

## Foreign Direct Investment in China and East Asia

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## Abstract

By any measure, China's policy to attract foreign direct investment (FDI) as a pillar of its development strategy has been a huge success. This FDI policy is promoting growth in China. But is this development strategy beggar-thy-neighbor? In other words, is China taking direct investment away from other Asian developing economies? Theoretically, a growing China can add to other countries' direct investment by creating more opportunities for *production-networking* and raising the need for *raw materials* and *resources*. At the same time, the extremely low Chinese labor costs may lure multinationals away from other Asian sites when the foreign corporations consider alternative locations for low-cost export platforms.

In this paper, we explore this developmental issue empirically. We use data for eight Asian economies (Hong Kong, Taiwan, Republic of Korea, Singapore, Malaysia, Philippines, Indonesia and Thailand) from 1985 to 2001 and control for the determinants of their inward direct investment. We then add China's inward foreign direct investment as an indicator of the "China Effect". Due to issues of simultaneity, we use a random effects simultaneous equation model to estimate our coefficients.

We have three results: (1) The level of China's foreign direct investment is *positively* related to the levels of these economies' inward direct investments; (2) the level of China's foreign direct investment is *negatively* related to the direct investment of these economies as shares of total Asian foreign direct investments; (3) The China Effect is generally *not* the most important determinant of the inward direct investments of these economies. Policy and institutional factors such as openness, corporate tax rates and the level of corruption tend to be more important.

## **1. Introduction**

In recent years, China has become a favorite destination for foreign direct investment. In 2002, foreign direct investment in China reached US\$53 billion. For 2003, despite the problems associated with SARS (Severe Acute Respiratory Syndrome), China received US\$54 billion worth of foreign direct investment (UNCTAD 2004).

China is seen to be on its way to become "the factory of the world". The success of China in attracting foreign direct investment is no accident. One of the earliest strategic policy reforms of China was to open up the South to lure foreign investors. China's attempts to introduce markets into its economy go hand in hand with the liberalization of its FDI regime. In some ways, foreign direct investment reforms can be seen as the vanguard of domestic market reforms.

While increases in FDI from the outside world are complementary to China's efforts to modernize its economy, most of China's Asian neighbors seem to be very worried about the prospects of a rising China that absorbs more and more of the investment from major multinationals. Several Asian governments have publicly noted that the emergence of China has diverted direct investment away from their economies. Policymakers throughout the region are convinced that the rise of China has contributed to the "hollowing out" phenomenon, with foreign and domestic investors leaving their countries and investing in China instead. This in turn has led to a continued loss of manufacturing industries and jobs, further weakening the vitality of these economies.

In this paper, we would like to examine empirically the question of whether the successful FDI policy of China has diverted foreign direct investment away from a group of Asian economies. The economies we will consider include Hong Kong, Taiwan, Republic of Korea, Singapore, Malaysia, Indonesia, Philippines and Thailand. The research strategy is to control for the standard determinants of foreign direct investment and then add a proxy to represent “the China Effect”. We then would investigate the sign, significance and magnitude of such a “China Effect”.

The organization of this paper is as follows. In the next section, we will provide some background discussions related to foreign direct investment in China in general. In section 3, we then survey the relevant policy issues and the current literature. In section 4, we set up the empirical model to be estimated. In section 5, we present and discuss our results. Section 6 concludes.

## **2. Some General Characteristics of Foreign Direct Investment in China**

One of the most important elements of China’s economic reform has been the promotion of foreign direct investment inflow. FDI in China has grown dramatically over the past two decades, since China initiated its ‘open-door’ policy in 1978 (Table 1). When China initiated its ‘open-door’ policy, the amount of FDI inflow was very little. It was not until the mid-1980s when FDI in China surged and marked the beginning of China’s ride on the wave of globalization. In the early 1990s, it once again gained momentum. After it achieved an unprecedented growth between 1991 and 1993 however, both the number of projects and the contracted value began to go down in 1994. This downturn continued until the next big wave of FDI inflow hit China in 2000. In

2002, despite the widespread decline in FDI in the world, China experienced an increase in FDI inflow and overtook the United States to become the world's second largest destination of FDI.

Table 1  
Contracted and Realized FDI, 1979-2002

US\$ million/%

Year	Contracted		Realized	
	Amount	Growth Rate	Amount	Growth Rate
1979-1982	6,010		1,166	
1983	1,732		636	
1984	2,651	53.1%	1,258	97.8%
1985	5,932	123.8%	1,661	32.0%
1986	2,834	-52.2%	1,874	12.8%
1987	3,709	30.9%	2,314	23.5%
1988	5,297	42.8%	3,194	38.0%
1989	5,600	5.7%	3,392	6.2%
1990	6,596	17.8%	3,487	2.8%
1991	11,977	81.6%	4,366	25.2%
1992	58,124	385.3%	11,007	152.1%
1993	111,436	91.7%	27,515	150.0%
1994	82,680	-25.8%	33,767	22.7%
1995	91,282	10.4%	37,521	11.1%
1996	73,277	-19.7%	41,725	11.2%
1997	51,004	-30.4%	45,257	8.5%
1998	52,102	2.2%	45,463	0.5%
1999	41,223	-20.9%	40,319	-11.3%
2000	62,380	51.3%	40,715	1.0%
2001	69,195	10.9%	46,878	15.1%
2002	82,768	19.6%	52,743	12.5%
1979-2002	827,809		446,258	

Source: China Foreign Economic Statistical Yearbook.

Tables 2a and 2b present the contracted value and the realized value of FDI from 14 leading investing countries, respectively.<sup>1</sup> One of the features of the inflow of FDI in China is the large contribution of investment from Hong Kong, Taiwan and Macao, especially during the late 1980s and the early 1990s. One of China's reform strategies is to first open up Special Economic Zones (SEZs) in the southeast part of China in an attempt to attract foreign capital from its neighbors. Four SEZs were established in two southeast coastal provinces, Guangdong and Fujian. In Guangdong province, three SEZs are established in Shenzhen, Zhuhai, and Shantou. Shenzhen was a small town sharing a border with the then British colony, Hong Kong. Zhuhai is located next to Macao. Shantou is another coastal town lies near the border between Guangdong and Fujian. The fourth SEZ, Xiamen in Fujian province was a relatively industrialized city, located near Taiwan.

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<sup>1</sup> Contracted investment refers to investment that is promised. Realized investment refers to investment that is actually used. For details, see Fung (1997) and Fung, Lau and Lee (2004).

