

WHAT ATTRACTS FOREIGN MULTINATIONAL CORPORATIONS TO CHINA?

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After adopting the open-door policy, China experienced a boom of inward foreign direct investment (FDI) by multinational corporations. This article attempts to assess effects of location characteristics and government policies on FDI flows during the period 1987–98. A model of FDI determinants is specified and estimated with cross-section and panel data. The estimates indicate that China's huge market size, liberalized FDI regime, and improving infrastructure are attractive to multinationals. The regional distribution of FDI within China is influenced largely by FDI incentives and historical-cultural links with foreign investors, along with other location factors. (JEL F21, F23, O53)

Over the past decade, few developments in international economics have been more important than the sudden emergence of China as a dominant recipient of foreign direct investment (FDI) in the world. From an almost isolated economy in 1979, China has become the largest recipient of FDI in the developing world and globally the second only next to the United States since 1993. Accumulated FDI flows into China in 1992–97 was \$196 billion, constituting over 30% of total FDI into all developing countries (UNCTAD, 1998). It should be stressed that the FDI boom is not unprecedented, but in fact conforms rather closely to Latin America in the 1970s and Southeast Asia in the 1980s. China's real distinction is its huge size and enormous population. The combination of the FDI boom and the huge size raises questions such as how China formed its FDI regime to attract multinational corporations and what differences China's market size made to the FDI boom.

Though there has been a lot of work done in examining determinants of FDI in China (e.g., Lardy [1995]; Chen [1996]; Head and Ries [1996]; Henley et al. [1999]; Zhang

[2000a]), an empirical assessment of roles of China's FDI regime and location characteristics with the latest data has been limited. The purpose of this study is to close the gap in the literature by estimating a model of FDI determinants with both cross-section and panel data in 1987–98. Estimations with the cross-section data are also conducted in three subperiods to investigate dynamic features of location advantages and policy instruments.

The study should be of importance in policy implications for developing countries. FDI has been viewed to play a positive role in a host country's capital formation, export promotion, employment augmentation, and, more important, technology transfers (UNCTAD, 1992). From a host country's point of view, it thus is desirable to assess what policy instruments should be adopted to attract FDI and to identify the locational factors through

ABBREVIATIONS

FDI: Foreign Direct Investment
MOFERT: Ministry of Foreign Economic Relations and Trade
OLI: Ownership, Location, and Internalization
SSB: State Statistical Bureau
UNCTAD: UN Conference on Trade and Development
UNCTC: UN Center on Transnational Corporations
USCBC: U.S.–China Business Council

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which the host country may to some extent influence the magnitude and the direction of FDI.

I. THE PATTERN OF FDI IN CHINA

FDI in China has experienced dramatic changes since 1979, when China promulgated the "Law of Sino-Foreign Joint Venture." The pattern of FDI may be described by its time trend, sources, sectoral structure, and regional distribution. First, the most impressive feature of the time trend is the sharp FDI boom in 1990s in contrast with steady but small amount of inflows in the 1980s (see Table 1). In fact, the seven-year (1992–98) inflows amounted to \$233.9 billion, constituting 91% of total FDI (\$257 billion) over the entire period of 1979–98 (SSB, 1999). The factors that caused the FDI boom included further liberalization of China's FDI regime and the explosive growth of domestic economy, along with the worldwide rise in FDI outflows in the first half of the 1990s and China's political stability (Lardy, 1995).

Second, most of the FDI received by China did not come from the world's major investors (the US, Japan, and West Europe) but from Hong Kong, Taiwan, and other Asian developing countries. Table 1 shows origins of FDI into China over the period 1979–98. During the boom period (1992–98), the Asian FDI sources that contribute over 70% of total FDI in that period include Hong Kong (53.6% of the total, ranked as 1st),¹ Taiwan (2nd), Singapore (5th), South Korea (6th), and Thailand (11th). With the exception of Japan (8.1%, ranked as 3rd) and the United States (7.7%, 4th), other industrialized countries played a minor role.

