Manufacturing UK, but they did not arrive. Products have a

example, training workers exhaustively or collaborating with local suppliers in the development of complex components.

⁴¹ Nien Textile Co. did not abide by the “1:1 requirement”. Following this breach, the group saw the number of TPLs it was allocated annually diminish. This apparently speeded up its decision to relocate its production to Vietnam and Cambodia (Olivares, 2008b).

life cycle and plants have to win the next investment cycle to survive (Phelps and Fuller, 2000). This disengagement of Sony from Wales was followed by the decision of Sony's *accompanying* Japanese suppliers of glass for the cathode ray tube (Nippon Electric Glass – 590 employees) and cabinets (Mitsubishi – 129 employees) to shut their facility in Wales (Barry, 2005b; Cundy, 2005).

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