

Backward linkages of foreign subsidiaries in Guangdong, China: A country-of-origin analysis

Filip De Beule (<mailto:fيلip.debeule@ua.ac.be>)

Institute of Development Policy and Management

University of Antwerp

Venusstraat 35

2000 Antwerpen

Belgium

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INTRODUCTION

It is commonplace to mistake the size of foreign direct investment (FDI) to indicate its regional economic impact, as many newspapers and reports rave or rant about the amount of FDI received. Multinational corporations (MNCs) exercise their impact on the economic development of host countries and regions through FDI. However, the size of FDI is not always commensurate with its real impact on regional economic development (Li and Yeung, 1998). This impact can be found in many aspects of the host economy, such as capital, technology, trade, industrial structure, employment (Dicken, 1992), comparative advantage, resource allocative efficiency, economies of scale and scope (Young et al., 1994), infrastructure improvement (Kueh, 1992), and economic, institutional, and legal reforms (Zhan, 1993, Lardy, 1994, Porter, 1995).

In general, host countries seek not just more foreign direct investment, but are increasingly interested in its quality in terms of benefits for sustainable economic development. One of the most important ways to tap these benefits is through production linkages between foreign affiliates and domestic firms, either backward, forward or horizontal (UNCTAD, 2001). Backward linkages refer to the purchases of primary (raw materials, such as agricultural products, minerals, etc.), secondary (parts, components, semi-finished products, etc.) and tertiary supplies (services, packaging, etc.). Forward linkages imply the marketing, sale and distribution of goods and services in the local economy. Horizontal linkages involve interactions between firms engaged in competing activities and may either have a negative or a positive impact on local business activities.

This study attempts to examine some evidence with regard to the backward linkages of foreign invested enterprises (FIEs) in the province of Guangdong, China. First, it will give an overview of some literature with regard to backward linkages of multinational companies, before drawing some hypotheses there from. The next section will describe the target region of Guangdong, with regard to the policy and impact of FDI and FIEs. The following section will describe the data, methodology and results. The final section will draw some conclusions and policy recommendations.

MULTINATIONAL COMPANIES AND BACKWARD LINKAGES

The regional economic impact can be extended through industrial linkages, particularly backward linkages by supplying materials, components, and services to MNCs' subsidiaries. The importance of such impact has been highlighted by many studies (e.g., Dicken, 1992, Kueh, 1992, Young et al., 1994, Williams, 1996, UNCTAD, 2001).

When a firm sets up shop, it has to decide whether to perform in-house production for the various production steps or to procure from outside suppliers. This is not a once-for-all decision and sometimes firms subcontract parts of the production process until they have built-up the necessary credibility or capacity to start up in-house production. More recently, however, there seems to be a general trend to focus more on core competencies allowing for increased specialisation and more outsourcing (Battat, Frank and Shen, 1996). If a firm takes on activities outside its main field of specialisation, it may overextend its organisation and reduce the efficiency and innovativeness of the internalised activity (Penrose, 1959). Independent suppliers on the other hand can enjoy significant scale economies by selling to a large number of users (Richardson, 1972).

When a greenfield affiliate is started up in a foreign host country, a large proportion of its supplies are likely to consist of imports, since it does not yet have an existing network of suppliers. Besides, the existing suppliers to that firm in the country of origin benefit from an advantage when it comes to negotiating contracts for the delivery of e.g. parts to the subsidiary. And as the extant supplier base may either hesitate to start production in the new host country of its client and will need time to actually do so, it is not altogether surprising that foreign direct investors choose to import semi-finished products and parts from their existing suppliers or group affiliates abroad (De Beule and Van Den Bulcke, 1997).