Table 2a  
Contracted FDI by Source Country/Territory, 1983-2002  
US\$10,000/%

ta	1983-1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	1992-2002	1983-2002
Total	<b>5066740</b>	5873545	1.1E+07	8267977	9128153	7327642	5100353	5210205	4122302	6237952	6919455	8276833	<b>77607983</b>	<b>82674723</b>
Hong Kong, China	<b>3107746</b>	4199377	7393852	4697141	4099555	2800172	1822229	1761328	1332892	1696105	2068586	2520183	<b>34391420</b>	<b>37499166</b>
United States	<b>464887</b>	314191	681275	601018	747113	691576	493655	648373	601611	800089	751487	815647	<b>7146035</b>	<b>7610922</b>
Taiwan	<b>0</b>	554790	996487	539488	587907	514098	281449	298168	337444	404189	691419	674084	<b>5879523</b>	<b>5879523</b>
Japan	<b>368782</b>	220025	296047	444029	759236	513068	340124	274899	259128	368051	541973	529804	<b>4546384</b>	<b>4915166</b>
Singapore	<b>92161</b>	100255	295420	377796	866575	631440	46919	300152	225824	203074	198417	278548	<b>3524420</b>	<b>3616581</b>
Virgin Islands	<b>560</b>	4345	29856	83570	132115	312105	515571	613613	348749	752162	877177	1264980	<b>4934243</b>	<b>4934803</b>
Korea	<b>0</b>	42054	155669	180626	299839	423646	218098	164085	148385	238582	348740	528222	<b>2747946</b>	<b>2747946</b>
United Kingdom	<b>78476</b>	28741	198832	274838	357723	254238	144551	168159	108540	83418	151564	114199	<b>1884803</b>	<b>1963279</b>
Germany	<b>116778</b>	13434	24938	123314	165963	99809	61281	237467	93872	290009	117145	91532	<b>1318764</b>	<b>1435542</b>
France	<b>24450</b>	29165	23623	24813	64242	123539	108112	48884	47031	63440	56577	87886	<b>677312</b>	<b>701762</b>
Macau, China	<b>0</b>		281466	172111	111529	44873	35865	30718	42656	34801	50300	63154	<b>867473</b>	<b>867473</b>
Netherlands	<b>22017</b>	4143	15169	36582	60232	88921	56718	56268	67581	341412	97397	51629	<b>876052</b>	<b>898069</b>
Canada	<b>33406</b>	31578	118374	89033	98248	82256	90659	94679	69915	86843	129546	114843	<b>1005974</b>	<b>1039380</b>
Malaysia	<b>6173</b>	20928	75855	61734	106066	75737	49021	32591	26573	38851	47221	79284	<b>613861</b>	<b>620034</b>
Australia	<b>33977</b>	27583	63791	84892	125738	52162	61447	69899	58838	69668	67500	91044	<b>772562</b>	<b>806539</b>
<b>Share in total</b>	<b>1983-1991</b>	<b>1992</b>	<b>1993</b>	<b>1994</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>1992-2002</b>	<b>1983-2002</b>
Total	<b>100.0%</b>	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	<b>100.0%</b>	<b>100.0%</b>
Hong Kong, China	<b>61.3%</b>	71.5%	66.4%	56.8%	44.9%	38.2%	35.7%	33.8%	32.3%	27.2%	29.9%	30.4%	<b>44.3%</b>	<b>45.4%</b>
United States	<b>9.2%</b>	5.3%	6.1%	7.3%	8.2%	9.4%	9.7%	12.4%	14.6%	12.8%	10.9%	9.9%	<b>9.2%</b>	<b>9.2%</b>
Taiwan	<b>0.0%</b>	9.4%	8.9%	6.5%	6.4%	7.0%	5.5%	5.7%	8.2%	6.5%	10.0%	8.1%	<b>7.6%</b>	<b>7.1%</b>
Japan	<b>7.3%</b>	3.7%	2.7%	5.4%	8.3%	7.0%	6.7%	5.3%	6.3%	5.9%	7.8%	6.4%	<b>5.9%</b>	<b>5.9%</b>
Singapore	<b>1.8%</b>	1.7%	2.7%	4.6%	9.5%	8.6%	0.9%	5.8%	5.5%	3.3%	2.9%	3.4%	<b>4.5%</b>	<b>4.4%</b>
Virgin Islands	<b>0.0%</b>	0.1%	0.3%	1.0%	1.4%	4.3%	10.1%	11.8%	8.5%	12.1%	12.7%	15.3%	<b>6.4%</b>	<b>6.0%</b>
Korea	<b>0.0%</b>	0.7%	1.4%	2.2%	3.3%	5.8%	4.3%	3.1%	3.6%	3.8%	5.0%	6.4%	<b>3.5%</b>	<b>3.3%</b>
United Kingdom	<b>1.5%</b>	0.5%	1.8%	3.3%	3.9%	3.5%	2.8%	3.2%	2.6%	1.3%	2.2%	1.4%	<b>2.4%</b>	<b>2.4%</b>
Germany	<b>2.3%</b>	0.2%	0.2%	1.5%	1.8%	1.4%	1.2%	4.6%	2.3%	4.6%	1.7%	1.1%	<b>1.7%</b>	<b>1.7%</b>
France	<b>0.5%</b>	0.5%	0.2%	0.3%	0.7%	1.7%	2.1%	0.9%	1.1%	1.0%	0.8%	1.1%	<b>0.9%</b>	<b>0.8%</b>
Macau, China	<b>0.0%</b>	0.0%	2.5%	2.1%	1.2%	0.6%	0.7%	0.6%	1.0%	0.6%	0.7%	0.8%	<b>1.1%</b>	<b>1.0%</b>
Netherlands	<b>0.4%</b>	0.1%	0.1%	0.4%	0.7%	1.2%	1.1%	1.1%	1.6%	5.5%	1.4%	0.6%	<b>1.1%</b>	<b>1.1%</b>
Canada	<b>0.7%</b>	0.5%	1.1%	1.1%	1.1%	1.1%	1.8%	1.8%	1.7%	1.4%	1.9%	1.4%	<b>1.3%</b>	<b>1.3%</b>
Malaysia	<b>0.1%</b>	0.4%	0.7%	0.7%	1.2%	1.0%	1.0%	0.6%	0.6%	0.6%	0.7%	1.0%	<b>0.8%</b>	<b>0.7%</b>
Australia	<b>0.7%</b>	0.5%	0.6%	1.0%	1.4%	0.7%	1.2%	1.3%	1.4%	1.1%	1.0%	1.1%	<b>1.0%</b>	<b>1.0%</b>
Above 15	<b>85.8%</b>	95.2%	95.6%	94.2%	94.0%	91.5%	84.8%	92.1%	91.4%	87.7%	89.5%	88.3%	<b>91.7%</b>	<b>91.4%</b>

Source: China Statistical Yearbook, China Foreign Economic Statistical Yearbook, Almanac of China External Economies and Trade, various issues.

Note: Data for 1983 - 1992 include data of Foreign Direct Investment and Other Foreign Investment.



