

The Impact of Foreign Direct Investment on Chinese export performance

*28th Annual Conference of European International Business Academy
December 8-10 2002
Athens University of Economics and Business, Greece*

Chengqi Wang, Peter J. Buckley and Jeremy Clegg

Centre for International Business, University of Leeds (CIBUL)
Leeds University Business School
The University of Leeds
Maurice Keyworth Building
Leeds LS2 9JT
United Kingdom

Tel.: 00-44-113-233-6856
Fax: 00-44-113-233-4465
E-mail: cw@lubs.leeds.ac.uk

Abstract:

This paper seeks to contribute to the growing literature on inward foreign direct investment and host country exports. Using time series data for 1983-1999, inward FDI is found to increase the volume of Chinese exports and to enhance export structure. Our results show that the impact of FDI occurs through the creation of market access spillovers, which serve to improve export performance of domestically owned firms. Firms from Asian emerging economies and Japan are found to have contributed more to the expansion of Chinese exports than their US and EU counterparts. Policy implications for Chinese government policy on FDI are discussed.

Key words: FDI, export, China, multinational enterprises, spillovers,

The Impact of Foreign Direct Investment on Chinese Export Performance

I. Introduction

The opening of China through exports and inward foreign direct investment (FDI) has been one of the most important structural changes in the world economy in recent years (Naughton, 1996). China now ranks as the ninth greatest trading country and the second largest recipient of FDI in the world (People's Daily, 2000a and b). However, little is known about the influence that inward investment may have exerted over the export performance of China.

The contribution that multinational enterprises (MNEs) make to exports from developing countries has long been a subject of debate. On the one hand, it has been felt by many host countries that MNEs export 'too little'. For example, there is empirical evidence that MNEs performed rather poorly in Indian exports (Lall and Mohammad, 1983). On the other hand, other empirical studies suggest that inward FDI raises the level of exports of host economies. These include O'Sullivan (1993) for the Republic of Ireland, Cabral (1995) for Portugal and Blake and Pain (1994) for the UK, each of which finds inward FDI to be export-oriented, that is, motivated to serve wider international markets. Research on the role of inward FDI in improving Chinese export performance has been a more recent addition to the literature. Amongst these have been studies by Sun (1999, 2001) and Zhang and Song (2000), both of which find evidence of a generally positive and significant role for inward FDI in promoting overall Chinese export expansion.

The key issue that remains unclear, however, is the mechanism through which FDI creates or encourages Chinese export expansion. First, how far is the growth of Chinese exports attributable to inward FDI stimulating on the performance of Chinese indigenous firms? After all, the rise in China's exports could result directly from the export activities of foreign invested enterprises (FIEs) themselves. But it could also be associated with the expansion of exports by domestically-owned firms. This latter may result from "market access spillover effects" generated by FIEs. Second, the expansion of Chinese exports is coupled with a transformation in the structure of exported goods, with an increasing share going to manufactured goods and capital and technology intensive goods. There has been no study so far investigating the extent to which FDI has contributed to the changing structure of Chinese exports. Third, FIEs in China cleave into two groups — "local market oriented" and "export oriented", which are associated with nationality of ownership. At present, nothing is known about which source country (or group of countries) have contributed more to China's export performance.

This study attempts to shed some light on the ways in which inward FDI contributes to Chinese export expansion and upgrading. The paper proceeds as follows: section II presents a theoretical framework and model specification. The empirical results are displayed in section III and concluding remarks are offered in the last section.

II. Conceptual Framework and Model Specification

MNEs are generally considered to be better placed to serve international markets than their local host country counterparts (de la Torre, 1974). FIEs enjoy captive access to the

information and international marketing networks of their parent enterprises. They are usually better informed on international market conditions and benefit from access to foreign marketing and distributing networks. Moreover, FIEs are often larger than local firms and have the managerial, entrepreneurial and financial resources to afford the high fixed costs associated with the development of transport, communications, and financial services that are needed to support export activities (Blomström and Kokko, 1998).

MNEs' export activities may directly increase total host exports and indirectly act as export catalysts to local firms (Rhee and Belot, 1990). These "market access spillovers" or externalities enhance the export prospects of local firms, and may arise, for example, through local firms being employed as suppliers and subcontractors to MNEs. These linkages provide knowledge about product and process technologies, and about foreign market conditions. Indirect channels also exist through which local firms' export performance can be improved. First, they may learn how to succeed in foreign markets by copying MNEs. Second, MNEs may train local employees in export management and foreign market knowledge. Third, local firms can acquire this knowledge when employees of MNEs join them. The theoretical argument for "market access spillovers" is empirically supported by Aitken, et al (1994) on Mexican data and by Kokko et al (1997) on Uruguayan data.