However, as plants generate their own routines, they will consider alternative suppliers in the host country both in terms of equipment and consumables. Over time, firms will be inclined to buy from local suppliers, either domestic ones or foreign companies that have followed the company that invested abroad (bandwagon effect, follow the leader, or sequential investment). MNCs will try to localise operations, as this will promote their competitiveness, for instance, by creating a cost advantage by sourcing locally instead of importing components, parts and equipment. Local sourcing can also increase flexibility of the local operations, as procurement is easier from suppliers nearby. It allows for better and faster adaptation of technologies and products to local market conditions and consumer preferences. The access to pools of external technological and human skill resources can also feed their own innovative efforts (UNCTAD, 2001). However, local sourcing can be constrained by the

lack of suppliers of key inputs; either because they are simply not present, cannot fulfil the qualitative production standards or are not competitive in terms of price (Halbach, 1989, Crone, 2000). These benefits can be derived from domestic suppliers as well as for follow-the-leader suppliers. Although possibly irrelevant to the multinational affiliate, *ceteris paribus*, not all linkages are equally beneficial for the host economy.

Foreign firms can assist prospective local or foreign suppliers to launch production, in order to provide better, cheaper or more reliable components, or to act as alternative sources so as to avoid excessive dependence on a few suppliers (Lall, 1980). Locally established suppliers or subcontractors and consequently the host country can benefit from the linkages with foreign invested enterprises in terms of employment. Local purchases by multinational affiliates of material inputs and services in the host country increases sales for local manufacturing firms, which in turn generates an additional number of jobs in the supply chain. Although the employment impact is the most important for first-tier suppliers, there does exist a trickle-down effect to lower-order suppliers in the supply chain.

A less tangible, but perhaps more important advantage for local suppliers is the diffusion of knowledge and skills (Blomström, Kokko and Zejan, 2000). Although the most innovative relationships between firms are the ones where there are reciprocal flows of knowledge in new technologies, products and organisational methods, the technologically weaker suppliers in developing countries are likely to benefit more from those technological transfers, at least if they have sufficient absorptive capacity or the MNCs themselves engage in efforts to develop this capacity.

The interactions of MNCs with suppliers can also increase the productivity and efficiency of local suppliers and consist of: helping prospective suppliers set up production facilities; demanding reliable, high quality products that are delivered on time, while providing necessary technical assistance and information to improve the products or facilitate innovations; providing training and help in management and organisation; assisting suppliers to find additional customers including other affiliates of the same group in other countries or independent external purchasers, thereby stimulating exports (UNCTAD, 2001). Other firms can also enjoy (third party) externalities and spillovers from the collocation of firms. There may also be positive demonstration effects on local firms, enterprise spin-offs, competition effects and mobility of trained employees (Markusen, 1994, Baptista, 1998). As a result there are likely to be increases in production efficiency, productivity, technological and managerial capabilities and market diversification.

However, linkages may also entail disadvantages for a host economy, related to the size and market power of foreign affiliates. The danger exists that sourcing will limit itself to unsophisticated items for mature products. As the most advanced suppliers interact increasingly with customers in developing new technologies and products, it is essential that local companies upgrade products, processes and technologies to get into the game and achieve world production standards. They can either procure new know-how from another organisation, such as a government-supported research institute, or undertake innovative activities themselves and develop the know-how internally, possibly with the assistance or guidance of foreign affiliates (White, 2000). However, the dependence on foreign companies may also stifle innovation, competition and new firm development in the host economy. If the local suppliers are dependent upon monopsonistic “flagship” affiliates, this can lead to anti-competitive practices and unfair terms and conditions for suppliers (Altenburg, 2000). This lock-in to footloose multinational affiliates can ultimately also force local suppliers to close or relocate their production activities in order to follow the lead firm to a new location.

HYPOTHESES

The propensity of foreign subsidiaries to forge local linkages will probably be affected by the motive of the MNC to invest in the host country. Foreign affiliates that are part of global production systems are likely to be more dependent upon centralised corporate sourcing policies and less able to choose suppliers freely (UNCTAD, 2001). Multi-domestic multinationals generally invest in host countries for market seeking purposes and leave more decision-making autonomy to their subsidiaries. This might explain that domestic market-oriented affiliates generally purchase more locally than export-oriented firms (Belderbos, Capannelli and Fukao, 2001). Domestic suppliers may also find it easier to serve companies that sell in the local market, because they are better acquainted with local consumer preferences and might allow foreign affiliates to adapt their products better to the local situation.

