"Home and Away: Implications of Integration under the ASEAN Economic Community on Intra-Regional Portfolio and Direct Investment Flows"

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INTRODUCTION

The establishment of the ASEAN Economic Community (AEC) heralds a significant change in the region's approach to integration. While previous attempts have resulted in mixed results, such as the aborted "integrated supply chain" model envisioned in the 1990's, the AEC has set realistic and tangible objectives geared towards meaningful economic integration. Such objectives can be largely divided into two classifications depending on the cross-border nature of the economic activity: intra-regional and extra-regional. For intra-regional objectives, the AEC aims for an oddly phrased dichotomy of "free movement of goods, services and investments" and "freer flow of capital and skills" within the region. The difference between "free" and "freer" seems to be rooted in the implication that the flow of economic inputs such as capital and skill or labor is currently "free" and that it should be improved whereas trade or the movement of goods, services and investments are not and hence, need to be "free".

In reality, this distinction does not seem to matter as much. Trade integration in the region, in terms of both goods and services, has been observed to be high relative to other regions (Hamanaka 2013) which disputes the notion that the movement of goods and services are not "free". In fact, since 2000, intra-regional trade has grown exponentially which comes as no surprise due to the proliferation of bilateral free trade arrangements within the region which are negotiated on top of multilateral free trade treaties such as the ASEAN Free Trade Area (AFTA) (Plummer and Wignaraja 2007). However, this feature of ASEAN also serves to highlight one of its more confounding deficiencies – the lack of intra-regional investments and capital flows amongst its member nations despite years of deep trade integration (Pongsaparn and Unteroberdoerster 2011). The AEC's extra-regional objective of "harmonizing trade and investment laws" in order to strengthen the region as "a ruled-based organization" and become a "more interesting single investment destination" is a step towards addressing this challenge of meaningful financial integration. This seems to be working, at least for attracting externally sourced investments, considering that ASEAN received 16% of the world Foreign Direct Investment (FDI) among all developing countries (UNCTAD ASEAN Report 2016). The same UNCTAD report also observed the trend of

increasing intra-regional FDI from 17% in 2014 to 18.5% of total FDI received. Intra-regional foreign portfolio investments (FPI) were also recognized to be on the way up largely through Intra-ASEAN merger and acquisition (M&A) activities. Notably, intraregional investment has even become the largest source of FDI for some ASEAN member countries. However, the levels are still nowhere near the region's full potential especially considering the intensity of trade integration within the region. This puzzling condition begs the question if some bias exists in ASEAN countries with respect to regional investments. Historically, any analytical approach to this topic would proceed from studies on the nature of home bias on investment decisions (French and Poterba 1992) and concerns of appropriate risk diversification. Alternatively, and as supported by several studies, perhaps the region is only slowly realizing its potential in terms of intra-regional investment activity and can in fact match its previous performance with respect to trade integration through the adoption of appropriate policy actions and targeted financial regulations.

This paper seeks to examine these questions by analyzing the existing home and regional bias exhibited by ASEAN countries, namely Indonesia, Malaysia, Philippines and Thailand ("ASEAN 4," collectively) towards FPI and identifying the possible causes for such biases as well as the relationship between them. While this initial approach will largely focus on portfolio investments, the second half of the paper will address the current level of investment flows among the member nations by adding FDI as a component. Later on, bilateral investment flows between ASEAN countries will be explained through a gravity model, which was initially developed by Tinbergen (1962) and Pöyhönen (1963) to explain bilateral trade volume between countries through their paired economic size and geographical distance. The methodology employed by Nasha Ananchotikul, Shi Piao and Edda Zoli in their paper entitled: "Drivers of Financial Integration - Implications for Asia" which was published by the IMF in 2015 ("2015 IMF Study" for brevity) is followed in this paper but also builds on the same by focusing on ASEAN countries and including FDI in the gravity model which was not included in the original paper. Alternative specifications for both the basic panel regression for home bias and gravity models will likewise be presented and discussed to expound on relationships which are not adequately explained by the reference models. The effect of recent reforms implemented by the AEC will also be tested in these models

through a time dummy variables to determine how they have spurred or stymied PI and FDI growth.

This paper chiefly relies on two data sources from the IMF: the Coordinated Portfolio Investment Survey (CPIS) and the Coordinated Direct Investment Survey (CDIS) which tracks FPI and FDI data on a bilateral host and home country basis.

It is the goal of this paper to identify the current levels of investment flows in ASEAN and map out the factors affecting them for the purpose of crafting appropriate policy recommendations to attain the noble goals set out by the AEC.

BACKGROUND OF ASEAN ECONOMIC COMMUNITY

Since its creation in 1967, ASEAN has been the principal regional body in Southeast Asia tasked with fostering peace, security, economic growth and cooperation within the region. In 1992, the Common Effective Preferential Tariff (CEPT) Scheme was introduced in ASEAN which paved the way for the creation of the ASEAN Free Trade Area (AFTA). The primary intention of the creation of this free trade area was to make the region more globally competitive and by harnessing its production base. Aside from trade related pacts, ASEAN also implemented the ASEAN Investment Area (AIA) which was a framework agreement to encourage cross-border investment in the region by removing capital restrictions. This was intended to supplement the ASEAN Investment Guarantee Agreement (IGA) which was entered into way back in 1987 as a measure to ensure investor protection across member countries. In 2003, the ASEAN countries signed the Bali Concord II in which member nations agreed to reduce tariff and non-tariff barriers towards the goal of making the region into a single market. More significantly, this was also the first time that the ASEAN Economic Community (AEC) was officially identified as the form by which regional economic integration would take place by 2020. On August 2006 during an ASEAN Economic Ministers Meeting (AEM), the members agreed to develop a “single coherent blueprint” that would accelerate the formation of the AEC to 2015. Subsequently, on November 2007, the first ASEAN Economic Community Blueprint (AEC) was formulated as a “comprehensive master plan to

chart the region's journey towards the formal establishment of the AEC by 31 December 2015." (Fact Sheet on Asian Economic Community 2015).

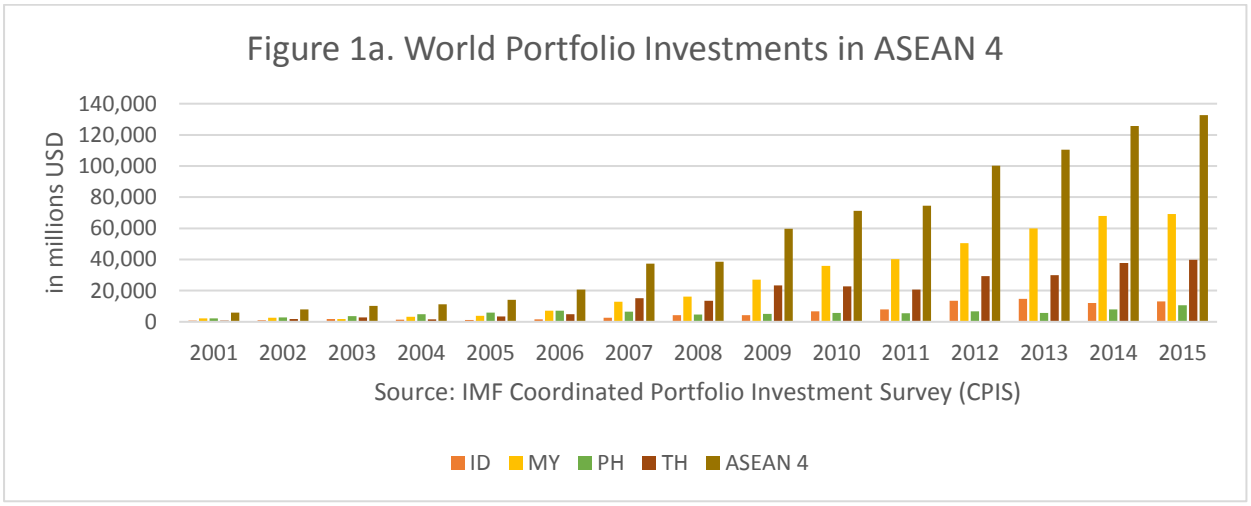
The AEC is envisioned to herald a comprehensive transformation of the ASEAN region into "(a) a single market and production base, (b) a highly competitive economic region, (c) a region of equitable economic development, and (d) a region fully integrated into the global economy." The official mission statement of the AEC is to *"establish ASEAN as a single market and production base making ASEAN more dynamic and competitive with new mechanisms and measures to strengthen the implementation of its existing economic initiatives; accelerating regional integration in the priority sectors; facilitating movement of business persons, skilled labor and talents; and strengthening the institutional mechanisms of ASEAN."* In 2009, a roadmap for the establishment of the AEC was rolled out by the member nations identifying an ASEAN single market and production base as being comprised of the five core elements mentioned in the introduction of this paper, namely; (a) free flow of goods, (b) free flow of services; (c) free flow of investment; (d) freer flow of capital; and (d) freer flow of skilled labor. The roadmap also set out concrete timelines and undertakings to be mainly accomplished by 2013 onwards to prepare for the official formation of the AEC by the end of this period. Aside from further reductions in trade and labor barriers, the roadmap also required massive reforms with respect to capital markets in the region to foster greater movement in FDI and FPI. The main objectives were to strengthen ASEAN capital markets and allow for greater capital mobility across the region. To achieve these objectives, detailed measures such as harmonizing capital market standards, facilitating mutual recognition arrangements for market professionals, enhancing withholding tax structures and facilitating market-driven efforts to encourage cross-border investment activities were among the various undertakings ASEAN member nations committed to perform by 2012-2015.

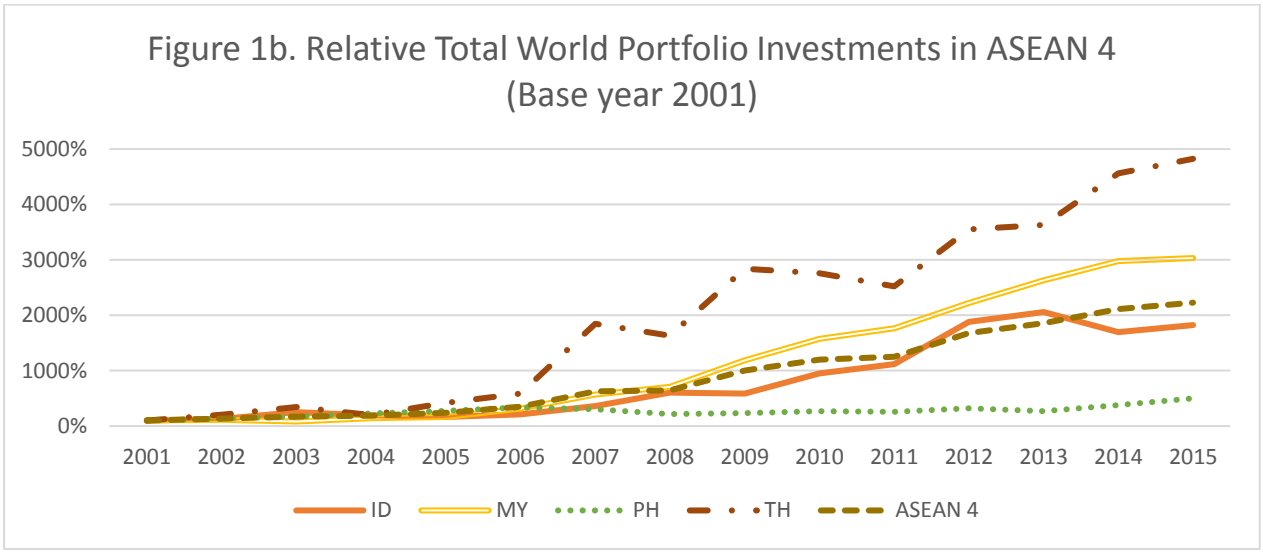
By November 2015, the ASEAN members signed the Kuala Lumpur Declaration officially declaring the establishment of the AEC. They also approved a master plan for AEC 2025 which provided further reform targets to sustain the momentum of regional economic integration efforts. All told, the AEC represents a single market worth over USD 2.5 trillion and is the seventh largest economy in the world and is the third largest market base in the world (Fact Sheet on Asian Economic Community 2015). The upward trend in economic growth and

development is expected to be maintained on the heels of the transformative reforms implemented under the aegis of the AEC.

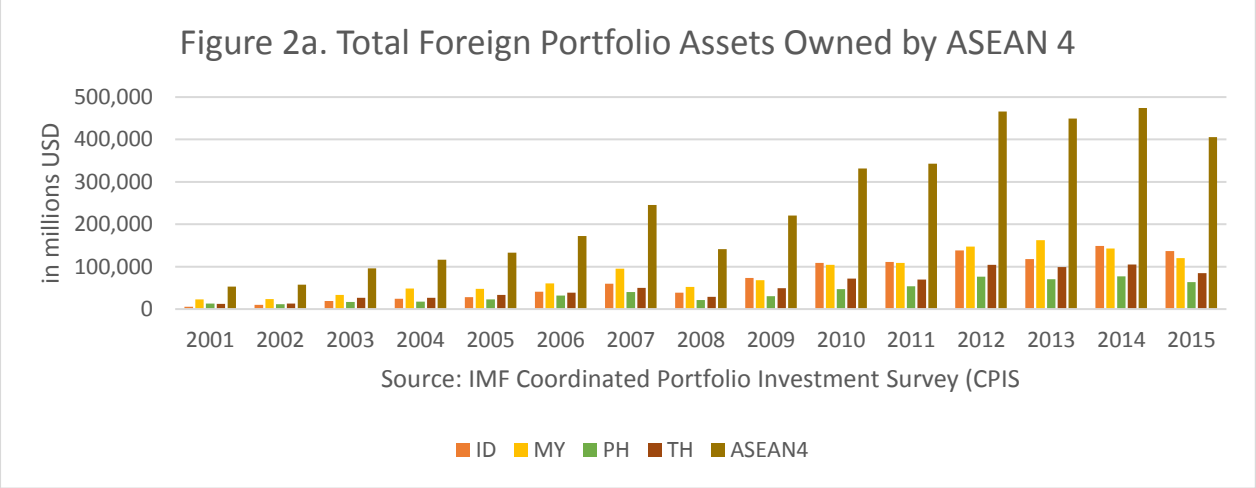
STYLIZED FACTS IN ASEAN 4

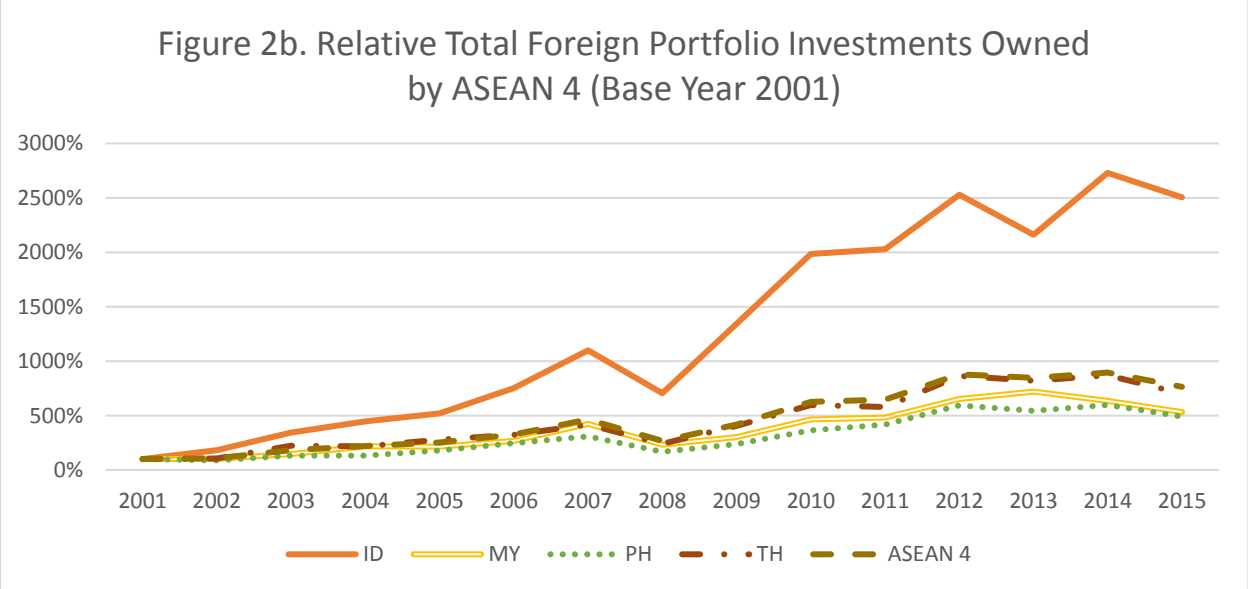
From 2001 to 2015, total FPI directed towards the region have increased twenty-two fold (Figure 1a.) with an average annual growth rate of 24.5%. In terms of regional performance, Malaysia (31.6%), Indonesia (28.4%), Thailand (44.5%) fared better than the world average growth rate with the Philippines (14%) being the sole ASEAN4 country below this benchmark (Figure 1b.). Notably, the lion's share of this amount is received by Malaysia which significantly bolstered its foreign portfolio investment intake by 2010. From this point onwards, Malaysia's inward FPI was greater than the total received by the other countries.





