



Macroeconomic Synchronization and Foreign Direct Investment Inflow into ASEAN: Evidence from Malaysia's Experiences

Tajul Ariffin Masron

School of Management, Universiti Sains Malaysia

11800 Minden, Malaysia

Tel: 60-4-653-2755; Fax: 60-4-657-7448 E-mail: tams@usm.my

Rohana Kamaruddin

Department of Economics

Faculty of Business Management, Universiti Teknologi MARA

40450 Shah Alam, Malaysia

Tel: 60-3-5522-5404 Fax: 60-3-5544-4693 E-mail: rohana77@hotmail.com

Abstract

ASEAN has experienced remarkable growth performance in the last decade, in particular the period before the 1997 economic crisis. This great achievement is partly attributed to the inflow of foreign direct investments (FDI) into the region. Today, ASEAN is facing stiff competition to attract FDI inflow with the emergence of China and India as new competitors or locations for (FDI). Meanwhile, the 1997 economic crisis has also resulted in large volatility especially exchange rate volatility. As part of the efforts to stabilize the region, there is a suggestion that ASEAN has to pursue regional currency. Regional currency, in turn, requires ASEAN macroeconomic to converge or synchronize to enable all members will be benefited from the formation. In the nutshell, it is the importance of this convergence that propels this study to undertake an investigation into the impact of several macroeconomic convergences on the FDI flow into ASEAN. As expected, this study found that macroeconomic synchronization, which is believed as able to strengthening the formation of ASEAN Free Trade Area (AFTA) if successfully coordinated, has a significant impact on the inflow of FDI into the region.

Keywords: Maastricht criteria, FDI, AFTA

JEL classification: F21, E62

1. Introduction

Foreign direct investment (FDI) is regarded by economists and policy makers as today's chief means of economic development and growth. Unlike the flighty nature of portfolio investment, FDI tends to focus on the longer term investment window and is thereby more reliable. For this and other attractive traits, FDI is now treated more than ever as the capital flow of choice (Braunstein and Epstein, 2002). For one, FDI spreads capital, technology and management skills across the globe - all the crucial ingredients for economic growth and development (Crotty et al., 1998). For developing countries, FDI provides the much needed funds for upgrading the economies and fosters economic growth through technology transfer and spillovers.

As shown in Table 1, the amount of FDI flowing into developing countries has grown dramatically over the course of the 1990s, from USD 551 billion in 1990 to USD 2339 billion in 2002. Out of these amounts, ASEAN-5 attracted approximately USD 91 billion in 1990 and USD 278 billion in 2002 (UNCTAD, 2003; note 1). This increase in FDI was the result of concerted actions taken by the ASEAN governments to further boost their respective economies following the successes of the investments made in the 1980s. Among others, ASEAN has adopted a more liberal policy on the inflow of FDI and the exports and imports of materials and parts for FDI firms (Hiley, 1999). In the 1980s and generally through to the late 1990s, ASEAN-5 were well positioned to attract a relatively large portion of the global boom in FDI. This scenario, however, began to change in the 1990s with the emergence (or re-emergence as the case maybe) of investment hot spots such as China, Eastern Europe, Latin America, South Asia, and Southern Africa. Although the amount of FDI inflow is growing, the ratio of FDI inflow into ASEAN over total inflow into developing countries henceforth began to decline or stagnates, as shown in Table 1 (note 2).

<Table 1 insert here>

According to Woo (2003), based on the Overall Technological Index (OTI), ASEAN-4 is ranked higher than China in terms of receiving technologies from abroad, but is lower in terms of its capability to develop indigenous technology (note 3). Many US multinational corporations (MNCs) now view China as a country with the highest growth potential. Some of them, such as General Motors, Ford Motor Co., and AT&T have invested billions of dollars in China to capitalize on the expected growth (Madura, 2005). Its large population not only provides a ready domestic market for their products, but also an abundance of cheap labor. With the diversion of FDI flow from ASEAN to China (and possibly also to India, which is another emerging location for FDI) and the competition posed by Eastern Europe and Latin America for scarce capital, ASEAN's economic growth and technological development is at risk. Investment incentives as provided by individual ASEAN countries are inadequate to significantly tilt investment decisions in their favor. What is required is a fully implemented AFTA. Not only will a full blown AFTA make the individual ASEAN economies more attractive as a location for FDI, it will also provide foreign investors with economies of scale for the production of truly regional export products and for the production of goods and services for the region's consumption (Akraane and Stifel, 1993).