Table 2b  
Realized FDI by Source Country/Territory, 1983-2002  
US\$10,000/%

Country (Territory)	1983-1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	1992-2002	1983-2002
<b>Total</b>	<b>2329049</b>	<b>1100751</b>	<b>2751495</b>	<b>3376650</b>	<b>3752053</b>	<b>4174548</b>	<b>4527701</b>	<b>4546275</b>	<b>4031871</b>	<b>4071481</b>	<b>4687759</b>	<b>5274300</b>	<b>42294884</b>	<b>44623933</b>
Hong Kong, China	1367575	750707	1727475	1966544	2006037	2067732	2063200	1850836	1636305	1549998	1671730	1786093	19076657	20444232
United States	258496	51105	206312	249080	308301	344333	323915	389844	421586	438389	443322	542392	3718579	3977075
Taiwan	0	105050	313859	339104	316155	347484	328939	291521	259870	229658	297994	397064	3226698	3226698
Japan	311589	70983	132410	207529	310846	367935	432647	340036	297308	291585	434842	419009	3305130	3616719
Singapore	27014	12231	49004	117961	185122	224356	260641	340397	264249	217220	214355	233720	2119256	2146270
Virgin Islands	0				30376	53761	171717	403134	265896	383289	504234	611739	2424146	2424146
Korea	0	11948	37381	72283	104289	135752	214238	180320	127473	148961	215178	272073	1519896	1519896
United Kingdom	33107	3833	22051	68884	91414	130073	185756	117486	104449	116405	105166	89576	1035093	1068200
Germany	40021	8857	5625	25899	38635	51831	99263	73673	137326	104149	121292	92796	759346	799367
France	20552	4493	14141	19204	28702	42375	47465	71489	88429	85316	53246	57560	512420	532972
Macau, China	0	20200	58650	50937	43982	58039	39455	42157	30864	34728	32112	46838	457962	457962
Netherland	6383	2841	8400	11105	11411	12511	41380	71882	54168	78948	77611	57175	427432	433815
Canada	6765	5824	13688	21605	25702	33793	34412	31652	31442	27978	44130	58798	329024	335789
Malaysia	566	2467	9142	20099	25900	45995	38183	34049	23771	20288	26298	36786	282978	283544
Australia	19241	3503	10996	18826	23299	19392	31374	27197	26331	30888	33560	38070	263436	282677
<b>Share in total</b>	<b>1983-1991</b>	<b>1992</b>	<b>1993</b>	<b>1994</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>1992-2002</b>	<b>1983-2002</b>
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Hong Kong, China	58.7%	68.2%	62.8%	58.2%	53.5%	49.5%	45.6%	40.7%	40.6%	38.1%	35.7%	33.9%	45.1%	45.8%
United States	11.1%	4.6%	7.5%	7.4%	8.2%	8.2%	7.2%	8.6%	10.5%	10.8%	9.5%	10.3%	8.8%	8.9%
Taiwan	0.0%	9.5%	11.4%	10.0%	8.4%	8.3%	7.3%	6.4%	6.4%	5.6%	6.4%	7.5%	7.6%	7.2%
Japan	13.4%	6.4%	4.8%	6.1%	8.3%	8.8%	9.6%	7.5%	7.4%	7.2%	9.3%	7.9%	7.8%	8.1%
Singapore	1.2%	1.1%	1.8%	3.5%	4.9%	5.4%	5.8%	7.5%	6.6%	5.3%	4.6%	4.4%	5.0%	4.8%
Virgin Islands	0.0%				0.8%	1.3%	3.8%	8.9%	6.6%	9.4%	10.8%	11.6%	5.7%	5.4%
Korea	0.0%	1.1%	1.4%	2.1%	2.8%	3.3%	4.7%	4.0%	3.2%	3.7%	4.6%	5.2%	3.6%	3.4%
United Kingdom	1.4%	0.3%	0.8%	2.0%	2.4%	3.1%	4.1%	2.6%	2.6%	2.9%	2.2%	1.7%	2.4%	2.4%
Germany	1.7%	0.8%	0.2%	0.8%	1.0%	1.2%	2.2%	1.6%	3.4%	2.6%	2.6%	1.8%	1.8%	1.8%
France	0.9%	0.4%	0.5%	0.6%	0.8%	1.0%	1.0%	1.6%	2.2%	2.1%	1.1%	1.1%	1.2%	1.2%
Macau, China	0.0%	1.8%	2.1%	1.5%	1.2%	1.4%	0.9%	0.9%	0.8%	0.9%	0.7%	0.9%	1.1%	1.0%
Netherland	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%	0.9%	1.6%	1.3%	1.9%	1.7%	1.1%	1.0%	1.0%
Canada	0.3%	0.5%	0.5%	0.6%	0.7%	0.8%	0.8%	0.7%	0.8%	0.7%	0.9%	1.1%	0.8%	0.8%
Malaysia	0.0%	0.2%	0.3%	0.6%	0.7%	1.1%	0.8%	0.7%	0.6%	0.5%	0.6%	0.7%	0.7%	0.6%
Australia	0.8%	0.3%	0.4%	0.6%	0.6%	0.5%	0.7%	0.6%	0.7%	0.8%	0.7%	0.7%	0.6%	0.6%
Above 15	89.8%	95.8%	94.8%	94.4%	94.6%	94.3%	95.2%	93.8%	93.5%	92.3%	91.2%	89.9%	93.3%	93.1%

Source: China Statistical Yearbook, China Foreign Economic Statistical Yearbook, Almanac of China External Economies and Trade, various issues.

Note: Data for 1983 - 1986 include data of Foreign Direct Investment and Other Foreign Investment.

Hong Kong has by far been the biggest investor in China throughout the years. The investment from Hong Kong to China has increased dramatically since the early 1980s. Between 1983 and 2002, the contracted amount and the realized amount of FDI from Hong Kong amount to more than US\$375 billion and US\$204 billion respectively. These figures account for 45.4% and 45.8% of the total respective contracted amount and realized amount of FDI from the world. However, it has been frequently estimated that a significant portion of investment from Hong Kong to China originates from China itself or from countries outside Hong Kong (Fung, 1997). A large amount of China's capital outflow is channeled to Chinese firms located in Hong Kong and finds its way back to China as FDI. This type of "round tripping" of funds is mostly used to escape regulations such as barriers to trade or to gain eligibility to incentives available to only foreign investors (e.g. tax concessions). According to the World Bank (2002), round tripping accounts for twenty to thirty percent of FDI in China.

Between 1983 and 2002, Singapore and Macao ranked 6<sup>th</sup> and 12<sup>th</sup> in total contracted FDI in China, and they ranked 6<sup>th</sup> and 11<sup>th</sup> respectively in total realized FDI. The presence of both economies appears to have been stronger in the beginning of the 1990's.

