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## The Location Determinants of Foreign Direct Investment in Developing Countries

by

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#### 1 Introduction

Since the late 1980s and especially in the early 1990s, China has received a huge amount of FDI in absolute terms. Its share both in the world total FDI inflows and in the total FDI inflows into developing countries has increased rapidly. As a result, since 1992 China has been the single largest host country among all developing countries, and further since 1993 China has become the second largest FDI recipient in the world (following the United States). China's success in attracting FDI into its domestic economy in recent years has caused concern in many other developing countries that the huge amount of FDI inflows into China may represent a diversion of world FDI away from them.

However, China is large, and large countries normally receive a large amount of FDI inflows. Has China really received more FDI inflows from the world than it should have, based on its economic and geographical characteristics? To answer this question we have to investigate the location determinants affecting FDI inflows into developing countries and establish an empirical norm of the magnitude of aggregate FDI inflows

from all source countries into a developing host country. Against the empirical norm, we can investigate the relative performance of China and other developing countries in attracting FDI and say whether or not China has attracted more FDI inflows than its potential.

Therefore, this paper is designed to investigate and answer two key questions. First, what are the location determinants affecting FDI inflows into developing countries? Second, what is the relative performance of China in attracting FDI inflows as compared with other developing countries in general and as compared with its neighbouring Asian countries in particular?

The paper is structured as follows. Section 2 provides a brief overview of FDI inflows into China from a world perspective. Section 3 presents a literature review of the theory of FDI. Section 4 sets out the problems which we will study in this paper. Section 5 discusses the analytical framework and derives the basic model. Section 6 discusses a number of hypotheses concerning the location determinants affecting FDI inflows into developing countries. Section 7 tests these hypotheses and gives the basic findings of the regression results. Section 8 investigates the relative performance of China and other developing host countries in attracting FDI inflows by comparing their actual FDI inflows with the model's predictions. Finally, section 9 summarises the main findings.

### 2 China's FDI inflows in Perspective

#### 2.1 An overview of the world FDI inflows in the past decade

During the past decade, the general trend of world FDI inflows can be divided into two phases. As shown in Table 1 and Figure 1, prior to 1990, world FDI inflows increased rapidly. This fast growth in world FDI inflows was mainly the result of FDI inflows into developed countries, though FDI inflows into developing countries also experienced a mildly increasing trend.

World FDI inflows declined steeply in 1991 for the first time since 1982 and only returned to the 1990 level in 1993. This sharp decline in the world FDI inflows was entirely caused by the steep decline of FDI inflows into developed countries and was mostly a consequence of poor economic performance resulting from a cyclical downswing in economic activity. Though FDI inflows into developed countries began to increase again in 1993, the amount of FDI inflows into developed countries in 1994 was still 30 percent lower than in 1990 and was only equivalent to the 1988 level.

Table 1FDI inflows in the World, DCs, LDCs and China, 1981-94(millions of US dollars at current prices)

Year	World Total	All DCs	All LDCs	China	
1981-86 (annual average)	55084	41797	13271	1021	
1987	134771	109455	25303	2314	
1988	159101	131313	27772	3194	
1989	200612	171722	28622	3393	
1990	211425	176436	34689	3487	
1991	158428	115092	40889	4366	
1992	170398	111223	54750	11156	
1993	208388	129073	73350	27515	
1994	225692	134984	84441	33800	

Sources: Data for 1981-1986 annual average and 1987 are from the United Nations (1993), World

Investment Report 1993: Transnational Corporations and Integrated International Production,
United Nations Publication, United Nations, New York and Geneva, Annex Table 1.
Data for 1988 are from the United Nations (1994), World Investment Report 1994:
Transnational Corporations, Employment and the Workplace, United Nations Publication,
United Nations, New York and Geneva, Annex Table 1.
Data for 1989-1994 are from the United Nations (1995), World Investment Report 1995:
Transnational Corporations and Competitiveness, United Nations Publication, United Nations, New York and Geneva, Annex Table 1.



Figure 1 FDI inflows in the World, DCs, LDCs and China (1987-94, current prices)

Source: As Table 1.

Despite the decline of the world total FDI inflows and the inflows into developed countries in the early 1990s, FDI inflows into developing countries continued to grow, particularly during 1992-94. As noted by the *World Investment Report*, the outstanding feature of world FDI inflows during the early 1990s was the considerable increase into developing countries (United Nations, 1994, p. 9). Consequently, the amount of FDI inflows into developing countries reached US\$84 billion in 1994, increasing 150 percent compared with 1990, and the share of developing countries in the world total FDI inflows increased from 16.4 percent in 1990 to 37.4 percent in 1994. The recovery of world FDI inflows in 1992-94 was therefore mainly the result of the FDI inflows into developing countries.

#### 2.2 China's FDI inflows in the global perspective

What has been the position of China in the world FDI inflows since it started to attract FDI into its domestic economy after 1978? As shown in Table 2 and Figure 2 from 1981 to 1991 China's shares in world total FDI inflows and in FDI inflows into all developing countries were around 2 percent and 10 percent respectively with minor annual fluctuations. However, in 1992 China's shares both in the world total FDI inflows and in the inflows into all developing countries increased dramatically, reaching 6.5 percent and 20.5 percent respectively. As a result, China became the largest developing-country recipient of FDI inflows. Further, in 1993, FDI inflows into China were US\$27.5 billion, accounting for more than 13 percent of world total FDI inflows and more than one-third of FDI inflows into all developing countries. In 1994, the growth rate of FDI inflows into China declined compared with that of 1992 and 1993. However, China still attracted US\$33.8 billion of FDI inflows, its share in the world total FDI inflows further increased to 15 percent, and its share in the developing countries' inflows further increased to 40 percent. Growth rates and shares of these amounts are unprecedented.

Year	China's share in the world (%)	China's share in all LDCs (%)		
1981-86 (annual average)	1.85	7.69		
1987	1.72	9.15		
1988	2.01	11.51		
1989	1.69	11.85		
1990	1.65	10.05		
1991	2.76	10.68		
1992	6.55	20.38		
1993	13.20	37.51		
1994	15.00	40.03		

Table 2China's shares in FDI inflows in the World and LDCs

Source: Calculated from Table 1.



Figure 2 China's share in FDI inflow in the World and LDCs

Source: As Table 2.

As shown above, the 1992-94 recovery of world FDI inflows was mainly attributed to the FDI inflows into developing countries. Since China was the largest FDI recipient in terms of FDI inflows among developing countries from 1992 to 1994, what was the contribution of China to the recovery of world FDI inflows? Figure 3 shows that excluding China, first the recovery of world FDI inflows would have been much slower, and second the growth of FDI inflows into developing countries would have been very slight. Undoubtedly, China has been one of the most important contributors to the 1992-94 recovery of world total FDI inflows, particularly among developing countries. While one might argue that without China the capital might have gone somewhere else or have been invested domestically, the key issue is that in terms of China's large domestic market, fast economic growth and low labour costs, the active participation of China in attracting FDI inflows into its economy not only has substantially increased the total world demand for FDI, but also has provided a greater opportunity for potential investors to realise their overseas investments and operations. Therefore, the significant role of China in the growth of world FDI inflows from 1992 to 1994 could not be neglected.



Figure 3 FDI inflows in the World and LDCs with and without China

#### China's position in FDI inflows in East and South-East Asia<sup>1</sup> 2.3

As the world's most dynamic and the fastest growing economies in the last decade, East and South-East Asian countries have attracted a large amount of FDI inflows in the late 1980s and the early 1990s. FDI inflows into this region have grown at a rapid rate of 26.3 percent annually from 1987 to 1994. Consequently, as shown in Table 3 and Figure 4, their combined shares of FDI inflows in total world FDI inflows increased dramatically from 8.3 percent in 1987 to 25.5 percent in 1994, and their shares in developing countries' FDI inflows increased from 44.4 percent to 68.2 percent during the same period.

Source: Calculated from Table 1.

<sup>&</sup>lt;sup>1</sup> Refers to East and South-East Asian developing countries and economies including China, Hong Kong, Indonesia, Malaysia, the Philippines, Singapore, South Korea, Taiwan, and Thailand.

FDI inflows into		East, South-East	East, South-East	
	East, South-East	Asian countries	Asian countries	
Year	Asian countries	as % of World	as % of all LDCs	
	(million US\$)	(%)	(%)	
1981-86 (annual average)	5033	9.1	37.9	
1987	11231	8.3	44.4	
1988	14642	9.2	52.7	
1989	14406	7.2	50.3	
1990	19234	9.1	55.5	
1991	20217	12.7	49.4	
1992	30670	18.0	56.0	
1993	47132	22.6	64.3	
1994	57541	25.5	68.2	

# Table 3Shares of East and South-East Asian countries in FDI inflows in<br/>the World and all LDCs (1981-94, current prices)

Source: As Table 1.

Note: The shares are calculated from the above data.



Source: As Table 3.

However, the growth pattern of FDI inflows into different country groups within East and South-East Asian countries exhibits clear time sequences. As Table 4 and Figure 5 show, FDI inflows into East and South-East Asian countries began to increase rapidly after 1987. The rapid increase of FDI inflows into this region began with the large amount of FDI inflows into NIEs in 1987, followed by the rapid rise in FDI inflows into ASEAN in 1989, and finally by the dramatic increase of FDI inflows into China in 1992. After 1992, FDI inflows into East and South-East Asian countries were dominated by China.