Although work on the full implementation of the ASEAN Investment Area (AIA) has accelerated somewhat since 2002, its integration effort is still lagging and implementation and commitment still short of expectation. In view of this state of affairs, this paper seeks to assess whether the harmonization of several AFTA strengthening policies will have an impact on FDI flow vis-à-vis the individual ASEAN economies.

The organization of this paper is as follows. The next section reviews the theoretical aspects of the study, focusing particularly on how economic integration and FDI flow is linked as well as the association between Maastricht criteria and economic integration. Section III reviews the previous studies on this issue. Section IV provides the empirical specification as well as the estimation procedure, while Section V discusses the findings. Finally, section VI summarizes and concludes the study.

2. Theoretical Review

2.1 Theoretical Link between Economic Integration and FDI Inflow

According to Monge-Naranjo (2002), the most striking feature of globalization in the last two decades is FDI rather than trade. FDI flows have grown ten-fold during the period as compared to just a two-fold increase in trade. This phenomenon is particularly remarkable in the case of developing countries where FDI is the fastest growing component of foreign capital inflow (Monge-Naranjo 2002).

Regional economic integration, or more specifically AFTA, in the case of ASEAN, can affect the inflow of FDI in several ways. Firstly, it needs to be noted that in principle, the effect of a FTA on FDI need not always be a positive one. In fact, in the simplest Heckscher-Ohlin world where free trade achieves factor-price equalization, capital has no incentive of crossing borders. According to this logic, a free trade agreement could reduce the incentives for FDI if the original purpose of FDI is to bypass trade barriers in order to access protected domestic markets. In contrast, when the factor endowment of countries is sufficiently unequal, there is incentive for capital to relocate to more labor-intensive countries. These incentives are further strengthened when the flow of goods between countries are unimpeded. Moreover, third-country corporations may, as a diversion, choose to invest in one of the FTA member countries in order to take advantage of the lower tariffs imposed by the agreement partners (Cuevas et al., 2005, p. 473).

Meanwhile, Blomstrom and Kokko (1997) and Levy-Yeyati et al. (2001) provided relatively extensive theoretical links between changes in FDI and free trade. According to the vertical FDI theory, multinational corporations establish different stages of production in different countries in order to take advantage of specific conditions in the local factor markets. Conversely, in a horizontal FDI set-up, multinational corporations would establish similar production facilities in several countries, with each one serving the local market. A horizontal FDI set-up is a rational strategy when obstacles to trade (natural or artificial) are significant. It does not require any specific degree of similarity or difference in factor endowments among the countries, as long as production becomes feasible and economically viable after the investment has taken place. A vertical FDI set-up, on the other hand, would be more suited in a liberalized environment of a regional integration where trade barriers are reduced or removed.

According to Bitzenis (2004), it is regionalization rather than globalization that is responsible for the inflow of FDI into the Balkan region. Had it not been for regionalization, the individual Balkan countries may not even receive any FDI. Bitzenis (2004) made this conclusion after observing an inconsistent disparity between a higher FDI accumulation and the dismal state of globalization related reforms and transition programs happening in that region (note 4).

2.2 Maastricht Criteria and Economic Integration

Regionalism may not manifest itself through any kind of formal institution. It could exist through various types of cooperation and alliances among the countries in question (Acharya, 1999). Regionalism assists in the creation of free trade zones and the general liberalization of economic activities. It facilitates the progress of under-developed countries

through interaction with the external control mechanisms (Bowles, 1997). In addition, it helps the entry of small and developing countries into a union such as the EU, which reflects the success of multilateralism (Sapir, 2000).

As argued by Afxentious (2000), political considerations are rarely free of economic considerations. In the case of the European Union (EU), for instance, economic considerations eventually dominated the objectives of the regional integration while intense political unification has proven to be untenable. This is evident from the five conditions set forth in the Treaty of Maastricht of 1992 that saw the birth of the union. Known as the “Maastricht criteria,” the 5 conditions are: (1) an inflation rate of no more than 1.5 percentage points above the average of three countries with the lowest inflation rates, (2) nominal long-term interest rates not exceeding more than 2 percentage points of the three countries with the lowest interest rates, (3) exchange rate stability, (4) Government budgetary deficit should not exceed 3% of GDP, and (5) Public debt should not exceed 60% of GDP. By adding this inter-governmental co-operation to the existing “Community” system, the Maastricht Treaty created a new structure with three “pillars” which is political as well economic. This is the evidence of the existence of EU.

