# FDI Effects of ASEAN Integration

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Abstract

For the past two decades, ASEAN member countries have pursued intra-regional market liberalization in order to provide more flexibility to multinationals and therefore promote the region as a competitive production platform. Attracting FDI has been a key objective of this regional project. This paper describes and analyzes recent trends in FDI to and among ASEAN countries, mainly comparing FDI patterns before and after the Asian Crisis, to characterize and assess the region's strategies to liberalize and facilitate investment. We find that FDI flows to ASEAN countries suffered after the Asian Crisis but have picked up since 2005. Moreover, ASEAN FDI is dominated by Singapore. In addition, the sectoral distribution of FDI has changed in some members of ASEAN (i.e., Malaysia, Singapore, and Thailand) but not in others. We also perform an econometric analysis of the determinants of FDI to check for ASEAN-specific changes in FDI in the post-Crisis period. Our results, after controlling for a host of factors, indicate that ASEAN countries suffered a fall in total FDI but experienced an increase in intra-regional FDI after 1998. Moreover, we do not find any significant impact of FDI in China on ASEAN FDI.

JEL classification: F21; F36 ; F42

Keywords: Association of South East Asian Nations (ASEAN); Foreign Direct Investment (FDI); Economic integration; ASEAN Investment Area (AIA); knowledge capital model.

# I. Introduction

The decision to create an ASEAN Economic Community (AEC) by 2020 at the Ninth ASEAN Summit in October 2003 represented an important milestone in ASEAN economic cooperation. While regional economic integration had become a much more important part of the ASEAN member countries' commercial policies beginning with the creation of the ASEAN Free-Trade Area (AFTA) ten years earlier, the decision to establish a unified market underscored the desire on the part of the ASEAN leaders to embrace comprehensive market integration. Indeed, even though the details of the AEC roadmap are only now being worked out, the AEC seeks to create a regional marketplace in which not only goods but also services would flow freely, and in which there would be a freer flow of capital and skilled labor. Such an endeavor requires far more effort in terms of policy harmonization, and much more willingness to cede "sovereignty", than has ever been the case in the past.

The attraction of foreign direct investment (FDI) inflows is an important goal of the AEC; it will also in large part determine the success of ASEAN's integration efforts. In fact, stimulating FDI inflows by reducing business costs associated with multinational activity in the region has always been a primary objective of ASEAN economic cooperation. FDI inflows have become paramount to an outward-looking development strategy in the contemporary global economy. They bring in new (risk-sharing, non-debt-creating) capital flows, foreign exchange, easy access to foreign markets, and technology transfer. They also have a tendency to strengthen institutions within developing countries, including in the financial sector (see, for example, Prasad, Kose, Rogoff, and Wei, 2006), and create a more stable environment and internal "policy competition".[1] In doing so, they establish an attractive business environment within which multinationals can easily profit from a vertical division of labor and production and facilitate the emergence of multinationals within the developing region itself. These are all explicit goals of ASEAN economic cooperation. The diversity of economic structure in the ASEAN region makes it a particularly strong candidate for investment cooperation.

In addition to reducing transaction costs through trade liberalization and facilitation, in the past ASEAN has tried to enhance the attractiveness of the region through industrial cooperation with somewhat disappointing results. The ASEAN Industrial Projects (AIP) and ASEAN Industrial Complementary (AIC) programs were early attempts at doing this, though their top-down approach proved to be unappealing to the private sector. The ASEAN Industrial Joint Ventures (AIJV) approach, which at the Third ASEAN Summit in 1987 was reinforced to allow for deeper margins of preference and more attractive equity schemes, also produced relatively disappointing results due to a variety of inhibiting factors including: bureaucratic costs, some confusion in terms of regional and national legal applications and jurisdictions, and lack of active promotion.

With the advent of AFTA, the margin of preferences in the AIJV scheme became redundant. Hence, a transitional program that could serve as a base from which to build future cooperation was established in the ASEAN Industrial Cooperation Scheme (AICO) in 1996, which officially superseded the Basic Agreement on AIJVs (15 December 1987) and the Memorandum of Understanding on the Brand-to-Brand Complementation (BBC) Scheme dated 18 October 1988.[2] The AICO would reduce preferential tariff rates to between zero and five percent and would have other advantages over other programs, such as a guaranteed rapid turnaround on applications,

[1] By "policy competition" here we imply that countries within a free-trade area will have an incentive to adopt best-practices, promote a low-cost business environment, and embrace greater transparency if they are to compete effectively for FDI flows within a given trade area.

[2] The Brand-to-Brand Complementation Scheme was an augmented version of the original AIC program discussed above. It was intended to enhance vertical FDI across ASEAN Member Countries.

references to dispute settlement, and benefits in terms of more liberal equity restrictions for foreign investors. It has been especially popular in the area of vertical integration of auto parts production and electronics.

The most significant attempt at economic cooperation in the area of FDI is the ASEAN Investment Area (AIA), created in October 1998. Rather than merely expanding existing programs in the new context of AFTA like the AICO, the AIA was designed to enhance a process of FDI policy liberalization, promotion, and, to some extent, harmonization across ASEAN member countries, as well as having certain investment facilitation features. It covers five sectors: manufacturing, agriculture, fishery, mining, and quarrying, as well as services incidental to the five sectors ("Services Incidental"). Thus, its scope is far larger than any other program; moreover, it will likely be an essential pillar in the building of the AEC.

Given the high stakes being placed on ASEAN integration, tracking its progress in the area of FDI is of the essence. Since the inception of the AIA in 1998, has there been any discernible effect on FDI inflows to ASEAN? The purpose of this paper is to gauge empirically, through both descriptive and econometric techniques, whether or not ASEAN integration has had any effect on FDI flows. We begin in Section II with a review of FDI patterns in the region. Section III provides a theoretical discussion and an econometric investigation of the determinants of FDI. Finally, Section IV gives some concluding remarks.

# II. Trends in Foreign Direct Investment in ASEAN

In general, FDI to ASEAN has been strong over the past few years in terms of flows and rate of growth after a period of slow growth associated with the 1997-98 Asian Crisis. Below we provide descriptive background data with accompanying analysis, including the sources of FDI to ASEAN from around the globe, its distribution by sector, and changes over time.[3]

### a. FDI Inflows in ASEAN Member Countries

Table 1 puts FDI inflows to ASEAN in a global context over the 1995-2006 period. From this table we see that world FDI inflows have more than tripled from $343 billion in 1995 to $1,306 billion in 2006, though this is less than the heydays of the 1998-2000 period, when FDI flows peaked at $1.4 trillion in 2000. These flows have been concentrated in the developed countries. The United States and the EU member-states alone have consistently accounted for more than half of global FDI, with the exception of 2004 when their share was 46 percent. Inflows into Japan and South Korea have actually been insignificant; together, inflows to these two large, OECD countries constituted less than two percent of global flows.