During the same period, ASEAN 4 countries increased their holdings of foreign portfolio assets to a peak of almost nine hundred percent (900%) in 2014 and with an average annual growth rate of 19.5%. (Figure 2a). In terms of growth of FPI among ASEAN4 countries, Indonesia (31.5%) is far ahead of Thailand (20.6%), Malaysia (16.8%), and the Philippines (16.2%) (Figure 2b). Nominally, Indonesia holds the most foreign portfolio assets overtaking Malaysia, the previous leader, in 2009 and has consistently held beyond double the holdings of the Philippines for that same time period.





In terms of intra-regional FPI activity, the ASEAN 4 countries exhibited stellar performance relative to the above-mentioned metrics. For the same period, FPI into the

region by ASEAN 4 countries increased by an astounding thirty-two times (Figure 3a.), well beyond the world benchmark of 2200%. Remarkably, the ASEAN 4 region sustained thirty-four percent (34%) growth of FPI sourced from and directed into its member countries, led by Malaysia (86.1%) and followed by Indonesia (68.15%), Thailand (53.3%) and Philippines (32%) (Figure 3b.). However, in terms of nominal levels of investment, Indonesia is far and away the leader in the region, having overtaken Malaysia in 2007 and dwarfing all the other ASEAN 4 countries levels.

Figure 3a. Total Intra-regional Foreign Portfolio Holdings of ASEAN 4

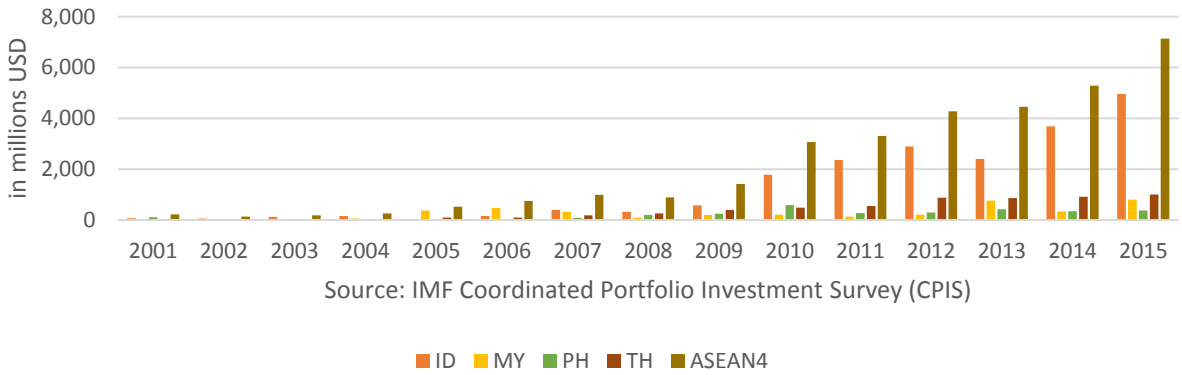
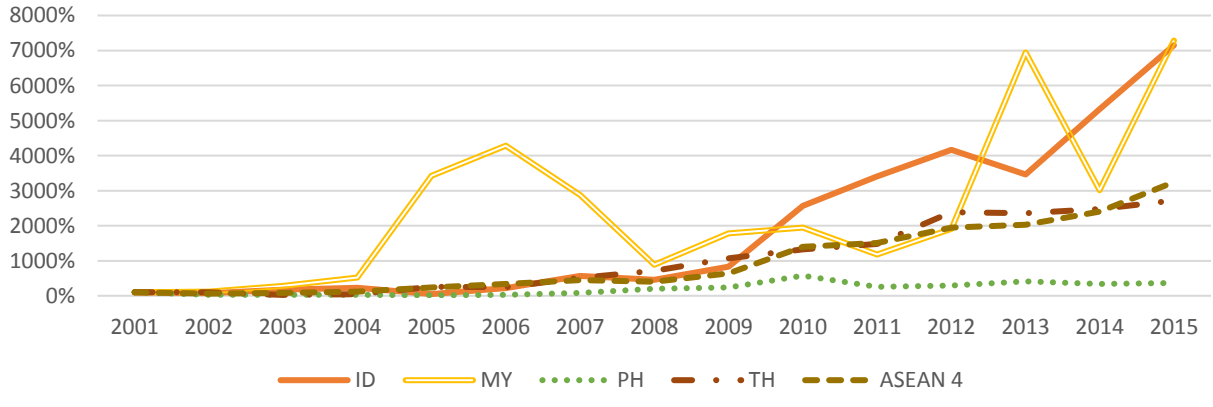
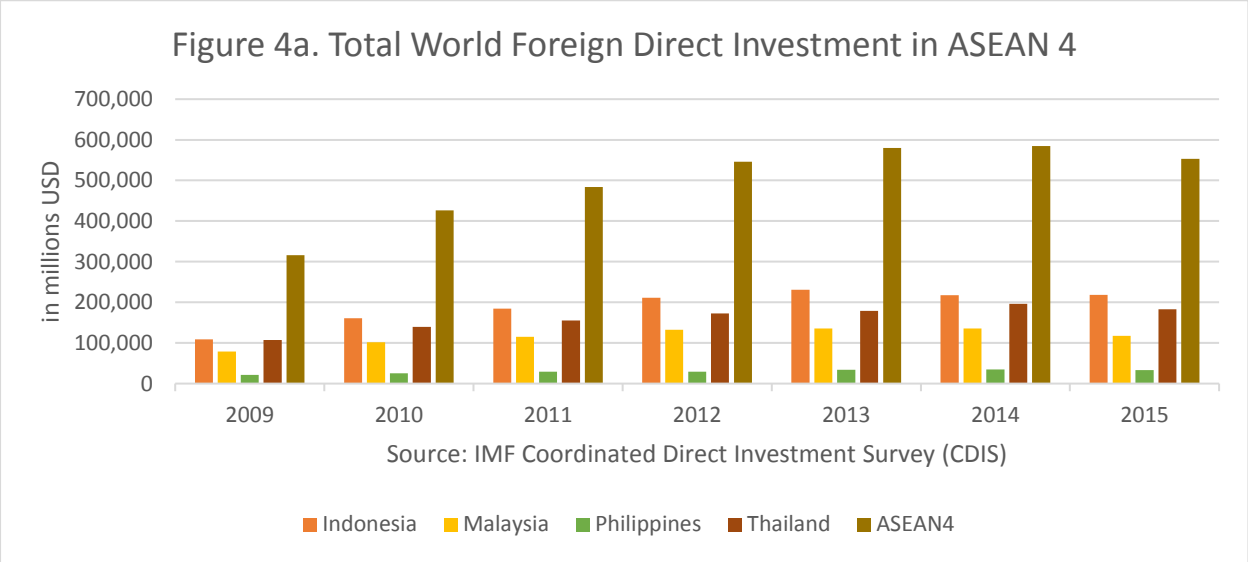


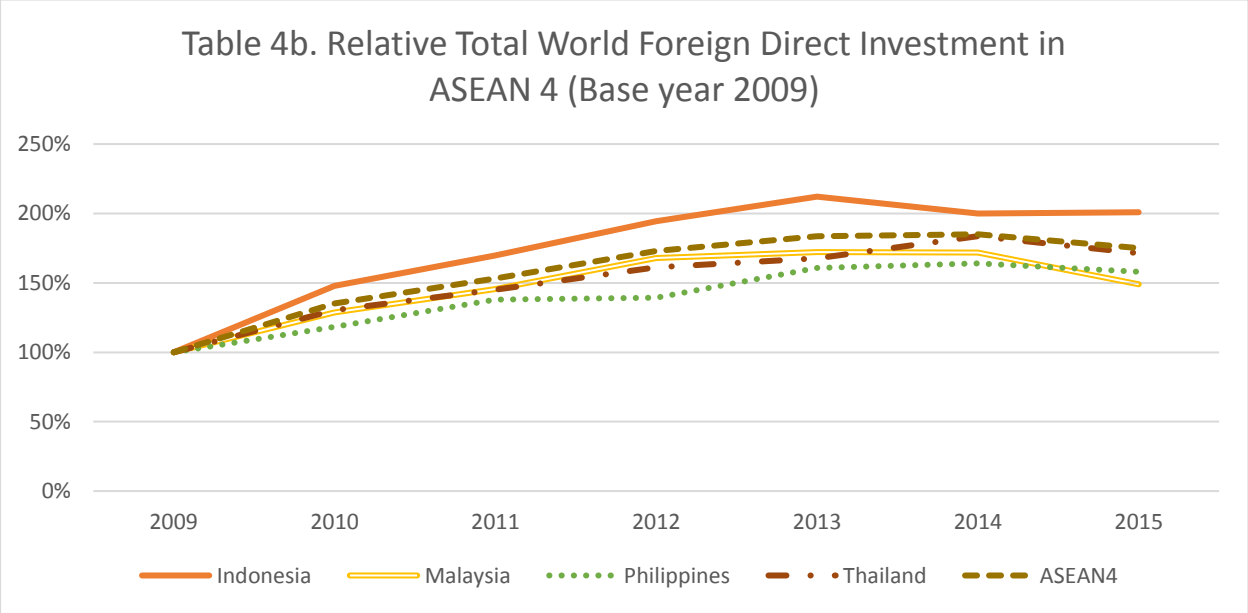
Figure 3b. Relative Total Intra-regional Foreign Portfolio Holdings in/by ASEAN 4 (Base year 2001)



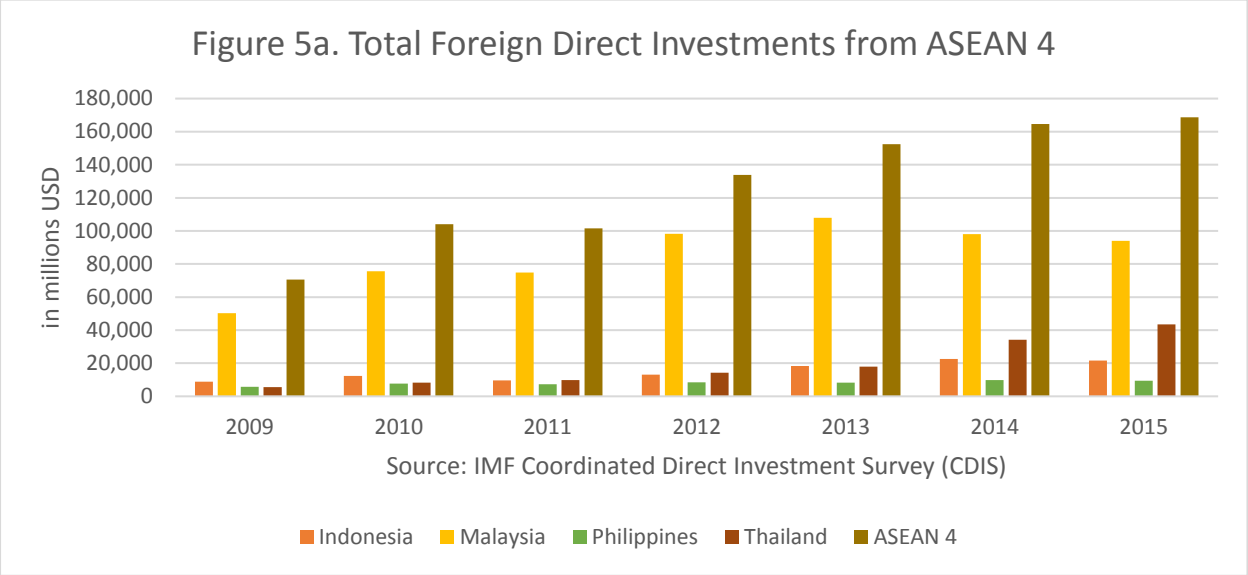
In terms of inward FDI received, the region exhibited positive growth since the Global Financial Crisis of 2009. Net inward FDI to the region grew annually by around ten and a half percent (10.5%) and, cumulatively, by almost one hundred seventy percent (175%) for the

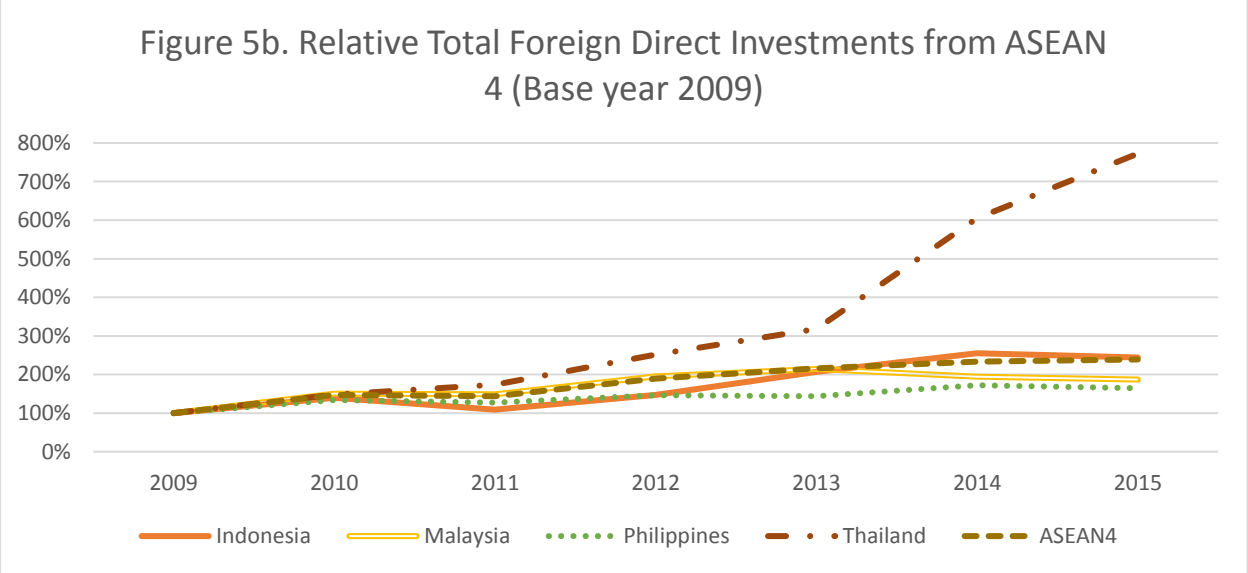
entire period of 2009-2015 covered by the CDIS (Figure 4a.). On a per country basis, Indonesia (13.5%) led the group followed by Thailand (9.9%), Philippines (8.3%) and Malaysia (7.7%) (Figure 4b.). In terms of nominal FDI received, Indonesia has been consistently ranked first, followed by Thailand, Malaysia and Philippines during the covered period. It is also observable that the disparity between the first three countries is not so large relative to levels observed in Total Outward FDI (Figure 5.) and Total Intra-regional FDI (Figure 6.). This increasing volume and growth of foreign portfolio investments is in line with observations made in several studies.