Bronk (2002) explained the reason that relatively inflexible conditions can be very effective in furthering both the transition and enlargement processes, and why many of the Central and Eastern Europe Communities (CEECs) are prepared to stick to the reforms needed despite the high economic and political costs of doing so. In essence, Bronk (2002) argued that by acceding and delegating their choice of policy mix to the exigencies of the EU conditions, these countries stand to benefit from a self-reinforcing boost in the market credibility of their transition reforms.

3. Review of Empirical Studies

A number of empirical studies have been conducted on the impact of economic integration on the flow of FDI. Mold (2003) in his study analyzed the impact of the single market program (SMP) on the locational determinants of US FDI for the period 1978–95, a key period in the development of the European single market. However, he found little evidence to support a strong correlation between the formation of SMP and FDI location. On the contrary, Mold (2003) found that size and growth of gross domestic product (GDP) are more important determinants of FDI inflows.

In another study using cross-country panel data, Cuevas et al. (2005) assessed the effect of North America Free Trade Agreement (NAFTA) on the FDI flows into Mexico. Based on their study, it was found that free-trade agreements (FTAs) do exert a significant positive effect on FDI flows, particularly for the smaller members. After controlling for a set of other factors—such as an increase in worldwide FDI flows—it was found that NAFTA generates FDI flows of nearly 60 percent higher than it would have been without the agreement.

As alluded earlier in the context of the Maastricht criteria, countries that wish to embark on joining the union need to accede much of their policy matters to the EU pre-set conditions. Bronk (2002) explored the dynamics of how CEEC commitment to the EU conditions delivers considerable interim (i.e., pre-accession) credibility benefits. These interim credibility benefits are important in themselves in raising investment and FDI. In coming to his conclusion, Bronk (2002) considered a significant amount of empirical evidence, particularly the findings of Bevan and Estrin (2000) and the analogous impact of Italian commitment to enter economic and monetary union (EMU).

Nicoletti et al. (2003) suggested that the removal of border barriers in existing free trade areas (the EU and NAFTA, and thus potentially AFTA) can boost the overall FDI flows among participating countries. However, they argued that the positive effect of a stable exchange rate arrangement (which is one of the Maastricht criteria) on FDI flows into participating countries is less evident.

Blomstrom and Kokko (1997) found that the creation of the Canada-U.S. Free Trade Agreement (CUSFTA) has relatively little influence on direct investment patterns in Canada. The reason for this is that much of the trade between Canada and the United States has long been liberalized before CUSFTA was established. In contrast, Mexico’s inclusion in NAFTA and the establishment of the Latin America Common Market or Southern Common Market (MERCOSUR) are likely to significantly affect the region's policy environment, and thereby the inflow of FDI. Of late, Canada has voiced her concern on the “unequal” share of “quality FDI” amidst a growing concentration of high value-added FDI in the United States at the expense of Canada (Globerman, 2001). Specifically, this pertains to FDI flows into knowledge-intensive industries where there is an increased leaning towards the United States and away from Canada in the post-CUSFTA period (Globerman, 2002).

In yet another study, Bitzenis (2004) noted that FDI orientation is not as global as expected and that there is a regional trend in those flows. The regional factor is responsible for channeling FDI into less-developed and poor countries when otherwise they would not be getting any share of it at all. Therefore, this study demonstrated the importance of regional economic integration as another impetus for the inflow of FDI into the individual countries in the regional economic agreement.

Janicki et al. (2005) presented an empirical assessment of the endogenous optimum currency area theory by using the gravity model. Several Maastricht criteria were utilized to assess the effectiveness of the convergence criteria in guiding multinational investments within the European Union. A fixed effects model based on a panel data of FDI flows within

the EU-15 showed specifically that the Maastricht criteria on interest rate, government fiscal policy, and debt do play a significant role in attracting multinational investment. Rojec and Potocnik (1997) and Bitzenis (2004) provided additional support to the finding by Janicki et al. (2005) that EU integration represents a strong incentive for FDI to flow into member and non-member countries in the region. An even stronger incentive for increased FDI in a country is its acceptance as a new member in the EU. There is no doubt that Slovenia's membership in the EU (Rojec and Potocnik, 1997) as well as the Balkan regional economic integration (Bitzenis, 2004) would strongly increase FDI inflow into that country. This increase, however, will not be felt immediately but in the longer term when Slovenia harmonizes her legal and institutional frameworks with EU standards (Rojec and Potocnik, 1997).