### **3. Recent Policy Concerns**

It is not hard to find various analysts, commentators and policymakers in Asia who have voiced concerns about the emergence of China and that China is adversely affecting direct investment flows into their economies. In November 2002, Singaporean Deputy Prime Minister Lee Hsien Loong (who has since become the Prime Minister of Singapore) commented that “Southeast Asian countries are under intense competitive pressure, as their former activities, especially labor-intensive manufacturing, migrate to China. One indicator of this massive shift is the fact that Southeast Asia used to attract twice as much foreign direct investment as Northeast Asia, but the ratio is reversed.” (ChinaOnline November 14, 2002). According to KOTRA, the state-run trade and investment promotion agency of the Republic of Korea, the rate of foreign direct investment in most Asian countries is falling as global investors are being drawn to invest in China (Republic of Korea Times August 27, 2002). World Economic Forum director for Asia, Frank J. Richter, said if the Asian countries do not take prudent and pragmatic steps to be as competitive as China, the foreign direct investment flows into these economies would be adversely affected (New Straits Times-Management Times March 9, 2002). Furthermore, Taiwan’s Vice Premier Lin Hsin-I said that facing the rapid rise of the Mainland Chinese economy, Taiwan would have to take effective measures to increase its competitiveness. Taiwan has to implement the “go south” policy to encourage Taiwan to switch their investments from the Mainland to Southeast Asian countries (Taiwanese Central News Agency November 21, 2002).

Is China's FDI policy a *friend* or an *enemy* to its Asian neighbors? What determines foreign direct investment flows into the Asian and other economies? Is there a “**China Effect**”? To get some insights as to what methodology we should pursue, we now look at selectively some relevant academic literature.

Brainard (1997) empirically examines the determinants of the ratio of U.S. export sales to total foreign sales (the sum of export sales by sales by foreign affiliates) by industry. She uses a framework of focusing on factors that favor concentration of production (i.e. favoring exports) vs. proximity to overseas customers (i.e. favoring sales by foreign affiliates). The explanatory variables include freight costs to the export market, tariffs of the host country, per capita gross domestic product, corporate tax rates, measures of trade and foreign direct investment openness, measures of plant scale economies and corporate scale economies. She also adds a dummy representing whether a country has a political coup in the last decade. In her random effects estimation, almost all the variables have the right signs and are significant. The major exception is the corporate tax rates, which has the opposite sign as predicted.

Gastanaga, Nugent and Pashamova (1998) focus on policy reforms in developing countries as determinants of foreign direct investment inflows. They employ both ordinary least squares as well as panel estimations. The expected rates of growth, the corporate tax rates, the degree of corruption and the degree of openness to foreign direct investment are all important determinants of foreign direct investment flows into these economies. Hines (1995) and Wei (1997) both examine the impact of institutional factors on foreign direct investment. By employing a corruption index, Hines shows that after 1977, U.S. foreign direct investment grew faster in less corrupt countries. Wei (1997)

uses OECD direct investment data and shows that both corruption and tax rates have negative effects on foreign direct investment flows. Wei's estimations are cross-sectional.<sup>2</sup>

#### 4. The Empirical Model

In this section we provide an empirical model to estimate the impact of China on the inward direct investment of various Asian economies. The economies we examine include Hong Kong, Singapore, Taiwan, the Republic of Korea, Thailand, Malaysia, Philippines and Indonesia.<sup>3</sup> The years examined in this analysis are from 1985 to 2001. The strategy here is to control for all the standard explanatory variables of foreign direct investment in the Asian economies. But we add an additional variable representing the China factor. To proxy for the China Effect, we choose the level of the inflow of China's foreign direct investment. Obviously Chinese inward foreign direct investment can also be dependent on the inward direct investment of these Asian economies as well as the standard explanatory variables. In order to capture such a reciprocal relationship between the inflow of FDI in China and that in other Asian economies, the FDI equation for both the Asian economies and China are estimated simultaneously.

The basic regression model for inward foreign direct investment for Asian countries and for China are written as a linear specification of the following form:

$$\begin{aligned} \ln(\text{AFDI}_{i,t}) = & \alpha_0 + \alpha_1 \ln(\text{CLNFDI}_{i,t}) + \beta_1 \ln(\text{AGROWTH}_{i,t}) + \beta_2 \ln(\text{ACORRUPT}_{i,t}) \\ & + \beta_3 \ln(\text{ADUTY}_{i,t}) + \beta_4 \ln(\text{AGOV}_{i,t}) + \beta_5 \ln(\text{AWAGE}_{i,t}) \end{aligned}$$

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<sup>2</sup> Other related literature includes Bao, Chang, Sachs and Woo (2002), Fung, Iizaka and Siu (2003), Zhang and Song (2001), etc.

$$\begin{aligned}
& +\beta_6\ln(\text{AOPEN}_{i,t})+\beta_7\ln(\text{AILLIT}_{i,t}) + \beta_8\ln(\text{ACPTAX}_{i,t}) + \beta_9\ln(\text{ATEL}_{i,t}) + \\
& \beta_{10}\ln(\text{AINCOME}_{i,t}) + \beta_{11}\ln(\text{OUTFLOW}_t) \\
\ln(\text{CLNFDI}_t) = & \gamma_0 + \delta_1\ln(\text{AFDI}_{i,t}) + \rho_1\ln(\text{CGROWTH}_t) + \rho_2\ln(\text{CCORRUPT}_t) \\
& \rho_3\ln(\text{CDUTY}_t) + \rho_4\ln(\text{CGOV}_t) + \rho_5\ln(\text{CWAGE}_t) + \rho_6\ln(\text{COPEN}_t) + \\
& \rho_7\ln(\text{CINCOME}_t)
\end{aligned}$$

where the subscript “i” and “t” stands for country i at period t and the variables used in this analysis are defined below.

$\text{AFDI}_{i,t}$  : the level of inward foreign direct investment in the ith Asian economies in year t.

$\text{CLNFDI}_t$  : inward foreign direct investment into China in year t.

$\text{AGROWTH}_{i,t}$  : growth rate of GDP of country i at time t.

$\text{CGROWTH}_t$  : growth rate of GDP of China at time t.

$\text{ACORRUPT}_{i,t}$  : an index of corruption of county i at time t.

$\text{CCORRUPT}_t$  : an index of corruption of China at time t.

$\text{ADUTY}_{i,t}$  : import duty of country i at time t.

$\text{CDUTY}_t$  : import duty of China at time t.

$\text{AWAGE}_{i,t}$  : average wage in manufacturing of country i at time t.

$\text{CWAGE}_t$  : average wage in manufacturing of China at time t.

$\text{AOPEN}_{i,t}$  : the share of exports and imports in GDP of country i at time t.

$\text{COPEN}_t$  : the share of exports and imports in GDP of China at time t.

$\text{AILLIT}_{i,t}$  : the percentage of people who are illiterate of country i at time t.

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<sup>3</sup> In future studies, we intend to include other Asian economies such as India and Pakistan.

$ATAX_{i,t}$  : corporate tax rate of country  $i$  at time  $t$ .

$AGOV_{i,t}$  : an index of government stability of country  $i$  at time  $t$ .

$CGOV_t$  : an index of government stability of China at time  $t$ .