Table 4FDI inflows and shares of East and South-East Asian Countries(1987-94, current prices, million US\$ and percent)

	East and	FDI	FDI	FDI	Share	Share	Share
Year	South-	inflows	inflows	inflows	of	of	of
	East Asia	into China	into NIEs	into ASEAN	China	NIEs	ASEAN
1987	11231	2314	7417	1500	20.60	66.04	13.36
1988	14642	3194	8112	3336	21.81	55.41	22.78
1989	14406	3393	6326	4687	23.55	43.91	32.54
1990	19234	3487	9348	6399	18.13	48.60	33.27
1991	20217	4366	7813	8038	21.60	38.65	39.75
1992	30670	11156	10210	9304	36.37	33.29	30.34
1993	47132	27515	9929	9688	58.38	21.07	20.55
1994	57541	33800	12041	11700	58.74	20.93	20.33

Source: As Table 3.

Notes: NIEs refers to Hong Kong, Singapore, South Korea and Taiwan. ASEAN refers to Malaysia, Indonesia, the Philippines and Thailand.



Figure 5 FDI inflows into NIEs, ASEAN and China (1987-94, current prices)

Source: As Table 4.

In accordance with this growth trend, the shares of FDI inflows of these countries in the total FDI inflows into the region changed dramatically. Figure 6 presents the changing pattern of shares of FDI inflows into China, the NIEs and ASEAN in the total FDI inflows into this country group. From 1987 to 1991, China's share was relatively stable around 20 percent. During the same period, the NIEs' share dominated this region but experienced a declining trend from a record high of 66.04 percent in 1987 to 38.65 percent in 1991. In contrast, ASEAN's share increased continuously from 13.36 percent in 1987 to a record high of 39.76 percent in 1991. In 1992, FDI inflows into China increased dramatically and exceeded both the inflows into the NIEs and ASEAN, and China's share in the total FDI inflows into this country group increased to 36.37 percent. In 1993, FDI inflows into China doubled the figure of 1992, and, as a result, China's share in FDI inflows into East and South-East Asia reached 58.38 percent. In 1994, China still accounted for 58.74 percent of the total FDI inflows into this region. During 1992-94, FDI inflows into the NIEs and ASEAN continued to increase in absolute terms. However, in contrast to the huge increase of FDI inflows into

China, the shares of FDI inflows into the NIEs and ASEAN in the total FDI inflows into this country group experienced a relative decline.



#### Figure 6 Shares of FDI inflows into East and South-East Asian Countries

Source: As Table 4.

#### 3 The Theoretical Framework

Foreign direct investment is formally defined as ownership of assets by foreign residents for purposes of controlling the use of those assets (Graham and Krugman, 1991, p. 7).<sup>2</sup> To analyse and understand FDI, a theoretical framework is necessary. Therefore, in this section we will first briefly review some of the leading theories used in explaining FDI, and then discuss the implications of the existing literature for the present study.

<sup>&</sup>lt;sup>2</sup> According to China's official statistics, foreign direct investment includes foreign investments in equity joint ventures, contractual joint ventures, wholly foreign owned ventures, and joint exploitation, and the minimum share of foreign investment should be over 25 percent.

#### 3.1 The theory of foreign direct investment

There are many theories seeking to explain FDI, and the most recent surveys can be found in Dunning (1993) and Caves (1996). Among these theories, however, the most influential are those based on industrial organisation explanations.

The industrial organisation explanations of FDI originate from Hymer's celebrated 1960 doctoral thesis (published in 1976). In his thesis, Hymer first distinguished the difference between portfolio investment and direct investment, and then argued that the capital-arbitrage hypothesis explaining international capital movements was inconsistent with several obvious patterns in the behaviour of multinational enterprises (MNEs) and was unable to explain the causes of FDI. In particular, he gave three reasons for his arguments. First, Hymer argued that once risk and uncertainty, volatile exchange rates and the cost of acquiring information and making transactions were incorporated into portfolio capital-arbitrage theory, many of its predictions, for example, with respect to the cross-border movements of money capital in response to interest rate changes, became invalid. This was because such market imperfections altered the behavioural parameters affecting the conduct and performance of firms and, in particular, their strategy in serving foreign markets. Second, Hymer asserted that FDI involved the transfer of a package of resources including not only capital but also technology, management skills, and entrepreneurship. As a result, MNEs were motivated to produce abroad by the expectation of earning an economic rent on the totality of their resources. Third, unlike portfolio investment, the most fundamental characteristic of FDI was that it involved no change in the ownership of resources or rights transferred.

Hymer not only swept aside the capital-arbitrage explanation for FDI but also laid the foundation for a microeconomic explanation of FDI by pointing out that FDI is not randomly distributed among industries and that competitive conditions, in particular those in product markets, clearly influence FDI. Applying industrial organisation theory, Hymer pointed out that if foreign MNEs are exactly identical to domestic firms, they will not find it profitable to enter the domestic market, since there are added costs of doing business in another country, including communications and transport costs, higher costs of stationing personnel abroad, barriers due to language, customs, and being outside the local business and government networks. Therefore, Hymer argued that for MNEs to conduct foreign production they must possess some kind of firm-specific ownership advantages, such as superior technology or lower costs due to scale economies, which is sufficient to outweigh the disadvantages they face in competing with indigenous firms in the country of production. The ownership advantages may range from the possession of superior technology to ownership of a brand name. Whether the firm will exploit such advantages through licensing or FDI depends on the nature of the advantages and the degree of imperfections in the markets for the advantages it possesses. The higher the imperfections, the greater will be the tendency to undertake FDI and control operations rather than engage in arm's-length transactions.

Following Hymer, many economists have made contributions to the industrial organisation explanations of FDI. Among them the work of Kindleberger, Caves, and Dunning is particularly worthy of note. Their studies concentrated on trying to identify and assess the origins and significance of the firm specific ownership advantages which drive FDI, such as technological capacity, labour skills, industrial structure, product differentiation, marketing skills and organisational capabilities.

Another and earlier influential approach in explaining FDI was that of Vernon's product cycle hypothesis (1966). The product cycle hypothesis states that, based on the comparative advantage arising from the pattern of factor endowments, initially a product was invented in the home country with comparative advantage in technology and innovatory capabilities, and produced for the home market in the home country near to both its innovatory activities and markets. At a latter stage of the product cycle, because of a favourable combination of innovation and production advantages offered by the home country, the product was exported to other countries most similar to the home country in demand patterns and supply capabilities. Gradually, as the product becomes standardised or mature and labour becomes a more important ingredient of production costs, the attractions of siting value-adding activities in a foreign, rather than in a domestic, location increase. Eventually, if conditions in the host country are right, the

subsidiary could replace exports from the parent company or even export back to the home country. The product cycle hypothesis was the first dynamic interpretation of the determinants of, and relationship between, international trade and foreign production.

In the mid 1970s some economists, for example Buckley and Casson (1976), Lundgren (1977), and Swedenborg (1979), proposed the application of internalisation theory to explain the growth of multinational enterprises based on a theory of transactions costs. As Buckley and Casson observed, for multinational enterprises to serve foreign markets through direct investment rather than alternative modes of doing business, like exporting or licensing, there must exist some internalisation advantages for the firm to do so. That is, there must be economies associated with a firm exploiting a market opportunity through internal operations rather than through external arm'slength transactions such as the sale of rights to the firm's intangible assets to other firms. These economies might be associated with costs (including opportunity costs) of contract enforcement or maintenance of quality or other standards. Buckley and Casson noted that, where these costs are absent, firms very often do use licensing or franchising as a means of serving international markets. For example, Coca-Cola franchises the right to market its products in many nations where contract enforcement is not a problem, but the firm directly controls operations in nations where enforcement is a problem.

The internalisation approach incorporates the idea of market imperfections identified by Hymer and extends it to provide an explanation for the existence of multinational firms across national boundaries. In general, it argues that, faced with imperfections in the markets for intangible assets and imperfect information, firms tend to internalise operations to minimise costs of transactions and increase productive efficiency. While this approach emphasises the importance of transaction costs resulting from market imperfections, both Buckley (1987) and Casson (1987) have acknowledged the need to integrate location-specific variables with internalisation variables to explain the MNE activities.

One organising framework was proposed by Dunning (1977, 1980, 1981a, 1981b, 1986, 1988a, 1988b, 1993), who synthesised the main elements of various

explanations of FDI, and suggested that three conditions all need to be present for a firm to have a strong motive to undertake direct investment. This has become known as the "OLF" framework: <u>ownership advantages</u>, <u>location advantages</u>, and <u>internalisation advantages</u>.

A firm's *ownership advantage* could be a product or a production process to which other firms do not have access, such as a patent or blueprint. It could also be some specific intangible assets or capabilities such as technology and information, managerial, marketing and entrepreneurial skills, organisational systems and access to intermediate or final goods markets. Whatever its form, the ownership advantage confers some valuable market power or cost advantage on the firm sufficient to outweigh the disadvantages of doing business abroad. Although ownership advantages are firm specific, they are closely related to the technological and innovative capabilities and the economic development levels of source countries.

In addition, the foreign market must offer a *location advantage* that makes it profitable to produce the product in the foreign country rather than simply produce it at home and export it to the foreign market. Location advantages include not only resource endowments, but also economic and social factors, such as market size and structure, prospects for market growth and the degree of development, the cultural, legal, political and institutional environment, and government legislation and policies.

Finally, the multinational enterprise must have an *internalisation advantage*. If a company has a proprietary product or production process and if it is advantageous to produce the product abroad rather than export it, it is still not obvious that the company should set up a foreign subsidiary. One of other alternatives is to license a foreign firm to produce the product or use the production process. However, because of market failures in the transaction of such intangible assets, the product or process is exploited internally within the firm rather than at arm's length through markets. This is referred to as an internalisation advantage.