4. Empirical specification and estimation procedure

This section uses regression techniques to identify the effect of several Maastricht criteria, which are believed to be as important in the realization of AFTA, on FDI and then uses those estimates to gauge the relative contribution of these criteria and other factors to the evolution of FDI in ASEAN-4. The empirical model specification is based on the study by Janicki et al. (2005) with little modification. This study uses total FDI inflow into the (two) ASEAN economies instead of bilateral FDI flow. Although there is an argument regarding why this study does utilize total, instead of bilateral, FDI, we do believe that this specification is valid (note 5). Our main proposition is that if ASEAN countries could synchronize their macroeconomic policies, couple with the existing effort to promote single market under ASEAN Free Trade Area (AFTA), this effort will support as well as elevate the existing single market formation in ASEAN. Macroeconomic synchronization may reduce the asymmetrical-shock-bound risk. Subsequently, may spur more FDI to inflow into the region. Accordingly, this study also omits the role of distance from the analysis (note 6). The empirical model, which is *a la* gravity model, is specified as follows:

$$FDI_{ij,t} = f(HO_{ij,t}, MC_{ij,t}) \quad (1)$$

where, *HO* refers to Hecksher-Ohlin variable while *MC* stands for Maastricht criteria harmonization. As mentioned in the first place, one of the motivations of FDI inflow is market penetration. By having free trade agreement the rest of ASEAN countries, products made in Malaysia can be marketed in other ASEAN countries. This will be captured by the *HO* variable. In addition, we test several macroeconomic synchronizations on FDI inflow as it will help in reducing risks of doing business in ASEAN (note 7). At this point, it is worth to mention that although ASEAN is still far for implementing any Maastricht condition in its regional integration process, we do incorporate these criteria not in the form of its original standard as discussed in Section 2. Rather we include this in line with the current interest on this issue, namely the level of synchronization of Maastricht criteria. Subscript *ij* denotes two ASEAN economies; where *i* refers to Malaysia and *j* denotes other ASEAN core members (e.g. Indonesia, the Philippines, Singapore and Thailand). In other words, this study will have four combinations or equations to be estimated with respect to Malaysia's experiences. Therefore, *FDI_{ij}* refers to FDI inflow into two ASEAN economies, namely Malaysia and Indonesia (MI), Malaysia-Philippines (MP), Malaysia-Singapore (MS) and Malaysia-Thailand (MT). Similar set up applied to the other variables. If we decompose *HO* and *MC* into their components, we get the following equation (note 8):

$$\ln FDI_{ij,t} = \theta_0 + \theta_1 \ln SIZE_{ij,t} + \theta_2 \ln INFDF_{ij,t} + \theta_3 \ln BGTDF_{ij,t} + \theta_4 \ln DBTDF_{ij,t} + \varepsilon_{ij,t} \quad (2)$$

Where, *SIZE* is market size of the two ASEAN economies; *INFDF*, *BGTDF* and *DBTDF* refer to the differential between the two ASEAN economies in inflation, budget and debt respectively. There are two more criteria which are not included, namely exchange rate stability as well as interest rate. The exclusion of exchange rate stability is because of extensive research has been done in examining the impact of exchange rate volatility (see for example Chit (2008), among others). On the other hand, the exclusion of interest rate is due to difficulty to find a consistent type of interest rate across countries under study. Measurement of each of the variable is as follows:

$$FDI_{ij,t} = (FDI_{it} + FDI_{jt}) \quad (3)$$

$$SIZE_{ij,t} = (GDP_{it} + GDP_{jt}) \quad (4)$$

$$INFDF_{ij,t} = |INF_{it} - INF_{jt}| \quad (5)$$

$$BGTDF_{ij,t} = |BGTDF_{it} - BGTDF_{jt}| \quad (6)$$

$$DBTDF_{ij,t} = |DBTDF_{it} - DBTDF_{jt}| \quad (7)$$

5. Methodology

In order to estimate the above empirical model, we follow the standard time series procedure. We start by analyzing the existence of unit root problem in each series or variable. It will then followed by the test of cointegration. As the sample size in this study is relatively small, autoregressive distributed lag model (ARDL) is seemed to be more appropriate to be used. The ARDL modeling approach as popularized by, among others, Pesaran and Pesaran (1997) and more recently by Pesaran et al. (2001), has a few advantages. The main advantage of this approach lies in the fact that it can be applied irrespective of whether the variables are $I(0)$ or $I(1)$. This approach also allows for the model to take a sufficient number of lags to capture the data generating process in a general-to-specific modeling framework. Although, a dynamic error correction model (ECM) can be derived from ARDL through a simple linear transformation (Banerjee et al., 1998; Pesaran et al., 2001) recently introduced bound testing as an alternative to test for the existence of cointegration among the variables (note 9). The bounds test procedure is merely based on an estimate of unrestricted error correction model using ordinary least squares (OLS) estimator. The UECM is a simple reparameterization of a general ARDL model (Tang, 2003). To illustrate the ARDL modeling approach, the simple model of equation (1) is reconsidered and its corresponding unrestricted error correction version of the ARDL (p, q, r) model is given by:

$$\Delta \ln FDI_{ij,t} = \beta_0 + \beta_1 \ln FDI_{ij,t-1} + \beta_2 HO_{ij,t-1} + \beta_3 MC_{ij,t-1} + \sum_{i=1}^{p-1} \beta_{4i} \Delta \ln FDI_{ij,t-i} + \sum_{i=0}^{q-1} \beta_{5i} \Delta HO_{ij,t-i} + \sum_{i=0}^{r-1} \beta_{6i} \Delta MC_{ij,t-i} + \varepsilon_t \quad (8)$$

The second part of equation (8) with β_{4i} , β_{5i} and β_{6i} represents the short run dynamics of the model whereas the first part

with β_1 , β_2 and β_3 represents the long run relationship. The null hypothesis in the equation is $\beta_1 = \beta_2 = \beta_3 = 0$,

which means the non-existence of the long run relationship. Given the estimated UECM in equation (8), the long-run

relationship can be derived from UECM that is the estimated coefficient of the one lagged explanatory variable

(multiplied with a negative sign) divided by the estimated coefficient of the one lagged dependent variable (Bardsen,

1989; Tang, 2003). The long-run impact of HO and MC in (1) are given by (β_1/β_0) and (β_2/β_0) , respectively.

Equation (8) is estimated by using annual time series data for the period 1970 to 2004. The data series used are taken from the International Financial Statistics (IMF), and World Development Indicators (World Bank, 2006) and covers ASEAN-5 economies. However, our focus will be on Malaysia's experiences with its four neighboring ASEAN countries, namely Indonesia, the Philippines, Singapore and Thailand.

6. Results and discussion

Although the ARDL procedure requires no pre-testing (i.e. stationarity level), all variables are first tested for stationarity with intercept and trend using the Augmented Dickey- Fuller (ADF, see note 10). Since all variables are found as not necessarily integrated at order one, the use of the ARDL procedure is valid. The unrestricted error correction model (UECM), which is a reparameterization of autoregression distributed lag (ARDL) model (Bardsen, 1989; Tang 2003), is used to estimate the model. By using Hendry's general to specific method, we can see that, despite the significant reduction in parameters, the goodness of fit of the specification (R -squared) and the Akaike information Criterion (AIC) of regression remain superior as evident from Panel II of Table 2.

<Table 2 insert here>

Meanwhile, the robustness of the model is confirmed by several diagnostic tests, such as the LM test (Breusch-Godfrey serial correlation test), the WHITE test (heterogeneity test) and the Jacque-Bera test (normality test) as shown in Panel III of Table 2. All the tests, as shown in the lower part of each panel, reveal that the models have the desired econometric properties, namely, the residuals are serially uncorrelated and normally distributed, homoscedasticity and all estimated parameters are stable over time (test statistics fall within the 1% critical line). Therefore, the results reported are valid and reliable.

<Table 3 insert here>

The results of bounds testing approach for cointegration or existence of long run relationship indicate that the calculated *F- statistic* is at least 5.3956 (in the case of Malaysia-Philippines, or MP), which is higher than the upper level of bounds critical value of 4.68 and the lower bounds value of 3.41, implying that the null hypothesis of no cointegration cannot be accepted, and indicating that there is indeed a cointegration relationship among the variables in all combinations (see Table 3).

After having established the UECM, we investigate the estimated long run equation. As shown in Table 4, the synchronization of all of the Maastricht criteria has a significant negative impact on the inflow of FDI, except for debt (DBTDF) which is not significant in the case of MS. The plausible explanation could be that Singapore is capital exporter rather than debtor. Therefore, to reach the level of zero debt like Singapore is unlikely to be realized in the near future and this aspect will become one of hurdles to achieve the idea of single currency (note 11). SIZE, which is utilized as a proxy for Hecksher-Ohlin variable, also shows a significant positive impact. Therefore, the elimination of intra-regional tariffs vis-à-vis establishment of single market in ASEAN will affect the level of sales by multinational subsidiaries and subsequently expected to be another attraction for new FDI to inflow to the region, while retaining the existing FDI in the region.

<Table 4 insert here>

The above results indicate that an improvement in the level of synchronization of several economic policies will improve the inflow of FDI into the region. This finding highlights the importance and contribution of the Maastricht criteria in providing additional attraction for FDI. However, SIZE or Hecksher-Ohlin variable remains the main contributor to the inflow of FDI, which is consistent with the finding by Mold (2003).