$ATEL_{i,t}$  : number of telephone mainlines per 1,000 people of country  $i$  at time  $t$ .

$AINCOME_{i,t}$  : per capita GDP of country  $i$  at time  $t$ .

$CINCOME_t$  : per capita GDP of China at time  $t$

$OUTFLOW_t$  : total outflows of direct investment to the world at time  $t$

The independent variables examined in the analysis are believed to exert an influence on inward foreign direct investment in each country of Asia and China by changing the investment environment through institutional and policy changes as well as the relevant economic conditions.

The main variable that we shall examine in this paper is the proxy for the China effect  $CLNFDI$ . There are at least two aspects that we should consider here. First, in examining which low-wage export platform to locate, multinationals may choose between investing in China vs. investing in another Asian country, say Thailand. In this case, the multinationals will study the whole host of factors, including wage rates, political risks, infrastructure, etc. that would make a country desirable as a site for low-cost production. Investing in China will then reduce the FDI in another Asian economy, say Thailand. The sign of  $CLNFDI$ , according to this argument is negative. We shall call this the “*investment-diversion effect*”.

The second aspect is the production and resource linkages between a growing China and the rest of Asia. In manufacturing, this takes of the form of further specialization and growing fragmentation of the production processes. An investor sets up factories in both China and Thailand to take advantage of their respective competitiveness in distinct stages of productions. Components and parts are then traded among China and other Asian economies. An increase in China's FDI is then positively related to an increase in Thailand's FDI. A different but complementary argument is that as China grows, its market size increases and its appetite for minerals and resources also rises. Subsequently, foreign firms rush into China to produce in China and to sell in China. At the same time, other multinationals also invest in other parts of Asia to extract minerals and resources to export to fast growing China in need of a whole spectrum of raw materials. This line of reasoning leads one to predict that the sign of CLNFDI to be positive. We call this effect the "*investment-creation effect*". Theoretically we cannot determine a priori the net effect of investment-creation and investment-diversion for China. It is thus important to examine this issue empirically, as we attempt to do in this paper.

A substantial literature has developed confirming empirically the importance of the size of the host market and the growth factor measured by GDP per capita or GDP growth. The foreign investors that target the local market are assumed to be more attracted to the country with higher growth rate of GDP as it indicates a larger potential demand for their product. The effect of the variable on their investment incentive therefore is assumed to be larger than the effect on those who are not focusing on the domestic market. Furthermore, for the foreign investors who operate in industries



characterized by relatively large economies of scale, the importance of the market size or its growth is magnified. This is because they can exploit scales economies only after the market attains a certain threshold size. As the variables (the growth of GDP and per capita GDP) are used as indicators for the market size and the potential for the products of foreign investors, the expected signs for these variables are positive.

Since the cost of labor is a major component of the cost function, various versions of the wage variables are frequently tested in the literature. A high wage, other things being equal, deters inward foreign direct investment (FDI). This must be particularly so for the firms which engage in labor-intensive production activities. Therefore, conventionally, the expected sign for this variable is negative. However, there are no consistent empirical results for the effect of labor cost on the investment incentives. While some econometric studies have shown no significant role of labor costs, others have shown the positive relationship between labor costs and FDI. The latter result is often attributed to a level of labor productivity or quality of human capital that may be reflected in the wage variables.

The level of human capital is demonstrated to be an another important determinant of the marginal productivity of capital. It has been shown in various studies that skill-related variables are host country specific. When a host country is more appealing to labor-intensive foreign investment that requires a relatively lower level of skills, the importance of the human capital variable tends to be small. On the other hand, labor skills can be a more significant factor for a host country, in which more capital- and technology intensive investment projects are concentrated. In this analysis, we utilize illiteracy rate as a proxy for the level of human capital.

We examine the hypothesis that better developed regions with a superior quality of infrastructure are more attractive to foreign firms relative to others by including in our regressions the proxy, the number of telephone mainlines per 1000 people.

We also examine the significance of institutional factors in the determination of FDI by incorporating the level of corruption and the stability of each government. Corruption can discourage FDI by inducing a higher cost of doing business. Hines (1995) shows that FDI from the United States grew more rapidly in less corrupt countries than in more corrupt countries after 1977. Wei (1997) presents alternative explanation of the large negative and significant effect of corruption on FDI. Unlike taxes, corruption is not transparent and involves many factors that are more arbitrary in nature. The agreement between a briber and a corrupt official is hard to enforce and creates more uncertainty over the total questionable payments or the final outcome. Wei demonstrates that this type of uncertainty induced by corruption leads to a reduction in FDI. Political stability of a government can be another important factor to foster the inflow of FDI. Uncertain political environments and their related risks can impede FDI inflows in spite of favorable economic conditions. Since the indices of corruption and instability assign higher scores to less corrupt or more stable country, the expected signs of the variables, *ACORRUPT* and *AGOV*, are positive.

Also included in the analysis are policy-related variables, tariff barriers proxied by import duty, corporate tax rates, and openness to foreign trade. The effect of tariffs on the behavior of multinational enterprises (MNEs) is methodologically demonstrated by Horst (1971). He predicts that in the face of higher tariffs imposed by the host countries, other things being equal, MNEs will increase its production abroad and decrease its

exports. More recent models highlight the effect of tariffs on FDI within the context of vertical and horizontal specialization within MNEs. A typical vertical FDI can be characterized by individual affiliates specializing in different stages of production of the output. The semi-finished products in turn are exported to other affiliates for further processing. By fragmenting the production process, parents and affiliates take advantage of factor price differentials across countries. Horizontal specialization on the other hand, involves each affiliate' engagement in similar types of production. A typical horizontal FDI can be associated with behavior that targets the domestic economy and is motivated to avoid trade costs. Choosing between engaging in horizontal FDIs or exporting would involve calculating the trade-off between trade costs and economies of scale.

The MNEs, which set up vertical production networks may be encouraged to invest in a country with relatively low tariff barriers due to a lower cost of their imported intermediate products. Therefore, the expected sign of *ADUTY* is negative. In contrast, high tariff barriers induce firms engaging in horizontal FDI to replace exports with production abroad by foreign affiliates (Brainard, 1997; Carr, Markusen, and Maskus, 2001). This “tariff jumping” theory implies a positive relationship between *ADUTY* and FDI.

*AOPEN* is included to examine the importance of openness of an economy to international trade. The variable measures the degree of general trade restrictions of each country. Following the same line of reasoning above, a negative relationship between openness and market-seeking FDI is expected, and a positive relationship is expected for export-oriented FDI.

Another policy-related variable that can influence the host country's location advantage is the host country's corporate or other tax rates. The MNEs, as global profit maximizers, can be assumed to be sensitive to tax factors, since they have a direct effect on their profits. The evidence of significant negative influences of corporate tax rates are reported in previous studies by Wei (1997), Gastanaga, Nugent, and Pashamova (1998), and Hsiao (2001).