Third, the sectoral distribution of FDI differs across FDI-source countries. Table 2 suggests that relative to the Asian developing economies, industrial countries have placed

1. It should be noted, however, that a small part of the reported Hong Kong FDI is actually either industrialized countries' investment through their subsidiaries based in Hong Kong or Taiwanese investment under the name of Hong Kong for political reasons. The latter was especially true before 1992 when Taiwanese government permitted officially FDI into China. Moreover, a small part of the reported Hong Kong FDI was carried out by subsidiaries located in Hong Kong but owned by Chinese central or local governments (so-called round-tripping FDI) to take advantage of preferential treatments, such as tax holidays, under the name of FDI (UNCTAD, 1996).

less emphasis on export-oriented light industries and textile projects in China. Though the share of Asian FDI in these two groups is as high as 44%, that for the Western FDI is only 26%. The Asian FDI is concentrated on labor-intensive and relatively low-technology goods (such as garments, toys, shoes, and consumer electronics) aimed at the international market. The Western firms aim their investments much more to China's domestic market in capital-intensive goods such as machinery, chemicals, health care products, and services.²

Fourth, although FDI is located in every corner of China, it tends to be highly concentrated in coastal region (see Table 3). Though the share of population in the coastal region in China is 40%, its share of FDI flows in total is 88% in the period 1986–98. The uneven regional distribution of FDI might be a result of a variety of factors, including the FDI policies, regional economic differences, and particularly historical-cultural links with foreign investors.³

II. THEORETICAL FRAMEWORK

FDI arises mainly from activities of multinational firms that operate across countries. The literature on the FDI determinants indicates that multinational firms would allocate their investment among countries so as to maximize their risk-adjusted profit (Caves, 1996). The profit of FDI made by multinational firms in a country may depend on three

2. Overall, FDI from Asian developing countries specializes in labor-intensive and low-technology activities. Their products tend to be undifferentiated and sold mainly on the basis of price rather than distinct design or performance characteristics (Wells, 1993). In contrast, FDI from Western countries (the U.S., Japan, and Western Europe) concentrates in capital-intensive goods and is large in size. Their investment is motivated more by access to the Chinese market for specialty and high-technology products rather than cheap labor (USCBC, 1990).

3. Because the majority of the FDI received in China came from overseas Chinese in Hong Kong, Taiwan, and the other parts of the world, location choices of their investment are largely influenced by the historical-cultural links between investors and sites picked up (so-called hometown connections). With close links to Guangdong (the province with largest FDI flows in China), for instance, Hong Kong investors contributed over 90% of FDI in that province. Similarly, Taiwanese located a substantial portion of their investments in Fujian province, which not only is the closest part of China to Taiwan but also has hometowns of many Taiwanese.

TABLE 1
Sources of FDI in China 1979–98 (Millions of U.S. Dollars)

Countries/Regions	1992–98		1979–91	
	Total Inflows	%	Total Inflows	%
Asian developing economies	173,090	74.00	15,594	67.50
Hong Kong	125,300	53.57	13,208	57.17
Taiwan	19,458	8.32	199	0.86
Singapore	11,626	4.97	628	2.72
South Korea	8,005	3.42	51	0.22
Thailand	1,620	0.69	118	0.51
Others	7,081	3.03	1,390	6.02
Western developed economies	60,816	25.99	7,509	32.50
Japan	18,890	8.08	1,740	7.53
United States	17,963	7.68	2,382	10.31
United Kingdom	5,830	2.49	862	3.73
Germany	3,332	1.42	655	2.88
France	2,046	0.87	305	1.32
Canada	1,876	0.80	146	0.63
Netherlands	1,535	0.66	32	0.14
Others	9,344	3.99	1,387	6.00
Total	233,906	100.00	23,103	100.00

Sources: Data for 1992–97 are from *International Trade* (various issues) by MOFERT. Others are from *Almanac of China's Foreign Economic Relations and Trade* (various issues) and *China Statistical Yearbook* (various years).

Note: All numbers of FDI flows and stock are realized investment in current values.