While FDI may increase the total value of exports of the host country, it may also enhance the export structure of the host country, from primary goods to manufactured goods and from labour intensive goods to capital- and technology-intensive goods. FDI

may increase both the volume of exports and upgrade export structure from primary to manufactured goods and from labour intensive to capital and technology – intensive goods.

The role of FDI in promoting host exports may vary with on the type of international production and also with the home origin of the FDI. The two primary sources of FDI in China are Asian emerging economies (AEEs, mainly Hong Kong and Taiwan and Macau) and western countries (mainly the USA and EU and Japan). The dominance of FDI from AEEs is difficult to explain using orthodox models of international production, because AEE MNEs do not usually own proprietary intangible assets in advanced technology. However, MNEs from AEEs and western countries may have different types of technological advantages (Yeung, 1994; Shi, 1998 and Luo, 1999). Western MNEs' technological assets are typically in proprietary state-of-the-art product and process innovation, generated by heavy strategic investment in R&D (Buckley and Casson, 1976). In contrast, AEE MNEs are relatively small and less innovation intensive. Their intellectual capital assets lie in skills of using standardized technology, and experience in organizing labour intensive production. Much of these have been generated through export-oriented production conducted during the development take-off period of their home economies (Shi, 1998).

These differences in ownership advantages are expected to influence the motivations of the two groups of investors. The ownership of advanced technology enables western-owned FIEs to produce differentiated products that indigenous firms in developing

countries can not manufacture themselves. Research and development effort also feeds into the design of new products, or the adaptation of existing products, to meet the demands of the local market. Thus market-seeking is the prime motivation for FDI by western MNEs, in developing countries with large domestic markets. MNEs from AEEs typically originate from newly-industrialised economies (NIEs) which are export-oriented. AEE ownership advantages facilitate the reduction of production costs in combination with cheap labour and land in developing hosts. The motive for FDI by AEE MNEs is therefore characteristically efficiency-seeking. In effect these MNEs move export-oriented industries overseas to take advantage of cheaper locational factors in the host, in order to pursue export expansion. The above discussion suggests that AEE MNEs will have contributed more to China's improved export performance than their western counterparts.

Kojima's macroeconomic theory of FDI (1978) proposed that Japanese FDI in Asia was geared towards exploiting host countries' comparative advantage and that it “creates harmonious trade with the host country”. This was contrasted with US FDI, which was deemed to be driven by domestically oligopolistized industries, which spawned rivalistic foreign investors intent on exploiting monopolistic advantages in the host countries. This view is reinforced by recent empirical evidence from Thompson and Poon (2001) who find that Japanese-invested firms in China are indeed driven by comparative advantage, that is, low production cost and raw materials availability. Empirically, Zhang (1995) finds that Japanese FDI is trade-oriented and contributes significantly to the growth of China's exports. On the other hand, in connection with MNEs from the USA and EU,

Japanese-owned firms also possess ownership advantages of the western type, i.e., proprietary technological assets. Anand and Delios (1996) find that Japanese subsidiaries in China were established both to access low cost labour and to serve local Chinese markets. The motivation for most Japanese FDI in China can arguably be classified into the “export oriented” category, generating local sales intensity lower than western FDI, but higher than AEE FDI.

Our study examines the relationship between export performance and inward FDI in China for the period 1983-1999. The level of exports is modelled as a function of the level of the FDI and other explanatory variables¹:

$$\text{LogEX}_t = \alpha_0 + \alpha_1 \text{LogFDI}_t + \alpha_2 \text{LogR}_{t-1} + \alpha_3 \text{TIME} \quad (1)$$

where EX is the value of exports (in different categories), FDI is utilized foreign direct investment², R is exchange rate, expressed as the Renminbi (RMB) yuan price of a dollar. The model was estimated using ordinary least square (OLS) method.

¹ Following Zhang and Song (2000) and Sun (2001) we sought to avoid omitting critical predictor variables by including lagged domestic investment and GDP growth. In almost all preliminary regressions GDP growth had no effect on exports, while domestic investment was usually insignificant and often wrongly signed. In view of this, and suspected collinearity with the FDI variable, these two variables were removed from the equation. Possible reasons for the poor performance of the domestic investment variable include the extreme variability in the data. The average growth rate from 1983-1999 was 12.22 per cent, with a low of 6.53 per cent in 1989 climbing to 25.03 per cent in 1991, 35.08 per cent in 1992 and 47.80 per cent in 1993. A further explanation may be that the bulk of domestic investment went to the infrastructure sector, which may be only weakly linked to export activities.