FDI inflows into ASEAN as a percentage of total world inflows have dropped from their highs in the mid-1990s when ASEAN countries accounted for about 8 percent of world inflows to the current percentage of only about 4 percent. Clearly, the cause for this downward trend was related to the Asian Crisis, which not only affected ASEAN countries but also other East Asian countries

[3] The available information on how FDI is defined by ASEAN countries and their major investment partners (i.e., the EU, Japan, and the US) generally indicates that these countries officially define FDI flows in conformance with IMF and OECD standards. According to the IMF and the OECD, FDI refers to an investment that gives an effective voice in the management of an enterprise operating outside of the economy of the investor. The IMF and OECD both suggest that a threshold of 10 per cent of equity ownership qualifies an investor as a foreign direct investor.

like China, though the Chinese share picked up relatively rapidly after the Crisis. Inward FDI into China has significantly exceeded ASEAN FDI in absolute and percentage terms in the post-Crisis period. The rise in China begs the question as to why its share has been generally rising when ASEAN's has been falling, in terms of flows, even years after the Asian Crisis. Is this due to ASEAN policies, Chinese policies, or something else? We address these issues later.

**Table 1**
**World Shares of FDI Inflows to ASEAN and Selected Other Countries and Regions**
**(Percentage of Total World FDI Inflows)**

| Year / Host | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | % of Cumul. Total (1995-2006) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **United States** | 17.16 | 21.50 | 21.13 | 24.59 | 25.79 | 22.25 | 19.15 | 11.97 | 9.42 | 18.30 | 10.68 | 13.43 | 18.16 |
| **EU 25** | 38.34 | 31.78 | 29.11 | 39.62 | 45.74 | 49.26 | 45.83 | 49.41 | 45.51 | 27.52 | 51.43 | 40.66 | 42.77 |
| **Japan** | 0.01 | 0.06 | 0.66 | 0.45 | 1.16 | 0.59 | 0.75 | 1.49 | 1.12 | 1.05 | 0.29 | -0.50 | 0.57 |
| **China** | 10.95 | 10.62 | 9.25 | 6.41 | 3.67 | 2.88 | 5.63 | 8.48 | 9.49 | 8.17 | 7.66 | 5.32 | 6.41 |
| **South Korea** | 0.36 | 0.51 | 0.54 | 0.72 | 0.90 | 0.64 | 0.50 | 0.55 | 0.78 | 1.21 | 0.75 | 0.38 | 0.66 |
| **East Asia** | 13.59 | 14.28 | 12.64 | 9.24 | 7.07 | 8.26 | 9.50 | 10.88 | 12.88 | 14.33 | 12.29 | 9.63 | 10.49 |
| **ASEAN** | 8.22 | 7.76 | 7.01 | 3.14 | 2.62 | 1.67 | 2.48 | 2.90 | 4.34 | 4.75 | 4.34 | 3.94 | 3.79 |
| **World (US$billion)** | 343 | 393 | 489 | 709 | 1,099 | 1,411 | 833 | 622 | 564 | 742 | 946 | 1,306 | 9,457 |

Source: UNCTAD FDI Statistics, 2007.
1) The EU 25 include Austria, Belgium, Luxembourg, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, and the UK.
2) The figures for China do not include inflows to Hong Kong and Macao.
3) East Asia includes China, Hong Kong, Taiwan, South Korea, Cambodia, Indonesia, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Vietnam.
4) ASEAN includes Brunei, Cambodia, Indonesia, Lao People's Dem. Rep., Malaysia, Myanmar, Philippines, Thailand, Vietnam and Singapore.

Regarding FDI to individual ASEAN member countries, Table 2 shows total inflows of FDI by destination in ASEAN over 1995 to 2006, using the ASEAN Secretariat database (as opposed to the UNCTAD database used in Table 1). 2006 was a strong year for ASEAN with inflows of $52 billion. Still, about half of total inward FDI to ASEAN over the 1995-2006 period went to one country: Singapore. Thailand and Malaysia, whose growth during the "miracle" years was fuelled in part by robust FDI inflows, saw a significant slowdown in inflows coming into the 2000s, and Indonesia's FDI inflows have usually been negative (sometimes significantly so) since the onset of the Asian Crisis until 2004 due, for example, to huge repayments of intra-company loans by foreign affiliates.[4] Flows to the Philippines also relented significantly in the early 2000s. FDI flows to the latter four countries, however, have picked up since 2005. Inflows into Vietnam have been relatively stable, generally falling in the range of $1.2 billion to $2.0 billion range without any obvious trend. FDI inflows into the other transitional economies (Cambodia, Laos, and Myanmar) have been low and somewhat volatile.

[4] It should be noted, however, that accounting for FDI inflows in Indonesia is tricky, especially with respect to the petroleum sector, where there is a large foreign presence but the inflows are generally not counted as FDI (but rather part of "product sharing" agreements). Moreover, as there was a large depreciation of the *rupiah* during this period, end-year valuations of the change in FDI stocks would generally have a strong negative effect on the numbers.

**Table 2**
**FDI Flows to ASEAN 1995 – 2006**
**(USD $ Million)**

| | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | Cumulative Total:95-06 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Brunei** | 582.8 | 653.6 | 701.7 | 573.3 | 747.6 | 549.2 | 526.4 | 1,035 | 3,123 | 212 | 288.5 | 434 | 9,427 |
| **Camb** | 150.7 | 293.7 | 168.1 | 242.9 | 232.3 | 148.5 | 149.4 | 145.1 | 83.99 | 131.4 | 381.2 | 483 | 2,610 |
| **Indo** | 4,346 | 6,194 | 4,678 | -356 | -2,745 | -4,550 | -3,279 | 144.9 | -596.1 | 1,895 | 8,336 | 7,514 | 21,581 |
| **Laos** | 88.4 | 128 | 86.3 | 45.3 | 51.61 | 34 | 23.9 | 25.38 | 19.51 | 16.92 | 27.73 | 187 | 734 |
| **Malay** | 5,815 | 7,297 | 6,323 | 2,714 | 3,895 | 3,788 | 553.9 | 3,203 | 2,473 | 4,624 | 3,965 | 6,060 | 50,711 |
| **Myan** | 317.6 | 580.7 | 878.8 | 683.4 | 304.2 | 208 | 192 | 191.4 | 291.2 | 251.1 | 71.76 | 81 | 4,051 |
| **Phil** | 1,577 | 1,618 | 1,261 | 1,718 | 1,247 | 2,240 | 195 | 1,542 | 490.8 | 687.8 | 1,854 | 2,345 | 16,775 |
| **Sing** | 11,503 | 9,303 | 13,533 | 7,594 | 16,067 | 16,485 | 15,649 | 7,200 | 11,664 | 19,828 | 15,002 | 24,056 | 167,883 |
| **Thai** | 2,070 | 2,338 | 3,882 | 7,491 | 6,091 | 3,350 | 5,061 | 3335 | 5,235 | 5,862 | 8,957 | 9,751 | 63,422 |
| **VN** | 1,780 | 1,803 | 2,587 | 1,700 | 1,484 | 1,289 | 1,300 | 1,200 | 1,450 | 1,610 | 2,021 | 1,036 | 19,261 |
| **TOTAL** | 28,231 | 30,209 | 34,099 | 22,406 | 27,375 | 23,541 | 20,372 | 18,023 | 24,235 | 35,117 | 40,904 | 51,945 | 356,456 |