7. Conclusion

This study employs the bounds testing (ARDL) approach to cointegration to examine the relationships between harmonization of several Maastricht criteria and FDI, using several members of AFTA as the case study.

One observation gleaned from the results shown above is that Maastricht criteria harmonization can significantly improve the level of FDI flow into the region, or more precisely, the individual ASEAN economy. Thus, policies to reduce asymmetry in economic policies among the members can be expected to increase the share of FDI inflow. However, the standard determinant of FDI inflow, namely, the market, remains the main determinant. Hence, stronger regional economic integration can be anticipated to further attract FDI into ASEAN. Another interesting point to note and requires further research is regarding the dynamic relationship between trade integration and business cycle synchronization. Regardless of current nature of business cycle (even though if we assume they are asymmetrical), the trade intensities and compositions of trade flow changes, so will business cycle pattern (Fiess, 2001), implying potential avenue for ASEAN to search for regional mean of regional development in future. This could be done better in the presence of FDI which is perceived as capable to stimulate and change regional trade and subsequently the pattern of business cycle.

Nevertheless, this study is not without limitation. The first weakness is the use of bilateral model and focus on Malaysia's experiences which may not be necessarily validating the generalization made in conclusion of the study. Therefore, as for future direction of research pertaining to this issue, at least the extension of this study should attempt to investigate other combinations as part of the validating process. The second limitation of this study is regarding the choice of optimum level of each macroeconomic variable. The study done on exchange rate alignment found that even in the case of Singapore, its exchange rate tends to misalign from its true value (Yip and Wang, 2001; see note 12). In other words, as concluded by Frankel and Rockett (1988), if macroeconomic coordination is based on the wrong economic model, it can make countries worse off than under non-cooperation.

Acknowledgement

The first author would like to thank Universiti Sains Malaysia for granting Short Term Research grant.

References

Acharya, A. (1999). Realism, Institutionalism, and the Asian Economic Crisis. *Contemporary Southeast Asia*. 21: 1-29.

- Afxentiou, P.C. (2000). Convergence, the Maastricht Criteria and Their benefits. *The Brown Journal of World Affairs*. VII (1): 245–254.
- Akrasane, N. and Stifel, D. (1993). AFTA and Foreign Direct Investment. *TDRI Quarterly Review*. 8 (3): 18-27.
- Banerjee, A., Dolado, J.J. and Mestre, R. (1998). Error-correction mechanism tests for cointegration in a single-equation framework. *Journal of Time Series Analysis*. 19 (3): 267-283.
- Bardsen, G. (1989). Estimation of long-run coefficients in error-correction models. *Oxford Bulletin of Economics and Statistics*. 51: 345–350.
- Bevan, A.A. and Estrin, S. (2000). The determinants of foreign direct investment in transition economies. *London Business School Discussion Paper No 9*.
- Bitzenis, A. (2004). Is globalization consistent with the accumulation of FDI inflows in the Balkan countries? Regionalisation for the case of FDI inflows in Bulgaria. *European Business Review*. 16 (4): 406-425.
- Blomstrom, M. and Kokko, A. (1997). Regional Integration and Foreign Direct Investment: A Conceptual Framework and Three Cases. *NBER Working Paper No. W6019*, Cambridge MA.
- Bowles, P. (1997). ASEAN, AFTA and the 'New Regionalism'. *Pacific Affairs*. 70: 219-234.
- Braunstein, E. and Epstein, G. (2002). Bargaining power and foreign direct investment in China: Can 1.3 billion customers tame the multinationals? *SCEPA Working Paper No. 2002-12*, Schwartz Center for Economic Policy Analysis (SCEPA), New School University.
- Bronk, R. (2002). Commitment and credibility EU conditionality and interim gains. *European Institute Working Paper No. 2002-02*.
- Calvo, G.A. and Reinhart, C.M. (2002). Fear of floating. *The Quarterly Journal of Economics*. CXVII (2): 379-408.
- Carr, D.L., Markusen, J.R., Maskus, K.E. (2001). Estimating the knowledge-capital model of the multinational enterprise. *The American Economic Review*. 91: 693-708.
- Chit, M.M. (2008). Exchange rate volatility and exports: evidence from the ASEAN-China Free Trade Area. *Journal of Chinese Economic and Business Studies*. 6 (3): 261-277.
- Crotty, J., Epstein, G. and Kelly, P. (1998). Multinational corporations in the neoliberal regime. In: D. Baker, G. Epstein and Pollin, R. (Eds.) *Globalization and Progressive Economic Policy*. Cambridge University Press, Cambridge (1998), pp. 117–143.
- Cuevas, A., Messmacher, M. and Werner, A. (2005). Foreign Direct Investment in Mexico since the Approval of NAFTA. *The World Bank Economic Review*. 19 (3): 473-488.
- Devereux, M.B. and Lane, P.R. (2003). Understanding bilateral exchange rate volatility. *Journal of International Economics*. 60: 109–132.
- Fiess, N. (2001). Business cycle synchronization and regional integration: A case study for Central America. *World Bank Economic Review*. 21 (1): 49–72.
- Frankel, J.A. and Rockett, K. (1988). International Macroeconomic Policy Coordination when Policy-Maker Disagree on the Model. *NBER Working Paper No. 2059*, Cambridge MA.
- Globerman, S. (2001). The Location of Higher Value-Added Activities. *Occasional Paper Number 27*, Ottawa: Industry Canada.
- Globerman, S. (2002). *Trade, FDI and regional economic integration: Cases of North America and Europe*. Paper presented at conference entitled Enhancing Investment Cooperation in Northeast Asia, Honolulu, Hawaii, August 7-9, 2002.
- Hiley, M. (1999). Industrial restructuring in ASEAN and the role of Japanese foreign direct investment. *European Business Review*. 99 (2): 80-90.
- IMF (various years) *International financial Statistics*. Washington DC.
- Janicki, H.P., Warin, T. and Wunnav, P.V. (2005). Endogenous OCA Theory: Using the Gravity Model to Test Mundell's Intuition. *Center for European Studies (CES) Working Paper No. 125*.
- Levy-Yeyati, E., Stein, E. and Daude, C. (2001). *Regional Integration and the Location of FDI*. Universidad Torcuato Di Tella, Buenos Aires; Inter-American Development Bank, Washington, D.C.; University of Maryland, College Park.
- Madura, J. (2005). *International Corporate Finance*. 6th Edition. Thomson: South-Western.
- Markusen, J.R. and Venables, A.J. (1999). Foreign direct investment as a catalyst for industrial development. *European Economic Review*. 43 (2): 335-356.