² Utilized foreign direct investment is the official term given to investment actually made. This is to be distinguished from the value of investment for which permission has been granted by the Chinese authorities.

The coefficients on LogFDI_t and LogR_{t-1} represent the short-run elasticities of exports with respect to each of these right-hand side variables. We expect both to have positive signs. Of particular interest is the coefficient on LogFDI_t , as this coefficient indicates the percentage change in exports associated with a one per cent change in FDI. There is precedent for the inclusion of a lag structure for the impact of FDI on export performance (Orr, 1991). However, our preliminary results showed that the FDI variable without lags performs much better than the one year lag usually adopted in other studies (Sun, 2001 and Zhang and Song, 2000). This reflects the fact that the majority of export-oriented foreign invested firms in China originate from AEE, which are relatively small and less technology intensive, thus may allow shorter time than big MNEs for initial investment to be leveraged into significant export capacity.

The exchange rate (LogR_{t-1}) is always an important determinant of Chinese exports. The Chinese government has always claimed that the main objective of exchange rate adjustments was to promote exports. The depreciation of the Chinese currency tends to encourage Chinese exports given that these are likely to be price elastic. The first-order lag structure adopted for the exchange variable may be enough to capture potential feedback between the exchange rate and its longer-term impacts on exports.

The time variable is included in order to capture the time trend that pervades the Chinese data.

III. Data and Empirical Results

The empirical analysis was conducted using aggregate data for 1983-1999, obtained from various issues of the China Statistical Yearbook, and the China Foreign Economic Statistical Yearbook.

Our empirical investigation starts with an analysis of the extent to which FDI impacts upon the level of exports of all enterprises in China ($LogEX$). Then it examines the role of FDI in promoting exports by domestically owned firms, the export of primary goods and manufactured goods, and the export of labour intensive goods and capital and technology intensive goods. This involves replacing the dependent variable $LogEX$ with , respectively, $LogEX(D)$, $LogEX(P)$, $LogEX(M)$, $LogEX(L)$ and $LogEX(C)$. Finally, we investigate the impact of FDI from different source countries on export performance. The estimated results are displayed in tables 1-4.

Column (1) in Table 1 shows that the coefficient on the FDI variable is positive and statistically significant, confirming the contribution of FDI to China's overall export expansion in the period under study. This result indicates that a 1 per cent increase in FDI leads to 0.205 per cent growth in exports in the same year. In aggregate inward FDI is of a trade-promoting character. This result is consistent with Thoburn (1997), Sun (1999, 2001) and Zhang and Song (2000), which find evidence of a positive role for foreign MNEs in promoting China's export growth. It agrees with the view that FDI in China serves as an export platform to sell to adjacent markets (Zhao and Zhu, 2000). This points to strong locational advantages in China, which Lucas (1992) concluded were an

important motivation for much FDI in east and southeast Asia. These advantages are likely to be based on cheap labour and land exploitation. Inward FDI realises potential comparative advantage through the transference of entire industries, or the labour intensive and lower technology-intensive stages of high technology industries (Lee, 1990). Our results are consistent with this interpretation, though further investigation is required to understand better what intangible assets are being transferred and through which mechanisms.

(Insert Table 1 here)

As discussed above, the export performance of domestic firms may be improved through spillover effects from the presence of export-oriented FIEs. As can be seen, in column (2) the FDI variable registers a positive sign and the coefficient is statistically significant at the 10 per cent level, indicating that FDI promotes exports by Chinese locally-owned firms. This finding is reinforced by the result in column (3), which shows that exports by FIEs ($LogEX(F)_t$) stimulate those by domestically owned firms ($LogEX(D)_t$). The result in column (3) indicates that a 1 per cent increase in exports by FIEs leads to 0.133 per cent growth of exports in domestically owned firms.

From this we can infer that it is FIEs' export intensity, not simply the presence of FIEs, that stimulate local firms' exports. This indicates that existence of so-called "market access spillovers". This result agrees with Buckley, et al (2001) on Chinese data and with Kokko, et al (1997) and Aitken, et al (1994) on non-Chinese data. There are several mechanisms through which export-oriented FIEs may provide a stimulus to potential or

modest Chinese exporters. They might indirectly enable domestic Chinese firms to identify target markets in the West or, in the case of Sino-foreign joint ventures, marketing knowledge and know-how might be transferred back to the Chinese parent.