The generalised predictions of the "OLI" framework are straightforward. At any given moment of time, the more a country's enterprises --- relative to those of others ---

possess ownership advantages, the greater the incentive they have to internalise rather than externalise their use, the more they find it in their interest to exploit them from a foreign location, then the more they are likely to engage in foreign production. The framework also can be expressed in a dynamic form. Changes in the outward or inward direct investment position of a particular country can be explained in terms of changes in the ownership advantages of it enterprises relative to those of other nations, changes in its location advantages relative to those of other countries, and changes in the extent to which firms perceive that these assets are best organised internally rather than by the market (Dunning, 1993).

#### 3.2 The main implications of existing theory for the present study

In the above discussion we have reviewed the leading theories of foreign direct investment. From Hymer's seminal work to Dunning's "OLI" paradigm, scholars have made great contributions to the theory of foreign direct investment. Among them, Dunning's "OLI" framework has been the most ambitious and comprehensive explanation of FDI. It is a very useful theoretical framework for the present study.

What are the main implications of the existing theories of foreign direct investment for this present study? According to Dunning's eclectic "OLI" paradigm, which synthesises the main elements of the various explanations for FDI, the determinants of FDI can be classified into two groups, supply-side factors and demandside factors. The supply-side factors are ownership advantages and the internalisation advantages, and the demand-side factors are location advantages.

In terms of the supply-side factors, the investment potential and investment patterns of enterprises are determined by the nature and extent of their possession of ownership advantages and the incentive to internalise the use of their ownership advantages. However, the creation and development of the ownership advantages of enterprises are closely related to their home countries' technological and innovative capabilities and the overall economic development levels. In other words, differences in their technological and innovative capabilities and in their levels of economic development will lead to differences in the ownership advantages of the enterprises of different countries. In general, enterprises from developed source countries with high technological and innovative capabilities and high overall economic development level will possess not only more ownership advantages in general but also more ownership advantages in the forms of hi-technology, product differentiation, managerial and entrepreneurial skills, and knowledge-based intangible assets in particular. In contrast, for developing source countries, because they have relatively lower technological and innovative capabilities and are at the mid-level of economic development, the ownership advantages possessed by their enterprises not only are relatively less in general but also are more concentrated in the forms of labour intensive production technology, standardised manufacture products and well established export market networks.

Because the incentives for enterprises to internalise the use of their ownership advantages through FDI depend on the nature of the ownership advantages and the degree of imperfections in the markets for the ownership advantages they possess, the more technology intensive and the higher the imperfections of the markets, the stronger the incentives for the enterprises to internalise the use of their ownership advantages through FDI and control operations. As we pointed out above, since enterprises from the developed source countries possess more technology intensive and knowledge-based intangible assets of ownership advantages than enterprises from the developing source countries, we may conclude that enterprises from developed source countries have greater incentives to internalise the use of their ownership advantages and a stronger tendency to secure control over the business than enterprises from the developing source countries.

In terms of the demand-side factors, a host country's overall attractiveness to FDI is determined by the location advantages it possesses. Because resource endowments are not evenly distributed among countries and social and economic factors as well as government policies are also different among countries, the attractiveness of host countries to FDI is different. This implies that given the supply-side factors the differences in location advantages of host countries are very crucial in determining the distribution of FDI inflows into host countries.

To facilitate the discussion of the location factors affecting FDI inflows, from the host country's point of view, we classify total FDI into two types: market-oriented FDI and export-oriented FDI.

Market-oriented FDI aims to set up enterprises in a particular country to supply goods and services to the local market. This kind of FDI may be undertaken to sustain or protect existing markets or to exploit or promote new markets. The most frequently cited reason for market-oriented FDI is tariff barriers imposed by host country governments. However, studies of the causes of FDI, such as Caves (1971, 1974a, 1974b), have shown that market-oriented FDI is most likely to originate from and to be found in these industries characterised by high product differentiation, high absolute capital costs (high barriers to entry), high economies of scale, high multiplant economies, and high entrepreneurial requirements. According to these characteristics, the market size, prospects for market growth, and the degree of development of host countries are very important location factors for market-oriented FDI. The general implication is that host countries with larger market size, faster economic growth and higher degree of economic development will provide more and better opportunities for these industries to exploit their ownership advantages and, therefore, will attract more market-oriented FDI.

Export-oriented FDI aims to use particular and specific resources at a lower real cost in foreign countries and then to export the output produced to the home country or to third countries. The most important location factors for export-oriented FDI are resource endowments. In general, the explanation for export-oriented FDI can be found in an extension of international trade theory. The principle of comparative advantage in international trade theory seeks to explain the commodity composition of trade. It assumes complete immobility of factors of production and finds an explanation of commodity composition of trade in the factor endowment ratios and preference characteristics in different countries. However, factor endowments should not be considered as rigid, especially in developing countries. Many studies have shown that a country's comparative advantage changes over time in the process of its economic development, depending on its relative performance in physical capital and human capital accumulation as compared to other countries in the world (Leamer, 1984;

Anderson, 1990; and Song Ligang, 1996a). The frequently cited successful examples are the NIEs (Hong Kong, Singapore, South Korea, and Taiwan). Modifying the traditional theory of comparative advantage and allowing for the international mobility of some factors of production, for example, capital and technology, and not others like natural resources and human labour, enables location theory to determine the location decisions of FDI. In particular the differential endowment of immobile factors, strongly influences such location decisions: those countries endowed with a relative abundance of a particular immobile factor will be the location choice of the production of those commodities that use it intensively.

For the developing countries, being relatively abundant in labour resources, FDI will tend to locate in them in order to benefit from the lower wage rates. However, it should be realised that it is not low absolute wages that matter, but low efficiency wages.<sup>3</sup> Thus, it is those developing countries which have put great efforts in investing and developing in human capital that will tend to attract more export-oriented FDI.

In addition to the location factors discussed above, other location factors such as relative distance, culture, language, government policy and political stability of host countries, are very important in affecting the distribution of FDI inflows into developing host countries. These will be explained further in the course of our analysis.

By applying mainly the theoretical framework of Dunning's "OLF" paradigm in explaining FDI, we have elaborated a number of key implications for our study. These implications will enable us to develop a set of hypotheses that may be expected to explain the distribution of FDI inflows into developing countries in general and to explain the location determinants in particular. These hypotheses will be developed and tested in the following sections of this paper.

<sup>&</sup>lt;sup>3</sup> We will discuss the implication of efficiency wages in more detail in Section 6.

#### 4 The Problem

Why are there differences in the magnitude of FDI inflows among developing countries and what location factors affect FDI inflows into developing countries? In order to analyse these issues, we may describe the magnitude of the developing country distribution of FDI inflows as the entries in the cells of a matrix. The matrix  $[FDI_{ij}]$  has its typical element FDI<sub>ij</sub> which is the FDI inflows from source country i into developing host country j.

$$\begin{bmatrix} FDI_{ij} \end{bmatrix} = \begin{bmatrix} FDI_{11} & FDI_{12} & FDI_{13} & \dots & FDI_{1N} \\ FDI_{21} & FDI_{22} & FDI_{23} & \dots & FDI_{2N} \\ \dots & \dots & \dots & \dots & \dots \\ FDI_{M1} & FDI_{M2} & FDI_{M3} & \dots & FDI_{MN} \end{bmatrix}$$
$$\begin{bmatrix} FDI_{*j} \end{bmatrix} = \begin{bmatrix} FDI_{*1} & FDI_{*2} & FDI_{*3} & \dots & FDI_{*N} \end{bmatrix}$$

If we array the developing host countries along the columns and array the source countries along the rows, then summing down rows for each column, we get a row vector [FDI<sub>\*j</sub>] with its typical element FDI<sub>\*j</sub>. This is the total FDI inflows from all source countries into developing host country j, and is the dependent variable which we will study in this chapter.

Our analysis asks the questions: what location factors determine the magnitudes of a typical element FDI<sub>\*j</sub> which is the total FDI inflows from all source countries into developing host country j, and what is the relative performance of China and other developing host countries in attracting FDI inflows? The approach in the analysis of the questions is first to seek the determinants affecting the magnitudes of FDI inflows among developing countries, and then to examine the difference between actual FDI inflows and the model's predictions for China and other developing host countries in order to compare the relative performance of China in attracting FDI inflows with that of other developing countries in general and with that of its neighbouring Asian countries in particular.

As we discussed in the above section, in the foreign direct investment literature the determinants of FDI can be classified into two groups, supply-side and demand-side factors. According to Dunning's "OLI" paradigm, the supply-side factors are ownership advantages and the internalisation advantages and the demand-side factors are location advantages. Empirically, both sets of determinants have been tested by scholars taking the two sets of determinants either together or separately (Dunning, 1993, pp. 148-179). Some empirical studies of demand-side factors, like Scaperlanda and Mauer (1969), Riedel (1975), Lim (1983), Nigh (1985), Torrisi (1985), Hultman and McGee (1988), Coughlin, Terza and Arromdee (1991), Wheeler and Mody (1992), Balasubramanyam and Greenaway (1994), Milner and Pentecost (1994), Zhang Leyin (1994) and Wei Shangjin (1995), have shown that given the ownership advantages of the source countries' enterprises and the incentive for them to internalise the use of their ownership advantages, the location determinants of host countries, such as market size, economic growth, labour costs, trade barriers, distance, government policy and political stability, are very important in affecting the distribution of FDI inflows into host countries.

Using the same methodology, this study will focus upon the demand-side factors to explore the location determinants of FDI inflows into developing countries. The following section will introduce the framework of analysis and derive the basic model.

#### 5 Framework of Analysis and the Model

In introducing the problems under study we assert the usefulness of a "modified" gravity model. This section provides a description of the model, its theoretical underpinning, and its possible modifications.

The phrase "gravity model" is drawn from the concept of gravitational attraction over space. In its unmodified form, the gravity concept postulates that an attracting force of interaction between two areas is created by the population masses of the two areas while a friction or resistance to interaction is caused by the intervening space over which the interaction must take place. The magnitude or strength of the gravitational attraction between two areas varies directly with some function of the size of the two areas and inversely with some function of the distance between them.