TABLE 2
FDI Sector Distribution in China in 1990, by Sources of FDI and Projects

Sector	Asian FDI		Western FDI		Total	
	Number	%	Number	%	Number	%
Agriculture	44	2.40	44	6.71	88	3.53
Building materials	90	4.90	35	5.34	125	5.02
Chemicals	146	7.96	51	7.77	197	7.91
Electronics	143	7.79	74	11.28	217	8.71
Energy	9	0.49	18	2.74	27	1.08
Food	100	5.45	52	7.93	152	6.10
Heavy industry	130	7.08	67	10.21	197	7.90
Light industry	503	27.41	108	16.46	611	24.53
Medical	35	1.90	43	6.55	78	3.13
Packaging	58	3.16	11	1.68	68	2.73
Printing	14	0.76	8	1.22	22	0.88
Property development	53	2.89	17	2.59	71	2.85
Services	68	3.71	22	3.35	89	3.57
Textiles	312	17.00	63	9.60	378	15.17
Transportation	91	4.96	34	5.18	122	4.90
Miscellaneous	39	2.13	9	1.37	49	1.97
Total	1,835	100.00	656	100.00	2,491	100.00

Source: *Special Report on US Investment in China* by the US–China Business Council (1991).

Notes: Western FDI denotes FDI from all developed countries. Asian FDI is the FDI from all developing economies.

TABLE 3
Flows of Foreign Direct Investment into China by Provinces, 1987–98 (Millions of U.S. Dollars and Percentages)

Provinces	1987–90		1991–94		1995–98	
	Flows	Share	Flows	Share	Flows	Share
National total	1,041.257	100.00	7,743.911	100.00	17,116.796	100.00
Coastal region	951.898	91.42	6,838.578	88.31	14,927.337	87.21
Beijing	119.353	11.46	270.619	3.49	671.653	3.92
Tianjin	24.335	2.34	188.145	2.43	829.833	4.85
Shanghai	117.542	11.29	698.284	9.02	1,504.776	8.79
Hebei	9.037	0.87	113.641	1.47	414.259	2.42
Liaoning	51.210	4.92	340.395	4.40	769.867	4.50
Shandong	34.505	3.31	553.170	7.14	1,021.904	5.97
Jiangsu	38.841	3.73	881.471	11.38	2,205.757	12.89
Zhejiang	15.380	1.48	256.280	3.31	559.972	3.27
Fujian	80.038	7.69	864.027	11.16	1,653.257	9.66
Guangdong	412.930	39.66	2,226.949	28.76	4,658.924	27.22
Hainan	33.076	3.18	254.991	3.29	326.678	1.91
Guangxi	15.651	1.50	190.606	2.46	310.457	1.81
Inland region	89.359	8.58	905.333	11.69	2,189.459	12.79
Jilin	2.667	0.26	64.017	0.83	166.225	0.97
Heilongjiang	9.951	0.96	69.011	0.89	227.683	1.33
Inner Mongolia	0.353	0.03	7.551	0.10	28.793	0.17
Shanxi	1.889	0.18	16.013	0.21	71.535	0.42
Anhui	2.326	0.22	68.739	0.89	170.033	0.99
Jianxi	2.165	0.21	58.587	0.76	153.543	0.90
Henan	12.218	1.17	91.167	1.18	231.195	1.35
Hubei	7.425	0.71	138.575	1.79	312.492	1.83
Hunan	2.765	0.27	90.908	1.17	296.850	1.73
Sichuan	7.164	0.69	167.507	2.16	246.205	1.44
Guizhou	1.756	0.17	13.370	0.17	18.353	0.11
Yunnan	1.790	0.17	32.611	0.42	60.171	0.35
Tibet	0.000	0.00	0.000	0.00	0.000	0.00
Shaanxi	32.361	3.11	54.983	0.71	157.842	0.92
Gansu	1.498	0.14	13.119	0.17	23.402	0.14
Qinghai	0.000	0.00	1.081	0.01	1.143	0.01
Ningxia	0.241	0.02	6.540	0.08	6.287	0.04
Xingjiang	2.790	0.27	11.554	0.15	17.707	0.10

Sources: Computed based on *China Statistical Yearbook* (1997, 1998, and 1999) and *China Regional Economy* (1996) by SSB.

Notes: FDI flows the three periods are accumulative amount of millions of U.S. dollars in current prices. The division of coastal and inland regions follows the Chinese government. The municipal city of Chongqing, established in 1997, is still included in Sichuan province due to unavailability of the data in the years before 1997.

groups of factors: (1) factors within the firm that enable it to grow and diversify more successfully than others at home or abroad (such as proprietary technology and management expertise); (2) factors in the host country that make the country as the best location for the firm to produce across countries (such as cheap labor, growing market

size, and tax incentives); and (3) factors associated with the firm's trade-off between FDI and exporting or licensing (such as transaction costs). Dunning (1981) has classified these three groups of factors as three sets of advantages for a firm to go multinational: ownership, location, and internalization (the so-called OLI paradigm of eclectic theory).