**Source**: Statistics of Foreign Direct Investment, ASEAN Secretariat, 2007.
**Notes**: Data compiled from the respective ASEAN Central Banks and Central Statistical Offices. Unless otherwise indicated, the figures include equity and inter-company loans. Figures for Brunei Darussalam, Cambodia, Malaysia (for the whole data series); figures for Indonesia (2004-1st Q 2006); Philippines (1999-1st Q 2006) and figures for Myanmar and Viet Nam (2003-2005) include reinvested earnings. Figures for Singapore include reinvested earnings for the whole data series, but exclude inter-company loans for 1995-1996.
(1) Cambodia's figures for 2006 are estimated figures.
(2) Indonesia's figures for 2005 had been revised due to their BOP survey.
(3) Myanmar's figures are in fiscal year which ends in March of the following calendar year.
(4) Philippine's figures for 2005 had been revised due to their BOP survey.
(5) Singapore's figures from 2002-2005 had been revised due to their BOP survey.
(6) Thailand's figures from 2001-2005 had been revised due to their BOP survey.
(7) Viet Nam's figures for 2006 only cover the data on 1st. half of 2006.

With respect to the sources of inward FDI flows over the same period, Table 3 aggregates cumulative FDI flows from ASEAN and major non-ASEAN sources. The EU is by far the largest supplier of FDI to the region ($102 billion), which is slightly more than double the value of US FDI in ASEAN ($50 billion) and 80% more than that of Japan ($55 billion). China has been only a marginal source of FDI to the region ($2.8 billion) but the Asian NIEs (excluding Singapore) provided a total of $24 billion. Although flows have been declining since the Asian Crisis, intra-ASEAN FDI remains an important source of investment ($38 billion).

Intra-regional trade between ASEAN countries is approximately 25 percent of the region's total trade with the world (ASEAN, 2006, p.33). This has led some to claim that ASEAN is not a "natural" economic bloc. Such a claim has two critical problems. First, it ignores the fact that ASEAN itself is quite small in terms of market size and, since size matters, one would not expect intra-regional trade shares to be high. Indeed, controlling for size, ASEAN trades 4-5 times more with itself than one would predict if member countries were randomly distributed (Naya and Plummer, 2005). Second, this claim distracts from the need for ASEAN economic integration to focus on enhancing *global* competitiveness. In the case of trade, the goal of an effective regional Free Trade Agreement (FTA) should not be to raise intra-regional trade shares but to stimulate global trade, enhance productivity, and ensure a more efficient division of labor.

**Table 3**
**FDI Flows to ASEAN Countries by Source**
**(Cumulative 1995 – 2006, US$ Millions)**

| HOST / SOURCE | Brunei | Indonesia | Lao PDR | Malaysia | Myanmar | Philippines | Singapore | Thailand | Vietnam | Total Cumulative 1995-2006 * |
|---|---|---|---|---|---|---|---|---|---|---|
| Japan | 414 | 3,369 | 20 | 8,936 | 120 | 3,243 | 16,301 | 20,099 | 2,765 | 55,266 |
| USA | 90 | 1,972 | 6 | 13,643 | 406 | 3,461 | 23,303 | 6,397 | 915 | 50,192 |
| Canada | 14 | 113 | 3 | 378 | 62 | 8 | 1,232 | 518 | 48 | 2,376 |
| **European Union** | 6,990 | 7,823 | 189 | 11,427 | 1,887 | 1,795 | 58,294 | 9,809 | 3,737 | 101,951 |
| France | 139 | 983 | 167 | 355 | 729 | 276 | 2,805 | 763 | 1,084 | 7,301 |
| Germany | 20 | 1,210 | 1 | 4,187 | 9 | -291 | -684 | 2,060 | 82 | 6,594 |
| Netherlands | 2,637 | 4,308 | 0 | 1,642 | 8 | 627 | 20,218 | 453 | 1,519 | 31,412 |
| United Kingdom | 4,178 | 1,238 | 9 | 3,741 | 1,137 | 847 | 29,554 | 5,270 | 864 | 46,837 |
| China | 8 | 873 | 42 | 114 | 197 | 306 | 967 | 46 | 294 | 2,847 |
| **ANIEs** | 77 | 1,240 | 124 | 2,818 | 302 | 1,152 | 7,050 | 5,636 | 5,481 | 23,881 |
| Korea | 39 | 1,040 | 111 | 196 | 56 | 245 | 1,092 | 500 | 1,785 | 5,065 |
| Hong Kong | 33 | 162 | 2 | 1,895 | 247 | 699 | 1,693 | 3,638 | 1,476 | 9,844 |
| Taiwan (ROC) | 5 | 38 | 10 | 728 | 0 | 207 | 4,265 | 1,497 | 2,220 | 8,972 |
| **ASEAN** | 1,429 | 4,428 | 281 | 9,030 | 1,051 | 1,247 | 9,401 | 7,778 | 3,254 | 37,900 |
| Brunei Darussalam | | -28 | 0 | 298 | 0 | 0 | 218 | 11 | 3 | 502 |
| Cambodia | 0 | 0 | 0 | 3 | 0 | 0 | 6 | 18 | 1 | 28 |
| Indonesia | 57 | | 0 | 280 | 41 | 39 | 4,092 | 54 | 61 | 4,625 |
| Lao PDR | 0 | 0 | | 0 | 0 | 0 | 1 | -1 | 12 | 12 |
| Malaysia | 240 | 1,344 | 97 | | 57 | 88 | 4,536 | 470 | 612 | 7,445 |
| Myanmar | 0 | 0 | 0 | 0 | | 0 | 100 | 3 | 0 | 104 |
| Philippines | 5 | 13 | 0 | 97 | 4 | | 273 | 234 | 49 | 675 |
| Singapore | 1,119 | 2,955 | 6 | 8,097 | 750 | 1,116 | | 6,983 | 2,000 | 23,026 |
| Thailand | 8 | 144 | 168 | 215 | 198 | 4 | 142 | | 517 | 1,396 |
| Vietnam | 0 | 0 | 9 | 38 | 0 | 0 | 33 | 6 | | 86 |