The basic idea underlying the gravity model is that interaction between two areas is a function of the concentration of relevant variables in the two areas, and of the distance between them. The gravity model has been extensively used by economists in studies of international trade flows.<sup>4</sup> Tinbergen (1962) pioneered the use of the gravity model in the study of the levels of bilateral trade flows. Linnemann (1966) elaborated the Tinbergen model and his results implicitly suggested that the relative distance is important in the determination of trade levels. Leamer (1974) used the framework laid out in his earlier work with Stern to test the adequacy of traditional trade theory, alongside more recent theory which stresses the importance of scale economies. Some economists also used the gravity model in studies of regional trade blocs, regional trade bias.<sup>5</sup>

The theoretical validity of the gravity model has been examined by Niedercorn and Bechdolt within the framework of utility theory (Niedercorn and Bechdolt, 1969, pp. 273-282). More recently, Deardorff (1995) demonstrated that the gravity model is compatible with the neo-classical models as well, and he also found that what matters for bilateral trade volume is not just the absolute distance between the two countries, but their geographic positions relative to all other countries in the world. The gravity model

<sup>&</sup>lt;sup>4</sup> For an earlier survey of the use of gravity models in the analysis of trade flows, see Leamer, E. L. and R. M. Stern (1970), *Quantitative International Economics*, Boston: Allyn and Bacon. For a recent discussion of the use of gravity models in the analysis of trade flows, see Drysdale, P. and R. Garnaut (1994), "Trade Intensities and the Analysis of Bilateral Trade Flows in A Many-country World: A Survey", in R. Garnaut and P. Drysdale (eds), *Asia Pacific Regionalism --- Readings in International Economic Relations*, Harper Educational Publishers, Australia.

<sup>&</sup>lt;sup>5</sup> There are a lot of such studies, for example Wolf and Weinschrott (1973), Deardorff (1984), Frankel (1994), Wei Shangjin and Frankel (1994) and McCallum (1995).

is also justified by some economists in an imperfect competition / differentiated product framework.<sup>6</sup>

Apart from being extensively used in studies of trade flows, the gravity model has also been used by some scholars, for example Nankani (1979) and Wei (1995), in studies of FDI flows. As we will argue below, the basic principle of using the gravity model in studies of FDI flows is the same as using the gravity model in studies of trade flows.

As elaborated by Dunning's "OLI" theory of FDI, many factors influence the flows of FDI. Since these factors are located in different areas, the general argument for the use of the gravity model in line with the "OLI" theory is that each factor may be categorised as a source country factor (the ownership advantages), a host country factor (the location advantages) or a linkage factor (the distance and other bilateral factors). Source country factors reflect the capacity of a source country to conduct FDI in all possible host countries, while host country factors are characteristics of the overall attractiveness of a host country to attract and locate FDI inflows from all source countries. Linkage factors take account of the relationships between a particular pair of source country and host country, or a host country / a source country and all the other countries in the world.

We refer to our model as "modified" gravity model because first we use a large range of quantitative and qualitative factors in the model, and second, we use an improved linkage factor --- remoteness --- as a resistance factor affecting FDI flows. The remoteness factor is an index of a weighted average distance of a country to all the other countries in the world. The biggest advantage in using remoteness instead of the absolute distance as the distance factor is that first it takes account of a country's geographic position relative to the rest of the world. Second because we will examine the location determinants of FDI inflows from all source countries into developing host

<sup>&</sup>lt;sup>6</sup> For more detailed discussion, see Anderson (1979), Helpman and Krugman (1985), and Bergstrand (1989).

countries, remoteness provides us with a comparable distance factor for each of the developing host countries relative to all the other countries in the world.

In this study, in presenting the specified determinants of the country distribution of FDI inflows from all source countries into developing host countries, we shall therefore classify the determinants as: source country variables; host country variables; and linkage variables.

Based on the spirit of the gravity model and the discussion of the framework of analysis, the fundamental model used in this study can be written as:

$$FDI_{ij} = f(X_i, X_j, R_{ij})$$
(1)  
i = 1, 2, 3, ... I  
j = 1, 2, 3, ... J

where:

 $FDI_{ij}$  = the magnitude of FDI inflows from source country i into host country j  $X_i$  = source country variables  $X_j$  = host country variables  $R_{ij}$  = linkage variables

As regard to the functional form of equation (1), we consider the use of the linear and log-linear forms.

First, the linear form of equation (1) can be written as:

$$FDI_{ij} = \alpha_0 + \alpha_1 X_i + \alpha_2 X_j + \alpha_3 R_{ij}$$
<sup>(2)</sup>

Since our interest is in examining the location determinants of FDI inflows from all source countries into developing host countries, therefore, to obtain the host country aggregate equation FDI<sub>\*j</sub>, the aggregate FDI inflows from all source countries into a developing host country j, we use the identity:

$$FDI_{*j} = \sum_{i=1}^{I} FDI_{ij}$$
(3)

Substituting (2) for (3),

$$FDI_{*j} = \sum_{i=1}^{I} (\alpha_0 + \alpha_1 X_i + \alpha_2 X_j + \alpha_3 R_{ij})$$
$$= I\alpha_0 + \alpha_1 \sum_{i=1}^{I} X_i + I\alpha_2 X_j + \alpha_3 \sum_{i=1}^{I} R_{ij}$$
$$= I\alpha_0 + \alpha_1 X_* + I\alpha_2 X_j + \alpha_3 R_{*j}$$
(4)

Since a source country i's variables  $X_i$  which measure the overall outward investment potential of source country i are determined by its own technological and economic development levels, the key feature of these variables is that they are common to all outward FDI of source country i and are independent from and irrespective of destinations. Therefore, the source country variables  $X_*$  become a constant for each of the host countries. In the actual implementation, we use the intercept term to capture the effects of source country variables  $X_*$ . As a result, we have the following equation:

$$FDI_{*j} = \beta_0 + \beta_2 X_j + \beta_3 R_{*j}$$
(5)

where:

$$\beta_0 = I\alpha_0 + \alpha_1 X_*$$
$$\beta_2 = I\alpha_2$$
$$\beta_3 = \alpha_3$$

Thus the equation for  $FDI_{*j}$  is a function of host country variables and linkage variables only. It states that, given the source country variables (supply-side factors), the host country variables (demand-side factors) and the linkage variables are the only things that matter to determine the distribution of FDI inflows from all source countries into each of the host countries. Therefore, we call equation (5) the host country aggregate FDI equation.

As is usual in the use of a gravity model in studies of international trade flows, we also adopt the log-linear form as the basic functional form to connect the magnitude of FDI inflows from all source countries to host country j to the relevant explanatory variables (host country variables and linkage variables). Therefore, equation (5) can be rewritten in log-linear form as:

$$\ln FDI_{*j} = \beta_0 + \beta_2 \ln X_j + \beta_3 \ln R_{*j}$$
(6)

Thus based on the principle of gravity model, we have derived the basic equation. In equation (6) the estimated coefficients of the  $lnX_j$  and the  $lnR_{*j}$  variables will be elasticities.

Equation (6) is the form of a "modified" gravity model used to explain the magnitude of FDI inflows from all source countries into a host country j. In fact, almost all empirical studies of location determinants of FDI inflows or stocks have used the functional form of this "modified" gravity model without systematically conducting the derivation of the model. Since our interest is to investigate the location determinants of FDI inflows into developing countries, and in particular into China, equation (6) is the fundamental equation in this study. The following section will describe the location determinants and establish the independent variables.

#### 6 The Hypotheses

As shown in many studies, the location factors determining FDI inflows into developing countries are mainly market size, economic growth, per capita income, labour costs adjusted for productivity, distance, resource endowments, political stability and investment incentives offered by the host country government.<sup>7</sup> In line with the

<sup>&</sup>lt;sup>7</sup> For a comprehensive survey of the studies of the location factors in determining FDI inflows into developing countries, see Dunning, J. (1993), *Multinational Enterprises and the Global Economy*, Addison-Wesley, Wokingham, England. Also see Helleiner (1973), Riedel (1975), Nankani (1979), Root and Ahmed (1979), Lim (1983), Schneider and Frey (1985), Hill (1988), Tsai Pan-Long (1991) and

framework adopted for our analysis, in the following we examine those location factors which we consider play an important role in determining the magnitude of FDI inflows into developing host countries.

#### (1) Market size and degree of development of host countries

In the previous studies, the argument for the importance of market size as a location factor in the determination of the inflows of FDI is primarily based on the theory of economies of scale. It argues that larger economies can provide more opportunities to realise and explore economies of scale, to realise the specialisation of productive factors and to absorb more efficiently the technology which the foreign investors desire to introduce. However, the significance of this argument is debatable in open economies. This is because in the open economies, enterprises and industries can realise and explore economies of scale through international markets instead of only relying on the domestic market. Therefore, the importance of market size as a location factor in the determination of FDI inflows should be discussed within the situation of open economies.

There are three basic arguments for the importance of the market size as a location factor in attracting FDI inflows even within open economies. First, for domestic market-oriented FDI and FDI in non-tradeable sectors, especially FDI in the service sector, domestic market size is a very important determinant affecting the investment location decision. This kind of FDI in the world total FDI inflows and in the FDI inflows into developing countries has increased rapidly in recent years (United Nations, 1993). Second, for export-oriented FDI, as is the general case of most FDI projects in developing countries, particularly in East and South-East Asia, domestic market size can still be important because larger economies can provide more opportunities for industries and enterprises to benefit from external economies of scale and spill-over effects. This is especially important for high technology industries and those industries which have a relatively high requirement for well trained skilled and semi-skilled

Zhang Leyin (1994). For more details on investment incentives influencing the location decision of FDI see Guisinger (1985).

labourers. Third, larger economies not only can sustain more economic activities but also can provide more opportunities for economic diversification. This is very important for strategic-seeking, conglomeration and diversification FDI.