According to the OLI framework, the i th firm with certain ownership advantages (O_i) would open a subsidiary in country j with location advantages (L_j) to respond to expected return (π_{ij}) as well as risk (ξ_{ij}). Both advantages of O_i and L_j can best be captured by the internalization (I_i) of production via direct investment, as summarized in the following equation:

$$FDI_{ij} = f(\pi_{ij}, \xi_{ij}) = g(O_i, L_j, I_i).$$

In a demand-supply framework, the ownership (O_i) and internalization (I_i) advantages might be viewed as the supply-side factors of FDI, and location (L_j) advantages are treated as the demand-side factors. Studies focusing on demand-side determinants, given the ownership and internalization advantages, concern the question of why FDI goes to a particular country rather than to others.

Focusing on the location factors, it is convenient to distinguish between export-oriented (or vertical) and market-oriented (horizontal) FDI on the basis of multinationals' motivations. The export-oriented FDI involves fragmenting the production process geographically by different stages based on labor intensities, whereas the market-oriented FDI is made to build plants in multiple countries to serve local markets (Zhang, 2000b). Location factors that influence the export-oriented FDI include labor cost and infrastructure (e.g., transportation conditions) (Zhang and Markusen, 1999). Due to its "footloose" feature, this type of FDI is largely attracted to the location with favorable fiscal policies (e.g., tax holidays) and other incentives (e.g., low land fee).

The market-oriented FDI is essentially motivated by gaining access to local markets. Host countries' FDI regime that regulates entry and scope of this type of FDI would be a prerequisite for the presence of multinationals. If subsidiaries of multinationals are allowed to sell their products in host countries, the size of local markets is expected to be a critical determinant because the larger market size offers greater opportunities to realize effectively economies of scale (Zhang, 2000b). Because this type of FDI involves advanced technology, it generally requires certain level of stock of human capital or skilled labor and good infrastructure conditions in the host counties.

III. EMPIRICAL ANALYSIS OF FDI DETERMINANTS

A. Explanatory Variables and Specifications

The preceding discussions of the theoretical framework and the stylized facts of FDI in China suggest that FDI flows to a province depend on policy instruments as well as on location characteristics. In particular, FDI flows at the provincial level are expected to be affected by China's FDI regime, local market size, labor costs, labor quality, agglomeration economies, transportation costs, FDI incentives, and cultural links with investors. The definitions of these independent variables and their expected impacts on FDI flows are listed in Table 4. The identification of the potential determinants is discussed as follows.

- **Market Size (MARKET):** An important factor affecting revenue (2nd therefore profits) of a multinational firm is market size of a province, particularly for the market-oriented FDI that aims to gain access to local markets. The larger the market size of a province, the more FDI is likely to be received in that province.

- **Labor Costs (WAGE):** Foreign investors generally aim to take advantage of cheaper factor inputs in China, particularly cheaper labor for the export-oriented FDI in which production is labor-intensive. Though such sensitivity of FDI location to cross-country differentials in labor costs has been recognized and tested in the literature, we know very little of the link between FDI and cross-province differential in labor costs within a vast country. To see how foreign investors respond to differences in labor costs across provinces, we include the variable in our estimation by using average wage rate of manufacturing workers as proxy of labor costs.

- **Labor Quality (SCHOOL):** High labor quality not only raises output but also enables firms to operate production with advanced technology. This is especially true for the FDI from the US, Japan, and Western Europe, which is capital-intensive in production and skilled labor-oriented. Consequently, a province with higher labor quality, measured by share of secondary school students in provincial population, should receive more FDI flows relative other provinces.