**Source:** Statistics of Foreign Direct Investment, ASEAN Secretariat, 2007

**Notes:**

1) Data compiled from the respective ASEAN Central Banks and Central Statistical Offices. Unless otherwise indicated, the figures include equity and inter-company loans. Figures for Brunei, Cambodia and Malaysia include reinvested earnings for the whole data series.
2) Figures for the Philippines include reinvested earnings for the period of 1999-2002. Data on reinvested earnings by source countries are not available. Figures for Singapore include reinvested earnings for the whole data series, but exclude inter-company loans for 1995-1996.
3) Figures for Vietnam include reinvested earnings for 2003.
4) "*" Total cumulative figures for 1995-2006 (by source countries) exclude data on FDI flows to Cambodia

This argument is even more relevant to FDI inflows. As Table 3 shows, intra-regional FDI as a share of the total is far smaller than even in the case of trade: at $38 billion, it only amounts to 10.6% of total ASEAN FDI inflows. Moreover, Singapore dominates as a source of intra-regional FDI, supplying 61% of total intra-regional FDI. Further, Singaporean outward FDI itself is concentrated in two countries: Malaysia and Thailand. About a quarter of all intra-ASEAN FDI is accounted for by Singaporean investment in these two countries.

From an economic perspective, the direction of FDI flows is far less relevant than the quantity and quality of the flows. This point deserves to be stressed, as often the goal of trade and investment cooperation between developing countries is to increase intra-regional shares. But the basic advantage of FDI in terms of technology transfer, non-debt-creating capital flows, enhanced export competitiveness, and the like, has no real predetermined "nationality requirement". Moreover, to

the extent that the FDI is involved in a global production chain, a successful policy of increasing FDI inflows to ASEAN could even lead to a *decrease* in intra-ASEAN trade shares, if ASEAN valued-added in the production chain is low. However, this is irrelevant if efficiency and welfare increase.

Further, it is important, perhaps, to stress the role of Singapore in the process of integration. It serves as both an *entrepot* center for intra-ASEAN trade and a hub for FDI. Without Singapore, intra-regional trade and investment would be much diminished. Hence, while Singapore apparently does extremely well by almost any measure in attracting FDI, its destiny in many ways is linked to economic performance of the region.

In short, the quantity of FDI flowing into the ASEAN countries has been generally low in early post-Crisis years, at least relative to pre-Crisis levels and the performance of key competitors, but has been picking up significantly lately, with 2005 and 2006 being among the best years that ASEAN has seen.

**b. Sectoral Distribution of FDI**

Next, we consider the sectoral structure of FDI in the ASEAN countries and how it has changed over time. In doing so, we hope not only to add another dimension to our descriptive analysis of FDI in ASEAN but also to capture its "dynamic" nature. If ASEAN development is, indeed, proceeding at a rapid pace, we would expect to see significant changes in the structure of FDI in the member countries.

Table 4 calculates the distribution of FDI in ASEAN by sector and source country over the 1999-2003 period.[5] As expected, the sector with the largest share of FDI is manufactures, followed by financial services and trade/commerce. Manufactures is the single-most important sector for all major sources of FDI with the exception of US FDI, whose investments in financial services and "other sectors" are greater than in manufactures. The EU also has large investments in financial services. Approximately half of Japanese and Singaporean FDI went into manufactures. Trade/commerce is an important target area, with more than 10 percent of total FDI outflows, for all major source countries save the EU. South Korea, the Philippines and Thailand also have significant shares of investments in agriculture, fishery and forestry.

Finally, we try to capture the "dynamism" associated with structural change in ASEAN FDI inflows. In other words, we ask the question: "how much has the sectoral distribution of FDI changed in individual ASEAN countries?". Our technique to answer this question is straightforward: we merely rank sectors by importance (in terms of the value of FDI inflows) in two periods and calculate how well the two series are correlated. A high correlation would suggest little change in a country's FDI structure over time, while a low correlation would imply just the opposite. Our expectation would be that a highly-developed country would see little change in its structure, since the country would already be specialized in capital- and knowledge-intensive production. The same would be true of a country that engages mostly in agricultural production and the same unskilled labor-intensive goods. However, an emerging economy would have rapid change in the sectoral distribution of FDI, and therefore its temporal correlation in the sectoral rankings of FDI should be low.

[5] Unlike the analyses in previous tables, our FDI data by **sector and source country** are limited to the period 1999-2003.

**Table 4**
**Cumulative FDI Flows to ASEAN, 1999-2003, by Economic Sector and Source Country (percentage of the total)**

| Economic Sectors / Country | Agriculture, Fishery and Forestry | Mining and Quarrying | Manufacturing | Construction | Trade/ Commerce | Financial Intermediation and Services | Real Estate | Services | Others (Not elsewhere classified) | Total FDI flows 1992-2003 (US$ Millions) |
|---|---|---|---|---|---|---|---|---|---|---|
| **JAPAN** | - | 2.84 | 48.61 | 1.08 | 18.20 | 13.87 | 2.11 | 2.92 | 10.36 | 9579.11 |
| **USA** | 0.99 | 5.74 | 23.11 | 0.66 | 10.24 | 28.52 | 2.10 | 4.70 | 23.93 | 19315.23 |
| **EU** | 0.53 | 13.01 | 33.13 | 0.91 | 6.63 | 26.28 | 3.14 | 0.63 | 10.14 | 35536.54 |
| **R of KOREA** | 13.78 | 3.50 | 23.86 | 2.68 | 26.28 | 3.14 | 0.63 | 10.14 | 16.00 | 1463.82 |
| **HONG KONG** | 0.94 | 0.22 | 12.81 | - | 17.55 | 25.12 | 0.89 | 5.94 | 36.53 | 3403.58 |
| **TAIWAN** | 3.63 | - | 40.69 | 2.56 | 9.03 | 21.15 | 2.92 | 9.31 | 10.72 | 2164.19 |
| **CHINA** | 3.12 | 1.41 | 27.50 | 4.89 | 4.73 | 18.49 | 31.19 | 5.58 | 3.09 | 446.4 |
| **BRUNEI** | - | - | 1.85 | 0.56 | 71.99 | 6.12 | 5.69 | 4.46 | 9.33 | 64.73 |
| **CAMBODIA** | - | - | 1.72 | - | 53.85 | 1.62 | - | 0.41 | 42.39 | 9.86 |
| **INDONESIA** | 0.06 | 0.59 | 2.64 | 0.22 | 5.85 | 11.81 | 71.02 | 1.63 | 6.19 | 1639.63 |
| **LAO** | - | - | 48.15 | - | 5.56 | 33.16 | 0.84 | 1.35 | 10.94 | 11.88 |
| **MALAYSIA** | 5.04 | 6.66 | 2.61 | 3.21 | - | 30.60 | 41.14 | 3.18 | 7.57 | 2635.11 |
| **MYANMAR** | 0.18 | - | 7.87 | 0.78 | 32.27 | 0.81 | 51.43 | 3.66 | 3.00 | 33.31 |
| **PHILIPPINES** | 13.72 | 0.01 | 3.86 | 0.31 | 2.39 | 30.15 | 21.72 | 4.73 | 23.10 | 158.4 |
| **SINGAPORE** | 1.19 | 2.65 | 52.97 | 1.12 | 16.78 | 11.11 | 0.03 | 10.70 | 3.45 | 9536.36 |
| **THAILAND** | 11.90 | 0.99 | 19.30 | 1.00 | 7.38 | 39.29 | 1.31 | 6.45 | 12.38 | 528.77 |
| **VIETNAM** | 0.82 | - | 28.78 | - | 25.37 | 2.16 | 26.76 | 2.11 | 14.00 | 20.85 |
| **ALL SOURCES** | 1.19 | 8.48 | 31.80 | 1.00 | 10.33 | 21.61 | 4.36 | 5.73 | 15.50 | 86547.77 |