The positive significant results for exchange rate in the equations substantiate the theoretical argument that a depreciation in the RMB yuan promotes the growth of exports. The results indicate that a 1 per cent fall in the value of the Chinese yuan leads to 0.686 per cent increase in overall Chinese exports and 0.906 (0.793 per cent in column 3) per cent increase in exports by locally-owned firms. In the second and third equations, the price elasticity of exports by locally – owned firms appears greater than the average for all Chinese exports. The implication to be drawn from this is that domestically-owned firms are exporting more standardised goods than are the affiliates of MNEs. A lower exchange value of the RMB causes Chinese products to be cheaper in the international markets, so increasing the demand for Chinese exports.

The Chinese authorities have stated that the focus of exchange rate changes in the RMB should be to encourage exports. During the period under study (1983-1999), the Chinese currency depreciated significantly from US\$1=RMB1.98 yuan in 1983 to US\$1=RMB8.28 yuan in 1999. The evident price elastic nature of Chinese exports would support the view that the depreciation of the RMB is a leading cause of export expansion over the period. If, however, structural changes in Chinese exports have led to declining price elasticities, we should expect Chinese exchange rate policy to be amended accordingly.

We now turn to Table 2, which shows the impact of FDI on structural improvement in Chinese exports. Columns (1) and (2), where the dependent variables are the export of primary goods (Log EX(P)) and the export of manufactured goods (Log EX(M)), show that FDI has a positive and significant impact on exports of both primary and manufactured goods. However, the coefficient on the FDI variable in the primary goods equation is larger with higher level of significance than that in the manufactured goods equation. A 1 per cent increase in FDI leads to 0.223 per cent growth of primary goods exports, contrasted with 0.178 per cent in the case of manufactures. At first sight, these results seem somewhat unusual, given the fact that over the period under study export of manufactured goods rose much faster than that of primary goods and in all the years, except for 1985, manufactured goods accounted for over half of the total exports and even throughout the 1990s. This pattern of results suggests that the motives for FDI in Chinese primary goods sectors differ systematically from the motives for FDI in Chinese manufacturing. While FDI in manufacturing comprises export orientation and local market seeking motives, FDI in natural resources is predominantly export oriented. Very little natural resources FDI is competitive with existing Chinese produces for the domestic market. The exchange rate variable is not significantly different from zero for primary goods' export, while it is very close to unity for all manufactured goods. This agrees with the premise that the demand for manufactures is more price elastic than for primary goods, and that these latter are commodities with characteristically inelastic demand.

(Insert Table 2 here)

The FDI variable is positive and statistically significant in both column (3) and (4), indicating that FDI has promoted the export of both labour intensive goods and capital and technology intensive goods. While we cannot directly test this hypothesis here — there being no simultaneous data for type of goods and source country — it is likely that overseas Chinese capital has contributed more to the export of labour intensive goods. We would expect that western capital has played a more significant role in increasing the export share of capital and technology intensive goods. This would follow the pattern of ownership advantages of the foreign investors, as found by Buckley, et al (2002) in the case of spillover effects.

Contrary to expectation, the exchange rate variable is insignificant for all but manufactured goods. This contrasts with the coefficients in Table 1, which are all significant. It appears that exchange rate tends to be less significant when exports are divided into categories. This may relate to the way that exports are grouped. The lower level of significance of exchange rate variable in capital intensive goods is particularly worth noting. This suggests that demand in international markets for those Chinese goods is not responsive to price, but may be driven by factors we cannot capture in our model. Classification by capital and labour intensity of the industry may aggregate a wide variation of factor intensities between different production stages. So, for instance the labour intensive stages of production of capital and technology – intensive goods may be located in China. This classification problem would wash out the hypothesised

relationship, and the results suggest this may have occurred here. Low responsiveness of demand to price may indicate that quality may be important or, in the case of certain products, these may be traded within multinational enterprises as intra-firm trade. In intra-firm trade transfer prices are able to mitigate exchange rate movements if required by corporate goals, so resulting in an apparent lack of significance of the exchange rate.

Finally we turn to the impact of inward FDI from four different sources on Chinese export performance. Table 3 shows that the coefficient on the FDI variable in the both the Hong Kong and Japan equations is positive and statistically significant. We conclude that FDI from Asian owned affiliates has contributed to Chinese export performance. In contrast, FDI from the USA and EU does not contribute significantly to the Chinese exports. These results corroborate our previous argument on the differences in investment motivations between AEE and western firms. Our results agree with the view that US and EU FDI is aimed at serving China's domestic market rather than at exporting to overseas markets.