- **Agglomeration Economies (AGGLOM):** Manufacturing production generally could

TABLE 4
Definitions, Measurements, and Expected Impacts of Independent Variables

<i>MARKET</i>	Market size, measured by real GDP of a province (+)
<i>WAGE</i>	Labor costs, measured by average real wage rate of manufacturing workers in a province (-)
<i>SCHOOL</i>	Labor quality, measured by the share of secondary-school students in total population in a province (+)
<i>AGGLOM</i>	Agglomeration effects, measured by share of manufacturing output in a province's GDP (+)
<i>TRANS</i>	Transportation network, measured by railroad and highways (include expressways and class I to IV highways) in kilometers per square kilometer for a province (+)
<i>INCEN</i>	FDI incentives, measured by a dummy variable that takes value of one for coastal provinces with special economic zones or opened cities, and zero for other provinces (+)
<i>CULTU</i>	Cultural and historical links with foreign investors, measured by a dummy that takes value of one for Guangdong and Fujian provinces, and zero for other provinces (+)
<i>OPEN</i>	Openness of China's domestic market to FDI, measured by a dummy that takes a value of one for years since 1991, when the liberalized FDI regime was adopted, and zero for other years (+).

Note: The signs (+ or -) in parentheses indicate the expected impact of each independent variable.

become more efficient due to agglomeration economies that result from existing manufacturing activities locating in close proximity. Measured by the share of manufacturing output in provincial GDP, a province with strong agglomeration economies should attract more multinational firms.⁴

- Transportation (*TRANS*): One frequently mentioned consideration in attempts to attract FDI is the existence of a highly developed transportation network. More railroad and highway mileage, adjusted for province size, would be positively related to FDI flows.

- FDI Incentives (*INCEN*): To encourage FDI, China has provided foreign investors with special favorable measurements in taxation, land use, and foreign currency exchange in coastal region, particularly 4 special economic zones and 14 opened cities. As a result, the coastal region has received the lion's share of total FDI. A regional dummy is used to capture the cross-province differences in FDI incentives.⁵

- Cultural Links (*CULTU*): Cultural proximity between FDI sources and hosts would

encourage FDI flows. This is especially true for pairs of Hong Kong-Guangdong province and Taiwan-Fujian province because the two pairs not only are geographically adjacent to each other but also speak the same dialect. Such geographic and linguistic proximity plays a key role in large FDI flows in Guangdong and Fujian provinces.

- Openness (*OPEN*): The new FDI regime adopted since 1991 to open more industries to FDI and to allow more local sales by foreign affiliates (measured by a dummy variable *D1*) are supposed to have substantially contributed to the FDI boom in 1990s.

The resulting hypotheses are as follows.

HYPOTHESIS 1. *The FDI boom should be a result of the liberalized FDI regime and huge market, along with improving infrastructure conditions and labor quality resulting from fast economic growth.*

HYPOTHESIS 2. *The effects of market size, labor quality, and infrastructure on FDI flows should become stronger from 1980s to 1990s due to more market-oriented FDI.*

HYPOTHESIS 3. *Regional distribution of FDI within China should be influenced largely by FDI incentive policy, historical-cultural links with foreign investors, and regional economic differences.*

The corresponding empirical model with cross-province data might be specified as

$$FDI_i = \alpha_0 + \alpha X_i + \varepsilon_i,$$

4. In the literature, the agglomeration has been measured by either the share of manufacturing output in total output (i.e., GDP) or the share of manufacturing workers in total labor force (Wheeler and Mody, 1992; Head et al., 1995). I have tried both indexes separately in the regressions and found that the estimates are qualitatively identical.

5. The coastal region includes 3 municipalities (Beijing, Tianjin, and Shanghai) and 9 provinces (Hebei, Liaoning, Shandong, Jiangsu, Zhejiang, Fujian, Guangdong, Hainan, and Guangxi) (SSB, 1998).

where $i = 1, \dots, 29$; FDI_i is amount of FDI flow in i th province in the given period of time; \mathbf{X}_i denotes a set of location characteristics of the province; and ε_i is stochastic disturbance term.

To bring out any possible structural variations over the period, separate estimations of the model are conducted for the three subperiods: 1987–90, 1991–94, and 1995–98. This is based the consideration that foreign investors may have responded differently over these periods due to changes in China's investment environment. The Chinese government launched an economic adjustment program in the late 1988 to control rapidly rising inflation, leading to a halt in all new FDI projects. The crackdown on the student demonstration at the Tiananmen Square in 1989 probably hurt FDI inflows because foreign investors began to doubt Chinese political stability. However, in 1991 the Chinese economy started recovery from the deflationary government interventions and from negative influences due to the Tiananmen Square incident (Lardy, 1995). From the same year, China's FDI regime began to shift gradually from "export-promotion FDI" to "technology-promotion FDI" (labeled "trade domestic markets for technology"). Such a shift was partly due to increasing pressures from the U.S. and other industrialized countries to open up Chinese domestic markets and partly the limits of expansion of the export-oriented FDI (Lardy, 1995; Zhang, 2000a). In 1994 the Chinese currency (Renminbi) was depreciated dramatically by almost 50%, which led to an export boom, and hence the economy maintained an attraction for foreign investors with export-oriented FDI in the following years. More fundamentally, with outstanding economic performance, China has become increasingly attractive to foreign investors over time, particularly due to improving infrastructure and expanding domestic markets.