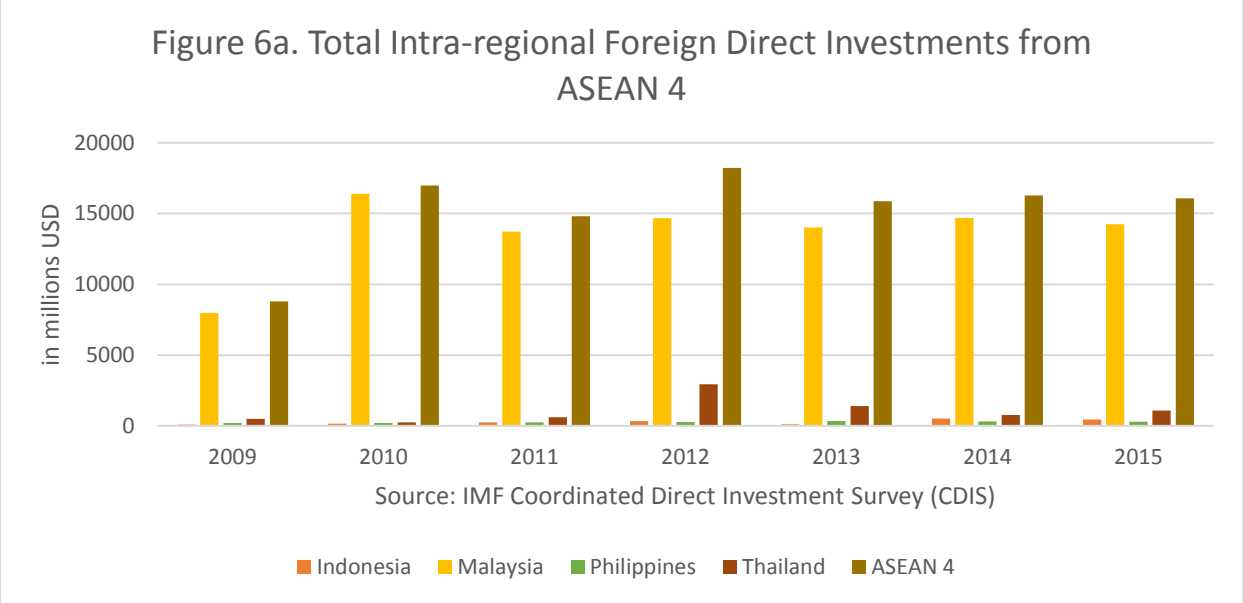


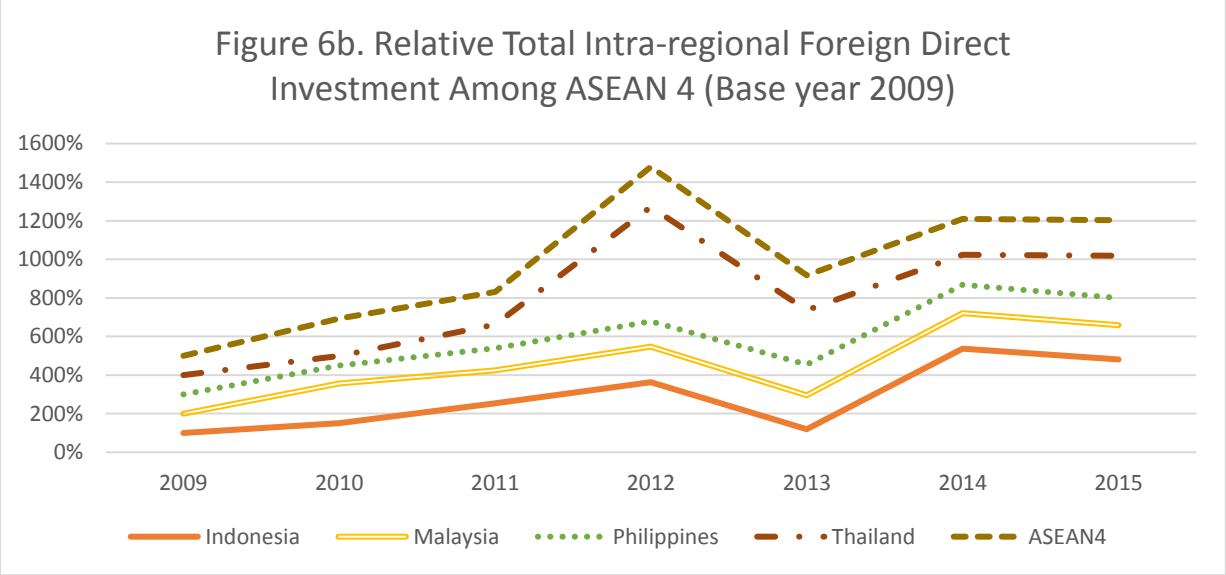
On the other hand, total outward FDI from ASEAN 4 countries grew annually by an average of almost seventeen percent (16.8%) and resulted in close to a two hundred forty percent (240%) increase from its 2009 level in 2015 (Figure 5a.). Interestingly, Thailand leads the region in terms of average annual growth (42.4%) (Figure 5b.) trailed by Indonesia (18.7%), Malaysia (12.8%) and Philippines (9.6%) but in terms of nominal volume, Malaysia is head and shoulders above the other countries, far outweighing the FDI volume from the others combined.



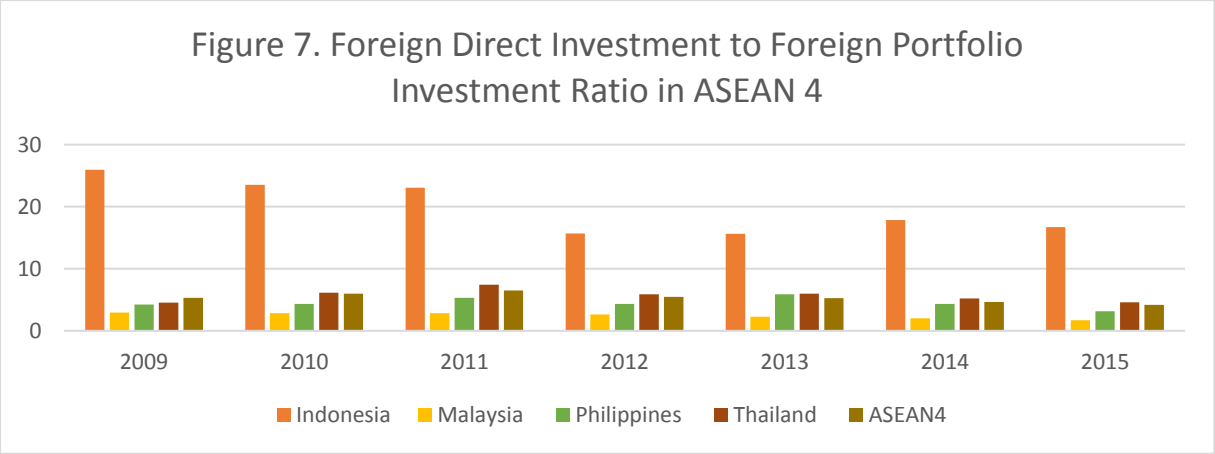


With respect to intra-regional FDI from ASEAN 4 countries, the performance of the region is in the middle of the previous two metrics. From 2009 to 2015, intra-regional FDI grew by an annual average of 15.3% and aggregately by 183% for the entire period which are less than the annual and aggregate growth of Total Outward FDI from ASEAN 4 (16.% and 240%, respectively) but more than for Total World FDI in ASEAN 4 (10.5% and 175%, respectively (Figure 6a.). Indonesia (72.5%) and Thailand (70.8%) lead the region in terms of average annual growth of Intra-regional FDI with Malaysia (15.5%) and Philippines (6.6%) significantly behind. It must be pointed out that Indonesia's annual growth might be overstated considering its intra-regional FDI level jumped more than 300% between 2013-2014 (Figure 6b.) and encountering negative growth in periods before and after this notable moment. In this sense, it may be more conservative to assume Thailand leads the region in terms of FDI growth. At any rate, in terms of nominal levels of intra-regional FDI, Malaysia is far and away the largest provider, once again overshadowing the contributions of the other ASEAN 4 countries. In this regard, the behavior of Intra-regional FDI in ASEAN 4 somehow mimics the pattern or country ranking in Total outward FDI generated by ASEAN 4 (Table 5a.) where Thailand and Indonesia lead in terms of growth but Malaysia remains ahead of the pack in terms of sheer volume of FDI provided.





It bears pointing out that while total and intra-regional foreign portfolio investments have been growing at significantly larger rate than its counterpart FDI, nominally, the former is significantly dwarfed by the latter by an average factor of five (5) for the entire ASEAN 4 region (Figure 7.). Broken down individually, Indonesia has the biggest disparity between nominal FDI and portfolio investment levels with an average factor of twenty (20), followed by Thailand (6) and Philippines (5) and with Malaysia (2) in the rear. Notably, the FDI-to-FPI ratios in ASEAN 4 are the opposite of average world ratio of 0.59 which highlights the attractiveness of the region as a destination for FDI relative to FPI despite the growth of the latter being faster.



The main takeaway from these observed facts is that although foreign portfolio investments are growing at a faster clip than FDI, it would be imprudent to disregard the latter in any analysis of capital flows within the ASEAN 4 region considering that FDI greatly outsizes foreign portfolio investments five-to-one. While these observations are in line with established literature characterizing portfolio investments as more volatile and unpredictable relative to FDI which is far less erratic and more enduring, there is analytical value in studying them together especially considering the implication that they may be summed up which is borne out of the arbitrary accounting rule that distinguishes the reporting of investments as either portfolio or direct under the CPIS and CDIS depending on where such values fall on the "10%" threshold.

REVIEW OF RELATED LITERATURE

All modern studies analyzing the topic of home bias are indebted to the pioneering work of French and Poterba (1991). In their paper, the authors tackled one of the more persistent puzzles in international economics, that despite the proven risk management benefits of international diversification, investors in the most advanced economies in the world still held majority of their assets in domestic assets. The levels of this "home bias" were quite astounding with Japan in the lead (95.7%), the U.S. (92.2%) and the U.K. (92%) not far behind, and even advanced European countries such as France (89.4%) and Germany (79%) with comparably high levels as well. If investors in these countries practiced perfect diversification, their holdings of domestic assets should be far less and proportionate to the strength of correlation of market returns between their home and intended host markets. However, through their methodology which estimated the expected returns to justify such high domestic asset concentrations, they discovered that investors were overestimating the returns on domestic assets by as much as 44 percentage points in the U.K., 25 percentage points in Japan and 9 percentage points in the U.S. Based on the authors' analysis, which was limited to stock holdings, home bias or incomplete diversification is largely explained by behavioral factors and not institutional limitations such as taxation, transaction costs and capital controls. Investors, the paper argues, have substantially different expected returns for domestic assets than foreign assets so much so that there is a higher risk premium associated

with the latter. While this behavior is acknowledged to be irrational and undoubtedly inefficient, it is also founded on the reasonable conclusion that investors may fear overseas markets due to information asymmetry. Despite the availability of historical data to temper the high risk perception in overseas markets, home bias still remains relatively high even among investors in these advanced markets with U.K. investors still holding as much as fifty percent (50%) of their investments in U.K. stocks in 2010 with a domestic stock allocation of around 6.5 times the local stock market capitalization, and U.S. investors holding seventy-two percent (72%) in American stocks with a domestic stock allocation equivalent to 1.7 times the local stock market capitalization (Vanguard Research 2012, Philips, Kinniry and Donaldson 2012). Several other studies have identified factors that support the phenomenon of Home Bias such as the preference for what is familiar (Strong & Xu 2003), level of corporate governance (Dahlquist et al. 2002), liability hedging in multinational companies (Philips 2012 and Labarge 2008), currency fluctuations (Labarge 2010) and hedge against non-diversifiable labor income risk (Heathcote and Perri 2008)

The 2015 IMF Study investigated the incidence of home bias in Asia in the context of identifying the determinants of increased economic integration in the region. Per their designation, intra-regional foreign portfolio asset holdings were deemed a superior measure of financial integration as opposed to price-based variables such as harmonization of asset prices or the law of one price (Fukuda 2011) or the reduction of cross-border transaction costs (Martin 2011) since those maybe affected by global factors which may have nothing to do with actual financial integration.

The study observed that the level of intra-regional FPI for the Asian region was relatively low, only one-third that of the E.U. but higher than Latin America and that the gap between the actual level of intra-regional FPI and the benchmark level was still rather high. They mostly assigned the anemic level of intra-regional FPI to remarkably high levels of home bias for Asian equity holdings which in turn was caused by well-documented factors such as (a) level of economic and financial development, (b) policy restrictions such as capital control measures and (c) implicit transaction costs from information frictions, real exchange rate risk, country and corporate governance issues (Chan, Covrig and Ng 2005 and Bekaert and Wang 2009). Using a basic panel regression, they found that home bias was negatively related to GDP per capita, a higher level of financial development and increased capital openness.

Additionally, through a gravity model using bilateral CPIS data, the study further identified and confirmed certain factors which contributed to the general low level of FPI. Positive factors were under the usual scope of capital market development such as the depth and sophistication of the financial system, the extent of trade integration and greater capital openness. Negative factors were in the form information asymmetries, foreign bank penetration barriers, and wide differences in regulatory and institutional quality between countries. They also identified other areas which may increase cross-border holdings such as sustained trade integration, harmonization of rules within the region such as those concerning contract enforcement, investor protection and bankruptcy procedure. What is also particularly relevant for this paper is two unique findings the 2015 IMF Study had with respect to ASEAN countries namely that a.) their home biases were much larger than the rest of Asia and b.) these countries drove the higher intraregional integration level in the Asia set so much so that the inclusion of an ASEAN intra-regional dummy in the gravity model highlighted the non-significance of the presence of non-ASEAN countries with respect to increasing the level of FPI between Asian countries. While ASEAN was not the primary focus of the 2015 IMF Study, these incidental findings are ripe for verification in this paper.