**Source:** Statistics of Foreign Direct Investment, ASEAN Secretariat, 2005 (Authors' Calculations).
Note: The percentages are over the source country's cumulative FDI flows in the period 1999 to 2003 to ASEAN. A '-' in a cell indicates that FDI to that sector was negligible (i.e., less than 0.01% of cumulative FDI flows in the period 1999-2003).

The statistic from our correlation technique is called the Spearman Rank Correlation Coefficient (SRCC). It varies from +1 (perfect correlation) to -1 (perfect negative correlation), with 0 suggesting no correlation at all. Given the volatility of annual FDI data, we choose two periods in which annual FDI flows are averaged: Pre-Crisis (1993-1997) and Post-Crisis (1998-2005). The data we use for this exercise mainly come from the UNCTAD FDI database.

Table 5 summarizes our results for these two periods. Data for Brunei, Cambodia, and Myanmar were insufficient in terms of the sectoral breakdown of FDI. Most estimates are statistically significant from zero, with the (surprising) exception of Malaysia. In addition to being the country with the lowest estimated coefficient, the fact that the SRCC is not statistically significant would imply that FDI into Malaysia has been the most dynamic over these periods. Singapore's SRCC would be next at 0.47, whereas Vietnam (SRCC=0.70) and Indonesia (SRCC=0.69) have seen the least amount of change in the structure of their FDI.

There is no "magic value" that would be consistent with a robust transformation in FDI structure. Moreover, as FDI data are notoriously problematic, we should not attach too much importance to comparative changes. This exercise suggests that the structure of FDI in ASEAN has generally been changing significantly in countries like Malaysia, Singapore, and Thailand. Regardless of what caused these structural changes in FDI (e.g. market forces, institutional changes, explicit measures applied to FDI, or shocks like the Asian Crisis), we take structural change as a positive indication of economic dynamism.

**Table 5**
**Structural Change of Inward FDI in ASEAN**
**(Spearman Rank Correlation Coefficient; Pre 1998 and Post 1998)**

| | SRCC |
|---|---|
| **Brunei** | - |
| **Cambodia** | - |
| **Indonesia** | 0.69* |
| **Malaysia** | 0.21 |
| **Myanmar** | - |
| **Philippines** | 0.66* |
| **Singapore** | 0.47* |
| **Thailand** | 0.49* |
| **Vietnam** | 0.70* |

**Source**: UNCTAD FDI Statistics Database and Japanese FDI Statistics from the Ministry of Finance (viewed October/November 2006).
**Notes**:

1) Average annual FDI inflows were calculated by: (a) summing inflows from Denmark, Finland, Japan, the UK and the US to each ASEAN country's industry for each year; and (b) taking the average for the periods (1993-1997) and (1998-2005). We then correlated the series using the SRCC approach.
2) The data is for FDI inflows classified by the ISIC Rev 3.1 System
3) The industries, across which the correlations were calculated, varied by country. On average, each ASEAN country had 18 industries. Brunei, Cambodia, and Myanmar each had less than 5 industries, which was too few to calculate a reliable statistic.
4) "*" statistically significant at the 5% level

# III. Determinants of FDI in ASEAN

Which variables have been the most significant in determining ASEAN FDI over time? Has ASEAN FDI been driven by its own economic fundamentals, or has it been due to outside factors, such as FDI growth globally over this period or the emergence of China as a major recipient of FDI (at ASEAN's expense)? In this section we provide some theoretical background and an empirical analysis of the factors behind ASEAN FDI.

## a. Theoretical Determinants of FDI

Early theories of the determinants of FDI are encompassed in Dunning's "eclectic approach." Dunning highlights three key requirements for direct investment: (1) The firm must possess "ownership advantages" over other firms (firm specific advantages (FSAs)); (2) The firm must find it beneficial to utilize these advantages directly instead of selling or leasing them ("internalization" advantages); and (3) The firm must find it profitable to combine these advantages with at least one factor input abroad so that local production dominates exporting ("locational" advantages). Locational advantages include proximity to markets, specialized suppliers, evasion of protective barriers, and factor endowment advantages.

A more recent and formal theory of the determinants of FDI is the 'knowledge-capital model' as devised by Markusen (2002). It assumes that firms can conduct knowledge-based activities such as R&D, accounting services, or management (which are skilled-labor intensive) separately from production. The firm tries to locate knowledge-based activities where the costs of skilled labor are relatively lower and production, where unskilled labor is cheaper. So, in this model, relative factor

endowments determine the extent to which the firm uses a vertical FDI strategy. However, separating the stages of production come at a cost because, between the different locations, technology and know-how need to be transferred and parts and finished goods need to be shipped. These trade costs (which are captured by the distance between locations and include the costs of communication, contracting, transportation, tariffs, customs procedures, etc.) may mitigate the extent to which a company pursues a vertical FDI strategy. Instead, a firm may set up a subsidiary that is more self-contained (i.e., includes more knowledge-based activities) in another country to serve the host's market, which would be a horizontal FDI strategy. FDI studies have traditionally used a dichotomy between vertical and horizontal FDI, but, in the 'knowledge capital model', FDI is motivated by both vertical and horizontal factors. A multinational will employ more vertical FDI if: 1) it has a higher ability to fragment production; 2) there are larger differences in comparative advantage between countries for each stage of production; and 3) there are lower trade costs. A multinational will deploy more horizontal FDI given: 1) similar country market-size, 2) similar home and host countries' relative endowments; 3) lower plant-level fixed costs; and 4) higher trade costs.