The above discussion leads us to expect that the magnitude of FDI inflows will be greater, the larger is the market size of the developing host country. The measure of market size used in this study is the Gross Domestic Product of the developing host country, denoted by GDP. The expected influence of this variable on the magnitude of FDI inflows is positive.

The degree of development of developing host countries is expected to be another important location determinant affecting FDI inflows. First, the supply of domestic entrepreneurship is generally assumed to be positively related to the degree of development of the country. This is important for attracting FDI inflows, particularly for FDI taking the form of joint ventures with local partners and for FDI with high technology and a high requirement for skilled labourers. Second, a higher degree of development also implies better conditions in local infrastructure, which is fundamental for attracting FDI inflows. In this study the Per Capita Gross National Income, denoted by PGNI, is used as a measure of degree of development of developing host countries. Of course, we expect that the influence of PGNI on the magnitude of FDI inflows into developing countries is positive.

#### (2) Economic growth in developing host countries

A high rate of economic growth is an indicator of development potential. In empirical studies, two measures of economic growth have been used (Scaperlanda and Mauer 1969, pp. 558-568). One is the growth rate of GDP, another is the absolute annual change of GDP. In this study, both the growth rate and absolute change of GDP, denoted by GGDP and DGDP respectively, are used as alternative measures of economic growth in the host country under study. Clearly markets that are expected to grow faster will tend to attract higher levels of inward FDI. Therefore, the hypothesis is that there is a positive relationship between inward FDI and economic growth in the developing host country.

#### (3) Factor costs in developing host countries

In the FDI literature, the most important factor cost in the determination of FDI flows is the wage rate, especially when FDI is export-oriented. Therefore, we take the relevant factor cost in the decision to locate FDI in the host country as that of labour costs. In particular, we expect lower labour costs to include higher levels of FDI inflows, especially for export-oriented FDI. However, we should note that a lower wage rate may also be accompanied by lower productivity, and thus the "efficiency wage" may not be low. Therefore, the best measure of labour costs should be the efficiency wage rather than the absolute wage rate. Following this argument, in this study we use the efficiency wage may be directly measured as:<sup>8</sup>

$$EW_j = \frac{W_j}{\prod_j}$$

where  $EW_j$  is the average efficiency wage in developing host country j,  $W_j$  is the absolute wage rate in developing host country j, and  $\Pi_j$  is the average productivity of labour in developing host country j. The efficiency wage as a measure of labour costs has the advantage of being unit free. It is expected to be negatively related to the level of FDI inflows.

There are two major problems involved in the international across country comparison of wage rates and labour productivity. One is the different price levels in different countries, and another is the different exchange rates, especially in the context of the developing countries. To avoid these problems, in this study we use the total manufacturing labour earnings as a percentage of total manufacturing value-added in

<sup>&</sup>lt;sup>8</sup> A similar definition of efficiency wage was used by Nankani (1979) in a study of intercountry distribution of direct foreign investment in manufacturing in developing countries.

each developing country as the corresponding measure of efficiency wage.<sup>9</sup> In fact, according to our above definition for the efficiency wage, the measure of manufacturing earnings as a percentage of manufacturing value-added is exactly the manufacturing efficiency wage.<sup>10</sup> Since the stock of manufacturing FDI accounts for around 50 percent of the total FDI stock in developing countries, the manufacturing efficiency wage is acceptable as a proxy for the average efficiency wage in the developing host countries.<sup>11</sup>

#### (4) Remoteness of developing host countries

The use of remoteness instead of the absolute distance as the distance factor is mainly for two reasons. First, in this study since our interest lies in analysing the location determinants of aggregate FDI inflows from all source countries into developing host countries, remoteness as a linkage variable provides us with a standardised distance factor for each of the developing host countries with respect to all other countries in the

<sup>10</sup> The derivation of the manufacturing efficiency wage is as follows:

$$MEW = \frac{MW}{M\Pi} = \frac{\binom{Y_m}{L_m}}{\binom{V_m}{L_m}} = \frac{Y_m}{V_m}$$

Where: MEW = Manufacturing Efficiency Wage

MW = Manufacturing Wage Rate

 $M\Pi = Manufacturing Labour Productivity$ 

Y<sub>m</sub> = Manufacturing Labour Earnings

 $V_m = Manufacturing Value-added$ 

 $L_m = Manufacturing \ Labour$ 

<sup>11</sup> The calculation is based on the following developing countries: Argentina, Brazil, Chile, China, Colombia, Hong Kong, Indonesia, Malaysia, Mexico, Nigeria, the Philippines, Korea, Singapore, Taiwan, Thailand and Venezuela. Together these countries accounted for 68 percent of total inward FDI in developing countries. The stock of manufacturing FDI in the total FDI stock was 54.6 percent, 49.6 percent and 48.6 percent in year 1980, 1985 and 1990 respectively (United Nations, 1993, p. 62).

<sup>&</sup>lt;sup>9</sup> The World Bank in the World Tables 1995 also uses manufacturing earnings as a percentage of manufacturing value-added as a measure of manufacturing wage index. The data of manufacturing efficiency wages of developing countries used in this study are from the World Bank, *Socio-economic Time-series Access and Retrieval System: World Tables 1995*, The International Bank for Reconstruction and Development, World Bank, Washington D.C.. The calculation is based on local currency and current prices.

world. Second, as Deardorff (1995) pointed out, what matters for bilateral export volumes is not just the absolute distance between the two countries, but their geographic position relative to all other countries. Though this point is derived from trade flows, we can argue that its basic principle is also valid in examining FDI flows. Our basic argument here is that in terms of the distance factor what matters for the magnitude of aggregate FDI inflows from all source countries into a developing host country is the developing host country's geographic position relative to the rest of the world.

The rationale for including the distance factor --- remoteness --- as one of the location determinants in affecting FDI inflows into developing host countries is that, first, remoteness is directly related to the level of transport costs. Therefore, on the one hand we expect that remoteness has a positive effect on FDI inflows if the nature of FDI is domestic market-oriented and FDI and trade are substitutes. On the other hand we expect that remoteness has a negative effect on FDI inflows if the nature of FDI is export-oriented. Second, remoteness is also closely related to the level of transaction cost in terms of information gathering and familiarity with local market conditions. Therefore, we expect remoteness to have a negative effect on FDI inflows. At this aggregate level of study of FDI inflows from all source countries into developing host countries, we expect that remoteness has a net negative effect on FDI inflows. This argument rests on the importance of transaction costs for FDI inflows.

In this study we define a host country j's remoteness as the weighted average distance to all the other countries in the world, and the weight is the share of country i's GDP in the world total GDP. The following formula expresses host country j's remoteness.

Remoteness<sub>j</sub> = 
$$\sum_{i=1}^{I} \mathbf{w}_i \mathbf{D}_{ij}$$

where:

 $w_{i} = \frac{Y_{i}}{Y_{w}}$   $Y_{i} = \text{country i's GDP}$   $Y_{w} = \text{world GDP}$   $D_{ii} = \text{direct distance between country i to country j.}$ 

According to the above definition, remoteness is a measure of the relative closeness of a country to the world economic centre. We expect that the closer a country is to "the world economic centre" the higher the level of FDI inflows into that country will be.

In this study we chose 35 countries as the 'other' countries in the world to calculate the weighted average distance of a given developing host country.<sup>12</sup> In fact, when we take a country's GDP share as the weight to calculate the weighted average distance of a given developing host country, it is not necessary to use all countries in the world in the calculation since most of the small countries' GDP shares in the world total GDP are very small and will make very little difference to the calculation of the weighted average distance of a given developing host country. The principle for choosing the countries in the calculation was based on their total outward FDI stock at the end of 1994. As long as a country's total outward FDI stock at the end of 1994 exceeded US\$1 billion, it was chosen in the calculation. Thus we have 35 countries with combined total outward FDI stock at the end of 1994. In addition their combined GDP shares from 1986 to 1993 were around 85 precent of the world total GDP.

<sup>&</sup>lt;sup>12</sup> The 35 countries are: Australia, Austria, Belgium, Brazil, Canada, Chile, China, Denmark, France, Finland, Germany, Hong Kong, Israel, Italy, Japan, Korea, Kuwait, Malaysia, Mexico, Netherlands, New Zealand, Norway, Panama, Portugal, Saudi Arabia, Singapore, South Africa, Spain, Sweden, Switzerland, Taiwan, Thailand, United Kingdom, United States, Venezuela.

The distance between country j and the other countries is the physical distance between their capital cities.<sup>13</sup>

#### (5) The level of accumulated FDI stock in developing host countries

The level of accumulated FDI stock has been found to be an important explanatory factor of current FDI inflows in several previous studies (Petri, 1995; Dobson, 1993; Mody and Shrinivasan 1991). Based on the results of the previous studies, we argue that the level of accumulated FDI stock may have certain demonstration effects on the investment location decision of foreign investors. Consequently, our hypothesis is that a higher level of accumulated FDI stock indicates an overall better investment environment in developing host countries, which may generate demonstration effects and induce higher level of FDI inflows. We, therefore, expect that the level of accumulated FDI stock will have a positive effect on attracting FDI inflows.

In this study, the level of accumulated FDI stock, denoted as FDIS, is calculated by adding the annual FDI inflows to the 1985 FDI stock of host countries at constant 1987 US dollar prices.