While the above-mentioned literature only covers the dynamics of home bias with respect to FPI, solely focusing on this metric in ASEAN may lead to missing out on a bigger picture. Including FDI in any extensive analysis on investment flows in the region may be the key to fully understanding the drivers of integration in ASEAN. Interestingly, the 2015 IMF Study briefly mentions that, in contrast to FPI, FDI in Asia is largely sourced within the region with estimates as high as seventy percent 70%. However, around half of this amount pertains only to China and Hong Kong. A significant portion of the remainder of this amount is sourced from South Korea and Japan who are likely drawn to Southeast Asian countries for both market and resource seeking reasons. Per an ASEAN Investment Report (2016), around sixteen percent (16%) of outward FDI from South Korea went to ASEAN in the period 2010-2015. In 2015, approximately USD 41 billion worth of FDI stock in the ASEAN region came from South Korea in which is represented by 3,770 subsidiaries which are dispersed all around ASEAN member nations. This leaves the question of how much of this FDI stock in Asia is sourced from and directed to ASEAN countries. To answer this question, this paper draws from the companion survey of the CPIS which is the CDIS which likewise tracks bilateral

information of FDI stocks between countries from 2009 onwards. This database contains reported values of inward and outward FDI stocks which theoretically should match. However, due to issues with inaccurate reporting of such data and differences in calculation of value, discrepancies naturally arise between these datasets. Hence, the CDIS developed mirrored databases such as “Inward Derived” and “Outward Derived” to match the corresponding database containing actual values. Hence the mirrored pairings would be “Actual Inward” – “Outward Derived” and “Actual Outward” – “Inward Derived”.

However, the proposition of jointly analyzing both FPI and FDI requires some basic discussion on the distinction of the two forms of investment. The OECD Benchmark Definition of FDI (2008) states that it is a category of cross-border investment made by a resident in one economy with the objective of establishing a lasting interest in an enterprise that is residing in another economy. The so-called “lasting interest” requirement in FDI is manifested as a strategic long-term relationship between the investor and the enterprise whereby the latter exercises a significant degree of influence on the management of the latter. While this definition may seem rather nebulous as different jurisdictions have different interpretations of what a “lasting interest” is, the OECD, as a practical matter, has stated that the main evidence or standard by which to just such an interest is if the investor owns at least ten percent (10%) of voting power of the enterprise residing in a host country. In contrast, this requirement of “lasting interest” does not exist with respect to FPI. The motivation for investors with respect to FPI is to secure the earnings associated with the acquisition and sale of such portfolio securities and nothing more. FPI investors have no intention of controlling or influencing the management of the assets underlying these investments. This classification of FPI dovetails perfectly with the ten percent (10%) voting power threshold which represents a clear, though arbitrary line, of whether an investor has a short or long term interest in an enterprise. While this demarcation provides an easy to follow criteria for identifying investments as either FPI or FDI, in reality, certain complications may arise. A common problem is when an investor increases or decreases his current shareholdings in an enterprise above or below the ten percent (10%) threshold or if the nationality of the investor holding the foreign asset changes. While the IMF CDIS has set out rules for these eventualities, it is another matter if the reporting countries consistently and strictly adhere to these instructions. FDI is further broken down into three classifications: (a) investment positions, (b) financial

transactions and (c) associated income flows between enterprises. To be consistent with CPIS data which tracks level data on FPI assets (stocks) held, this paper will only concern itself with the first category of investment positions which reflects the value of FPI stock at the end of the year. Another category of FDI has received recent attention especially in the realm of development economics, Greenfield FDI. The OECD Benchmark Definition describes Greenfield FDI as referring to "absolutely new investment" (ex nihilo investments) made by a foreign investor in a host country. This is different from the conventional notion of FDI which is made through a merger with or acquisition of a domestic enterprise by a foreign investor since the foreign investor directly creates a new domestic enterprise. At any rate, this type of FDI is covered by the reporting requirements in the CDIS whether if it is done through a non-corporate structure (Greenfield FDI investor will be identified as a notional resident unit) or through an expansion of corporate enterprise (Capital expansion will increase the market value of existing shares of stock).

RESEARCH QUESTIONS AND METHODOLOGY

While there are a multitude of research directions supported by the broad literature, this paper will narrow the scope of research to the following questions:

1. What is the current level of home and regional bias for foreign portfolio investments (FPI) in the ASEAN 4 region and what factors affect these levels of home and regional bias?
2. Is there a relationship between home bias and regional bias for portfolio investments in the ASEAN 4 region?
3. What is the current level of regional bias for FDI in ASEAN 4 region and does portfolio home bias have an effect on it?
4. Based on the gravity model, what factors determine FPI, FDI and total investment levels in the ASEAN region?
5. What effect did the AEC reforms have on the levels of FPI, FDI and total investment in the ASEAN 4 region? Were there also any effects on home bias for FPI and regional bias for both FPI and FDI?

Based on the progression of these questions, the first step involves computing the respective home and regional bias levels for foreign portfolio investments of the subject countries. To do so, the methodology in the 2015 IMF paper, which was based on Chan, Covrig and Ng (2005) and Bekaert and Wang (2009), is followed and later modified to account for certain peculiarities in the ASEAN 4 region.

Step 1: Since domestic holdings ($FPI_{s,s}$) are not recorded in CPIS data, that value must be derived by subtracting the total foreign holdings of a country in the entire world($\sum_{d \neq s} FPI_{s,d}$) from its total domestic capitalization which is the sum of its stock market capitalization and value of its domestic bond market ($TCap_s$). Stock market capitalization data was sourced from Bloomberg (2003-2015) whereas the value of the domestic bond market is estimated from Total Outstanding Bonds data from the Bank for International Settlements (BIS) (2003-2015).

$$FPIs, s = TCaps - \sum_{d \neq s} FPIs, d$$

Step 2: Total portfolio investment holdings of a country ($TFPI_s$) is merely the sum of its domestic holdings ($FPI_{s,s}$) and total foreign holdings ($\sum_{d \neq s} FPI_{s,dw}$)

$$TFPIs = \sum_{d} FPIs, d$$

Step 3: Home Bias (HB_s) is calculated directly as domestic holdings ($FPI_{s,s}$) over total foreign portfolio holdings ($TFPI_s$).

$$HBs = \frac{FPIs,s}{TFPIs}$$

In the original methodology, a Home Bias Index is constructed by first calculating a benchmark rate (BM_s) which is calculated as the total domestic capitalization ($TFPI_s$) over the world total capitalization ($TFPI_w$). This benchmark rate represents the optimal portfolio allocation that a country is supposed to have if it exercised perfect portfolio diversification. The raw Home Bias Index is then computed as the difference between HB_s and BM_s and a normalized Home Bias Index is this difference over the denominator (1 - BM_s). This "benchmark step" is dispensed with in this paper's methodology for two reasons. First, ASEAN

4 countries have near zero BM_s since their individual markets are very small compared to the $TFPI_w$. Unlike the previous 2015 IMF study which involved larger economies from East Asia namely China, South Korea, Japan and regional financial hubs such as Hong Kong and Singapore, ASEAN 4 countries comprise the smaller values in that dataset. The second reason is that this study emphasizes intra-regional capital flows and does not intend to compare ASEAN 4 countries to other countries outside this region. The previous 2015 IMF study constructed a Home Bias index of roughly fifty countries precisely to allow for comparisons between all Asian countries to non-Asian countries through an implied ranking. At any rate, the direct Home Bias values computed for ASEAN 4 countries are more straightforward and does not at all diminish their analytical value especially considering their relatively high levels which is consistent with calculations and observations from previous literature.

Step 4: Calculate a country's total foreign portfolio investments in ASEAN 4 ($FPI_{s,a}$) by summing up all its investments in the region excluding its domestic holdings.

$$FPIs, a = \sum_{d=ASEAN\ 4} FPIs, d$$

Step 5: Region Bias (RB_s) is directly computed as a country's total foreign portfolio investments in ASEAN 4 ($FPI_{s,a}$) over a country's total foreign portfolio investments in the world

$$RBs, t = \frac{FPIsa, t}{TFPIs, t}$$

Intuitively, Region Bias can also be derived by subtracting domestic asset holdings from total investment in ASEAN 4 and putting the difference over total foreign portfolio holdings but CPIS data already excludes domestic asset holdings so there is no need to deduct domestic holdings. This feature of the CPIS dataset ensures that Region Bias is not serially correlated with Home Bias because it does not record data on domestic assets owned which is necessary to derive the latter.

After obtaining the values for Home Bias of ASEAN 4 countries for the relevant time periods *t*, these values will be tested for consistency with the findings of 2015 IMF study with

respect to the relationship they have with the explanatory variables related to Income, Level of Financial Development, Size of Securities Market and Capital Account Openness. The effect and significance of these explanatory variables will be verified through a simple OLS panel regression setup devised by the said IMF study as follows:

$$HB_{s,t} = \alpha_1 GDPcapita_{s,t} + \alpha_2 Bank\ Assets_{s,t} + \alpha_3 MktCap_{s,t} + \alpha_4 Chinn\text{-}Ito_{s,t} + Cons$$

where:

$GDPcapita_{s,t}$ *(Income)*	*GDP per capita (in constant USD 2010) (Source Data: World Bank)*
$Bank\ Assets_{s,t}$ *(Level* of Financial Development)	*Total bank assets (as a percent of GDP) (Source Data: World Bank)*
$MktCap_{s,t}$ *(Size of Securities Market)*	*Total Stock Market Capitalization (as a percent of GDP) (Source Data: Bloomberg and World Bank)*
$Chinn\text{-}Ito_{s,t}$ *(Capital* Account Openess)	*Index for capital account openness (higher value = more open) (Source Data: Chinn-Ito Index 2015)*

The justification for these explanatory variables is based on the extensive literature confirming that the preference for financial investment destinations are affected by three categories of considerations: a. the level of economic and financial development, b. policy restrictions such as capital control measures, and c. implicit transaction costs arising from informational frictions, real exchange rate risk, country risk, and corporate governance issues. (Chan, Covrig and Ng, 2005; Bekaert and Wang 2009; Ananchotikul et al. 2015). The basic model specifies GDP per capita as the proxy for economic development, Bank Assets as a percentage of GDP and Total Stock Market Capitalization as determinants of financial development and lastly, the Chinn-Ito Index as an indicator of capital openness. Data for GDP per capita and Bank Assets as a percentage of GDP were sourced from the World Bank Financial Development Database whereas Total Stock Market Capitalization data was retrieved from the Bloomberg database.

An alternative specification unique to this paper will also be tested using different variables to represent the theoretical determinants of home bias such as Income, Level of Financial Development, Size of Securities Market and Capital Account Openness.

Nominal GDP sourced also from the World Bank replaces GDP per capita in order to capture the actual size of the economy without any consideration for demographics. The reasoning behind this is because, relative to East Asian countries, ASEAN 4 countries enjoy higher population growth rates. Such birth rates serve to have a downward effect on GDP per capita in that increases in GDP over a year are spread out to more people whereas the opposite is true for East Asian Countries with close to zero or even negative population growth rates as in Japan's case. The only exception to this trend in ASEAN 4 is Thailand which has experienced a rather drastic decline of its population rate from replacement level 1 in 2000 to only 0.3 in 2015. At any rate, if GDP per capita was only specified previously to proxy for income without any established relationship with population, Nominal GDP may be a better proxy at least for the ASEAN 4 region since it disregards the oddity of Thailand's declining population growth rate by only considering the size of the economies.

With respect to the proxy variable for financial development, Bank Assets as a percentage of GDP is replaced with Private Credit to GDP which is defined by the World Bank as *"domestic private credit to the real sector by deposit money banks as percentage of local currency GDP."* This variable excludes credit issued for governments, government agencies, and public enterprises as well as credit issued by the central bank. While both variables have been documented to be highly correlated, with a correlation coefficient of about 0.9 per the World Bank, and substitutable with each other as indicators of financial depth or development, Private credit to GDP is a more targeted variable considering that the dependent variable is FPI. It is highly unlikely that credit provided to or by the public sector translates into FPI especially in emerging economies such as the ASEAN 4. By using this explanatory variable instead of the broader Bank Assets to GDP, the link between private sector development and FPI is expected to be more apparent. For practical reasons, the total stock market capitalization to GDP variable is replaced with total capitalization or the sum of total stock market capitalization and the value of the domestic bond market (outstanding bonds) to GDP since the computation of domestic assets owned for Home Bias is derived from subtracting foreign assets owned from total assets which count both the stock market capitalization (Bloomberg data) and bond market value (BIS data).

Finally, the Chinn-Ito index which was intended to be a measure for a country's capital openness is replaced with Foreign-owned Domestic Assets to GDP. Unfortunately, the values provided by the Chinn-Ito index for ASEAN 4 countries had minimal variation among the subject countries and between the time periods covered. Moreover, some countries in ASEAN 4 had the exact same score which does not properly reflect the different levels of capital openness among the countries. Additionally, the data provided by the CPIS provides from the amount of domestic portfolio assets owned by foreigners which is a rather direct indicator of capital openness. While it may seem that this variable only covers inward capital openness since it captures the volume of foreign owned assets hosted by an ASEAN 4, outward capital openness or the ability of a foreigner to pull out his portfolio investment is likewise implied from this indicator. After all, the main draw of portfolio investments is their short-term and liquid nature and it is unlikely for foreigners to heavily invest into a country's stock or debt market without the assurance that they can readily withdraw their investments based on their own investment decisions.

$$HB_{s,t} = \alpha_1 NominalGDP_{s,t} + \alpha_2 PrivateCredit_{s,t} + \alpha_3 TotCap_{s,t} + \alpha_4 ForeignOwned_{s,t} + \alpha_5 AECDum + Cons + Error\ Term$$

where:

$NominalGDP_{s,t}$ *(Income)*	Nominal GDP (in millions of USD, constant prices 2010) *(Source Data: World Bank)*
$PrivateCredit_{s,t}$ *(Level* of financial Development)	Total Private Credit Available (as a percent of GDP) *(Source Data: World Bank)*
$TotCap_{s,t}$ *(Size of Securities Market)*	Total Stock Market Capitalization & Outstanding Bonds (as a percent of GDP) *(Source Data: Bloomberg, BIS and World Bank)*
$ForeignOwned_{s,t}$ *(Capital* Account Openess)	Total Domestic Assets owned by Foreigners (as a percent of GDP) *(Source Data: IMF CPIS and World Bank))*
AECDum	Dummy Variable for AEC reform years from 2013 onwards

With respect to the application of time effects, the AEC dummy is included to capture the reforms conducted in the relevant years.