Although there might be potential benefits for foreign affiliates to source locally, it also takes time to identify domestic suppliers, especially when the needs of the MNC for the level of quality, price, quantity and other requirements have to be taken into account. This applies also for foreign suppliers establishing in the host country in order to maintain their privileged relationship with the MNC, although the issue of quality will be less relevant for those firms. One would therefore expect the percentage of local procurement to increase along with the age of the foreign subsidiary (Drifford and Mohd Noor, 1999, Turok, 1997, Halbach, 1989).

Obviously, the potential for linkages is not the same for all companies and or all industries. First, the potential for local sourcing may be different according to the sector or sub-sector. In services, the possibility of local sourcing and subcontracting to domestic firms is relatively limited, although some service industries such as construction offer considerable potential for linkages with physical input suppliers (UNCTAD, 2001). In the manufacturing sector, there will be important differences according to the labour-, capital-, resource- or technology-intensity of the sub-sector.

The next hypothesis looks at the importance of the country-of-origin. given the fact that the Overseas Chinese investors are geographically closer to the Chinese market and have a greater affinity for its cultural environment, have hometown connections, use the same language, etc., they will demonstrate a higher local sourcing activity than the investors from the US, EU and Japan (Schroath, Hu and Chen, 1993).

As large foreign affiliates are able to internalise operations better, that is, they will produce relatively more within their own plants, and local suppliers find it difficult to supply very large volumes; size might be negatively correlated to local sourcing (Barkley and McNamara, 1994, Halbach, 1989).

Although the reasons for setting up a joint venture or a wholly owned subsidiary are multiple and diverse, including control, commitment, finance and risk (Hill et al., 1990), having a partner will definitely increase local ties. A Chinese partner company will have a better knowledge of the local industry and market place, which will result in a significant impact on the degree of local sourcing. As such, wholly owned enterprises are expected to source less than joint ventures, either equity joint ventures or contractual joint ventures.

GUANGDONG PROVINCE, CHINA

China has made truly remarkable economic strides by opening its doors to foreign direct investment and engaging in policy reforms at the end of the 1970s. Leading China's bold and ambitious drive towards modernization and development has been Guangdong province, which has applied a range of reform policies that have yielded astonishing results. Guangdong is located in the Pearl River Delta of southern China, adjacent to Hong Kong and Macau. Guangdong province was transformed into an export-oriented manufacturing-based economy through processing and assembling-induced industrialization and outward-oriented commercial agriculture during the early 1980s. After investing heavily in the construction and improvement of its infrastructure, in particular transport, power suppliers and telecommunications, Guangdong increasingly focused on the development of higher value-

added and technology-intensive industries and their supporting service sectors since the mid 1990s.

The result of economic reform in Guangdong is shown by an array of extraordinary economic statistics (Table 1). The average annual growth rate from 1978 till 2002 of gross domestic product (GDP) and GDP per capita reached 13.4 and 11.3 per cent, higher than China as a whole. During a quarter century of reform in Guangdong, GDP increased twenty-fold to 1,177 billion Yuan, while GDP per capita increased thirteen-fold to 15,030 Yuan in 2002, as compared to 7,997 Yuan for the whole of China. In the case of the real value of industrial output, the average annual growth rate in Guangdong was 20.6 per cent between 1978 and 2002. In value terms it rose from approximately 20 billion to almost 2,200 billion Yuan, illustrating its rapid industrialization (Guangdong Bureau of Statistics, 2003; China Statistical Bureau, 2003). From the beginning of the so-called ‘opening up’ policy, Guangdong also attracted the highest amount of FDI in China. The contracted value of FDI in Guangdong went up enormously from about US\$ 146 million in 1979 to the all time high of US\$ 33 billion in 1993, before dropping to US\$ 6 billion in 1999 and picking up again to 16 billion by 2002. The utilized value of FDI rose from US\$ 30 million in 1979 to more than US\$ 10 billion since the mid 1990s. In 2002, the cumulative value of contracted FDI in Guangdong reached US\$ 200 billion, and the corresponding utilized value reached US\$ 125 billion. This is equivalent to 26 and 28 of the cumulative value of contracted and utilized FDI in China between 1979 and 2002. For this reason, Guangdong is sometimes called the Fifth Dragon (Sung et al., 1995), next to the better known Asian cases of Taiwan, Singapore, Hong Kong and South Korea.