**b. Econometric Model of FDI and Data**

The econometric model we use is based on the 'knowledge capital model' and is as follows:

$$\ln(FDI)_{dit} = \beta_0 + \beta_1 \textbf{Horizontal} + \beta_2 \textbf{Vertical} + \beta_3 \textbf{Trade Costs} + \beta_4 \textbf{ASEAN} + \beta_5 \textbf{BITs} + \beta_6 \textbf{Regional} + \lambda_t + \alpha_d + \alpha_i + \varepsilon_{dit}$$

The dependent variable in the model is ln(*FDI*), which is the natural logarithm of FDI stock from country *d* (the home or source country) to country *i* (the host country). The FDI data are taken from the Source OECD, ARIC (Asia Regional Integration Center, ADB), and ASEAN Secretariat databases. Our final sample comprises 34 home countries and 74 host countries, including ASEAN countries.[6] The year subscript is *t*, and the sample period goes from 1982 to 2004. We also exploit the panel structure of the data to control for year-specific effects ($\lambda_t$) and factors that are time-invariant within each home ($\alpha_d$) and host ($\alpha_i$) country.

We divide the explanatory variables in the model into six groups. The first group of variables, **Horizontal**, captures the market-size determinants of FDI. This group contains the GDP and population size of each of the home and host countries. We expect that horizontal FDI is increasing in the GDPs of both the home and host countries but decreasing in the population sizes of both countries as larger populations reduce income per capita. The second group, **Vertical**, captures differences in relative factor endowments. This group comprises the natural logarithm of the home-to-host capital stock ratio; the natural logarithm of the home-to-host skilled-labor ratio; and the

[6] In our sample, we have 27 OECD and 7 ASEAN source countries. The OECD source countries are: Australia, Austria, Canada, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Korea, Rep., Luxembourg, Netherlands, New Zealand, Norway, Poland, Portugal, Spain, Sweden, Switzerland, Turkey, United Kingdom, and the United States. The ASEAN source countries are: Indonesia, Lao PDR, Malaysia, Philippines, Singapore, Thailand, and Vietnam. The 74 host countries are: Algeria, Australia, Austria, Belgium, Belize, Bolivia, Brazil, Bulgaria, Canada, Chad, Chile, China, Costa Rica, Czech Republic, Denmark, Dominican Republic, Ecuador, El Salvador, Ethiopia, Finland, France, Germany, Ghana, Greece, Guinea, Honduras, Hong Kong (China), Hungary, Iceland, India, Indonesia, Ireland, Italy, Japan, Jordan, Kenya, Korea, Rep., Lao PDR, Luxembourg, Malaysia, Mauritius, Mexico, Morocco, Netherlands, New Zealand, Nicaragua, Norway, Pakistan, Panama, Paraguay, Peru, Philippines, Poland, Portugal, Romania, Russian Federation, Rwanda, Singapore, Spain, Sri Lanka, Sweden, Switzerland, Syrian Arab Republic, Thailand, Trinidad and Tobago, Tunisia, Turkey, Uganda, United Arab Emirates, United Kingdom, United States, Uruguay, Venezuela, and Vietnam.

natural logarithm of the home-to-host unskilled-labor ratio.[7] We expect that vertical FDI is increasing in the capital stock ratio and the skilled-labor ratio, but decreasing in the unskilled-labor ratio. The third group, **Trade Costs**, consists of variables that represent the costs of doing business over a distance: home and host trade costs (defined as the inverse of the country's trade openness ratio, i.e. merchandise imports plus exports divided by GDP) and an interaction between distance (which is measured as the great circle distance between capital cities) with the log difference between the home's and host's capital to unskilled labor ratios, i.e. ln(home-to-host capital stock ratio)-ln(home-to-host skilled-labor ratio). The interaction between distance and relative factor endowments accounts for the fact that higher trade costs may lead to less vertical FDI because transferring knowledge and transporting goods between affiliates become more costly. However, higher trade costs may lead to more horizontal FDI because serving foreign markets locally becomes more profitable. As such, this variable can serve to discriminate between these two FDI strategies.

Beyond the factors in the 'knowledge capital model', multinationals might respond to political and institutional changes in making their investment decisions. In this regard, we are interested in assessing the impact of the ASEAN Investment Area (AIA), which was signed in 1998, on FDI in the ASEAN region. Although other ASEAN factors either at the regional level (e.g. post-crisis financial arrangements like the Chiang Mai initiative) or national level (e.g. changes in national equity restrictions or liberalization of additional sectors) may have had an impact on post-1998 ASEAN FDI stock, we reason that since other ASEAN regional initiatives were not specific to FDI and changes in national investment regimes were not regional in scope we can treat these other factors as secondary to the AIA. Therefore, the **ASEAN** group of variables contains the key variables of interest in our econometric model. In this group, we include a dummy variable that is equal to 1 for any observation on an ASEAN host country in or after 1998 and another dummy variable, for any observation in or after 1998, where both home and host countries are ASEAN members. The former dummy variable is intended to capture any effects of post-Crisis developments such as the AIA on FDI flows from non-ASEAN sources, while the latter is supposed to capture the differential effect on intra-ASEAN FDI after 1998. As further controls, we include groups of variables on bilateral investment treaties (BITs) and major regional projects outside ASEAN like NAFTA and the EU.[8]

### c. Econometric Results

Table 6 presents the results of estimating our econometric model with fixed effects panel regressions. We present the estimates with robust standard errors in parentheses, i.e. clustered by home and host country-pairs. The R-squared statistics reported are the adjusted R-squared of each regression. Column (1) shows the results from estimating the model with all home and host countries in the sample. In the first group of variables (i.e., horizontal determinants of FDI), the estimates on the GDP variables for both home and host countries are positive, but only the home

[7] These variables were constructed based on the methods in Baltagi et al. (2007) with data from the World Bank's World Development Indicators (WDI). Capital stocks were calculated with data on gross fixed capital formation, using the perpetual inventory method with a depreciation rate of 7%. The endowment of skilled labor was found by multiplying the share of the labor force with a tertiary education with the size of the labor force, while the endowment of unskilled labor was (1-share of the labor force with a tertiary education) times the size of the labor force. In a few cases, the share of workers with tertiary education in the labor force was not available; data on gross enrolment in tertiary institutions were used instead as a rough indicator of the share of skilled labor in the labor force.