After verifying the factors that affect home bias, this paper will proceed to address the open question in the 2015 IMF Study concerning the effect of home bias on intra-regional

flows or Region Bias (RB). The study suggests that a high degree of home bias stifles intra-regional flows by implying that one more unit of investment at home will be at the expense of that amount being invested in the region. However, this assumption precludes the possibility that an amount of investment foregone at home will more likely go outside the region to other markets. This goes to the heart of investment decisions made by citizens of ASEAN 4, if their investments decisions favor proximity, in that they prefer markets much closer to home such as regional markets or do they "skip" such markets and readily go beyond the region. To account for size or different levels of outward portfolio investments of each ASEAN 4 country, the variable on Total Foreign Portfolio Assets owned ($TFPI_{s,t}$) over GDP is included as an independent variable in the panel regression below with the AEC Dummy:

$$RB_{s,t} = \alpha_1 HB_{s,t} + \alpha_2 TFPI_{s,t}/\text{GDP} + \alpha_3 AEC\ Dummy + Cons + Error\ Term$$

A similar model will be used to check for any relationships between FPI Home Bias and Region Bias for FDI ($RB2_{s,t}$). While there have been extensive studies concerning the trade-off between FPI and FDI in terms of investor preference (Ahmad et. al. 2004, Goldstein and Razin 2013), the model employed here merely tests for any effect a given preference for domestic portfolio investment has on regional FDI. It is expected that running the two models will provide some insight as to the attractiveness of the ASEAN region for both intra-regional FPI and FDI relative to current levels of home bias exhibited by ASEAN 4 investors. FDI Region Bias ($RB2_{s,t}$) will now be the dependent variable and is computed similarly to FPI Region Bias as follows:

$$\text{RB2}_{s,t} = \frac{FDIs,a,t}{TFDIs,t}$$

where:

$FDI_{s,a}$ = A country's total foreign direct investments in ASEAN 4

$TFDI_s$ = A country's total foreign portfolio investments in the world

The explanatory variables are FPI Home Bias ($HB_{s,t}$), Total Foreign Direct Investment over GDP ($TFDI/GDP_{s,t}$), *(Data Source: IMF CDIS and World Bank)* to account for the size of

outgoing foreign direct investment a country generates per year and the AEC dummy to cover the years subject to reform.

$$RB2_{s,t} = \alpha_1 HB_{s,t} + \alpha_2 \, TFDI/GDP_{s,t} + \alpha_3 AEC\ dummy + Cons + Error\ term$$

After exploring the determinants of FPI Home Bias and its relationship with FPI and FDI Region Bias in ASEAN 4, the gravity model in the 2015 IMF Study, which was based on the framework developed by Martin and Rey (2004) and Aviat and Coeurdacier (2007), will be used to verify if the same variables are also significant in determining levels of foreign portfolio investment within the region. To recall, gravity models were initially formulated to measure the level of trade between two countries. Hence, the dependent variable is specified as a value corresponding to a home-host country pair per year. For this paper, the number of country pairs per year is twelve (12) computed as the square of the four subject countries minus the four pairs where the home and host country are the identical. Since the model is concerned only with foreign portfolio holdings, these identical pairings are excluded since they represent domestic portfolio holdings or assets held by a country within itself. Log values are used for ease of interpretation with the structure of the gravity model specified as follows:

$$log(FPI_{ijt}) = \alpha_1 log(MktSize_{it}) + \alpha_2 log(Mktsize_{jt}) + \alpha_3 log(Z_{ijt}) + \alpha_4 log(R_{ijt}) + \alpha_5 AECDum + RE + Cons + Error\ term$$

where:

FPI_{ijt}	The amount of foreign portfolio investment the Home country "i" has in Host county "j" at the current year. *(Source Data: IMF CPIS)*
$MktSize_{it}$	Total Stock Market Capitalization & Outstanding Bonds of Home Country *"i"* in the current year *"t"* *(Source Data: Bloomberg and BIS)*
$Mktsize_{jt}$	Total Stock Market Capitalization & Outstanding Bonds of Host Country *"j"* in the current year *"t"* *(Source Data: Bloomberg and BIS)*
Z_{ijt}	proxies for transaction costs on FPI between Home and Host countries
R_{it}	set of variables affecting expected return on asset holdings in the Host country *"j"*
AECDum	Dummy Variable for AEC reform years from 2013 onwards

For the basic gravity model, the following explanatory variables commonly associated with the traditional gravity model literature on trade will be used per the specification of the 2015 IMF Study:

$$log(FPI_{ijt}) = \alpha_1 log(MktSize_{it}) + \alpha_2 log(Mktsize_{jt}) + \alpha_3 log(D_{ijt}) + \alpha_4(CL_{ijt}) + \alpha_5 AECDum + RE + Cons + Error\ term$$

where:

FPI_{ijt}	The amount of foreign portfolio investment the Home country "i" has in Host county "j" at the current year t. *(Source Data: IMF CPIS)*
$MktSize_{it}$	Total Stock Market Capitalization & Outstanding Bonds of Home Country *"i"* in the current year *"t"* *(Source Data: Bloomberg and BIS)*
$Mktsize_{jt}$	Total Stock Market Capitalization & Outstanding Bonds of Host Country *"j"* in the current year *"t"* *(Source Data: Bloomberg and BIS)*
D_{ijt}	Distance (in km) between capital cities of the countries *(Source Data: www.distancefromto.net)*
CL_{ijt}	Dummy variable for common language between the countries
AECDum	Dummy Variable for AEC reform years from 2013 onwards

With respect to time effects, the AEC reform Dummy "AECDum" is added to the basic model to test for any effects caused by AEC integration. This dummy variable corresponds to data collected from 2013-2015 since this was when the first measures for capital market liberalization were scheduled to be undertaken under the Roadmap to the AEC.

After confirming these gravity model results for FPI (FPI_{ijt}), the same gravity model structure will be used on FDI (FDI_{ijt}) and then eventually on Total Investment (TI_{ijt}) computed as the sum of FPI and FDI to check if there are any similarities with the explanatory variables for FPI. Considering that TI is merely an arithmetic function of FPI and FDI, and considering how much FDI outsizes FPI in the ASEAN 4 region, it is expected that the explanatory variables for FDI will dominate those which affect FPI.

An alternate specification of the gravity model for FDI and TI will also be run based on the "market-seeking" theory of FDI (Uttama 2005 and Franco et. al. 2008) with the following variables:

$$FDI_{ijt} \text{ or } TI_{ijt} = \alpha_1 (GDPcapita_{it}) + \alpha_2(GDPcapita_{jt}) + \alpha_3(Distance_{ijt}) + \alpha_4(MarketDepth_{ijt}) + \alpha_5(MarketDepth_{jt}) + \alpha_6 AECDum + RE + Cons + Error\ term$$

where:

FDI_{ijt}	The amount of foreign direct investment the Home country "i" has in Host county "j" at the current year t. *(Source Data: IMF CDIS)*
TI_{ijt}	The amount of foreign portfolio and direct investment the Home country "i" has in Host county "j" at the current year t. (*Source Data: IMF CDIS and CPIS)*
$GDPcapita_{it}$	GDP per capita of Home Country *"i"* in the current year "t*"* *(Source Data: World Bank)*
$GDPcapita_{jt}$	GDP per capita of Host Country *"j"* in the current year "t*"* *(Source Data: World Bank)*
D_{ijt}	Distance (in km) between capital cities of the countries *(Source Data: www.distancefromto.net)*
$MarketDepth_{it}$	IMF Financial Market Depth Index score for the Home Country "i" for the current year "t" *(Source Data: IMF Broad-based Index)*
$MarketDepth_{jt}$	IMF Financial Market Depth Index score for the Host Country "j" for the current year "t" *(Source Data: IMF Broad-based Index)*
AECDum	Dummy Variable for AEC reform years from 2013 onwards

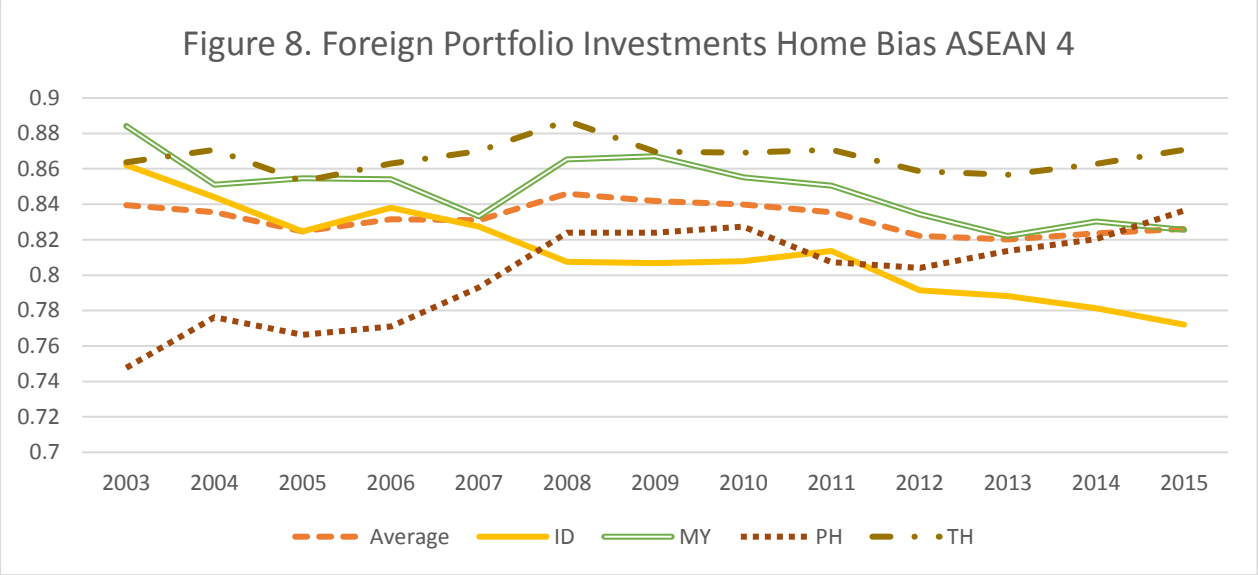
GDP per capita from both the home and host countries are used as a more direct measure of the size of a country's market over gross GDP since dividing that over the population gives an estimate of the average income level in that country. Generally speaking, and assuming FDI is not of the "export-platform" kind (which is actually more consistent with "resource-seeking" FDI), a country with higher average incomes is a more desirable market for direct investment (Qolbi and Kurnia 2015). From another perspective, a country with higher GDP per capita is richer and would also be a more abundant source of FDI. Distance is still expected to have a negative effect on FDI and Total Investment as a proxy for investment costs which increase with geographic distance (Rajan and Hattari 2009). Finally, one of the recently developed broad-based financial development indexes (Svirydzenka 2016), the IMF Market Depth Index, is used as a proxy for financial market development. The index takes a value from 0 - 1 and is a composite of five underlying variables: 1. Stock Market Capitalization to GDP, 2. Stocks Traded to GDP, 3. International Debt Securities of Government to GDP, 4. Total Debt Securities of Financial Corporations to GDP and 5. Total Debt Securities of Non-Financial Corporations to GDP. A higher score on this index implies a deeper and more developed financial market. This specification intends to check if FDI and TI in the region are

finance-seeking (Gök 2017) in that these investments have a positive relationship with deeper capital markets. For the home country, it is expected to increase outward FDI on account of the home economy becoming more financially developed and open to investing abroad with an abundance of financing. For the host country, a higher financial depth score would mean a more secure domestic credit or financing environment to host the FDI project. Since this index will be used, log transformation will be dispensed with for all variables in this alternative specification to avoid diminishing the explanatory power of this index. Similar to the previous models, the AEC dummy will also be included in the regression to check for the effect the AEC reforms have had on FDI and TI within the region. It is expected that the resulting coefficient will at least be positive though the magnitude of the effect may be small given the relatively small amount of time the reforms have been put into effect.

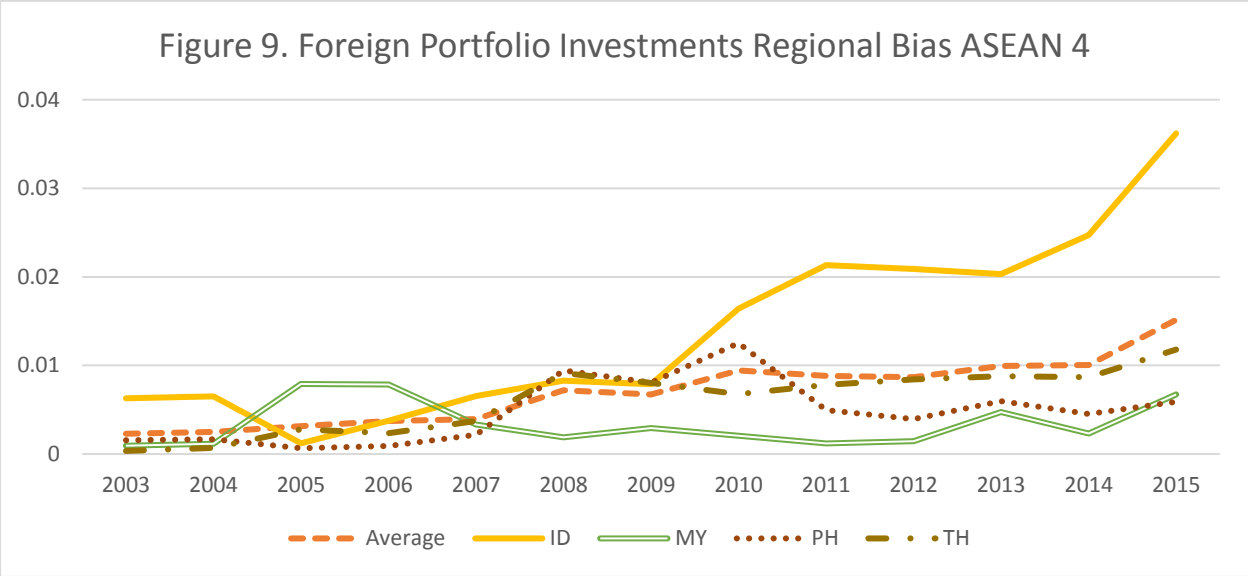
The regression for the basic model will use pooled OLS (reg) through the Stata program given the small number of observations. However, the estimation will be empirically tested for bias by analyzing the predicted values and errors. On the other hand, the gravity models will be run through Stata using panel (*xtreg*) techniques with clustered robust errors (Lahiri and Li Yan 2009) to account for potential Heteroskedasticity in the observations. The Hausman test was also used to check for the appropriateness of using fixed or random effects with the resulting Hausman p-value recommending the use of a random effects over fixed effects given the characteristics of the data.