Table 1. Salient figures for Guangdong province, selected years

	1980	1985	1990	1995	2000	2002
Population	52.30	56.71	63.46	68.68	77.07	78.59
Employment	23.68	27.31	31.18	35.51	39.89	41.34
GDP	24.96	57.74	155.90	573.40	966.22	1,176.97
Contracted FDI	1.20	2.01	2.69	24.83	8.68	16.17
Utilized FDI	0.12	0.51	1.46	10.18	12.24	13.11
Foreign trade	-	-	41.90	103.97	170.11	221.09

Notes: Population and employment is in million persons; Gross Domestic Product is in billion RMB, while FDI flows and trade figures are in billion USD.

The RMB/USD exchange rate was pegged at 8.28.

Data in value terms are calculated at current prices, whereas the growth rates are calculated at comparable prices.

Source: Guangdong Statistical Yearbook, 2003

Although a large number of countries have made investments in China, the primary sources of FDI have been highly concentrated among a small number of investor countries (Chen, 1997). Contrary to most other countries, the largest proportion of the FDI received by China does not come from the so-called Triad economies, namely the US, Japan and Europe, but from Greater China, i.e., Hong Kong, Macau, and Taiwan. The initial policy objective of the Chinese authorities was to attract ethnic Chinese business to the mainland. The first Special Economic Zones Shenzhen and Zhuhai were created next to Hong Kong and Macau, while the Shantou and Xiamen SEZs were put up across the Taiwan Straits. Despite earlier restrictions imposed by Taipei on FDI to China, this policy has proven to be a success. Most of the foreign direct investment from Greater China was directed towards Guangdong province.

Hong Kong has been the largest investor in Guangdong (Table 2). Since 1979 it has accounted for approximately 75 per cent of all inward foreign direct investment. However, as FDI statistics are registered as coming from the place where the investing firm is incorporated, this does not necessarily coincide with the actual home country of the invested funds (Chevalierias, 1998). In fact, it is difficult to have a precise picture of the actual patterns of FDI by country of origin, due to the special role of Hong Kong. First, some of the reported Hong Kong Direct Investment (HKDI) was carried out by Mainland Chinese subsidiaries located in Hong Kong. Chinese firms thereby transfer funds to Hong Kong and then invest it back in the mainland, sometimes involving fundraising in the Hong Kong stock market or after a tax haven routing (Zhan, 1995). These Red Chip firms can then take advantage of preferential treatments for foreign investors in China, such as tax holidays (UNCTAD, 1996). Estimations suggest that this so-called round-tripping foreign direct investment could account for about 25 to 30 per cent of HKDI in China (Harold and Lall, 1993; World Bank, 2002).

Second, Hong Kong operates as an intermediary between China and the rest of the world for capital flows, as much as it does for international trade. Therefore, HKDI in China includes flows from third countries that use Hong Kong as a platform for their investments into China. This was the case of FDI by Taiwanese firms, which could not invest directly for political reasons, especially during the 1980s. Western firms also invest in China via Hong Kong (e.g. through regional headquarters) to take advantage of the local experience and knowledge of how to do business with the mainland. In fact, the importance of flows passing through Hong Kong is not precisely known, nor is the amount of ‘truly’ Hong Kong direct investment (Zhang and Yuk, 1998).

The location choices of investments by Chinese from Hong Kong, Macau and Taiwan were largely influenced by the historical and cultural links between investors and the sites that were chosen, i.e. the so-called hometown connections. For instance, Hong Kong investors mainly selected Guangdong province as their preferred location of investment, not only because of their geographical proximity but also because of the cultural and other connections (Zhang, 2001). Consequently, Guangdong province is the largest recipient of foreign investment.