Finally, to control for the supply side of the direct investment, we include OUTFLOW, the total global outflows of FDI for each year.<sup>4</sup> All variables are transformed into logarithms. Data sources and additional explanations of variables are given in Appendix A.

The formulation of the empirical model is then specified as follows.

$$\begin{aligned} \ln(\text{AFDI}_{i,t}) = & \ln(\text{AFDI}_{i,t}) = \alpha_0 + \alpha_1 \ln(\text{CLNFDI}_{i,t}) + \beta_1 \ln(\text{AGROWTH}_{i,t}) + \\ & \beta_2 \ln(\text{ACORRUPT}_{i,t}) + \beta_3 \ln(\text{ADUTY}_{i,t}) + \beta_4 \ln(\text{AGOV}_{i,t}) + \\ & \beta_5 \ln(\text{AWAGE}_{i,t}) + \beta_6 \ln(\text{AOPEN}_{i,t}) + \beta_7 \ln(\text{AILLIT}_{i,t}) + \beta_8 \ln(\text{ACPTAX}_{i,t}) + \\ & \beta_9 \ln(\text{ATEL}_{i,t}) + \beta_{10} \ln(\text{AINCOME}_{i,t}) + \beta_{11} \ln(\text{OUTFLOW}_t) + u_i + e_{i,t} \\ \ln(\text{CLNFDI}_t) = & \gamma_0 + \delta_1 \ln(\text{AFDI}_{i,t}) + \rho_1 \ln(\text{CGROWTH}_t) + \rho_2 \ln(\text{CCORRUPT}_t) \\ & \rho_3 \ln(\text{CDUTY}_t) + \rho_4 \ln(\text{CGOV}_t) + \rho_5 \ln(\text{CWAGE}_t) + \rho_6 \ln(\text{COPEN}_t) + \\ & \rho_7 \ln(\text{CINCOME}_t) + v_i + w_{i,t} \end{aligned}$$

The above simultaneous equation system is estimated by the two stage least squares.

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<sup>4</sup> Another possible determinant of FDI is the level of exchange rates. However, as highlighted by Russ (2004), there are many conflicting empirical studies concerning the significance and even the sign of the exchange rate variable.

## **5. Results**

### **5.1 Regressions using Levels of FDI inflows**

Table 3 shows the results from the first set of panel simultaneous regressions using the level of FDI inflows as the dependent variables. To avoid multicollinearity problem, variables that are highly correlated are not included simultaneously. For each of the dependent variables, there are five specifications. The first specification in column (1) includes *AWAGE* but not *ATEL* and *AINCOME*. In column (2), we look at the effect of *ATEL* and leave out *AWAGE*, and *AINCOME*. Column (3) examines *ATEL* by additionally excluding *AOPEN* due to its moderate correlation with *ATEL*. The effect of *AINCOME* is studied in column (4) and (5).

**Table 3. Panel Regression Results with Levels of FDI**

Independent Variables	(1)	(2)	(3)	(4)	(5)
CLNFDI	0.2979 (2.690)***	0.2957 (2.628)***	0.2184 (1.842)*	0.1960 (1.911)*	0.2024 (1.866)*
AGROWTH	0.5820 (0.773)	0.6575 (0.881)	0.4322 (0.545)	0.5072 (0.680)	0.4413 (0.571)
ACORRUPT	0.3713 (1.503)	0.4375 (1.716)*	0.8022 (3.126)***	0.3801 (1.553)	0.6258 (2.686)***
ADUTY	0.0606 (0.304)	0.0867 (0.438)	-0.3388 (1.843)*	0.0707 (0.347)	-0.1188 (0.592)
AGOV	0.0726 (0.456)	0.1183 (0.712)	0.0506 (0.287)	0.0707 (0.445)	0.0288 (0.174)
AWAGE	-0.1168 (1.044)				
AOPEN	0.7905 (4.302)***	0.8705 (4.405)***		0.5858 (3.043)***	
AILLIT	0.2334 (1.330)	0.2021 (1.168)	0.5542 (3.387)***	0.4112 (2.405)**	0.6551 (4.118)***
ACPTAX	-1.2000 (3.321)***	-1.3238 (3.532)***	-0.5793 (1.625)	-1.0496 (2.875)***	-0.5823 (1.685)*
ATEL		-0.1282 (1.423)	0.1077 (1.392)		
AINCOME				0.0656 (0.579)	0.2720 (2.816)***
OUTFLOW	0.4623 (2.521)**	0.4482 (2.460)**	0.7083 (3.860)***	0.6260 (3.581)***	0.7264 (4.236)***
Constant	-1.6157 (0.743)	-1.6647 (0.827)	-4.3587 (2.133)**	-3.8717 (1.713)*	-6.3133 (2.975)***
R-square	0.7206	0.7222	0.6819	0.7212	0.6975
F-test: p-value	0.0000	0.0000	0.0000	0.0000	0.0000
Observations	130	131	131	131	131

t-statistics are reported in parentheses. \*, \*\*, \*\*\* represent significant at the 10%, 5%, and 1% level, respectively.

Our main variable of interest *CLNFDI* is **positive** and highly significant in all specifications. A 10 percent increase in the FDI inflows to China would raise the level of FDI inflows to the East and Southeast Asian (E&SE) countries by about 2 to 3 percent depending on the specifications. Despite considerable concerns in policy circles that an increase in FDI flow to China is at the expense of other regional economies, this study shows that those economies can actually benefit from it. This may be linked to the production-networking activities among Asian countries as well as the increased resource demand by a growing China. The evidence of production-networking among China and other Asian economies can be found in the substantial two-way trade of intermediate and final goods in the same industries among those countries.<sup>5</sup>

Many of the countries examined are heavily involved in vertical specialization, particularly in electric and electronics industries, which can be seen in the share of two-way trade in the same industry in the total volume of trade among the nations (Table 4). The economic ties of mutual dependence among them have been deepening rapidly since 1990s. The significance of the China effect in the level of FDI inflows to our group of Asian countries may reflect such interdependence. Thus our empirical study shows that an increase in China's FDI is positively and significantly related to FDI inflows in other Asian economies. Our central result here is then as follows: *up to now the investment-enhancing effect dominates the investment-diversion effect* so that overall China is a positive force for FDI inflows into other Asian economies.

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<sup>5</sup> As a robustness check, we experimented with running the regressions without Hong Kong. The results remain very similar to those with Hong Kong in the sample.

**Table 4. China's Two-Way Trade of Electric Equipment with its Neighbors, 2003**

	Exports of Electrical Equipment to China (US\$1,000)	Rank in Exports to China	Imports of Electrical Equipment from China (US\$1,000)	Rank in Imports from China
Taiwan	17,075,435	1	2,470,679	1
Republic of Korea	13,224,831	1	4,122,382	1
Singapore	3,432,677	1	2,869,225	1
Thailand	1,984,551	2	888,914	2
Malaysia	7,179,539	1	1,587,136	2
Philippines	4,251,766	1	890,895	1
Indonesia	346,577	7	632,660	3

Source: China's Custom Statistics Monthly, 2003, December.