RESULTS AND ANALYSIS

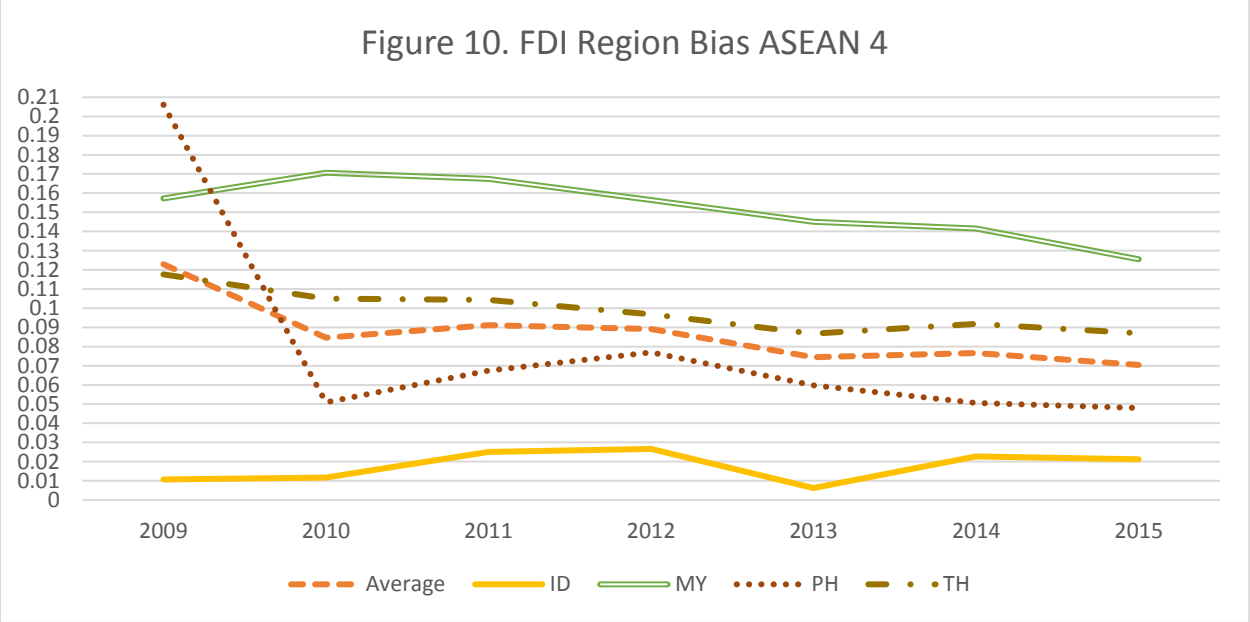
As earlier mentioned, home bias levels in ASEAN 4 countries remain relatively high at around 83%-84% on average (Figure 8.). However, contrary to the previous findings of the 2015 IMF Study, it does not seem all too clear that these levels are decreasing in the ASEAN 4 region. Based on the compiled data, Thailand and the Philippines remain on upward trajectories while Malaysia has been flat since 2012. Indonesia is the lone country exhibiting consistently lower home bias since 2003 and may be the main factor accounting for the previously observed downward trend in the region.



Unlike the trend on home bias, regional FPI bias is much more clear. From 2003-2015, average FPI region bias increased from near zero to 1.5%. Indonesia, Malaysia and Thailand are all on upward trajectories and increasing their share of portfolio investments in the region (Figure 9.). Indonesia's performance deserves attention given the significant jump it experienced from initially being below 1% to going over everyone and hitting almost 4%. This complements the country's comparable dip in home bias from 86% down to 77% which may imply some active rediversification on the part of Indonesia. On the other hand, the Philippines experienced a significant dip in region bias from 2009 and 2010 but seems to have largely maintained its ratio at around 0.5% of total outward FDI.



In contrast to the upward trend in FPI Region Bias, the trend for FDI Region bias was clearly downward. From 2009 to 2015, average FDI Region Bias went down by almost half from 13% to 7% (Figure 10.). The Philippines had the most rapid descent from being the highest in 2009 at 21% down to just 5% of total FDI. Malaysia has consistently had the highest ratio for the period with Indonesia and Thailand more or less maintaining their level of Region bias over the last two years.



The foregoing figures provide a visualization of the trends observed in ASEAN 4 countries for several of the dependent variables below. These trends are instrumental in interpreting the regression results below since they provide the current level of bias ASEAN 4 countries possess.

BASELINE HOME BIAS MODEL

The results from the baseline model for ASEAN 4 reveals several similarities with those of the 2015 IMF Study for Asia. Based on the resulting coefficient, there is also a negative relationship between GDP per capita and home bias and this sign endures even in the model containing the AEC dummy. While the resulting coefficient may seem much smaller

compared to the IMF model's result, it must be pointed out that the home bias measure used by the IMF is indexed to a scale of 100 whereas the simplified home bias index used in this study contain values between 0 and 1. However, even after adjusting the scale of both measures to be comparable, the coefficient for ASEAN countries was found to be smaller compared to its Asian counterparts by a factor of one thousand. As interpreted, a unit increase of $1 in GDP per capita would only decrease home bias by 0.000375 percent. This observation is not entirely surprising considering the ASEAN 4 countries exhibited persistently high home bias values while occupying the lower end of values for the explanatory values in the full Asia model. This characteristic of the data may explain why only minute changes in home bias are observed despite the variability of the explanatory variables.

Bank Assets to GDP is observed to have a positive relationship with home bias which is the opposite of the result from the 2015 IMF Study. The explanation provided by the literature behind a negative relationship between bank assets to GDP (as a proxy for financial development) and home bias is that a more developed financial system would encourage a preference for outward investment. However, as earlier mentioned, the ASEAN 4 countries have relatively lower financial development compared to other East Asian countries so it may be the case that they have not reached the threshold level whereby outward investment becomes a profitable option. Perhaps, the dynamic of bank assets to GDP in these countries merely raises the general level of investment which is largely funneled to domestic assets as foreign options are currently limited by the level of financial development to domestic assets. The effect is the most compelling amongst all the explanatory variables. Aside from being the most statistically significant variable, the coefficient has the largest effect with an increase of one-percent in Bank Assets to GDP yielding an .00092% increase in home bias. Considering that ASEAN 4 countries are heavily reliant on bank financing, it may be the case that banks in these countries only prefer to lend towards investments or transactions in the local market over outward ones such as FPI. The Stock Market Size variable exhibits a negative sign which is actually consistent with previous literature since a more developed financial system, as represented by a bigger stock market (Levine and Zervos 1998), is associated with less home bias. A larger stock market may also represent a higher level of sophistication among local investors which enables them to intelligently make investment decisions abroad. However,

the coefficient, while correct, is not significant in any of the model specifications which restricts any meaningful policy recommendations from this observation.

The Chinn-Ito Index is observed to have a positive relationship with home bias which is contrary to the expected relationship between a preference for home assets and capital openness. However, a further look into the source data for this index reveals very limited variability both across time and countries for the ASEAN 4 region with some countries even having the same score for prolonged periods of time. In this regard, it is quite difficult to extrapolate any meaningful policy implications from these observations considering that it was devised with a broader set of countries in mind and it is misleading to assume that some countries in the ASEAN 4 region have identical levels of capital openness let alone that they persist over time. Though generally, relative to East Asian Countries, the ASEAN 4 countries have exhibited lower capital openness scores which may generally explain the lower levels of investment among them but does not account for the differences across such levels. The inclusion of the AEC dummy yields a significant coefficient with a negative sign which represents progress within the region in terms increasing financial integration if measured by a decrease in home bias.

The basic model also has a much higher square than the IMF model. Testing for biasedness by analyzing the predicted values based on this model yields only 22 underestimated values out of a total 48 with an average absolute value error of 0.01239900 whereas the expanded model with the AEC dummy yield 21 underestimated values and an improved average absolute value error of 0.01092240. These results affirm the predictive power of the model as being unbiased and the inclusion of the AEC Dummy to increase its accuracy.

Table 1. Dependent Variable Homebias	Baseline IMF Model		
			IMF Study Model
	(1)	(2)	(3)
GDP per capita (constant USD 2010)	-3.75e-06*	-2.88e-06*	-.353***
	(-1.88)	(-1.68)	(-4.615)

Bank Assets to GDP	.0917613***	.0874486***	-0.122***
	(7.16)	(7.45)	(-5.976)
Stock Market size/GDP	-.0111029	-.0133308	0.057***
	(-0.85)	(-1.08)	(6.014)
Chinn-Ito Index (Capital Account Openness)	.0280752*	.0146647	-3.554***
	(1.86)	(0.99)	(-4.465)
AEC Dummy (For years 2013 onwards)		-.0192025***	
		(-3.76)	
Constant	.7933226***	.8028784	101.632***
	(71.80)	(75.06)	(36.599)
Time Effects	NO	AEC Dummy	YES
Observations	48	48	538
R-squared	0.6897	0.7582	0.407

Source: own calculations for columns 1 & 2. 2015 IMF study for column 3.
Robust t-statistics in parenthesis
*** p< .01, ** p<.05, *p<.1

ALTERNATIVE SPECIFICATION HOME BIAS MODEL

The results from the alternative model are more in line with the dynamics observed in the 2015 IMF Study as well as established literature. Changing GDP per capita to GDP still yields the same negative relationship with home bias but with the additional benefit of increased and sustained significance over both models. Even without considering the issue of relative income inequality in ASEAN 4 countries, it becomes apparent that population does not play a particularly significant role in determining levels of portfolio investment or the locational preference of where to make such investments. By nature, these kinds of investments are liquid and require some base level of financial sophistication to enter into. This renders GDP per capita as an inaccurate indicator especially in the ASEAN 4 region where relatively high population growth rates serve to blunt any increases in gross GDP. As mentioned earlier, this also unduly boosts Thailand's GDP per capita performance since it was the only ASEAN 4 country which experienced such a rapid decline in birth rates. Removal of

the population element would serve to put the ASEAN 4 countries on a comparable position in terms of economic size for the purpose of determining home bias. Private credit to GDP also results in the same coefficient sign as Bank Assets to GDP but with the additional benefit of having higher significance which persists over both models. As earlier explained, private credit is a more accurate determinant of FPI home bias in ASEAN 4 since it removes government sourced credit which is unlikely to translate into FPI given the generally lower level of financial development of the region relative to its more advanced East Asian counterparts. However, the same explanation given in the basic model may apply here as well: domestic credit in ASEAN countries is directed towards domestic activities which would tend to increase home bias. The sign for Stock and Debt Market size to GDP remains negative which is consistent with the original model's result and earlier literature but the coefficient is marginally larger. Relative to its East Asian counterparts, bond markets in ASEAN, with the exception of Malaysia, are still quite nascent and therefore, dwarfed by the value of the stock market which may account for the minor increase compared to merely using stock market capitalization. At any rate, this positive improvement may serve to support such initiatives towards developing and deepening bond markets such as the Asian Bonds Market Initiative (ABMI) spearheaded by ASEAN and the Asian Development Bank to increase corporate bond investments in the region. After all, developing these bond markets would allow investors in ASEAN 4 countries more viable investment options nearby. Interestingly, the significance of Total Stock and Debt Market size increased with the addition of the AEC Dummy which may signify some substantial improvements made to both capital and equity markets under the covered years that effectively reduced home bias such as harmonization of standards and increased intra-regional openness.

Total foreign-owned domestic assets over GDP as an indicator of capital openness also has a negative sign which maintains its high significance in both models. The implication in this variable is that inward capital openness accompanies outward capital openness and it is likely that the exposure of domestic investors to foreign investors in terms of inward transactions enables them to pursue investments overseas as well. Such informational transfers on returns and risk between foreign and domestic investors serves to bolster FPI by reducing information asymmetry and emboldening domestic investors to venture into international markets.

Even in this alternative model, the AEC dummy remains significant and also retains its negative sign with a similar magnitude of reducing home bias as in the base model. The inclusion of this reform variable also had the welcome effect of also increasing the significance of the Stock and Debt Market over GDP variable which signals some noteworthy interaction between the two in terms of reducing home bias. While this alternative specification yielded higher R-squares than the basic model, a test conducted on its predicted values resulted in consistent underestimation in all 48 values with the observed errors of 0.03285197 and 0.02303351 (with the AEC dummy) being larger than the basic model. At any rate, the improvement in the observed errors in the model with the AEC dummy highlights its robustness in bringing about a similar effect in both the basic and alternative model.

Table 2. Dependent Variable Home Bias	Alternative Specification Model		
			IMF Model
	(1)	(2)	(3)
Nominal GDP (constant USD 2010 in trillions)	-.0511*** (-3.98)	-.0423152*** (-3.43)	-.353*** (-4.615) (GDP capita)
Private Credit/GDP	.0726602*** (5.00)	.0754914*** (6.56)	-0.122*** (-5.976) (Bank Assets/GDP)
Stock & Debt Market size/GDP	-.0141318 (-1.57)	-.0158358** (-2.05)	0.057*** (6.014) (Stock Market size/GDP)
Total Foreign-owned Domestic Assets/GDP (Capital Account Openness)	-.1799414*** (-4.14)	-.1249477*** (2.83)	-3.554*** (-4.465) (Chinn Ito)
AEC Dummy		-.0178342*** (-3.71)	
Constant	.844821*** (79.13)	.8424757*** (81.87)	101.632*** (36.599)
Time Effects	NO	AEC Dummy	YES
Observations	48	48	538

R-squared	0.7357	0.7889	0.407
Source: own calculations for columns 1 & 2. 2015 IMF Study for column 3 Robust t-statistics in parenthesis *** p< .01, ** p<.05, *p<.1			

FOREIGN PORTFOLIO REGION AND HOME BIAS MODEL

A direct regression of FPI Home Bias on Region Bias consistently yielded a significant and negative relationship between the two. This means that an increase in home bias leads to a reduction in region bias and conversely, a decrease in home bias leads to an increase in region bias. The basic implication of this relationship is that in terms of investor preference, an increase in preference for domestic assets comes at the cost of regional assets as opposed to assets outside the region. This is the dynamic alluded to by the 2015 IMF Study which suggested that decreasing home bias in Asia would translate into increased investments within the region. Since portfolio investments can only either be invested either at home, in the region or outside the region, a decrease in home bias would logically mean an increase in foreign holdings, whether within or beyond the region. The observed coefficient would reveal how this decrease in home bias is divided between regional and extra-regional assets. Based on the model's results, a 1-percent decrease in home bias would increase regional bias by 0.11% and the remaining 0.89% percent is likely to manifest itself in extra-regional assets. It would seem, based on this dynamic, that ASEAN countries prioritize home assets first, then extra-regional ones (most likely larger markets such as the U.S., Europe and Japan) and finally, regional ones at a ninth of the extra-regional FDI volume. While majority of the investment "skips" the region, this observation actually bodes well for ASEAN since, controlling for the size of the ASEAN market vis-à-vis the world, it is actually receiving a significant share of FPI from member countries when their respective home biases decrease. To take advantage of this dynamic, ASEAN 4 regulators should encourage access and develop the attractiveness of their markets considering that significant FPI volume will make its way within the region. Therefore, the reduction in home bias may address the underinvestment in the region which was previously driven by ASEAN 4 countries only investing point seventy percent (0.70%) of their total FPI in the region which is far below the average benchmark rate of two percent (2%). In terms of optimizing their portfolios to a standard of perfect diversification, ASEAN 4

countries are only investing 30% of the benchmark share of FPI in the region. A reduction in home bias will lead to this share growing especially with the recent policy reforms the region has been making towards opening their capital markets to each other.

To further control for the different levels of external financial activities among the ASEAN 4 countries, the additional variable of Total Foreign Portfolio Assets Owned over GDP is added to control for such disparate sizes. The results from this specification remain consistent as is with the inclusion of the AEC dummy. Capital openness as represented by Total Foreign Portfolio Assets Owned over GDP has a significant and negative share which is consistent with the previous explanation that ASEAN 4 countries "skip" their own region in terms of FPI. The AEC Dummy actually yielded a positive significant coefficient which means that regional bias actually improved in the covered years. However, the average effect was only quite small at .006%. This may mean that current AEC initiatives have yet to significantly convince ASEAN investors to favor regional portfolio investments over extra-regional ones.