Table 2. Origin of FDI in Guangdong Province (1979-2002)

Number of agreements	1979-2002	2002	1979-2002	2002
			(%)	(%)
Hong Kong	72,413	3,847	75.67	58.17
Macao	5,072	376	5.30	5.69
Taiwan	6,980	802	7.29	12.13
Greater China	84,465	5,025	88.26	75.99
Japan	958	137	1.00	2.07
Europe	1,102	103	1.15	1.56
US	2,501	276	2.61	4.17
TOTAL	95,698	6,613	100.00	100.00
Contracted amount				
Hong Kong	13,633,454	790,401	68.14	48.88
Macao	565,770	46,394	2.83	2.87
Taiwan	756,005	80,706	3.78	4.99
Greater China	14,955,229	917,501	74.75	56.74
Japan	402,108	53,439	2.01	3.30
Europe	855,085	35,630	4.27	2.20
US	672,511	102,736	3.36	6.35
TOTAL	20,007,923	1,617,119	100.00	100.00
Actual amount				
Hong Kong	8,594,245	697,885	68.81	53.23
Macao	283,520	27,394	2.27	2.09
Taiwan	476,843	63,562	3.82	4.85
Greater China	9,354,608	788,841	74.90	60.17
Japan	423,005	52,717	3.39	4.02
Europe	386,204	36,610	3.09	2.79
US	432,496	80,537	3.46	6.14
TOTAL	12,490,138	1,311,071	100.00	100.00

Notes: Number of agreements is in units, while contracted and actual amount is in 10,000 USD.

Despite the handover of Hong Kong and Macau to China, these investments to the mainland are still considered as foreign direct investment.

Source: China Statistical Bureau, 2003

Guangdong cumulatively received FDI amounting to 125 billion USD between 1979 and 2002, or approximately 30 per cent of all FDI in China. In the 1980s, FDI in Guangdong was concentrated in the three Special Economic Zones (Shenzhen, Zhuhai and Shantou) and the Pearl River Delta region. During the 1990s, FDI has been spreading further into the eastern, western, and northern areas of Guangdong province, resulting in an increasing share of these sub-regions in the total provincial FDI (Lan, 1997). Although foreign direct investment in Guangdong province dropped more than ten percentage points in the 1990s as compared to the 1980s, it still attracts more than a quarter of all direct investment into China. However, the last few years the Yangtze River Delta has attracted most FDI. Jiangsu province has taken over the lead in terms of inflow of FDI, with cities like Suzhou, Nanjing and Wuxi leading the way.

DATASET, CONSTRUCTS AND RESULTS

This study uses data from manufacturing subsidiaries of American, Japanese, European and Chinese investors located in Guangdong province. The sample was originally drawn from the official fiscal database of foreign invested enterprises (FIEs) in the province of Guangdong. In order to have a representative sample, a selection was made based on the country of origin of the foreign parent and the industry, such that the data set approximately has the same percentage distribution across home countries and industries. The overall sample consists of 307 firms, of which 212 were Chinese firms from Hong Kong, Taiwan, Macau or the PRC itself (so-called round-tripping FDI, see above), 32 had their parent companies in Europe, 28 in Japan and 33 in the US. The top managers in these firms were interviewed in 1998 on the basis of a questionnaire, involving background data on the company and its foreign parent(s), linkages of the subsidiaries, technology, and management and organization of the firm. Although the questionnaires were filled in during the interview, the number of replies for some specific questions was sometimes lower than the total sample, because of the confidential nature of some questions or the non-availability of the information.

Subsidiary strategy can be generically defined as either market-seeking or resource-seeking. The subsidiary either wants to tackle the local market or export its production. This subsidiary strategy has been covered by the percentage of sales in Guangdong province. In terms of industrial differences, the manufacturing FIEs can be divided into four categories, according to their technological nature and capital intensity. Four separate categories are distinguished, that is labour intensive and low technology (LI, LT), labour intensive and high technology (LI, HT), capital intensive and low technology (KI, LT) and capital intensive and high technology (KI, HT) (Dunning, 1979, Lee, 1983, Schroath, Hu and Chen, 1993).ⁱ The AGE

construct reports the length of operation at the time of the survey. The size of the subsidiary is covered by the number of employees at the time of the survey. The degree of ownership is covered by a dummy variable for wholly owned subsidiaries.