[8] In the **BITs** group, we have one dummy variable which is equal to 1 for the year in which a BIT was signed between *d* and *i* and the following years; and another, which is equal to 1 for the year in which a BIT was enforced between *d* and *i* and subsequent years. NAFTA is a dummy variable that is equal to one for Canada and the USA in and after 1989 (when the CUSFTA was signed) and one for Mexico after 1994 (when NAFTA was signed), but zero otherwise. EU is also a dummy variable that is set to one for the EC-12 after 1992 and the EU-15 after 1995, but zero otherwise.

country's GDP is statistically significant. The GDP elasticity of bilateral FDI is about 4 for the home country's GDP (i.e. a 1% increase in the home country's GDP is expected to increase bilateral FDI by 4%). The effect of population size either in the home or host country is to reduce the bilateral stock of FDI.[9] This result means that FDI is mainly between countries with high income per capita, as wealthier countries represent both cheaper sources of funds and more attractive destinations for market-seeking FDI. This result therefore lends some support to the importance of horizontal FDI and is consistent with previous findings (see Markusen, 1995, and Lipsey, 2003). The second group of variables represents differences in factor endowments (i.e., determinants of vertical FDI). The elasticity estimate on *capratio* (which is the log of the home-to-host capital ratio) is 0.93 and significant at the 5% level. Given that the mean home-to-host capital ratio is 61 with a standard deviation of 842, a one standard deviation increase in the home-to-host capital ratio would translate to a rise in FDI by a factor of 12. This illustrates the importance of relative capital stock in determining FDI. The estimate on *skillratio* (i.e., the log of home-to-host skilled-labor ratio) is also positive and significant, which means that FDI moves from skilled-rich to skilled-poor countries. The estimate on *unskillratio* (i.e., the home-to-host unskilled-labor ratio) has the expected sign (i.e., negative) and it is statistically significant, implying that vertical FDI decreases as the home country's pool of unskilled labor increases relative to the host country. These results imply that relative endowments of capital and skilled and unskilled labor play an important role in vertical FDI decisions. However, in Column (2), which restricts the sample to only OECD host countries, the **Vertical** group of variables are all insignificant, implying that FDI to developed countries is not based on relative factor endowments.

As for the group of variables that represent **Trade Costs**, none of them turns out to be statistically significant in Column (1) except for *dist*caplabratio* (i.e., the interaction of geographic distance with the logarithmic difference between the home-to-host capital and unskilled labor ratios). This negative and statistically significant estimate appears to be driven by the distance variable given the positive base-effect estimate on *capratio* and the negative base-effect estimate on *unskillratio*. This result therefore shows a higher prevalence of vertical rather than horizontal FDI in the data because higher trade costs, as represented by distance, tend to discourage vertical FDI but have the opposite effect on horizontal FDI.

With respect to the bilateral-investment treaty (BITs) variables, we find that bilateral FDI actually falls when a treaty is signed, but this result is significant only at the 10% level. We find that the signing of a bilateral investment treaty induces a 23.4% decrease in FDI on average.[10] One possible explanation for this curious result is that a treaty may limit the policy choices of partner countries and this may result in the withdrawal of certain incentives that were in place before (see Arumugam, 2006). As for the variables on non-ASEAN regional projects, both NAFTA and the EU turn out to be insignificant for bilateral FDI.

[9] A t-test failed to reject the hypothesis that the estimates on *lnhomePop* and *lnhostPop* in the regression in Column (1) of Table 6 were equal.

[10] Using Kennedy's formula for the true impact of a dummy variable in a semi-logarithmic regression, we calculate the impact of signing a BIT as $100*[\exp(-0.254)-(0.143^2)/2)-1]=-23.4\%$.

**Table 6**
**Determinants of Bilateral FDI:**
**Fixed Effects Panel Regression Results**

| Dependent Variable: ln(FDI stock) | | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|---|
| Groups of variables | Explanatory Variables | All Home and Host Countries | All Home but Only OECD Hosts | All Home but Only Non-OECD Hosts | All Home but Only ASEAN Hosts | All Home and Host Countries | All Home but Only ASEAN Hosts |
| **Horizontal** | *lnhomeGDP* | 4.066** | 3.753** | 4.196** | 4.160** | 4.059** | 4.160** |
| | | (0.519) | (0.588) | (0.844) | (0.987) | (0.518) | (0.987) |
| | *lnhostGDP* | 0.482+ | 1.117* | 0.573 | 0.694 | 0.517+ | 0.694 |
| | | (0.282) | (0.502) | (0.410) | (0.793) | (0.297) | (0.793) |
| | *lnhomePop* | -6.940** | -6.239** | -7.770** | -10.237** | -6.952** | -10.237** |
| | | (1.180) | (1.284) | (2.337) | (2.731) | (1.181) | (2.731) |
| | *lnhostPop* | -3.576** | -7.900** | -2.807* | 3.728+ | -3.475** | 3.728+ |
| | | (0.884) | (1.598) | (1.167) | (2.032) | (0.924) | (2.032) |
| **Vertical** | *capratio* | 0.929* | -0.631 | 2.177** | 1.417 | 0.935* | 1.417 |
| | | (0.409) | (0.614) | (0.500) | (1.141) | (0.411) | (1.141) |
| | *skillratio* | 0.074+ | 0.050 | 0.116+ | 0.432** | 0.074+ | 0.432** |
| | | (0.042) | (0.049) | (0.069) | (0.125) | (0.042) | (0.125) |
| | *unskillratio* | -1.392** | -0.491 | -1.588* | -0.612 | -1.383** | -0.612 |
| | | (0.507) | (0.698) | (0.673) | (1.212) | (0.506) | (1.212) |
| **Trade Costs** | *hometradecost* | -0.628 | 10.169 | -6.953 | -13.947 | -0.526 | -13.947 |
| | | (5.944) | (6.817) | (10.049) | (9.304) | (5.941) | (9.304) |
| | *hosttradecost* | 0.787 | -2.908 | 2.194 | -8.787 | 0.848 | -8.787 |
| | | (5.419) | (8.419) | (7.080) | (20.532) | (5.400) | (20.532) |
| | *distxcaplabratio* | -0.209** | -0.061 | -0.290** | -0.193+ | -0.209** | -0.193+ |
| | | (0.043) | (0.071) | (0.043) | (0.101) | (0.043) | (0.101) |
| **ASEAN** | *ASEAN98* | -0.254+ | | -0.356* | -0.835 | -0.186 | -0.423 |
| | | (0.149) | | (0.149) | (1.298) | (0.158) | (0.283) |
| | *lntASEAN98* | 3.224** | | 1.081** | 0.988** | 3.219** | 0.988** |
| | | (0.667) | | (0.311) | (0.332) | (0.668) | (0.332) |
| **BITs** | *BITsign* | -0.254+ | -0.500+ | 0.018 | 0.001 | -0.255+ | 0.001 |
| | | (0.143) | (0.260) | (0.150) | (0.322) | (0.143) | (0.322) |
| | *BITentry* | 0.075 | 0.461* | 0.101 | 0.051 | 0.077 | 0.051 |
| | | (0.139) | (0.233) | (0.151) | (0.266) | (0.139) | (0.266) |
| **Regional** | *NAFTA* | -0.189 | 0.181 | | | -0.202 | |
| | | (0.230) | (0.253) | | | (0.232) | |
| | *EU* | 0.189 | 0.166 | | | 0.186 | |
| | | (0.125) | (0.140) | | | (0.125) | |
| | *lnChinafdi* | | | | | 0.261** | -0.068 |
| | | | | | | (0.067) | (0.184) |
| | *lnChinaASEAN* | | | | | -0.040 | |
| | | | | | | (0.077) | |
| Fixed Home Effects? | | Yes | Yes | Yes | Yes | Yes | Yes |
| Fixed Host Effects? | | Yes | Yes | Yes | Yes | Yes | Yes |
| Fixed Year Effects? | | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | | 11658 | 7341 | 4317 | 1297 | 11658 | 1297 |