(Insert Table 3 here)

In particular the results for Hong Kong and Macau are in agreement with De Beule, et al.'s (2001) survey results. Their study shows that overseas Chinese firms in Guangdong province sell substantially more abroad than western MNEs in China. They find that European firms export less than 30 per cent of Chinese sales, while the average in Guangdong province is approximately 50 per cent. Kojima's contention that Japanese

FDI is complementary to host and Japanese home comparative advantage position, and is thus trade-oriented, is also supported by our results. Japan is also noted for its firms' motivation to circumvent trade barriers and penetrate local markets (Kojima, 1978).

The view of Gray (1998) that efficiency-seeking FDI increases the volume of trade more than does market-seeking FDI is also substantiated by the circumstantial evidence of our study. It is likely that Hong Kong investments in China are used to perform labour-intensive operations on imported goods for re-export. It may well be that Hong Kong FDI is complementary to Hong Kong's comparative advantage position and is therefore trade-oriented. If so, it should not be surprising that these investments have contributed more than those from other countries to the expansion of China's exports. In contrast, it would appear that MNEs from western countries are market-seekers, targeting the Chinese local market and operating in sectors in which China does not have a revealed comparative advantage in production, but in which China offers a large market. American and EU firms are concentrated in a small number of subsectors. As western MNEs typically bear high technology, it is likely that many of their affiliates were admitted into China to serve Chinese industrial policy goals, for example, to create new industrial capabilities and to reinvigorate old ones. It is possible that American and EU-owned operations are anti-trade and import-substituting in nature. But it is difficult to disentangle their motives from the discriminatory pressure applied by the Chinese government to transfer the latest technology, through fiscal incentives, to satisfy high local content requirements. A further possible explanation for the insignificant role of western FDI is that US and EU FDI have

fluctuated markedly with China's political climate. This has not affected Hong Kong and Macau FDI, nor Japanese FDI, nor China's exports, which have grown steadily.

Similar regressions to those reported in Table 3 are run with respect to primary and manufactured goods, and labour intensive and technology intensive goods for each country group. The results, together with all other results, are presented in the summary form in Table 4. The results show that FDI from Hong Kong promotes export of manufactured goods but not of primary goods, and that it exerts a positively and statistically significant impact on the export of both labour and technology intensive goods. FDI from Japan tends to be important for the export of labour and technology intensive goods but not for primary nor manufactured goods. This means counter to the perception of Japanese FDI as targeted on securing natural resources, and more detailed industrial disaggregation would be necessary to investigate this further. In contrast, FDI from the USA and EU shows no association with Chinese export of whatever types of products, with the exception that US FDI has played a significant role in export of capital- and technology- intensive goods. Again, the complexity of US and EU investment in industries characterised by multi-stage processing may be responsible for this general lack of significance. These results are consistent with those in Table 3. They are, together with those from Table 1-3, summarized in Table 4.

(Table 4 here)

V. Concluding Remarks

This paper has sought to examine the role of FDI in the export performance of China. We find that foreign direct investment has contributed greatly to recent export expansion by China. This export expansion is comprised of the growth of exports by MNEs and by domestic firms, which have benefited from absorbing “market access spillovers”. Our results show that the exchange rate is the most important factor which influences Chinese exports. Our results also suggest that foreign direct investment has contributed to the upgrading of China's export structure. This is evidenced by the increasing share of manufactured goods and of capital and technology-intensive goods.

Not all FDI has been found to promote China's exports. Our results show that investments from Asian emerging economies and Japan have contributed more to Chinese exports, while investments of other national origins, including the United States and European Union, do not seem to be significantly linked to the export growth of China.

Our results show that Chinese export expansion has been dominated by manufactured not primary goods, and that there is an increasing share of capital and technology intensive goods in exports. However, China's exports of manufactured goods still consist mainly of products with low value added and a low complement of technology. Such products include textiles, garments, shoes and low-value electronics and machinery. We can also note that the share of electronics and machinery in total Chinese manufactures' export is lower than the world average. The impressive growth of exports from developed

countries during the 1980s was mainly fuelled by the expansion of electronics and machinery, both with a high technological component and high value added. China's share of exports of electronics and machinery in total exports of manufactured goods was 32 per cent in 1995, contrasting with 47 per cent for developed economies as a whole and with 40 per cent for all countries (Yue, et al 2000).