#### (6) Openness of developing host countries

The trade (exports plus imports) to GDP ratio is usually used as an indicator for the degree of openness of an economy. However, openness as a location factor may have a different effect on the inflows of different kinds of FDI. On the one hand, as usually argued by the "protection jump" hypothesis some kinds of FDI, for example some market-oriented FDI, are induced by high trade barriers. If this is the case, then openness would have a negative effect on the inflows of this kind of FDI. On the other hand, a higher degree of openness of an economy not only indicates more economic linkages

<sup>&</sup>lt;sup>13</sup> The physical distance is measured from the 'Demonstration Map of the World Economic and Trade Relations', in the Editorial Board of the Almanac of China's Foreign Economic Relations and Trade, *Zhongguo Duiwai Jingji Maoyi Nianjian* [Almanac of China's Economic Relations and Trade], Zhongguo Shehui Chubanshe, Beijing.

and activities with the rest of the world, but also indicates a more open and liberalised economic and trade regime. As a result, it is expected to attract more FDI inflows, particularly the inflows of export-oriented FDI. In this study we expect that a developing country's openness has a positive effect on FDI inflows.

The above has outlined the host country factors that are expected to be the most important in the determination of the magnitude of FDI inflows into developing host countries. Other location factors, such as resource endowments, trade barriers, political stability, investment incentives and legal framework, will not be tested in this study. This is mainly because of the data limitations and the difficulties in quantifying some of the variables. However, we acknowledge that these variables may have impacts on FDI flows even though we do not put them into our empirical tests. The following section presents the econometric analysis and the regression results.

#### 7 Econometric Analysis and Regression Results

#### 7.1 Method and variable specification

The research methodology is to use regression analysis to test the hypotheses set out above. The basic principle in choosing the samples of developing host countries is the data availability. We tried to choose as many samples as possible. However, because of data limitations we chose thirty-three developing countries over 8 years from 1987 to 1994. The thirty-three developing countries used in this study are: Argentina, Barbados, Bolivia, Brazil, Central Africa, Chile, China, Colombia, Costa Rica, Egypt, Ghana, Guatemala, Honduras, Hong Kong, India, Indonesia, Kenya, Korea, Madagascar, Malawi, Malaysia, Mexico, Morocco, Nigeria, Pakistan, Paraguay, the Philippines, Singapore, Sri Lanka, Taiwan, Thailand, Togo, and Venezuela.

The relationship between the inflow of FDI and the location variables in the developing host countries is investigated over time and across countries. The Kmenta Model, a special approach (Pool) designed particularly for pooled time-series and cross-
section data in the SHAZAM econometrics computer programme is used. As this method applies the Generalised Least Square (GLS) technique to pooled data, taking time-wise autocorrelation and cross-sectional heteroskedasticity into account, it will produce a more efficient regression estimation than that obtained by other methods. Furthermore, with the pooled data, the observations are much larger than would be the case if just time-series or cross-sectional data were employed. Consequently, the reliability of the estimates of the regression parameters can be greatly increased.

The dependent variable, denoted as FDI<sub>\*j,t</sub>, is the aggregate inflows of realised FDI from all source countries into developing host country j in year t. The value of FDI, as of all the relevant following variables, is measured in constant 1987 US dollar prices. There are eight independent variables, which are summarised in Table 5.

#### Table 5Variable list of the location determinants of FDI inflows into

## developing host countries

Variable Name	Specification of variables	Source
Dependent Variable FDI <sub>*j,t</sub>	Total FDI inflows from all source countries into developing host	World Investment Report 1993, 1994, 1995.
	country j in year t. Millions of US dollars at 1987 prices.	1775, 1774, 1775.
Independent Variables		
GDP <sub>j,t</sub>	Gross Domestic Product of developing host country j in year t. Millions of US dollars at 1987 prices.	World Bank, Socio-economic Time-series Access and Retrieval System: World Tables 1995.
DGDP <sub>j,t</sub>	Absolute annual change in GDP of developing host country j in year t. Millions of US dollars at 1987 prices.	Same as above.
GGDP <sub>j,t</sub>	Annual growth rate of GDP of developing host country j in year t. Percent (%).	Same as above.
PGNI <sub>j,t</sub>	Per capita Gross National Income of developing host country j in year t. US dollars per capita per year at 1987 prices.	Same as above.
$\mathrm{MEW}_{\mathrm{j},\mathrm{t}}$	Manufacturing Efficiency Wage of developing host country j in year t. Percent (%).	Same as above.
RMT <sub>j,t</sub>	Remoteness of developing host country j in year t. Index of weighted average distance to the rest of the world.	Countries' and world GDPs are from various issues of the World Development Report and the distances are measured from the map on the Almanac of China's Economic Relations and Trade.
FDIS <sub>j,t</sub>	Inward FDI stock of developing host country j in year t. Millions of US dollars at 1987 prices.	World Investment Report 1993, 1994, 1995.
OP <sub>j,t</sub>	Openness (trade to GDP ratio) of developing host country j in year t. Percent (%).	World Bank, Socio-economic Time-series Access and Retrieval System: World Tables 1995.

#### 7.2 The model and regression results

Using the basic model (6) derived in section 5 and the hypotheses discussed above, we establish the following equation to represent the relationship between the aggregate FDI inflows into developing host countries and the location determinants of FDI.

$$lnFDI_{*j,t} = \beta_0 + \beta_1 lnGDP_{j,t-k} + \beta_2 lnDGDP_{j,t-k} + \beta_3 lnGGDP_{j,t-k} + \beta_4 lnPGNI_{j,t-k} + \beta_5 lnMEW_{j,t-k} + \beta_6 lnRMT_{j,t-k} + \beta_7 lnFDIS_{j,t-k} + \beta_8 lnOP_{j,t-k} + \varepsilon_{j,t}$$
(7)

where  $\varepsilon_{j,t}$  is stochastic disturbance, the  $\beta$ s are the regression parameters to be estimated, and the variables are as defined above.

The independent variables are all lagged k years. This model assumes that the effect of the independent variables at time t-k appears only within period t and is fully completed within that period. The relationship shown in equation (7) will be examined for k=1, the most likely appropriate lag. In addition, another possibly appropriate lag (k=2) will be investigated. The estimated coefficients of lnGDP<sub>j,t-k</sub>, lnDGDP<sub>j,t-k</sub>, lnGGDP<sub>j,t-k</sub>, lnPGNI<sub>j,t-k</sub>, lnMEW<sub>j,t-k</sub>, lnRMT<sub>j,t-k</sub>, lnFDIS<sub>j,t-k</sub>, and lnOP<sub>j,t-k</sub> variables are elasticities.

The regression results of equation (7) are reported in Table 6 with the explanatory variables lagged 1 year (k=1) for the thirty-three developing host countries for the period 1987-94.

Variables	Model 1	Model 2
	0.0057	7 (70)
Constant	8.9256	7.6724
	(2.350)**	(1.998)**
LGDP	0.38716	0.4001
	(6.018)***	(6.332)***
LDGDP	0.0368	
	(3.232)***	
LGGDP		0.084773
		(3.824)***
LPGNI	0.13932	0.15352
	(2.147)**	(2.316)**
LMEW	-0.69487	-0.61497
	(-6.203)***	(-5.803)***
LRMT	-2.3370	-2.1075
	(-3.154)***	(-2.839)***
LFDIS	0.47391	0.48799
	(13.82)***	(15.60)***
LOP	0.34508	0.27801
	(3.171)***	(2.586)***
Buse - R <sup>2</sup>	0.54	0.61
DF	256	256
F - statistics	42.51	55.90

# Table 6Regression results of aggregate FDI inflows into developing host<br/>countries, 1987-94 (with lag k=1)

Note: t-statistics are in parentheses.

\*\* Statistically significant at 0.05 level (two-tail test).

\*\*\* Statistically significant at 0.01 level (two-tail test).

Since we have two alternative measures of economic growth DGDP and GGDP, we conducted two regressions. For Model 1 the absolute change in GDP is used as the market growth independent variable. The regression performed very well. We find that all of the independent variables have the expected signs in affecting the magnitude of FDI inflows into developing host countries. The coefficients of GDP  $(\hat{b}_1)$ , DGDP  $(\hat{b}_2)$ , MEW  $(\hat{b}_5)$ , RMT  $(\hat{b}_6)$ , FDIS  $(\hat{b}_7)$ , and OP  $(\hat{b}_8)$  are statistically significant at the 0.01 level, and the coefficients of PGNI  $(\hat{b}_4)$  and the constant term  $(\hat{b}_0)$  are statistically significant at the 0.05 level.

For Model 2, the growth rate of GDP is used as the market growth independent variable. The regression also performed very well. All of the independent variables have the expected signs in affecting the magnitude of FDI inflows into developing host countries. The coefficients of GDP  $(\hat{b}_1)$ , GGDP  $(\hat{b}_3)$ , MEW  $(\hat{b}_5)$ , RMT  $(\hat{b}_6)$ , FDIS  $(\hat{b}_7)$ , and OP  $(\hat{b}_8)$  are statistically significant at the 0.01 level, and the coefficients of PGNI  $(\hat{b}_4)$  and the constant term  $(\hat{b}_0)$  are statistically significant at the 0.05 level.

Although the 1 year lag was considered a priori to be the most likely appropriate lag, another possibly appropriate lag k=2 was investigated. As shown in Table 7, no superior results were obtained with the 2 year lag models. However, except for the market growth variables DGDP and GGDP, the regression results of the 2 year lag models do provide support for the acceptance of the other hypotheses as important location determinants affecting FDI inflows into developing countries.