Given 29 provinces and up to 12 years (1987–98), the data set provides us with a total of 348 observations, which is by far the largest panel data on FDI flows at the provincial level. Its panel nature has the important advantage of allowing us to control for province-specific effects when estimating how FDI flows are determined by the location characteristics. In contrast, some previous studies have pooled their data across

provinces and over time, implicitly assuming that province-specific effects are either absent or uncorrelated with the regressors. It is well known that such correlation will bias coefficient estimates. Fixed-effects estimation enables us to focus on relationship within provinces over time. Thus we use the following specification:

$$FDI_{it} = \beta_i + \delta \mathbf{X}_{it} + \mu_{it},$$

where $i = 1, \dots, 29$ and $t = 1, \dots, 12$; FDI_{it} indicates FDI flows into i th province in year t , and \mathbf{X}_{it} denotes the independent variables in Table 4 that vary across provinces and over time. Province-specific effects are captured by β_i .

B. The Data and Estimation Results

Because much of the information on the variables (especially FDI) used in this study is not available for many provinces for years before 1986, the best data set is collected for 29 provinces or regions for the period 1987–98.⁶ All data used in this study are taken from *China Statistical Yearbook* (SSB, 1997, 1998) and *China Regional Economy* (SSB, 1996) by State Statistical Bureau (SSB) of China. Because every province or regions for which data for the relevant variables are available in the sources cited has been included, there is no direct selection bias in the sample. The dependent variable (FDI) is measured by annual flows in terms of U.S. dollars, adjusted by U.S. GDP deflator. The construction of independent variables is provided in Table 4. For each subperiod of the cross-section estimations, both dependent and independent variables are computed by taking mean values of the variables over the relevant periods.

The estimates of cross-section data for the three subperiods are obtained by the ordinary least squares technique, and the estimates of panel data for the full sample are conducted by the "fixed effects" approach.⁷ In both

6. In addition to 22 provinces, the sample includes 3 municipalities (Beijing, Tianjin, and Shanghai) and 4 autonomous regions (Inner Mongolia, Guangxi, Ningxi, and Xinjiang) that have provincial status. The newly established municipal city of Chongqing and the autonomous region of Tibet are dropped from the sample due to unavailability of the data.

7. It should be noted that at least two aspects of the estimates reported here might seem troublesome. One is the possibility of heteroskedasticity in the disturbance

cases, all independent variables are lagged by one year so as to make the regressors predetermined and allow a one-year lag between the regressors and the actual investment. By including the data of 1986 for independent variables that are available, the number of observation for the panel estimation does not decrease with the one-year lagging.

Table 5 presents parameter estimates obtained from the cross-section data for the three subperiods (1987–90, 1991–94, and 1995–98) and from the panel data for the entire sample (1987–98). The following main points emerge from the results in the table.

1. The overall performance of both cross-section and panel estimates is satisfactory. Values of adjusted R^2 in all cases are more than 90%, suggesting a strong explanatory power of the models.⁸ The fit of the regressions is good in all cases as well. The regression F -statistics are significant at the conventional levels of almost 100% in each model.

2. The panel estimates are consistent with our expectation for all independent variables except labor costs. The estimated coefficients of *MARKET*, *SCHOOL*, *AGGLOM*, *TRANSP*, *INCEN*, *CULTU*, and *OPEN* are significant at 5% or better and have correct signs. The results support the widely held view that FDI might have been encouraged largely by China's market along with increasingly liberalized FDI regime and FDI incentives. Moreover, provinces with better

conditions in labor quality, manufacturing ability, infrastructures, and cultural links with foreign investors seem to be more attractive to multinational firms. These results are quite consistent with those from existing studies in the literature (e.g., Wheeler and Mody [1992])

3. The insignificance of the coefficient for labor costs in the cross-section as well as the panel estimates is not quite unexpected. The decision for multinational firms to invest in China is no doubt heavily influenced by the country's prevailing low wage rate relative to other potential host countries and FDI source countries. However, once the choice is made to invest in China, finding the cheapest possible labor *within* China may not be an important consideration as wage differentials may not be significant. In fact, it is likely to be the case that observed wage rates (including bonuses and in-kind benefits) do not vary as much between regions within China as within other countries because of China's legacy of central planning, which has tended to homogenize wage rates.