China's policy of supporting export-oriented FDI may have had some negative side-effects for the Chinese economy. Foreign invested firms engaged in export processing generate less local value added per unit of output than do domestically owned firms engaged in similar activities. This could result from a lesser use of locally sourced inputs as compared with their host country counterparts. For example, there is evidence that 40 per cent of foreign invested firms in Guangdong province source nothing in China (De Beule, et al., 2001), mirroring the fact that export oriented AEE MNEs are clustered in this region.

Another consequence of this policy is that China may have, to some extent, foregone major sources of benefit from FDI, notably the dynamic gains that come from greater integration and competition with the local economy. Foreign-invested firms largely engaged in export processing are not well integrated into the mainstream Chinese economy. This could reduce the opportunities for foreign invested firms to provide dynamic benefits for the Chinese economy in terms of demonstration effects to suppliers, customers, and competitors, backward linkages with the regional supply base, technological spin-offs and new firm creation.

China also probably has foregone some, albeit certainly not all, of the benefit that comes from access to foreign technology. China has showed eagerness for advanced technology and the government has emphasized the need for FDI to be coupled with the transfer of advanced technologies to China. In reality, however, technology transfer through FDI has never been treated by various levels of governments quite as important as exports by foreign affiliates. It seems plausible that the encouragement of exports and an emphasis on technology transfer might be in conflict with each other. The pursuit of exports might, to some extent, have impeded technology transfer by MNEs. In this respect, the rising share of FDI from the USA and Europe in recent years that is local market oriented in motivation may be a good thing for the Chinese economy. It is more likely to stimulate the acquisition of advanced technology from foreign MNEs. While market power motives, as envisaged by Kojima (1978) cannot be ruled out, the wider benefit to Chinese industry as a whole should not be overlooked.

References:

- Aitken, B., Hanson, G. H. and Harrison, A. E. (1994). Spillovers, foreign direct investment, and export performance. NBER Working Paper Series, No. 4967. National Bureau of Economic Research.
- Anand Jaideep and Delios Andrew. (1996). How Japanese MNCs have matched goals and strategies in India and China. *The Columbia Journal of World Business*, Fall: 50-62.
- Blake, A. P. and Pain, N. (1994). Investigating structural change in UK export performance: the role of innovation and direct investment", NIESR Discussion Paper 71.
- Blomström, M and Kokko, A. (1998). Multinational corporations and spillovers. *Journal of Economic Surveys*, 12/2, 1-31.

Branstetter, L. G., and Feenstra, R. (1999). Trade and foreign direct investment in China: a political economy approach. NBER Working Paper No. 7100.

Buckley J. Peter and Casson, Mike. (1976). The future of multinational enterprise. London: Macmillan.

Buckley, J. Peter, Clegg, Jeremy and Wang, Chengqi. (2002). The impact of inward FDI on the performance of Chinese manufacturing firms. *Journal of International Business Studies*, 33/4, forthcoming.

Cabral, S. (1995). Comparative export behaviour of foreign and domestic firms in Portugal, *Banco de Portugal Economic Bulletin*, March, pp. 69-78.

Chen, C., L. Chang, and Y. Zhang (1995). The Role of Foreign Direct Investment in China's Post-1978 Economic Development. *World Development*, 23/4, 691-703.

Chan, T., Tracy, N., and Zhu, W. (1999) China's export miracle. London: Macmillan.

Coughlin, C. C. and Fabel, O. (1988). State factor endowments and exports: an alternative to cross-industry studies. *Review of Economics and Statistics*, 70, pp. 696-701.

Dees, Stephane. (1998). Foreign Direct Investment in China: Determinants and Effects. *Economics of Planning*, 31, pp. 175-194.

De Beule, Filip, Van Den Bulcke, Daniel and Xu Luodan. Foreign invested enterprises in Guangdong province, China: survey results, 27th Annual Conference of the European International Business Academy, December 2001, ESCP-EAP-Paris.

De la Torre, Jr. J. R. (1974). Foreign investment and export dependency. *Economic Development and Cultural Change*, 23: 133-150.

Dunning, J. H. (1998). The European internal market program and inbound foreign direct investment. In J. H. Dunning (eds) *Globalization, Trade and Foreign Direct investment*. Oxford: Elsevier.

EIU. (1999) Country face sheet China. May 5, 1999. London: Economist Intelligence Unit.