- Mold, A. (2003). The Impact of the Single Market Programme on the Locational Determinants of US Manufacturing Affiliates: An Econometric Analysis. *Journal of Common Market Studies*. 41 (1): 37 – 62.
- Monge-Naranjo, A. (2002). The impact of NAFTA on Foreign Direct Investment flows in Mexico and the Excluded countries. *Northwestern University Working Paper*.
- Nicoletti, G., Golub, S. and Hajkova, D. (2003). The influence of policies on Foreign Direct Investment. *Experts' meeting on FDI in Developing Asia, 26-27 November, 2003, Paris*.
- Pesaran, M.H. and Pesaran, B. (1997). *Working with Microfit 4.0: Interactive Econometric Analysis*. Oxford, Oxford University Press.
- Pesaran, M.H., Shin, Y. and Smith, R.J. (2001). Bounds Testing Approaches to the Analysis of Long-run Relationships. *Journal of Applied Econometrics*. 16: 289-326.
- Rojec, M. and Potocnik, J. (1997). Foreign Direct Investment in Slovenia: Trends, Experiences and Policy. *NATO Economic Colloquium 1997, 25-27 June, 1997, Brussels*.
- Sapir, A. (2000). EC Regionalism at the turn of the Millennium: Toward a new paradigm. *The World Economy*, 23 (9): 1135-1148.
- Tang, T. C. (2003). Japanese aggregate import demand function: Reassessment from the 'bound' testing approach. *Japan and the World Economy*. 15: 419-436.
- te Velde, D.W. and Bezemer, D. (2006). Regional integration and foreign direct investment in Developing Countries. *Transnational Corporations*, 15 (2), 41-70.
- UNCTAD (2003). *World Investment Report: FDI policies for development – National and International Perspectives*. United Nation: New York & Geneva.
- Woo, W.T. (2003). The economic impact of China's emergence as a major trading nation. Retrieved from <<http://www.econ.ucdavis.edu/faculty/woo>> in July 2007.
- World Bank (2006). *World Development Indicator*. Washington DC.
- Yip, P.S.L. and Wang, R.F. (2001). On the neutrality of exchange rate policy in Singapore. *ASEAN Economic Bulletin*. 18 (3): 251-352.
- Yotopoulos, P.A. and Sawada, Y. (2006) Exchange Rate Misalignment: A New Test of Long-Run PPP Based on Cross-Country Data. *Applied Financial Economics*. 16: 127-134.