4. The parametric variation in cross-section estimates for three subperiods seems to indicate that significant changes have taken place over time in the responses by foreign investors to China's market, labor quality, and infrastructure conditions. As indicated in Table 5, coefficients of the market size variable rise over time from 0.11 in 1987–90 to 0.19 in 1995–98 and their t -statistics increase as well. The market size seems indeed to have played an increasingly important role in attracting FDI flows. Stronger effects of labor quality (*SCHOOL*) and transportation conditions (*TRANSP*) over time are also suggested, implying that multinational corporations prefer locations with labor forces of higher productivity and good infrastructure conditions.

Overall, the findings not only support the three hypotheses proposed in the preceding section but also are in large part consistent with the existing studies of FDI location determinants in China, as well as the studies of FDI location in general. In his cross-country study covering the period of 1974–86, Lecraw (1991) breaks down FDI flows into three types: export-oriented, local market-oriented, and resource-extractive activities. The growth of local market affect only

term, particularly for cross-section data. The other is the feedback from the dependent variable. Though a full-scale treatment of the second issue that may require causality tests with reasonably long time-series data is impossible for the present work due to unavailability of the data, one can test, based on the approach suggested by White (1980), at a simple level whether there are specification errors of the kinds mentioned. The result of White test indicates that the values of the test statistic are too small to justify nonacceptance of the null hypothesis of heteroskedasticity and correct model specifications, suggesting absence of both heteroskedasticity and other major specification errors.

8. Although the high R^2 might be a symptom of colinearity, the majority of coefficients in the regression indeed have high significance levels. In addition, almost all coefficients of independent variables have the correct signs, which may not suggest an indication of co-linearity. Moreover, the regressions are rerun in which small changes in the data or dropping one of the independent variables are allowed. These experiments seem not indicate the problem of colinearity because no large changes in the parameter estimates emerge in the regressions.

TABLE 5
Cross-Section and Panel Estimates of FDI Location Determinants

Independent Variables	Cross-Section Estimates			Panel Estimates
	1987-90	1991-94	1995-98	1987-98
<i>MARKET</i>	0.110 (1.005)	0.143* (1.812)	0.189** (2.298)	0.154** (2.307)
<i>WAGE</i>	-0.012 (-0.807)	-0.017 (-0.586)	0.014 (0.398)	-0.027 (-0.802)
<i>SCHOOL</i>	0.110 (0.815)	0.136* (1.901)	0.211** (2.061)	0.304** (2.229)
<i>AGGLOM</i>	0.650* (1.781)	0.701* (1.870)	0.738* (1.820)	0.868* (1.924)
<i>TRANSP</i>	0.102* (1.807)	0.126** (2.418)	0.225** (2.450)	0.214** (2.202)
<i>INCEN</i>	1.212*** (5.126)	1.003*** (3.365)	1.118** (2.608)	1.307*** (6.015)
<i>CULTU</i>	1.674*** (3.552)	1.557** (2.102)	1.698** (2.315)	1.857** (2.405)
<i>OPEN</i>				1.954*** (5.226)
Adjusted R^2	0.902	0.935	0.927	0.950
F -statistics	13.281	13.665	15.580	69.127

Notes: The number of observations for all of the three cross-section estimates is 29, and for the panel estimates is 348. The estimating results for constant terms are omitted to save the space. The asterisks ***, **, and * indicate the levels of significance at the 1%, 5%, and 10%, respectively.

the market-oriented FDI, whereas taxes and labor costs affect only the export-oriented FDI. UNCTC (1991) documents the general relaxation of host countries' control on FDI over 1977-87. Its panel data analysis suggests significant positive effects of more favorable terms of both taxes and performance requirements.