The effect of openness, denoted by the variable *AOPEN*, has an expected positive sign and is always significant in its inclusion. Openness captures the degree of both tariff and non-tariff measures including trade impediments. In contrast to the effect of tariff barriers proxied by *ADUTY*, the impact of openness to trade on the inflow of FDI is substantial. The results in Table 3 suggest that, all else being equal, the marginal effect of trade liberalization of the Asian countries on the inflow of FDI is approximately twice as large as that of the China Effect. Trade impediments can take various forms such as local content requirements, technology transfer requirements, domestic sales and export requirements, and so on. Our results imply that reductions in this type of trade barrier can play a vital role in promoting FDI to those countries.

Corporate tax is another variable that is found to exert a large influence on the level of the inflows of FDI in this analysis. Although many countries offer various forms of tax incentives for foreign investors, corporate tax rates can be considered as one of the most influential tools to promote investment since it has a direct impact on the profitability of their investment projects.

Unlike many of the previous studies, the growth rate of GDP does not appear to play an important role in attracting FDI in this analysis. On the other hand, per capita income is found to be a significant factor only in equation (5). This seems to suggest that the foreign investors are more sensitive to the current market size than with market potential for their products.

The degree of government stability and the index of corruption, *AGOV* and *ACORRUPT*, are found to be positively associated with the level of FDI. In particular,

the corruption index variables in column 3 and 5 are significant and have coefficients much larger than those of the corresponding China Effect. Finally, the OUTFLOW variables are all positive and significant. They signify the impact of an overall "supply" effect on the inflows of FDI to these Asian economies.

## **5.2. Regressions using Shares of Asian countries' FDI**

The model in this section uses shares of FDI inflows to the Asian countries as the dependent variable in equation (1). Also note that the dependent variable in the China equation (2) is still the level of China FDI. We could also use China's shares of FDI of the Asian countries instead of the level of China FDI. However, between the years 1985 and 2001, China and these East and Southeast Asian countries accounted for 89% of total inflow of FDI to Asia. Then, an increase in the share of FDI inflow to China will almost ensure a reduction in the shares of FDI inflows to those eight economies. To avoid this, we continue to use the level of China FDI inflows so as to see how much of these increases divert the shares of the Asian FDI from those E&SE Asian countries.

Given that direct investment inflows into China and our eight Asian economies constitute the bulk of direct investment into Asia, it may not be entirely surprising to find out flows of China's inward foreign direct investment will affect the shares of our economies' foreign direct investment into the whole of Asia. Nonetheless it is still useful to actually estimate the impact. It is evident from our regressions that an incremental increase in FDI to China will undoubtedly deteriorate the FDI stance of the Asian countries in terms of their shares of FDI within Asia. A 10 percent increase in China's FDI causes the E&SE Asian shares of FDI to Asia to *decrease* by about 3 to 4 percent (Table 5). Although China does appear to take a bigger share of FDI at the expense of its

neighboring countries, FDI promotion could come from the internal economic policy of each country such as the level of corporate tax and the degree of openness in foreign trade. The influence of openness on FDI is at least twice as large as that of the China effect in equations (1), (2) and (4). Similarly, the influence of corporate taxes on FDI can be more than three times as large as that of the China Effect.

Corporate tax rates as well as the corruption indices are also generally significant and have large effects. These variables tend to have larger coefficients than the "China Effect" proxy.

**Table 5. Panel Regression Results with Countries' Shares of Asian FDI**

Independent Variables	(1)	(2)	(3)	(4)	(5)
CLNFDI	-0.3189 (3.405)***	-0.3446 (3.553)***	-0.3968 (3.722)***	-0.3241 (3.394)***	-0.4066 (4.146)***
AGROWTH	0.4276 (0.601)	0.4864 (0.690)	0.2907 (0.383)	0.4738 (0.665)	0.3032 (0.408)
ACORRUPT	0.3985 (1.729)*	0.4876 (2.055)**	0.8250 (3.386)***	0.3373 (1.446)	0.6612 (2.958)***
ADUTY	-0.0058 (0.031)	0.0186 (0.100)	-0.3965 (2.250)**	0.0130 (0.066)	-0.2012 (1.040)
AGOV	0.2122 (1.418)	0.2737 (1.756)*	0.1955 (1.164)	0.1824 (1.201)	0.1727 (1.086)
AWAGE	-0.1328 (1.252)				
AOPEN	0.7715 (4.471)***	0.8552 (4.584)***		0.6427 (3.499)***	
AILLIT	0.1756 (1.056)	0.1370 (0.837)	0.4891 (3.123)***	0.3264 (1.998)**	0.5811 (3.792)***
ACPTAX	-1.1052 (3.228)***	-1.2374 (3.489)***	-0.5006 (1.464)	-1.0009 (2.869)***	-0.5009 (1.504)
ATEL		-0.1460 (1.716)*	0.0906 (1.229)		
AINCOME				0.0210 (0.194)	0.2379 (2.558)**
OUTFLOW	0.1403 (0.869)	0.1563 (0.963)	0.3817 (2.263)**	0.1684 (1.025)	0.3920 (2.470)**
Constant	2.0938 (1.032)	1.8492 (0.981)	-0.6611 (0.340)	0.8398 (0.390)	-2.3597 (1.160)
R-square	0.5715	0.5795	0.5055	0.5694	0.5250
F-test: p-value	0.0000	0.0000	0.0000	0.0000	0.0000
Observations	130	131	131	131	131

t-statistics are reported in parentheses. \*, \*\*, \*\*\* represent significant at the 10%, 5%, and 1% level, respectively.

### 5.3 Regressions Using Share of the World FDI Inflows

In this last empirical exercise, we change the dependent variable to the country's share of the world aggregate to the world. Although the eight E&SE Asian countries account for a bulk of FDI going into Asia, their shares in the world FDI inflows are only marginal. Therefore, it is reasonable to expect that the presence of China does not greatly affect the E&SE Asian shares of the world FDI inflows. In fact, our results show that none of the *CLNFDI* coefficients is significant (Table 6).

Now that *CLNFDI* has lost its influential momentum on shares of world FDI inflows, many variables have gained their significance. Corruption has become much more significant in all the specifications. The coefficient magnitudes have become higher. A 10 percent improvement in corruption index<sup>6</sup> increases a country's share of world FDI inflows somewhere from 6.2 percent to 10 percent. Other factors that remain important are openness, corporate income tax rates and income. Corporate tax rates are consistently large negative influences on FDI. The market size variable, as measured by *AINCOME*, is significant in column (5).

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<sup>6</sup> A 10 percent less corruption.