Clustered standard errors by home-host pairs in parentheses
+ significant at 10%; * significant at 5%; ** significant at 1%

Our key variables of interest are the **ASEAN** variables. Controlling for other factors, the *ASEAN98* coefficient estimate in Column (1) is negative and significant at 10% level, which implies that ASEAN FDI stock from non-ASEAN sources fell after 1998. However, we estimate a positive and statistically significant (at the 1% level) incremental difference in intra-ASEAN FDI after 1998 based on the *IntASEAN98* coefficient estimate. Accounting for the negative estimate on *ASEAN98*, we find that post-1998 intra-ASEAN FDI stock was more than 23 times higher than before 1998.[11] This is an interesting result in that it provides evidence of a surge in intra-ASEAN FDI despite a decline in FDI coming from outside the region.

In Columns (3) and (4), we check whether our results hold when the sample is limited to only non-OECD and ASEAN host countries respectively. By pooling the data, we may be making false comparisons between countries at different stages of development.[12] Among the **Horizontal** variables, the host country's GDP and population are no longer robust determinants of bilateral FDI. This is unsurprising because horizontal FDI takes place between OECD countries. Among the **Vertical** variables, the only robust determinant of bilateral FDI is the skilled-labor ratio. This result emphasizes the role of differences in skilled-labor endowments in FDI from OECD to non-OECD and ASEAN countries. As for **Trade Costs**, the results on *dist*caplabratio* in Columns (3) and (4) continue to show that vertical FDI predominates in the data. As for the **ASEAN** variables, our coefficient estimates are qualitatively the same except that, in the sample of only ASEAN host countries (Column 4), the estimate on ASEAN FDI stock from non-ASEAN sources is not significant anymore and the incremental difference in intra-ASEAN FDI after 1998 is estimated to be a factor of 3. This still indicates a rise in intra-ASEAN FDI in the midst of falling FDI from outside the region. To summarize our main results, we find that: (1) bilateral FDI stock in our sample is dominated by vertical FDI; and (2) controlling for other FDI determinants such as GDP, population size, and relative factor endowments, FDI stock in ASEAN from outside the region showed a decline after 1998 while intra-ASEAN FDI stock increased.

**d.** ***The "China Threat" Hypothesis***

China has clearly been an important recipient of FDI inflows in sectors in which ASEAN is competitive. The Chinese success is the result of many factors, including its size, relatively low-cost and well-educated workforce, increasing wealth, location, and an outward-looking policy stance that has put in place incentives to draw in FDI. China has now emerged as a major regional power and increasingly competes with ASEAN in local and third markets, which in turn no doubt has a bearing on FDI inflows. As such, we test for whether total inward stock of FDI in China has had an impact on other countries, in general, and the ASEAN countries, in particular. Columns (5) and (6) of Table 6 report the results of our econometric model with the addition of two variables: the natural logarithm of total FDI stock in China in a particular year (*ln(ChinaFDI)*) and an interaction between *ln(ChinaFDI)* and a dummy variable representing the ASEAN host countries. In Column (5), we see that elasticity estimate of Chinese FDI on bilateral FDI is 0.26 (significant at the 1 percent level). This suggests that, on average, a 1% increase in the amount of total FDI stock in China raises bilateral FDI by 0.26%. In the case of FDI stock in ASEAN countries, we see that the interaction term with Chinese FDI is negative but not statistically significant. In Column (6), the estimation results with only ASEAN host countries shows *ln(ChinaFDI)* having a negative but

[11] Using Kennedy's formula again, we calculate the post-1998 general decline in ASEAN FDI stock as $100*[\exp(-0.254)-(0.149^2)/2)-1]=-24\%$ and the post-1998 increase in ASEAN FDI stock from ASEAN sources as $100*[\exp(3.224)-(0.667^2)/2)-1] = 2391\%$. So, the net effect is 2391-24=2367%.

[12] Blonigen and Wang (2004) show that it is inappropriate to pool FDI data from developed countries and developing countries because the underlying factors that determine the location of FDI activity may vary systematically across the two groups. In their work, for example, differences in skilled labor turn out to be a positive and significant determinant of FDI in developing countries but not in developed countries.

statistically insignificant estimate. Hence, after controlling for relevant variables, our results do not support the idea that China itself has become a special "threat" above and beyond what one expects from its economic characteristics; rather, globalization has led to an increasingly competitive international economy in which competition for markets and FDI have risen. Our results are consistent with those found in the literature. Lee and Plummer (2004) use a gravity model and are able to reject the hypothesis that China has had any statistically-significant bearing on outward investment from these OECD countries ***outside of the usual channels*** (i.e., those stipulated in the traditional gravity models, such as size, wealth, distance, and trade). In addition, Busakorn, et. al. (2005) find that FDI flows to China are actually positively related to FDI in other Asian countries; they find that a 10 percent increase in the former will lead to a 2-3 percent increase in flows to the latter. In theory, this would be because the emergence of China as a major player has put the region "on the map" and multinationals have been using ASEAN to complement its investments in China. This result would go beyond merely dispelling the "China Threat" presumption and would actually suggest that China's success in attracting FDI has actually helped ASEAN (and other Asian) countries by attracting complementary FDI.

## IV. Concluding Remarks

This study has found that FDI to ASEAN countries was negatively impacted after the Asian Crisis, although inflows have picked up since 2005. In addition, the sectoral distribution of FDI has changed since 1998 in some members of ASEAN (i.e., Malaysia, Singapore, and Thailand) but not in others. Despite the fall in FDI coming from outside the region after 1998, our econometric analysis has shown that, after controlling for various factors, ASEAN countries increased their FDI stock in each other after the Asian Crisis. Moreover, in the period of our study, we have not found FDI in China to pose a threat to ASEAN FDI. Our analysis would suggest that the alignment and outward orientation of both trade and investment policies in ASEAN have served to mitigate the effects of the Asian Crisis and restore competitiveness to the region as a production platform. This is encouraging for ASEAN's plan to form the AEC. To maintain regional competitiveness and build the investment-related pillar of the AEC, our analysis would suggest that ASEAN countries should continue to provide a stable and secure environment in which FDI can thrive by harmonizing FDI policies and reducing bureaucracy and transactions costs. ASEAN member countries will also need to ensure that the negative lists in investment accords such as the AIA remain short, that members' commitment to national treatment be respected, and investment cooperation be streamlined to avoid the complications of numerous and inconsistent BITs.

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