The estimates indicate strong positive effects of market size, agglomeration, and infrastructure quality on the regional FDI distribution, which position is broadly consistent with the results reported by Head and Ries (1996) and Chen (1996). Wages seem to have an insignificant effect on FDI regional distribution, which is similar to Head and Ries's (1996) finding that the impact of wages is negligible and Chen's (1996) results that the labor cost does not matter in foreign investors' location choice within China. Though some findings of this study are not completely new, the estimation based on three subperiods provides evidence of dynamic patterns in the FDI determinants, which sheds some light on changes in the importance of individual explanatory

variables for the regional distribution of FDI within China.

IV. CONCLUDING REMARKS: POLICY IMPLICATIONS

Studying location determinants of FDI is obviously of interest because more developing countries view FDI as an engine of economic growth (UNCTAD, 1992). This study attempts to address the phenomenon of the FDI boom in China on the basis of cross-section and panel estimations. Besides working with a fairly large sample of 29 provinces and 12 years until 1998, the author investigates effects of FDI determinants for three subperiods separately to judge whether the importance of these factors changed over the 1980s and 1990s. Further, the author takes a closer look at the impact of policy instruments on FDI, such as FDI regime and incentive policies in the panel estimates that enable us to control province-specific effects. The evidence supports the view that China has become quite attractive to multinational corporations due to its liberalized FDI

regime and huge market, along with improving infrastructure conditions.

The main findings of the article are easily stated. Once again, China's FDI boom seems to be mainly a result of its liberalized FDI regime and huge market. In addition, the importance of market size, labor quality, and infrastructure conditions seems to have increased during the 1980 and 1990s, as we might have suspected. Though the impact of labor costs does seem negligible within China, regional distribution of FDI seems to have been determined largely by FDI incentive policy and historical-cultural links with investors as well as regional economic differences.

Some policy implications may be suggested from these findings. First, because FDI policy is shown to be important for FDI flows into a province, a more favorable FDI policy should be helpful for the vast inland areas that have received small amounts of FDI flows relative to the coastal areas. Less attraction of the inland areas to foreign investors is in large part a result of the lack of the incentive policies relative to the coastal areas. Second, further opening of domestic market to multinational corporations is needed to attract more FDI flows, because it is clear that foreign investors respond positively to both liberalized FDI regime and the market size. China has so far not taken full advantage of its market size in encouraging foreign investors because of many restrictions for the market-oriented FDI. With possible entry into the World Trade Organization in the near future, another FDI boom should be expected with more foreign subsidiaries in China to sell their products locally. Third, because both infrastructure and education turn out to be critical in attracting foreign investors in a province, improvements in these seem important for continuing FDI flows. Multinational corporations are likely to be attracted to the regions that have better infrastructure conditions and more skilled labor.

It should be noted that relative to many developing countries, China is unique in successfully attracting FDI due to its huge size and the large number of "loyal" overseas Chinese. The "market of over one billion" has made China a highly desirable location for new foreign investment and has provided an extremely strong lure

for multinational corporations. In particular, companies in the U.S., Europe, and Japan (such as Boeing, General Motors, Motorola, Volkswagen, and Toyota) view their investment in China as part of a global strategy, which is designed to secure their sales there over the long term, but not necessarily resulting in short-term profits or reduction of production costs. However, the significant presence of the market-oriented FDI from industrialized countries did not take place until the 1990s, because of the restrictive policy relative to this type of FDI. Chinese government believed in the 1980s that giant multinational corporations might drive domestic firms out of market with their competitive advantages in technology and marketing network. Therefore it actively encouraged the export-oriented FDI from Hong Kong, Taiwan, and other Asian developing economies. To maintain an attraction to foreign firms, particularly industrialized multinational corporations, Chinese government may take advantage of the market size by further liberalizing its FDI regime and keeping rapid economic growth.

Finally, in addition to labor cost considerations, "hometown connections" have played a critical role in the substantial flows of investment into China by overseas Chinese firms. The hometown connections are based on the fact that overseas Chinese not only share the same language and culture with people in China but also have relatives, friends, and former business ties in China. These connections made it much easier for overseas Chinese investors to negotiate and operate joint ventures in China than for other investors. Without overseas Chinese, China would not have been successful in attracting so much FDI over the past 20 years. This fact suggests that Chinese government should maintain its favorable policy for overseas Chinese investors and create a better environment to encourage their investments.

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