**Table 6: Panel Regression with Asian Countries' Shares of World FDI**

Independent Variables	(1)	(2)	(3)	(4)	(5)
CHINA_FDI	-0.0052 (0.078)	-0.0166 (0.246)	0.0288 (0.416)	-0.0084 (0.131)	-0.0019 (0.029)
AGROWTH	0.5220 (0.661)	0.5743 (0.736)	0.4225 (0.521)	0.4853 (0.621)	0.3557 (0.451)
ACORRUPT	0.7288 (3.072)***	0.8331 (3.440)***	1.0057 (4.094)***	0.6203 (2.593)**	0.7639 (3.314)***
ADUTY	0.0013 (0.006)	0.0192 (0.094)	-0.3006 (1.604)	0.0650 (0.305)	-0.0700 (0.343)
AGOV	0.0451 (0.270)	0.1012 (0.584)	0.0300 (0.167)	0.0099 (0.059)	0.0102 (0.060)
AWAGE	-0.0513 (0.441)				
AOPEN	0.5164 (2.951)***	0.6354 (3.257)***		0.3556 (1.939)*	
AILLIT	0.4283 (2.428)**	0.3428 (1.938)*	0.5898 (3.537)***	0.5845 (3.445)***	0.6985 (4.358)***
ACPTAX	-1.1093 (2.937)***	-1.2686 (3.241)***	-0.6879 (1.898)*	-0.9633 (2.535)**	-0.6657 (1.893)*
ATEL		-0.1251 (0.896)	0.0683		
AINCOME				0.1361 (1.164)	0.2624 (2.677)***
Constant	-1.0717 (0.662)	-0.8328 (0.558)	-1.3903 (0.901)	-2.3720 (1.391)	-3.0613 (1.819)*
R <sup>2</sup>	0.4999	0.5107	0.4665	0.5087	0.4935
F-test: p-value	0.0000	0.0000	0.0000	0.0000	0.0000
Observations	130	131	131	131	131

Absolute value of t statistics in parentheses

\*significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

## 6. Conclusion

China's development strategy to attract foreign firms has been a huge success. Its external "open door" reforms are complementary to its internal policies to privatize its economy. But is China's FDI policy *detrimental or complementary* to its neighbors' attempts to attract more foreign investment? In other words, is China diverting foreign direct investments away from other Asian economies? This is the paramount question on the minds of many academic researchers as well as policymakers in Asia.

Theoretically, the emergence of China can have both *investment-creating* effects as well as *investment-diverting* effects. In this paper, we examine this issue empirically. We use data for eight Asian economies (Hong Kong, Taiwan, Republic of Korea, Singapore, Malaysia, Philippines, Indonesia and Thailand) from 1985-2001 and estimate the determinants of foreign direct investment inflows in these economies. The standard determinants we consider include GDP growth rates, the degree of openness, corporate tax rates, indices of corruption, degrees of government stability, illiteracy rates, per capita GDP, tariff rates, wage rates, proxies of infrastructure and the global supply of FDI. To estimate the **China Effect**, we include in the empirical equations the levels of China's inward foreign direct investment. As China's foreign direct investment should also be dependent on foreign direct investment in other Asian economies and other similar policy and institutional factors. We use a panel regression simultaneous equation model to estimate our coefficients, including the estimation of the coefficient on the China Effect.

The main results of our paper are as follows. *First*, in terms of the levels of foreign direct investment flows, the China Effect is **positive**. In other words, foreign

direct investments to our Asian economies are positively related to direct investment into China. *Second*, in terms of the shares of foreign direct investments, the China effect is **negative**. Thus while both the level of China's foreign direct investment and the levels of foreign direct investments of our Asian economies are increasing together, an increase in China's investment is associated with a decline in the shares of foreign direct investment of the Asian economies. *Third*, the China effect is *not* the most important factor determining the inflows of foreign direct investments into these Asian economies. Specifically, policy variables such as the lower corporate taxes and higher degrees of openness play a larger role in attracting investment. Lower degrees of corruption also play an important role in attracting higher inflows of foreign direct investment.

From a development policy perspective, it seems that if Asian governments care more about the *absolute* levels of FDI they can obtain, they should focus on reforming their internal institutional and policy factors. So far, the increase in FDI going to China has been complementary to FDI going to these East and Southeast Asian economies. If Asian governments are concerned about losing their *relative* ranking with respect to China, then there is empirical evidence that China is rising while other economies are falling behind.



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## **Appendix A: Definition and source of variables.**

*AFDI* and *CHINA\_FDI*: Aggregate FDI inflows of each country, aggregate FDI inflows to Asia, and aggregate FDI to the world are from UNCTAD.

*ACORRUPT* and *CCORRUPT*: An index of corruption from International Country Risk Guide (ICRG) from the PRS Group. It ranges from 0 to 6, where a higher number means a lower level of corruption.

*AGOV* and *CGOV*: An index of government stability from International Country Risk Guide (ICRG) from the PRS Group. The range is from 0 to 12. A higher score means higher stability of a government.

*ADUTY* and *CDUTY*: Import duties are from IMF's *Government Finance Statistic Yearbook*.

*AWAGE* and *CWAGE*: Average wages in manufacturing; from UN Common Database, LABORSTA, and countries' official websites.

*AOPEN* and *COPEN*: Openness = (Export + Import)/ GDP. Export and Import data are from IMF's *Direction of Trade*.

*AILLIT*: Illiteracy rate is the percentage of people ages 15 and above who cannot, with understanding, read and write a short, simple statement on their everyday life; from *World Development Indicators*.

*ACPTAX*: Corporate income tax rate, measured in percentage points, from *Price Waterhouse's* "Worldwide summary" book.

*ATEL*: Telephone mainlines (per 1,000 people) from *World Development Indicators*.

*AINCOME* and *CINCOME*: per capita GDP = (GDP/population). GDP data are from EconStats. Population data are from *World Development Indicators*.

*AGROWTH* and *CGROWTH*: Measured in percentage point. Data are from EconStats.

*AWAGE* and *CWAGE* : Average wage in manufacturing; from UN Common Database, LABORSTA, and countries' official websites.

*OUTFLOW*: Total world outflows of foreign direct investment, from *World Investment Report* by UNCTAD.

## **Appendix B : List of Countries in Asia**

Israel, Japan, Bahrain, Cyprus, Iran (Islamic Rep. of), Iraq, Jordan, Kuwait, Lebanon, Oman, Palestinian territory, Qatar, Saudi Arabia, Syrian Arab Republic, Turkey, United Arab Emirates, Yemen, Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan, Bangladesh, Bhutan, Brunei Darussalam, Cambodia, China, China Hong Kong SAR, China Macao SAR, China (Taiwan Province of), India, Indonesia, Korea (Dem. People's Rep. of), Korea (Republic of), Lao People's Dem. Rep., Malaysia, Maldives, Mongolia, Myanmar, Nepal, Pakistan, Philippines, Singapore, Sri Lanka, Thailand, Viet Nam

Definition of Asia is from UNCTAD.