Several regression models were run with the percentage of sourcing of material inputs, by value, in Guangdong province as the dependent variable to determine patterns and significant relationships with regard to the hypotheses put forward. The following variables were included as independent variables: the age of the foreign subsidiary, dummy variables for the different sectors, a dummy variable for investors from the Triad, total employees as a proxy for the size of the subsidiary; the percentage of sales in Guangdong province; and a dummy variable for the wholly foreign owned enterprises. The findings of the analysis are organised around the hypotheses presented above. Table 4 presents the regression results of the different regression models, while table 3 shows the Pearson correlation table of the dependent and independent variables. The Pearson correlation table indicates no significant problems with the variables. Descriptive statistics are sometimes reported for the different geographical patterns of sourcing (sourcing in Guangdong province, sourcing in the rest of China, an overlapping category of sourcing from other foreign invested enterprises in China, and sourcing from abroad) for some of the independent factors.

Table 3. Pearson Correlation Table of Dependent and Independent Variables.

	Sourcing in Guangdong (%)	Sales in Guangdong (%)	Triad investors	LI_LT	LI_HT	CI_LT	CI_HT	AGE	WOS	Employees now
Sourcing in Guangdong	1.000	0.314	-.049	-.121	-.002	.230	-.120	-.005	-.125	-.098
Sales in Guangdong	.314	1.000	.130	-.243	-.061	.278	-.008	.010	-.147	-.102
Triad investors	-.049	.130	1.000	-.261	-.004	-.029	.282	-.032	-.016	.037
LI_LT	-.121	-.243	-.261	1.0000	-.406	-.326	-.425	-.016	.160	-.043
LI_HT	-.002	-.061	-.004	-.406	1.000	-.157	-.205	.006	-.055	-.001
CI_LT	.230	.278	-.029	-.326	-.157	1.000	-.165	.004	-.134	-.095
CI_HT	-.120	-.008	.282	-.425	-.205	-.165	1.000	.015	-.152	.074
AGE	-.005	.010	-.032	-.016	.006	.004	.015	1.000	-.137	.243
WOS	-.125	-.147	-.016	.160	-.055	-.134	-.152	-.137	1.000	-.026
Employees now	-.098	-.102	.037	-.043	-.001	-.095	.074	.243	-.026	1.000

Table 4. Coefficients of the different linear regressions for foreign invested enterprises in Guangdong

Sourcing in Guangdong	Overall Model	Strategic Model	Origin Model	Industrial Model	Age Model	Ownership Model	Size Model
Constant	31.88368	16.1775***	17.9142***	25.2724***	16.60127**	17.97459***	16.32939***
Sales in Guangdong	.2272256***	.2745075***	.2851274	.212887***	.2835008***	.2623243***	.2811342***
Triad investors	-5.206597		-7.382878*				
LI_LT	-12.33537			-10.34886			
LI_HT	-9.355564			-5.117935			
CI_LT	3.135184			9.632661			
CI_HT	-17.49929**			-15.12037*			
AGE	-.0714398				-.0400783		
WOS	-7.307271					-6.077198	
Employment	-.0009978						-.0010782
Adjusted R ²	.1174	.0780	.0843	.1080	.0782	.0803	.0905

Source: Stata output.

The investment motive turns out to be the single most important factor explaining the extent of local sourcing. Firms that sell more on the local market are significantly more prone to source on the local market. This is obviously in line with the hypothesis that stipulates that a market-seeking strategy is a strong incentive to employ a locally responsive sourcing policy.