Variables	Model 1	Model 2
	10.704	11.251
Constant	10.706	11.251
	(2.505)**	(2.786)***
LGDP	0.59197	0.59698
	(8.397)***	(8.892)***
LDGDP	0.00083726	
	(0.08198)	
LGGDP		-0.0040889
		(-0.2102)
LPGNI	0.16686	0.19237
	(2.095)**	(2.397)**
LMEW	-0.76415	-0.73902
	(-6.157)***	(-6.081)***
LRMT	-3.0445	-3.1982
	(-3.645)***	(-4.121)***
LFDIS	0.30852	0.30821
	(7.274)***	(7.284)***
LOP	0.60849	0.57416
	(4.638)***	(4.438)***
Buse - R <sup>2</sup>	0.20	0.20
DF	256	256
F - statistics	9.08	9.07

# Table 7Regression results of aggregate FDI inflows into developing host<br/>countries, 1987-94 (with lag k=2)

Note: t-statistics are in parentheses.

\*\* Statistically significant at 0.05 level (two-tail test).

\*\*\* Statistically significant at 0.01 level (two-tail test).

#### 7.3 Basic findings and explanations

In line with our hypotheses and the regression results, we can now give some basic findings concerning the location determinants of FDI inflows into developing countries.

The market size (GDP) and the degree of development (PGNI) of developing host country are positive and statistically significant location determinants affecting the magnitude of FDI inflows. The regression results, therefore, support the hypothesis that the larger and higher degree of development of an economy, the larger the magnitude of FDI inflows will be.

In the 1 year lag models, the market growth variables of the absolute change and the annual growth rate of GDP (DGDP and GGDP) are positive and statistically significant in affecting the magnitude of FDI inflows into developing host countries. The results demonstrate that the higher and faster the growth of an economy, the higher the level of FDI inflows will be. However, in the case of the 2 year lag models, both the absolute change and the annual growth rate of GDP are statistically insignificant. This may be because the variable of market growth rate has a more short term impact on FDI inflows.

Manufacturing efficiency wage (MEW), the proxy for labor cost, is a negative, statistically significant location determinant affecting the magnitude of FDI inflows into developing host countries. The results show that a higher efficiency wage in developing host countries deters FDI inflows. This indicates that FDI is responsive to the differences in efficiency wages across developing countries. It also reveals that taking advantage of developing countries' cheap labour is one of the main motives of foreign investors in developing countries.

In most other studies, as surveyed by Dunning (1993), the labour cost variables either have the wrong signs (positive) or are not statistically significant even though having negative signs. Apart from the statistical problems, the main reason for the above results is the use of the absolute wage rates rather than the efficiency wage in these studies. As we argued in section 6, a lower absolute wage rate may also be accompanied by lower productivity. Thus the efficiency wage may not be low. In other words, a higher absolute wage rate may be associated with higher productivity, thus the efficiency wage may not be high. Therefore, the analysis presented here shows that the best measure of labour costs should be the "efficiency wage" rather than the absolute wage rates.

Remoteness (RMT), the proxy for the relative distance of a developing country to the rest of the world, is a negative and statistically significant location determinant. The results show that the more 'remote' a developing host country is from the rest of the world, the smaller the magnitude of FDI inflows into that developing host country will be. The negative estimated coefficient of remoteness reveals an important point that transaction costs in terms of information gathering and familiarity with local market conditions are very important factors affecting the investment location decision of foreign investors.

The level of accumulated FDI stock (FDIS) is a positive and statistically significant factor affecting FDI inflows into developing host countries. The regression results show that a high level of accumulated FDI stock will attract more FDI inflows. This reveals the importance of the demonstration effect on the investment location decision of foreign investors.

Finally, openness (OP) is a positive and statistically significant location determinant affecting the magnitude of FDI inflows into developing countries. The regression results indicate that the more open an economy the more FDI inflows will go into that economy. Therefore, a more liberalised trade regime rather than imposing high trade barriers is important for developing countries to attract more FDI inflows to accelerate economic development.

To summarise, the main findings for the location determinants of FDI inflows into developing countries are: countries with a larger market size, faster economic growth, higher per capita income, a higher level of existing FDI stock and a more liberalised trade regime represented by the higher degree of openness will attract relatively more FDI inflows, while higher efficiency wages and more remoteness from the rest of the world will deter foreign direct investment.

# 8 The Relative Performance of China and Other Developing Countries in Attracting FDI Inflows

The statistical model in section 7 has effectively established a norm of the magnitude of aggregate FDI inflows from all source countries into a developing host country. According to the model, the magnitude of aggregate FDI inflows from all source countries into developing host countries is a function of a developing host country's market size, economic growth, per capita income, efficiency wages, remoteness from the rest of the world, level of FDI stock, and degree of openness. Against the empirical norm, we can now examine the relative performance of China and other developing countries in attracting FDI inflows and determine the relative performance of China in attracting FDI inflows as compared with other developing countries in general and as compared with its Asian neighbouring countries in particular.

To examine the relative performance of developing host countries in attracting FDI inflows, we define the relative performance of a developing host country in attracting FDI inflows as the percentage ratio of the difference between the actual FDI inflows and the FDI inflows predicted by the model.<sup>14</sup> The precise calculation of the relative performance in attracting FDI inflow is based on the following equation:

$$RFDI_{j} = (\frac{AFDI_{j} - PFDI_{j}}{PFDI_{j}}) \times 100\%$$

where:

 $RFDI_j$  = relative performance of host country j in attracting FDI inflows

<sup>&</sup>lt;sup>14</sup> This measure of the difference between actual and pothential flows includes the error term  $\varepsilon_{j,t}$  but this treatment is not expected to affect the analysis that follows.

AFDI<sub>j</sub> = actual FDI inflows into host country j PFDI<sub>j</sub> = model predicted FDI inflows into host country j

According to the equation, a positive figure for RFDI indicates that a developing host country's actual FDI inflows is more than the model's prediction, and the larger the figure the better the relative performance of that developing host country in attracting FDI inflows. In contrast, a negative figure for RFDI indicates that a developing host country's actual FDI inflows is less than it could receive based on its location variables, and the smaller the figure the poorer the relative performance of that developing host country in attracting FDI inflows. If a developing host country's RFDI is zero, then this developing host country's relative performance in attracting FDI inflows is at the average of all developing host countries.

Let us first examine the aggregate relative performance of the thirty-three developing host countries in the sample in attracting FDI inflows during the whole period of 1987 to 1994. Table 8 reports the 1987-94 aggregate relative performance of these countries in attracting FDI inflows in terms of the total actual FDI inflows and the total predicted FDI inflows into each of these countries during the period of 1987 to 1994. Among the thirty-three developing host countries, eighteen countries attracted more FDI inflows than the model predicted FDI inflows, in contrast, fifteen countries received less FDI inflows than they could receive based on their location variables. At one extreme, Malaysia, Argentina, Madagascar, Paraguay, and Singapore all attracted over 50 percent more FDI inflows than the model's predictions, indicating the outstanding performance of these countries in attracting FDI inflows into their economies during the whole period of 1987 to 1994. At the other extreme, Taiwan and Korea each received over 50 percent less FDI inflows than they might have received based on their economic and geographical characteristics.

Rank	Country	%	Rank	Country	%	Rank	Country	%
1	Malaysia	85.24	12	Indonesia	33.96	23	Kenya	-11.53
2	Argentina	76.98	13	Barbados	30.23	24	India	-13.06
3	Madagascar	75.12	14	Chile	21.05	25	Pakistan	-22.88
4	Paraguay	72.94	15	Mexico	14.42	26	Hong Kong	-23.46
5	Singapore	56.09	16	Nigeria	6.70	27	Togo	-26.00
6	Morocco	48.95	17	Colombia	5.59	28	Thailand	-29.01
7	Egypt	47.51	18	Bolivia	1.82	29	Central Africa	-29.55
8	Malawi	39.92	19	Venezuela	-1.09	30	Sri Lanka	-30.38
9	China	39.68	20	Honduras	-1.50	31	Ghana	-40.19
10	Costa Rica	37.57	21	Brazil	-3.19	32	Taiwan	-52.86
11	Philippines	36.88	22	Guatemala	-7.41	33	Korea	-65.75

Table 81987-94 aggregate relative performance of developing host<br/>countries in attracting FDI inflows

 $lnFDI_{*j,t} = \beta_0 + \beta_1 lnGDP_{j,t-k} + \beta_3 lnGGDP_{j,t-k} + \beta_4 lnPGNI_{j,t-k} + \beta_5 lnMEW_{j,t-k} + \beta_6 lnRMT_{j,t-k} + \beta$ 

 $+ \ \beta_7 lnFDIS_{j,t\text{-}k} + \beta_8 lnOP_{j,t\text{-}k} + \epsilon_{j,t} \qquad (\text{with lag } k = 1)$ 

For the East and South-East Asian countries, during the whole period of 1987 to 1994, five countries, Malaysia, Singapore, China, the Philippines and Indonesia, received more FDI inflows and four countries, Hong Kong, Thailand, Taiwan and Korea, received less FDI inflows than they might have received based on each of their economic and geographical characteristics. Therefore, for each individual country the relative performance of the East and South-East Asian countries in attracting FDI inflows presented very large differences. However, as a group the East and South-East Asian countries attracted more than half of the total FDI inflows into developing countries from 1987 to 1994. After controlling for their location variables, the relative performance of East and South-East Asian countries in attracting FDI inflows is only marginally above the average. This implies that as a group the East and South-East Asian countries has received only marginally above their normal share in the total FDI inflows into developing countries.

As for China, during the period 1987 to 1994 in total it attracted 39.68 percent more FDI inflows than expected based on its economic and geographical characteristics.

This makes China rank number nine in terms of its relative performance in attracting FDI inflows among the thirty-three developing host countries. Undoubtedly, China's relative performance in attracting FDI inflows is much better than most developing host countries. However, China's relative performance in attracting FDI inflows is only 63 percent of the average relative performance of the eight more outstanding developing host countries. Therefore, though China has a better performance in attracting FDI inflows, it is far from the best among the thirty-three developing host countries.