Table 3. Dependent Variable - Region Bias		FPI Region and Home Bias Model	
	(1)	(2)	(3)
Home Bias	-.1105061**	-.0984321**	-.0711102**
	(-2.33)	(-2.25)	(-2.07)
Total Foreign Portfolio Assets Owned/GDP		-.0181358***	-.0236369***
		(-3.50)	(-4.00)
AEC Dummy			.0061546***
			(2.68)
Constant	.1005869**	.0945979**	.0713341**
	(2.46)	(2.49)	(2.38)
Time Effects	NO	NO	AEC Dummy
Observations	52	52	52
R-squared	0.1734	0.2517	0.3758
Source: own calculations Robust t-statistics in parenthesis			

*** p< .01, ** p<.05, *p<.1,

FOREIGN DIRECT INVESTMENT REGION BIAS AND FOREIGN PORTFOLIO INVESTMENT HOME BIAS MODEL

With respect to the dynamic between FPI home bias and FDI region bias, the regression yields a rather strong and significant positive relationship between the two. As interpreted, a one percent (1%) increase (or decrease in FPI) in home bias leads to an increase (or decrease) of one point four percent (1.4%) in FDI regional bias. This characterizes the relationship of these two investment biases in the region as being in sync. When investors retreat into domestic portfolio investments, it also coincides with an increase in regional FDI preferences which may signal something at play between short-term risk appetites at home and longer-term risk appetites in the region. However, when investors wean themselves off domestic financial assets, they also shed some preference for regional FDI in favor of extra-regional FDI which may be explained by a general adjustment in both short-term and long-term external risk appetites. A possible explanation for this observation is the general level of limited capital openness or absorption in ASEAN 4 countries where such regulations as foreign limits on ownership of equity and land still persist and thus deters FDI in general. This means that though a reduction in home bias represents more willingness of domestic investors to test markets abroad, regional markets are not as receptive to these capital flows as more advanced economies such as those in East Asia. However, a retreat into domestic markets also comes with bolstered interest into FDI activity into nearby markets reinforcing the notion that the same considerations which make investors value their domestic markets more, such as perceived higher returns, lower risk, etc., may also be extended to the region.

Total FDI over GDP has a significant and positive relationship with FDI regional bias which implies that increases in total outward FDI will lead to increased regional preferences. This is the reverse situation with FPI where currently, there is an underinvestment in the region. In terms of FDI, the ASEAN 4 countries have an average region bias of eight-point seven percent (8.7%) whereas only one percent (1%) of total world FDI is directed to the

region. Given this regional investment mismatch based on the global trend, it would be expected for ASEAN 4 countries to diversify more outside the region as their levels of FDI increases given the very small coefficient (0.0012%) supporting increases in regional FDI preferences. ASEAN 4 policymakers should therefore consider further improving their investment conditions to maintain the current levels of regional FDI which are on trend to be decreasing though at a very slow rate.

Table 4. Dependent Variable - FDI Region Bias	FDI Region Bias – FPI Home Bias Model			Comparison with FPI Region-Home Bias Model (Table 3.) (Note: Dependent variable is FPI Region Bias)		
	(1)	(2)	(3)	(4)	(5)	(6)
FPI Home Bias	1.41375*** (6.34)	1.219234*** (5.76)	1.13854*** (5.44)	-.1105061** (-2.33)	-.0984321** (-2.25)	-.0711102** (-2.07)
Total FDI/GDP		.1206122** (2.10)	.1295038** (2.44)		-.0181358*** (-3.50)	-.0236369*** (-4.00)
AEC Dummy			-.0154719 (-1.12)			.0061546*** (2.68)
Constant	-1.102869*** (-5.95)	-.9563932*** (-5.56)	-.8831154*** (-5.11)	.1005869** (2.46)	.0945979** (2.49)	.0713341** (2.38)
Time Effects	NO	NO	AEC Dummy	NO	NO	AEC Dummy
Observations	28	28	28	52	52	52
R-squared	0.4300	0.5542	0.5716	0.1734	0.2517	0.3758
Source: own calculations Robust t-statistics in parenthesis *** p< .01, ** p<.05, *p<.1,						

BASELINE GRAVITY MODEL FOR FOREIGN PORTFOLIO INVESTMENTS

Running the baseline gravity model on the ASEAN 4 dataset yields similar results and consistent signs and coefficients as the explanatory variables in the 2015 IMF study. An increase in the total market capitalization in the home country is expected to increase current portfolio investments emanating from there due to increased financial activity and impliedly, financial development. An increase in the market capitalization of the host country also leads to larger portfolio investments received since it becomes a more attractive destination given

the larger market size and the financial development associated with such increase. A regression was also run using the log of the absolute value of the difference between the home and host country's market capitalization which revealed a positive coefficient of around 1.5 the previous year's market cap difference. This means that a greater difference in the market size of both countries encourages portfolio investments between the two provided that both markets are growing. It bears noting that in terms of magnitude of effect, the market capitalization of host country outsizes that of the home country's by more than double which supports the idea that investors value where there investments are destined irrespective of where they are from. Put in another way, stronger host markets will always attract investors from various home markets. The significance of the coefficient of host market capitalization is not only strong but also persists throughout the two models whereas the coefficient for home market capitalization weakens.

Distance was expected to be negative but is found to be statistically insignificant. Portfolio investments are by nature liquid and therefore easily transferrable between borders unlike FDI which can be discouraged by transport costs associated with long distances. At any rate, given the relative proximity of the ASEAN countries to each other and the fact that they operate in more or less the same time zone and have similar trading hours, distance seems to be a poor proxy for transaction costs for intra-regional portfolio investments. Common language is expected to have a positive coefficient but as applied to the region, this would only refer to Malaysia and the Philippines which both widely use English in commercial dealings. The significance of this variable is both strongly positive at 140% and persistent which reveals the importance of using a common means of communication in order for investors to understand the financial implications of portfolio investments which are usually marketed using written materials such as prospectus, pro-forma contracts and other supporting documents.

The AEC Dummy corresponds to a positive and significant coefficient with a rather strong magnitude of effect since intra-regional portfolio investments increased by 78% during the covered years. This finding is rather impressive and is a testament to the effectiveness of the targeted reforms implemented during the AEC years such as those dealing with capital

markets openness, market liquidity and establishing common rules, regulations and standards.

Table 5. Dependent Variable - Log Portfolio Investments		Baseline Gravity Model for FPI	
			IMF Study
	(1)	(2)	(3)
Log Home Total Market Cap	.7456727*	.5572585	1.519***
	(1.70)	(1.29)	(55.896)
Log Host Total Market Cap	1.836755***	1.645783***	1.279***
	(3.07)	(2.46)	(50.977)
Log Distance (km)	-1.195707	-1.419317	-2.867***
	(-0.98)	(-1.16)	(-36.176)
Language	1.366745***	1.422069***	1.253***
	(2.76)	(2.94)	(5.138)
AEC Dummy		.7833541**	
		(2.10)	
Constant	-20.78319	-14.45892	22.442***
	(-1.51)	(-0.97)	(34.274)
Time	NO	AEC Dummy	Yes
Observations	156	156	42,465
R-squared	0.3170	0.3264	0.520
Hausman Test (p-value)	0.6528	0.6809	0.00
Source: own calculations Robust t-statistics in parenthesis *** p< .01, ** p<.05, *p<.1,			

BASELINE GRAVITY MODEL FOR FOREIGN DIRECT INVESTMENT

For this model, only the explanatory variables for home market capitalization and distance were significant. Home market capitalization had a positive relationship with FDI with a 1% increase in the explanatory variable yielding a 3% increase in the latter. Since

market capitalization is an indicator of the financial development, sophistication and wealth in a country, a positive relationship with FDI is expected since there is an abundance or surplus of funds in the home market which could finance overseas investments. With respect to ASEAN countries, a bigger home market capitalization may represent increased confidence in local investors to embark on riskier investments in the form of outward FDI to the region. This is paired with the observation that a bigger host market capitalization has a negative, though statistically insignificant, effect on FDI received which hints at the type of FDI being generated in the region. It could very well be the case that the FDI generated prefers destinations which are less developed financially but richer in natural resources or have an abundance of cheaper labor relative to the home country.

The strong negative coefficient of distance is consistent with existing literature that farther distances between countries discourage FDI due to increased transaction costs. However, the persistence (across all models) and the magnitude of the coefficient is rather surprising given that the reduction of FDI is almost as high as four percent (4%) for every one percent (1%) increase in distance and yet, the countries in the ASEAN 4 region are much geographically closer to each compared to East Asian countries. Notwithstanding this disparity in distances, outside countries provide more FDI into the region than ASEAN 4 countries themselves. This observation may reflect the reality that transportation and investment costs are still quite significant within the region despite the ASEAN 4's relatively closer distance to each other. Some progress may have been made with respect to lowering the cost of these barriers since the AEC time dummy provides a positive though statistically insignificant coefficient for intra-regional FDI. Given that FDI is much more of a long game situation than PI, it is unlikely that the short three year period covered by the AEC Dummy would be able to reflect any significant increases in FDI especially since the trend within the region remains flat.

As for language, the negative effect on FDI is quite puzzling though it is statistically significant. Considering that this only refers to the country pair of the Philippines and Malaysia, perhaps there is some unique dynamic between the two countries, such as a uncomplimentary economies or investment barriers, which discourages bilateral FDI.

Table 6. Dependent Variable - Log Foreign Direct Investments		Baseline Gravity Model for FDI
	(1)	(2)
Log Home Total Market Cap	3.049705**	2.917113**
	(2.31)	(2.55)
Log Host Total Market Cap	-1.177945	-1.34332
	(-1.53)	(-1.64)
Log Distance (km)	-4.276437***	-4.427238***
	(-4.57)	(-3.99)
Language	-1.551481	-1.534085
	(-1.47)	(-1.47)
AEC Dummy		.2222834
		(0.87)
Constant	13.69336	18.64657
	(0.62)	(1.04)
Time	No	AEC Only
Observations	75	75
R-squared	0.6942	0.6934
Source: own calculations Robust t-statistics in parenthesis *** p< .01, ** p<.05, *p<.1,		

BASELINE GRAVITY MODEL FOR TOTAL INVESTMENT

As earlier predicted, it was expected for the explanatory variables in this regression to follow the results of the model run for FDI given that total investments is just the sum of FPI and FDI and the latter outsizes the former in the ASEAN 4 region. However, the results are not as straightforward. Home total market capitalization and distance remain significant and retain their coefficients but with a weaker magnitude. In the case of Home market capitalization, the effect is weakened by almost half (3% to 1.6%) and distance was diminished by a fourth (4% to 3%). These diminished magnitudes may be explained since portfolio investments are affected differently by these two variables. Host market capitalization plays

a far bigger and more significant role in attracting PI than the home market capitalization which is the reverse as far as FDI is concerned. Moreover, PI is not particularly affected by geographic distance given their liquid nature in contrast to FDI which is greatly discouraged by distance. Host Total Market Capitalization and common language change from negative to positive signs from the FDI to the total investments model which is consistent with their effect on PI. Host Total Market Capitalization and common language had very strong positive effects on PI but the sheer size of FDI dulled these effects rendering them statistically insignificant. This dulling effect of FDI on the significant variables of PI in the model for total investments is also observed with respect to the AEC dummy which has a much smaller positive coefficient than that observed in the PI model while also losing its statistical significance.

Table 7. Dependent Variable - Log Total Investments	Baseline Gravity Model for Total Investment	
	(1)	(2)
Log Home Total Market Cap	1.644555***	1.556956***
	(3.34)	(2.97)
Log Host Total Market Cap	.3066526	.1869431
	(0.47)	(0.26)
Log Distance (km)	-3.227242**	-3.331398**
	(-2.44)	(-2.40)
Language	.3216577	.3318031
	(0.51)	(0.52)
AEC Dummy		.1501978
		(1.18)
Constant	5.302584	8.74469
	(0.25)	(0.38)
Time	NO	AEC only
Observations	75	75
R-squared	0.6828	0.6846
Source: own calculations Robust t-statistics in parenthesis *** p< .01, ** p<.05, *p<.1,		

ALTERNATIVE SPECIFICATION GRAVITY MODEL FOR FOREIGN DIRECT INVESTMENT

The results across all iterations of the model are rather promising which finds support in the relatively strong explanatory power of the model as represented by consistently high R-squares. Home GDP per capita was found to have a positive and significant relationship with FDI. A unit $1 increase in GDP per capita in ASEAN 4 host countries increases outward FDI by $628,000. This observation supports the theory that outward FDI is generated through a surplus of funds in the home market which is seeking other opportunities abroad for a whole slew of reasons. As stated in the literature, FDI may be efficiency-seeking, market-seeking, resource-seeking or finance-seeking. At any rate, all these possible theories rely on a surplus of funds in a home market to finance outward FDI which is consistent with the observation gathered for Home GDP per Capita. The context of the magnitude of the coefficient may be explained in part by the relative high populations in the countries in the region which would translate a unit $1 increase per capita by an amount equivalent to a whole population size. For example, even in the average case of Thailand which had a population of 60 million people, the increase in FDI ($628,000) brought about by a unit increase in GDP per capita would only amount to 1% of the total increase in GDP ($1 x 60 million = $60,000,000). The proportion of outward FDI to GDP would even be smaller in countries with much larger populations such as the Philippines and Indonesia.

As initially hypothesized, regional FDI in ASEAN 4 countries was expected to be market-seeking but this does not seem to be the case given that the results for Host GDP per capita are statistically insignificant though the sign is positive. The magnitude is also weaker than that observed in the Home country GDP per capita variable. A possible explanation for the lack of significance in this variable is because the dependent variable used is total FDI which represents a variety of industries which ASEAN FDI targets. They may be motivated by several factors not just market-seeking behavior. While there are established national brands such as the Philippine-based San Miguel Brewery and Thailand-based Charoen Phokphand (PC) Group expanding into other ASEAN consumer markets (Hiratsuka 2006) which are clearly motivated by market-seeking behavior, other ASEAN companies may be pouring FDI in the region to create a global value chain that creates a manufacturing base in the region, for cost

reasons, in order to produce goods intended for export outside the region. This explanation finds support with the finding that intermediate goods (or goods intended for further processing) are the most traded in the ASEAN region among all classes of goods. (ADB ASEAN Economic Integration Report 2016). Intermediate goods which are produced in one ASEAN country and processed in another for export outside the region are likely to be included in some global value chain arrangement which may be financed by FDI. At any rate, the market-seeking theory of FDI, which is premised on increasing GDP per capita in the host country representing a bigger market for FDI projects to thrive in (Qolbi and Kurnia 2015), does not find support in the regression results for the ASEAN region.

The strong, significant and negative coefficient associated with distance is once again consistent with the existing body of work on gravity models for both trade and FDI (Anderson 1979, Anderson, Van Wincoop 2003 and Rajan and Hattari 2009). For every 1 km of additional distance, $2 million dollars worth of investments are discouraged which is the largest magnitude among all of the variables. Unlike portfolio investments, FDI incurs physical costs which are very similar to those also in trade such as transportation, training, set-up and regulatory costs. These are naturally expected to go up as distances between the home and host country increase. The relative proximity of ASEAN 4 countries to each other does not seem to reverse this relationship but it is expected that improved capital openness among them should at least dull the magnitude of this coefficient.