Triad investors have a tendency to source less than Chinese investors. Firms from Triad countries source between five and seven per cent less than Chinese investors. The direct investment from Triad investors is affected primarily by industrial and technological factors, whereby these investors usually require a suitably developed industrial base and relevant supplier industries. Chinese investors in Guangdong are often in the early stages of internationalization (Van Den Bulcke et al., 2003). They have rather limited capabilities and are more dependent on the local resources. Also, as the labour intensive export processing activities of these firms are often influenced by rapid changes in the export markets, they prefer outsourcing to local companies. The specific activity of the subsidiary and the degree of its integration within the value chain of the parent company can also affect the localization. Since many firms from Hong Kong and Taiwan relocated practically all their manufacturing activities to China and only kept their trade and marketing activities in the ‘home’ base, they have less need to control and coordinate the intra-firm integration between the offshore processing activities of the subsidiaries and the parent company’s value added chain.

In terms of industries, most manufacturing subsidiaries source less than firms in the service sector (control group), except for the capital intensive, low technology industries, such as glass, concrete products, and primary metal industries. Capital intensive, high technology industries, however, source the least on the local market with a 17 percent significant drop-off.

Wholly owned subsidiaries (WOS) source substantially less from local companies than joint venture companies. Statistically, they source 7 percent less locally than joint ventures. On average, WOS source less than 20 percent locally. They also source less in the rest of China than joint ventures, while they procure substantially more from other foreign invested enterprises in China. Consequently, importing is much higher for wholly foreign owned companies than it is for joint ventures. WOS source about two thirds of material inputs from abroad. The differences between equity joint ventures (EJVs) and contractual joint ventures (CJVs) are most pronounced in the sourcing from other FIEs in China, in which CJVs have significantly lower linkages to other foreign affiliates.

Table 5. Average sourcing of FIEs in Guangdong province by form.

	Sourcing from Guangdong province	Sourcing from Rest of China	Sourcing from other FIEs in China	Sourcing from abroad
<i>Form</i>	Mean (Std Dev)	Mean (Std Dev)	Mean (Std Dev)	Mean (Std Dev)
EJV	27.87 (34.18)	29.68 (33.96)	34.13 (35.08)	45.53 (38.78)
CJV	34.28 (38.39)	29.13 (33.39)	23.90 (29.67)	38.98 (40.56)
WFOE	17.84 (27.39)	20.37 (29.58)	40.82 (36.97)	67.31 (37.84)
Total	25.65 (33.38)	26.27 (32.69)	33.80 (34.85)	52.05 (40.28)

Note: Percentages may not add up due to response differences.

There is a marginal indication that age and size are negatively correlated to local sourcing, although the regression coefficient is very small and hardly significant. The analysis found neither support for the hypothesis that the length of time a foreign invested enterprise has been operating in China would positively affect its local sourcing. If any conclusion can be drawn, it would be that local sourcing does not automatically increase over time. Sourcing from abroad seems rather stable, with approximately half of the inputs being imported.

Table 6. Average Sourcing of FIEs in Guangdong Province over time.

	Sourcing from Guangdong province	Sourcing from Rest of China	Sourcing from other FIEs in China	Sourcing from abroad
<i>Sectors</i>	Mean (Std Dev)	Mean (Std Dev)	Mean (Std Dev)	Mean (Std Dev)
1979-1985	21.47 (27.43)	30.83 (33.66)	45.83 (41.22)	48.89 (39.39)
1986-1988	28.31 (33.33)	35.38 (34.79)	35.29 (35.90)	41.16 (39.13)
1989-1992	24.76 (34.22)	21.17 (29.47)	34.95 (34.02)	58.45 (40.73)
1993-1996	25.43 (33.81)	27.94 (34.02)	28.92 (32.65)	51.20 (39.88)
1997-1998	33.08 (35.91)	13.46 (24.78)	61.71 (43.05)	52.00 (41.48)

Note: Percentages may not add up due to response differences.