Erickson, Rodney A. and David J. Hayward. (1991). The international flows of industrial exports from U.S. regions. *Annals of the Association of American Geographers*, 81, pp. 371-390.

Erickson, Rodney A. and David J. Hayward. (1992). Interstate differences in relative export performance: a test of factor endowments theory. *Geographical Analysis*, 24, pp. 223-239

Graham Edward and Wada Erika. (2001). Foreign direct investment in China: effects on growth and economic performance. To appear in *Achieving High Growth: Experience of Transitional Economies in East Asia*, Peter Drysdale, editor, Oxford University Press, forthcoming 2001.

Gray, H. P. (1998) International trade and foreign direct investment: the interface. In J. H. Dunning (eds) *Globalization, Trade and Foreign Direct Investment*", Oxford: Elsevier.

Helpman, E. (1984). A simple theory of international trade with multinational corporations. *Journal of Political Economy*, 92/3, 451-471.

Helpman, E. and Kugman, P. R. (1985). *Market structure and foreign trade*. Cambridge: MIT Press.

Kokko, A., Tansini, R. & Zejan, M. (1997). Trade regimes and spillover effects of FDI: evidence from Uruguay. Mimeo, Stockholm School of Economics, Stockholm.

Kojima, K. (1978) *Direct foreign investment, a Japanese model of multinational business operations*. Praeger, New York.

Lall, Sanjaya and Mohammed, Sharif (1983). Foreign ownership and export performance in the large corporate sector in India. *Journal of Development Studies*, 20/1, 56-67.

Lee, C. H. (1990). Direct foreign investment, structural adjustment, and international division of labor: a dynamic macroeconomic theory of direct foreign investment. *Hitotsubashi Journal of Economics*, 31, pp. 61-72.

Leichenko, Robin M. and Rodney A. Erickson. (1997). Foreign direct investment and state export performance. *Journal of Regional Science*, 37, pp. 307-329.

Lemoine, Francoise. (2000). FDI and opening up the Chinese economy. CEPII Working Paper 2000-11, Paris: Centre d'Etudes Prospectives et d'Information Internationale.

Lucas, Robert. E.B. (1992). On the determinants of direct foreign investment: evidence from East and South Asia. *World Development*, 21/3, 391-401.

Luo, Y. (1999). Dimensions of knowledge: comparing Asian and Western MNEs in China. *Asia Pacific Journal of Management*, 16: 75-93.

Lutz, James M. (1987). Foreign investment in the United States: effects on export performance. *Social Science Quarterly*, 68, pp. 816-833.

Naughton, B. (1996). China's emergence and prospects as a trading nation. Brookings papers on economic activity, Vol. 2, pp. 273-344. Washington, DC: Brookings institution.

Orr, James. (1991). The trade balance effects of foreign direct investment in U.S. manufacturing, Federal Reserve Bank of New York Quarterly Review, 16, pp. 63-76.

O'Sullivan, P. J. (1993). An assessment of Ireland's export-led growth strategy via foreign direct investment: 1960-80. Weltwirtschaftliches, Archiv, Vol. 129, pp. 139-158.

People's Daily (2000a) Overseas Edition, 12 February.

_____ (2000b) Overseas Edition, 13 March.

Rhee, Y. W. & Belot. T. (1990). Export catalysts in low-income countries. World Bank discussion papers, No. 72.

Shi, Y. (1998). Technological assets and the strategy of foreign firms to enter the China market. Journal of International Marketing and Marketing Research, 23/3: 129-138.

Sun, H. (1999). Impact of FDI on the foreign trade of China. Journal of the Asia Pacific Economy, 4/2, 317-339.

_____. (2001). Foreign direct investment and regional export performance in China. Journal of Regional Science, 41/2, 317-336.

Thoburn, J. (1997). Enterprise reform, domestic competition and export competition. Journal of the Asia Pacific Economy, 2/2, 166-177.

Thompson, Edmund R. and Poon Jessie P. (2001). American and Japanese Investment Strategies in Southeast Asia. Journal of Asian Business, 17/2, 15-32.

Wei, Shang-Jin. (1995). The Open Door policy and the China's Rapid Growth: Evidence from city-level data. In Takatoshi Ito and Ann Krueger, editors, Growth Theories in Light of the East Asian Experience. Chicago: University of Chicago Press.

Wei, Shang-Jin (1996). Foreign Direct investment in China: Sources and Consequences. In Takatoshi Ito, and Anne O. Krueger, eds, *Financial Deregulation and Integration in East Asia*, NBER-East Asia Seminar on Economics, 5, University of Chicago Press.