Interestingly, Home Financial Development as reflected by the IMF Market Depth Index has an inconsistent sign throughout the models but remains statistically insignificant. This may mean that outward ASEAN FDI is not necessarily determined by considerations on the credit or financing availability in the home country as theorized by proponents of finance-seeking FDI theory. In contrast, Host Market Depth reveals a strong, negative and statistically significant relationship with inward FDI. As interpreted, every unit 0.01 increase in the index represents a decrease of $60 million in inward FDI. Otherwise stated, the more financial developed and ASEAN 4 country is, the less likely it is to receive inward FDI from the region. Moreover, this rather perplexing dynamic endures in both models even when AEC reforms are accounted for. In this sense, it is likely that the current make-up of regional FDI is dominated by either the resource-seeking or efficiency-seeking type. An advanced financial

market is a sign of a well-functioning domestic economy in the sense that local firms have access to ample liquidity in order to embark on an array of projects within the country. Having no resource or efficiency advantage to enjoy, overseas investors are repelled since they do not want to deal with a "crowded" domestic market which already hosts several local players who are in a better position to manage in-country investments. From both a data and real world viewpoint, Malaysia seems to be the source of this observation. In terms of data, inward FDI to Malaysia from the Philippines and Indonesia were omitted from the CDIS database and thus, these observations were dropped from the unbalanced panel regression. Also, Malaysia has the highest Financial Markets Depth Index among all the countries and yet, it receives the least FDI. It also has some of the strongest local firms in industries which usually attract FDI such as natural resources extraction (rubber and mining) and export goods manufacturing (medical technology and machine equipment). In this situation, ASEAN investors would be more inclined to invest in countries which are less liquid since there is a greater likelihood that domestic firms will not be as liquid and capable of saturating profitable industries. Additionally, FDI may function as a way to address a funding gap in a host country. If a host country is not as financially developed, local firms may be unable to acquire sufficient funds to optimally engage in industry hence there is an opportunity for foreign investors to come in and offer FDI to fund in domestic activities either in competition or in partnership with local firms.

At any rate, these results support the general observation that FDI, being far more resource intensive and long-term in scale than FPI, revolves around the existence of surplus funds in the home country and concerns about the profitability of the FDI project in the Host country. Distance and a potentially "crowded" host country will serve to discourage inward FDI since they render these projects riskier. From the opposite perspective, a less financially developed host country would be more dependent on inward FDI to address its funding deficiencies and given the rather strong magnitude of this coefficient, it would seem that inward regional FDI is actually welcomed in ASEAN 4 countries with less developed markets.

Additionally, ASEAN 4 policymakers should continue to develop financial markets and harmonize standards to boost support for cross-border transactions. The AEC dummy was not found to be significant in the model which may mean that more work needs to be done in

identifying specific objectives or targets for accelerating intra-regional FDI especially considering the current focus on attracting FDI for the region from external sources.

Table 8. Dependent Variable - Foreign Direct Investments (in millions USD)	Alternative Specification Gravity Model for FDI	
	(1)	(2)
Home GDP per capita	.6289495*	.607338*
	(1.75)	(1.74)
Host GDP per capita	.1958156	.2077071
	(1.43)	(1.58)
Distance (km)	-2.256306**	-2.408113**
	(-1.99)	(-2.19)
Home Market Depth	345.7939	-148.3001
	(0.18)	(-0.08)
Host Market Depth	-6996.568**	-7329.594**
	(-2.25)	(-2.30)
AEC Dummy		128.7583
		(1.34)
Constant	-5894.283*	6706.909**
	(1.85)	(2.15)
Time	NO	AEC Dummy
Observations	64	64
R-squared	0.6818	0.6978
Source: own calculations Robust t-statistics in parenthesis *** p< .01, ** p<.05, *p<.1,		

ALTERNATIVE SPECIFICATION GRAVITY MODEL FOR TOTAL INVESTMENTS

As expected, the results of the gravity model for Total Investments are consistent with those generated from the alternate specification FDI gravity model regression. While the

magnitude of the coefficients may have some differences, they do not seem to be drastically different from each other except for Home Market Depth which seems to have been effectively dropped by the model (z = 0) and is the only variable which is statistically insignificant. It seems apparent that the sheer size of total FDI levels in the ASEAN 4 region dominates whatever dynamic FPI had with these explanatory variables. Recall that in the basic OLS model, home bias had a negative relationship with GDP per capita in the home country. Given the construction of home bias as Total Domestic Portfolio Assets over Total Portfolio Assets, FPI bias can be extrapolated as (1 - Home Bias). Since the sum of both halves must always equal one (1), a reduction in home bias necessarily increases FPI bias. By process of transitivity, a negative relationship between GDP per capita and home bias involves a positive relationship between GDP per capita and FPI bias. While FPI bias may be a ratio, increases in FPI will serve to increase this ratio provided that domestic portfolio investments do not increase as much. This assumption can be comfortably made given the observed trend of significant increases in FPI levels in the region (Figure 9). This dynamic can be observed when FPI is combined with FDI to form total investments. The coefficients below for home GDP per capita remain positive and significant and is larger by 0.20 which represents the addition of FPI into the model. This only represents three percent (3%) of the total effect accounted for by FDI.

The same can be said for the variables which are significant. Distance was not statistically significant in determining FPI levels but was very significant for FDI. Host market depth remained negative and significant though the magnitude was lessened by 4%. This is expected since FPI is strongly and positively linked to the level of financial development of a host country based on the basic gravity model which used market capitalization as a proxy for the same. The immediate implication that can be gleaned from these results is that though FPI is increasing in the region, it is nowhere near a level where it can significantly affect the current determinants of FDI. Considering that the determinants of FDI have varying effects on FPI, more attention must be given on how these variables will interact and if there is trade-off between the two if one set of factors are favored by policy-makers in the region such as the case of high financial development repelling inward FDI but attracting FPI.

Some measure of optimism can be found in the positive and significant coefficient of the AEC dummy which represents an increase of $209 million in total investments for the covered years. In both the baseline and alternative models for FDI, this variable was not at all significant though it already possessed a positive sign. However, it would seem that the strength of the AEC dummy in the gravity model for FPI was able to manifest itself in the combined model resulting in a net observation that AEC reforms have generally increased total investment in the ASEAN region instead of favoring only FPI at the expense of FDI.

An empirical test was also conducted on the predicted values generated by the alternative TI model including the AEC dummy which underestimated 31 observations out of 64 with an mean absolute error of 1683. While the model does not seem to be biased since it does not underestimate or overestimate majority of the observations, the rather large error value, representing a value of $1.6 billion severely limits its predictive power. Further refinements are in order such as the possibility of dropping Home Market Depth which is neither a significant determinant of FPI and FDI in ASEAN 4 countries.

Table 9. Dependent Variable - Total Investments (in millions USD)	Alternative Specification Gravity Model for TI	
	(1)	(2)
Home GDP per capita	.646411*	.6185455*
	(1.71)	(1.71)
Host GDP per capita	.239663*	.2405495*
	(1.65)	(1.81)
Distance (km)	-2.178574**	-2.398327**
	(-1.80)	(-2.06)
Home Market Depth	-7.532018	-644.7937
	(-0.00)	(-0.30)
Host Market Depth	-6367.569**	-6839.568**
	(-1.93)	(-2.01)
AEC Dummy		209.1023*
		(1.83)

Constant	-5496.027	6674.064**
	(1.61)	(1.98)
Time	NO	AEC Dummy
Observations	64	64
R-squared	0.6513	0.6978

Source: own calculations
Robust t-statistics in parenthesis
*** p< .01, ** p<.05, *p<.1,

CONCLUSIONS AND RECOMMENDATIONS

This study mostly confirms the stylized facts concerning FPI home bias in the ASEAN region through both the baseline and alternative models. The relatively high levels of home bias, averaging to around eighty-five percent (85%), are adequately explained by relatively lower levels of income, whether gross or per capita, lower levels of financial development and reduced market openness and accessibility in the region. However, certain peculiar results were likewise unearthed such as the inverse relationship between private credit and home bias which hints at the possibility that the ASEAN region has a domestic financing structure that discriminates against cross-border investment opportunities. Alternatively, this situation may also imply some sort of excess capacity condition in that domestic investment conditions are favorable thereby decreasing the impetus for local investors to seek overseas markets. An interesting dynamic between FPI Home Bias and Region Bias was also identified. The IMF Study's suggestion that a significant trade-off between favoring home assets over regional ones exists was largely confirmed. While majority of the FPI gained by a reduction of home bias still goes outside the region, a rather significant share, relative to ASEAN's market size compared to the world's, remains, or roughly around 11%. The implication here is that a decrease in home bias does indeed significantly contribute to increasing region FPI. While ASEAN investors may still favor financial assets hosted in financial centers around the world for security and liquidity reasons, a reduction in their home bias will still lead to gains in regional FPI. In this regard, ASEAN regulators are on the right track in making regional financial assets attractive enough for investors to hold in lieu of home or extra-regional assets.

It was noticed as well that the growing level of outward FPI in ASEAN 4 countries would naturally involve a small increase in intra-regional holdings. This is credited to the significant gap between current levels of regional bias and the world benchmark rates for investing into the region where it is expected for some level of FPI to readily seek the region. A comparison of the results of the models run in the 2015 IMF Study and the alternate model provided in this paper show consistent relationships between FPI and the explanatory variable representing income and capital market openness but diverge on the effect of financial development and market capitalization size. While the results for the tests conducted in this paper are in line with expectations that a larger market capitalization should encourage more FPI, the credit-based proxies for financial development, Bank Assets to GDP and Private Credit to GDP, yielded significant but positive coefficients. This may portend some inherent selection bias possessed by local providers of credit or finance in favoring domestic ventures over overseas ones with similar or lower risk profiles. The effect of such a bias is especially striking in the ASEAN 4 region which relies heavily on bank financing relative to other regions (ADB Asian Development Outlook 2015). The 2015 IMF Study addressed this feature in Asia by recommending opening financial markets to the entry of foreign banks who have more exposure and experience in financing cross-border enterprises.

On top of analyzing FPI dynamics in the region, the paper also expanded the scope of study to cover FDI to check for common determinants. While several factors that affect FPI were found not to significantly affect FDI, such as host market capitalization and language, some common factors were identified. Home country GDP per capita as a proxy for the size of a home economy was found to be positively related to FDI since this would signal a surplus of funds to finance outward bound FDI. However, host country GDP per capita was not found to be significantly related to FDI which may debunk the notion that ASEAN FDI is market-seeking. Also, host financial market depth was unexpectedly found to have a very strong negative effect on inward FDI which also weakens the theory that ASEAN FDI is finance-seeking. More likely, ASEAN FDI is both resource and efficiency-seeking and would therefore avoid countries with ample domestic liquidity available to strengthen local firms. It was also found that, even in the more compact ASEAN region, distance, which was insignificant for purposes of determining FPI, was strongly negative related with FDI in line with established literature on gravity models.

However, the most significant conclusion supported by the entire methodology conducted by this paper is how the sheer size of FDI transactions in ASEAN fully absorbs any counter-dynamics associated with FPI. As illustrated in the trend charts, FDI outsizes FPI by a factor of five (5) in the region and while FPI growth is upward and going faster than FDI, which is flat or even slightly downward, the two forms of investment will not be converging anytime soon. So much so that more attention on the development of FDI friendly policies may be required to ensure that the gains in increasing intra-regional FPI may be sustained. Based on the models incorporating the AEC dummy, it seems that the AEC initiatives are more effective in generating intra-regional FPI than FDI but the analysis stops short of concluding they are at the expense of one another since it was also found to be positive and significant in determining total investments. In fact, it would seem that the direction taken by the AEC on liberalizing capital markets will encourage both forms of investment in the region. It is expected though that, depending on the emphasis of these initiatives, whether to deepen equity and bond markets or focus on developing the financial system at large, one form of investment will be encouraged more than the other. While the enlarging the size of equity and bond markets directly increases intra-regional FPI, the effect on FDI seems to be the opposite as far as host countries are concerned. It would seem that investors who are more interested in a "lasting interest" in an overseas enterprise are very concerned with the equity and debt markets in destination markets and the domestic firms strengthened by them.

In fine, the vital difference between FDI and FPI investors is the basis of their expectations of returns on their investment. FDI investors are in a riskier position since their ventures are exposed to the entire workings of the host country's economy whereas FPI investors mainly maneuver within the confines of equity and debt markets. The latter also have the luxury of retreating into their own home markets at any sign of financial peril in the host market. ASEAN 4 regulators would do well to remember these basic distinctions between FDI and FPI oriented investors when they craft and implement policies towards AEC 2020. These behaviors have been documented to be consistent across a broad swathe of investors, whether they are located outside or within the region.

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Appendix I. Summary Statistics

FPI Home Bias				
	Percentiles	Smallest		
1%	0.7975661	0.7975661		
5%	0.8026472	0.8003212		
10%	0.8155125	0.8026472	Obs	52
25%	0.823821	0.8040383	Sum of Wgt.	52
50%	0.8459309		Mean	0.8464629
		Largest	Std. Dev.	0.0264444
75%	0.8687499	0.8815035		
90%	0.8793575	0.8828507	Variance	0.0006993
95%	0.8828507	0.8925084	Skewness	-0.0410766
99%	0.8989904	0.8989904	Kurtosis	1.949867

FPI Region Bias				
	Percentiles	Smallest		
1%	0.0003521	0.0003521		
5%	0.0006769	0.0006578		
10%	0.0011795	0.0006769	Obs	52
25%	0.0021124	0.0009011	Sum of Wgt.	52
50%	0.0059395		Mean	0.0070476
		Largest	Std. Dev.	0.0070181
75%	0.008367	0.0208914		
90%	0.0163948	0.0213334	Variance	0.0000493
95%	0.0213334	0.0247333	Skewness	2.06307
99%	0.0361972	0.0361972	Kurtosis	7.883847

FDI Region Bias				
	Percentiles	Smallest		
1%	0.0062072	0.0062072		
5%	0.0107643	0.0107643		
10%	0.0117175	0.0117175	Obs	28
25%	0.037284	0.0211978	Sum of Wgt.	28
50%	0.0868633		Mean	0.08704
		Largest	Std. Dev.	0.0565197
75%	0.133527	0.1571882		
90%	0.1674598	0.1674598	Variance	0.0031945
95%	0.1706112	0.1706112	Skewness	0.2784874
99%	0.2061277	0.2061277	Kurtosis	2.039415

Portfolio Investments (in millions USD)				
	Percentiles	Smallest		
1%	0.001	0.001		
5%	0.0147	0.001		
10%	1.6513	0.001	Obs	156
25%	7.44355	0.001	Sum Wgt.	156
50%	38.306		Mean	208.6242
		Largest	Std. Dev.	430.8992
75%	149.8266	1802.671		
90%	697.4543	2044.855	Variance	185674.1
95%	1022.421	2173.266	Skewness	3.267749
99%	2173.266	2647.528	Kurtosis	14.59905

FDI (in millions USD)				
	Percentiles	Smallest		
1%	0	0		
5%	5	0		
10%	7	3	Obs	75
25%	100	5	Sum Wgt.	75
50%	377		Mean	2050.053
		Largest	Std. Dev.	3825.959
75%	2342	13795		
90%	4073	14202	Variance	1.46E+07
95%	13795	14582	Skewness	2.478645
99%	15193	15193	Kurtosis	8.009126

Total Investments (in millions USD)				
	Percentiles	Smallest		
1%	5.42	5.42		
5%	8.441	6.612		
10%	67.287	6.834	Obs	75
25%	278.598	8.441	Sum Wgt.	75
50%	540.534		Mean	2284.662
		Largest	Std. Dev.	3813.009
75%	2775.495	13834.34		
90%	4336.166	14594.47	Variance	1.45E+07
95%	13834.34	14769.43	Skewness	2.419032
99%	15205.57	15205.57	Kurtosis	7.823615