CONCLUSION

China has had a hybrid policy of allowing imports but also requiring local content. It has allowed foreign manufacturers to import intermediate inputs on the assumption that such imports would be gradually replaced by local sourcing. Local content requirements typically specified that some percentage or absolute amount of production inputs had to be purchased from local sources or had to be produced domestically. In some cases, a list of specific parts was issued by the government for mandated localisation (Battat, Frank and Shen, 1996). Admittedly, although about half of the inputs are imported, on average, the empirical evidence presented above has shown that local input linkages of MNC affiliates in Guangdong province, China, –and hence the benefits transmitted to this host region through the supply chain– are at best limited in the majority of cases. In view of China's entry into the WTO, which prohibits the use of internal regulations to discriminate in favour of domestic production, the question can be raised whether there is scope for increasing the level of local sourcing through other policy interventions.

One of the primary barriers to higher local sourcing is obviously the limited availability of qualified suppliers. It follows that local sourcing by MNC affiliates might be increased by policies designed to fill the gaps in the local supply base. Either an indigenous local supply base must be developed, if feasible and efficient; or else inward investment in specific supply industries may have to be targeted. Even if the latter path is chosen, domestic companies should benefit directly or indirectly from the presence of foreign technology, capacity, etc. as was discussed above.

The capacity of local suppliers is another important influence on the extent of local sourcing by foreign firms. This suggests that the level of local sourcing by MNCs could be increased by assisting smaller suppliers to allow them to expand their capacity. Domestic firms can either be helped on an individual basis, or by a consolidation of the indigenous supply industries. Given the increased openness of the Chinese central and local governments towards mergers and acquisitions, the latter choice might be the best policy option.

The success of policies designed to increase local sourcing will ultimately depend on whether local suppliers can remain competitive on price while meeting the necessary standards for quality and timely delivery. A development initiative that may help local suppliers to move towards world class standards is the creation of a supplier association based around major local buyers (usually inward investors) with the aim of encouraging the dissemination of key technologies and best practices through the local supply chain (Crone and Roper, 1999).

However, the policies to increase local sourcing by multinational affiliates is inherently intertwined with the strategies of the multinational firms. Given the increasing importance of multinational networks, local sourcing of multinational subsidiaries can be seriously hampered by their linkages with other affiliates from the same group elsewhere in the world. Multinationals are also increasingly sharing knowledge with suppliers throughout the multinational group. This has also led to a change in the relation with the suppliers from one based on adversarial arm's length transactions with multiple suppliers to one based on closer partnerships with a reduced number of key suppliers (Imrie and Morris, 1992, Cooke and Morgan, 1993, Phelps, 1997). Policy makers need to understand the environment within which individual MNC affiliates 'make' their sourcing decisions and strive to enable local suppliers to compete for business in such an environment (Crone, 2000).

China has, since its open-door policy during the last two decades of the previous millennium, increasingly sought to attract FDI. It has thereby relied on traditional policies, such as joint

venting and local content requirements. Given, for instance, that, on the one hand, joint ventures are loosing ground to wholly owned subsidiaries because of, among other things, the increased knowledge about the market environment in China by western investors, and, on the other hand, China's accession to WTO, it needs to adapt its policies. With regard to linkages, China needs to emphasize the need to upgrade domestic supply industries, and must provide strong infrastructure, both physical and institutional, to support that need. This requires the government to work closely with private industries to identify and supplement the areas where key supporting suppliers of goods and services are urgently needed but not sufficiently provided by the market. Although the national government has a decisive role to play, so has the provincial government, which may also resort to special promotion programmes to accelerate the development of backward linkages. Such programmes can be most successful if they work closely with both multinationals and domestic suppliers, reflecting their mutual needs and interests and incorporating their available resources.

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ENDNOTES

ⁱ The detailed listing of the manufacturing classification scheme is as follows:

LI, LT: flowers and plants, food and kindred products, tobacco, textile products, apparel products, lumber and wood products, furniture, paper, printing industries, rubber and plastics, leather products, fabricated metal products and miscellaneous manufacturing industries;
 LI, HT: non-electric machinery, electrical and electronic products and measuring equipment;
 KI, LT: stone, clay, glass and concrete products, and primary metal industries;
 KI, HT: chemicals and allied products, petroleum refining and related industries, and transportation equipment.