Yeung, Henry. Wai-Chung (1994). Transnational corporations from asian developing countries: their characteristics and competitive edge. Journal of Asian Business, 10/4, 17-58.

Yeung, H. W. (1997). Cooperative strategies and Chinese business networks: a study of Hong Kong transnational corporations in the ASEAN region. In P.W. Beamish and J. P. Killing, Cooperative strategies: Asian Pacific perspectives. San Francisco: New Lexington Press.

Zhang, K. H. and Song, S. (2000). Promoting exports: the role of inward FDI in China. China Economic Review, 11, pp. 385-396.

Zhang Zhaoyong. (1995). International trade and foreign direct investment: further evidence from China. Asian Economic Journal, 9/2, 153-167.

Table 1. FDI and export performance

Dep.variable	$LogEX_t$ (1)	$LogEX(D)_t$ (2)	$LogEX(D)_t$ (3)
Constant	4.803 (35.622)***	5.023 (29.465)***	5.383 (29.498)***
$LogFDI_t$	0.205 (2.656)**	0.188 (1.934)*	—
$LogEX(F)_t$	—	—	0.133 (1.907)*
$LogR_{t-1}$	0.686 (2.247)**	0.906 (2.350)**	0.793 (1.906)*
$TIME$	0.092 (2.779)**	0.034 (0.816)	0.048 (1.227)
$R^2 - adj$	0.989	0.977	0.977
F-statistic	522.045***	224.041***	222.642***
D.W.	1.993	1.694	2.107

Figures in parentheses are t statistics (two-tailed tests); *, **, and *** denote significance at the 10%, 5% and 1% levels respectively.

Table 2. FDI and export structure improvement in China

Dep.variable	$LogEX(P)_t$ (1)	$LogEX(M)_t$ (2)	$LogEX(L)_t$ (3)	$LogEX(C)_t$ (4)
Constant	4.519 (28.874)***	4.023 (23.770)***	3.336 (18.310)***	1.937 (9.662)***
$LogFDI_t$	0.223 (2.489)**	0.178 (1.840)*	0.352 (3.377)***	0.257 (2.246)**
$LogR_{t-1}$	0.583 (1.646)	0.997 (2.603)**	0.697 (1.691)	0.395 (0.871)
$TIME$	-0.004 (-0.092)	0.105 (2.529)**	0.075 (1.679)	0.194 (3.939)***
$R^2 - adj$	0.962	0.988	0.987	0.988
F-statistic	135.969***	432.340***	393.491***	453.249***
D.W.	1.887	1.698	1.453	1.302

Figures in parentheses are t statistics (two-tailed tests); *, **, and *** denote significance at the 10%, 5% and 1% levels respectively;

Table 3. Export and FDI by major source countriesDependent variable: Exports by China ($LogEX_t$)

FDI origin	Hong Kong And Macau	Japan	USA	EU
Constant	4.861 (36.438)***	5.013 (38.695)***	4.976 (36.678)***	5.020 (32.813)***
$LogFDI_t$	0.158 (2.294)**	0.169 (1.981)*	0.102 (1.459)	0.050 (0.792)
$LogR_{t-1}$	0.706 (2.193)**	0.859 (2.743)**	1.021 (3.185)***	1.036 (3.061)***
$TIME$	0.115 (3.648)***	0.102 (2.852)***	0.106 (2.689)**	0.118 (2.779)**
$R^2 - adj$	0.989	0.988	0.987	0.985
F-statistic	475.018***	439.868***	392.728***	353.341***
D.W.	2.084	1.783	1.924	1.730

- Figures in parentheses are t statistics (two-tailed tests); *, **, and *** denote significance at the 10%, 5% and 1% levels respectively.
- Here $LogFDI_t$ is FDI from different home origins as shown in the appropriate columns.

Table 4. Summary of Results

Dep. variables		$LogEX_t$	$LogEX(D)_t$	$LogEX(P)_t$	$LogEX(M)_t$	$LogEX(L)_t$	$LogEX(C)_t$
$LogFDI_t$		+	+	+	+	+	+
$LogEX(F)_t$		—	+	—	—	—	—
$LogFDI_t$	H.K.	+	O	O	+	+	+
	Japan	+	O	O	O	+	+
	USA	O	O	O	O	O	+
	EU	O	O	O	O	O	O
$LogR_{t-1}$		+	+	O	+	O	O

+ denotes significance and O insignificance