Compared with the East and South-East Asian countries, China's relative performance in attracting FDI inflows ranked number three, which is much better than that of Hong Kong, Thailand, Taiwan and Korea, but similar to that of the Philippines and Indonesia and much lower than that of Malaysia and Singapore. Therefore, though China is the largest FDI recipient among the developing countries and attracted 40 percent of the total FDI inflows into developing countries and nearly 60 percent of total FDI inflows into the East and South-East Asian countries in 1994, after controlling for its huge market size, fast economic growth, low labour costs and other economic and geographical characteristics, China's relative performance in attracting FDI inflows is only at a level moderately above average both among the developing countries and among the East and South-East Asian countries.

In the above we examined the aggregate relative performance of China and other developing host countries in terms of the total actual FDI inflows relative to the total predicted FDI inflows into each of the developing host countries for the whole period 1987 to 1994. It is also very interesting to examine the relative performance of developing host countries in attracting FDI inflows from a dynamic point of view. We do this by examining the annual relative performance of China, India and the other East and South-East Asian countries in attracting FDI inflows from 1987 to 1994. The computed annual relative performance in attracting FDI inflows of these countries is reported in Table 3.9.

As shown in Table 9, China attracted 53.06 percent and 21.18 percent more FDI inflows than the model's prediction in 1987 and 1988 respectively. However, from 1989 to 1991 China received 11 percent to 22 percent less FDI inflows than it might have

received based on its economic and geographical characteristics. China's poor relative performance in attracting FDI inflows during 1989 to 1991 was largely due to foreign countries' reaction to the Tiananmen Square Incident. Starting from 1992 FDI inflows into China surged at an unprecedented pace and, as a result, China received 28.68 percent, 81.84 percent and 57.45 percent more FDI inflows than its potential in 1992, 1993 and 1994 respectively, indicating China's much improved investment environment and increasing overall attractiveness to foreign investors.

developing host countries in attracting FDI inflows (%)								
Country	1987	1988	1989	1990	1991	1992	1993	1994
China	53.06	21.18	-10.77	-21.82	-21.68	28.68	81.84	57.45
India	79.12	-43.58	-8.59	-31.24	-63.25	-42.71	-6.01	28.19
Singapore	315.66	154.96	36.95	104.47	49.55	63.69	41.36	-12.27
Hong Kong	263.56	76.36	-42.32	-15.81	-78.11	-37.64	-57.46	-56.97
Taiwan	7.43	-25.55	-20.83	-45.47	-51.33	-71.63	-73.64	-67.13
Korea	-12.56	-28.34	-55.00	-60.73	-54.72	-81.83	-83.77	-79.22
Malaysia	107.35	77.41	114.22	98.31	135.24	123.93	80.53	23.25
Indonesia	91.06	59.88	36.76	47.07	49.21	38.52	23.56	10.89
Philippines	95.73	185.50	22.34	0.52	-5.62	-40.83	63.54	40.30
Thailand	49.23	89.63	42.99	20.95	-17.00	-38.87	-55.43	-83.83

Table 91987-94 annual relative performance of China and other Asiandeveloping host countries in attracting FDI inflows (%)

$$\begin{split} & lnFDI_{*j,t} = \beta_0 + \beta_1 lnGDP_{j,t-k} + \beta_3 lnGGDP_{j,t-k} + \beta_4 lnPGNI_{j,t-k} + \beta_5 lnMEW_{j,t-k} + \beta_6 lnRMT_{j,t-k} \\ & + \beta_7 lnFDIS_{j,t-k} + \beta_8 lnOP_{j,t-k} + \epsilon_{j,t} \qquad (with \ lag \ k = 1) \end{split}$$

In general, as illustrated in Figure 7, the estimations show that from 1987 to 1994 China's annual relative performance in attracting FDI inflows presented a flat "U" shaped pattern. The pattern started with an above average but declining trend in 1987 and 1988, followed by a period of very poor performance from 1989 to 1991, then gradually began to recover in 1992, and finally presented a good performance in 1993 and 1994. Thus it is clear that only after 1992 has China attracted relatively more FDI inflows than expected based on its economic and geographical characteristics.



Figure 7 Annual relative performance of China in attracting FDI inflow

Source: As Table 9.

Comparing China to some of its neighbouring Asian countries some interesting results emerge. India has many similarities with China in terms of economic size, level of development, and abundant supply of cheap labour, as well as history of policy towards FDI. After an outstanding performance in 1987, India attracted limited FDI inflows from 1988 to 1992. But India has been gradually catching up since 1993, attracting 28.19 percent more FDI inflows than its potential in 1994.

For the NIEs, Singapore's annual relative performance in attracting FDI inflows has been outstanding except in 1994. In contrast, the annual relative performance in attracting FDI inflows of Taiwan and Korea has been very poor. Both received much less FDI inflows from the world than their potential. Hong Kong's annual relative performance in attracting FDI inflows was in between the two extremes. It received much more FDI inflows in 1987 and 1988 but received much less FDI inflows than its potential from 1989 to 1994. However, for the NIEs one common characteristic is that their relative performance in attracting FDI inflows has been declining over time, particularly since 1992. This phenomenon is consistent with their declining share in the total FDI inflows into this region. One possible explanation for the NIEs' declining performance is that the fast rising labour costs in the NIEs have discouraged labourintensive FDI in these economies in recent years. As pointed out by the *World Investment Report* (1994, p. 67), the loss of cost advantages of these economies (NIEs) has caused not only foreign investors, but also domestic investors to shift labourintensive production abroad and thus has led to the process of industrial upgrading at home.

For the four ASEAN countries, Malaysia and Indonesia have been the most outstanding countries not only in ASEAN but also in the region in terms of annual relative performance in attracting FDI inflows. Each year from 1987 to 1994 they both attracted much more FDI inflows than they should have based on their economic and geographical characteristics. The Philippines' annual relative performance in attracting FDI inflows has been relatively good. Except the years from 1990 to 1992, the Philippines' annual reception of FDI inflows exceeded its potential by a considerable margin. Thailand's annual relative performance in attracting FDI inflows is interesting. From 1987 to 1990 Thailand had a very good performance in attracting FDI inflows. However, from 1991 to 1994 its performance became poorer and poorer. For example, its FDI inflows fell short of its potential by 17 percent in 1991 and further by 84 percent in 1994.

Comparing China with its neighbouring Asian countries, we found that in general China's annual relative performance in attracting FDI inflows was less than that of Singapore, Malaysia, and Indonesia, but better than that of India, Hong Kong, Taiwan, Korea, and Thailand, and was roughly similar to that of the Philippines.

### 9 Conclusion

What are the location determinants of FDI inflows into developing countries? What is the relative performance of China in attracting FDI inflows as compared with other developing countries in general and as compared with its Asian neighbouring countries in particular? This paper has offered answers to these questions by using an econometric regression analysis to test the hypotheses based on the location advantages of the theory of FDI and has, therefore, established a "norm" of the magnitude of aggregate FDI inflows from all source countries into a developing host country. The study has provided the following main findings.

First, the empirical study of the distribution of FDI inflows into developing countries by focusing on the host country location factors has demonstrated that given the ownership advantages and the internalisation advantages of the source countries, the location advantages of host countries are very important in determining the distribution of the magnitude of FDI inflows.

Second, for the location determinants of FDI inflows into developing countries, the regression results provided strong support for the acceptance of our hypotheses. The main findings are: countries with larger market size, faster economic growth, higher per capita income, a higher level of FDI stock and more liberalised trade policies represented by a higher degree of openness attracted relatively more FDI inflows, while higher efficiency wages and greater remoteness from the rest of the world deterred FDI inflows.

Third, in the FDI literature the most important factor cost in the determination of FDI flows is the labour cost. However, in most of the previous studies the labour cost variables either have the wrong signs (positive) or are not statistically significant, even though having the negative signs. The main reason for the above results is the use of absolute wage rates rather than the efficiency wage, since a lower absolute wage rate may also be accompanied by lower productivity. Thus the efficiency wage may not be low. In other words, a higher absolute wage rate may be associated with higher

productivity, and thus the efficiency wage may not be high. Therefore, the best measure of labour costs should be the efficiency wage rather than the absolute wage rates. Based on the above argument, in this study the efficiency wage rather than the absolute wage rates was used as the labour costs variable. According to our regression results it is a negative and statistically significant location factor affecting FDI inflows into developing countries. Therefore, this study has made some improvement in the use of labour cost variables in the empirical study of location determinants of FDI inflows.

Fourth, the use of remoteness instead of the absolute distance as the distance factor in this study is another improvement in the empirical study of the location determinants of FDI inflows. The basic argument for the use of remoteness as the distance factor is that what matters for the magnitude of aggregate FDI inflows from all source countries into a developing host country is the developing host country's geographic position relative to the rest of the world. Therefore, remoteness provides a standardised distance factor for each of the developing host countries with respect to all other countries in the world. According to the regression results, the large and negative estimated coefficient of remoteness reveals that transaction costs in terms of information gathering and familiarity with local market conditions are very important factors affecting the investment location decision of foreign investors.

Fifth, by using the statistical model as an empirical norm, our analysis of the relative performance of China and other developing countries in attracting FDI inflows shows that there is no obvious evidence to conclude that China's participation in attracting FDI inflows has caused a diversion of world FDI away from other developing countries towards China. We found that China's relative performance in attracting FDI inflows was only at a level moderately above average both among the developing countries and among the East and South-East Asian countries. Therefore, despite the fact that China is the largest FDI recipient among the developing countries and has attracted a large amount of FDI inflows in absolute dollars, in terms of its huge market size, fast economic growth, low labour costs and other economic and geographical characteristics, China received only its fair share of FDI inflows into developing countries, or at most marginally more than its potential from 1987 to 1994.

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