Notes

Note 1. Indonesia, Malaysia, the Philippines, Singapore and Thailand.

Note 2. To a great extent the problems faced by ASEAN today in attracting more FDI stem from their successful past in harnessing it. Other developing countries, who have witnessed what FDI did to the ASEAN economies, have in turn put in the efforts to attract FDI into their own countries as well. As a result, ASEAN-5 economies are now facing stiffer competition from other emerging economies.

Note 3. Indonesia, Malaysia, the Philippines and Thailand.

Note 4. This is not to say that the globalization theory is invalid in general, but the fact remains that there are countries or even whole regions that do not receive FDI flows. FDI flows into less-developing or poor countries, if any, show little or no growth at all (Bitzenis, 2004).

Note 5. This study is basically attempted to investigate the effect of macroeconomic synchronization on the inflow of FDI. By definition, macroeconomic synchronization is similar to what is termed as symmetrical shock in other studies and therefore the existing available method is bilateral procedure only. In reality, it is difficult to measure or to find way of measurement of macroeconomic synchronization for more than two countries at the same time.. The procedure is – in the first place, as we measure macroeconomic synchronization from bilateral perspective. To capture the implication at regional level, we test more than one combination. If all estimated equations or combinations highlight the same outcome, we may at the later stage conclude that the proposition is also valid and applicable at regional level. Considering that this study is among the first attempt, more study pertinent to this issue has to be done in future to reconfirm the finding in this study.

Note 6. We do believe that this variable may pose significant implication and therefore, future study should attempt to incorporate this element in their specification. As argued by Markusen and Venables (1999) and Carr *et al.* (2001), the elimination of intra-regional tariffs will, in general, affect the level of sales by foreign affiliates, but its extent will depend on, among others, the importance of transport costs in setting up foreign affiliates. This variable is omitted due to short observation which if included may reduce the reliability of the estimation. Furthermore, one of several

important conclusion pointed out in te Velde and Bezemer (2006) is that the position of countries within a region matters for attracting FDI, i.e. that smaller countries and countries located further away from the largest country in the region benefit less from being part of a region.

Note 7. On top of all, the validity of this study (macroeconomic synchronization) is very much dependent on the nature of business cycles among the members. If business cycles are similar, coordination of macroeconomic policies can become desirable, with a common currency as the ultimate form of policy coordination (Fiess, 2001).

Note 8. In the original model of Janicki et al. (2005), market similarity, resource endowment and distance are also included. However, due to the limited number of observations, we decided to exclude these variables from the model.

Note 9. The ECM integrates the short-run dynamics with the long-run equilibrium without losing long-run information.

Note 10. Results are available upon request.

Note 11. As mentioned in Calvo and Reinhart (2002) and Devereux and Lane (2003) argued that large foreign-currency denominated debt has become one of the deterring factor for developing countries to form or agree on single currency formation.

Note 12. Misalignment, which refers to systematic deviations of nominal exchange rates (NER) from their purchasing power parity (PPP) levels, may engender serious instabilities of the international macroeconomic system (Yotopoulos and Sawada, 2006).

Table 1. FDI inflow (in Millions of USD)

	1980	1990	2000	2001	2002
World	699415	1954152	6146812	6606855	7122506
Dev. Economies	307469	551481	2029412	2173769	2339632
ASEAN-5:	23908	91086	476248	266714	278109
	[7.78]	[16.52]	[23.46]	[12.26]	[11.88]
Indonesia	10274	38883	60638	57359	55836
	[3.34]	[7.05]	[2.98]	[2.63]	[2.38]
Malaysia	5169	10318	52747	53301	56505
	[1.68]	[1.87]	[2.59]	[2.45]	[2.41]
Philippines	1281	3268	9001	10468	11539
	[0.41]	[0.59]	[0.44]	[0.48]	[0.49]
Singapore	6203	30408	113431	116428	124003
	[2.02]	[5.51]	[5.58]	[5.35]	[5.30]
Thailand	981	8209	24468	29158	30226
	[0.31]	[1.48]	[1.20]	[1.34]	[1.29]

Source: UNCTAD (2003), Annex Table B.3.

Note: Figure in [] denotes percentage change. The percentages for year 2000 and 1990 are relative to year 1990 and 1980, respectively.

Table 2. Unrestricted error correction model (UECM)

	MT	MP	MI	MS
Panel I: Unrestricted Error Correction Model				
Constant	-5.6018*** [-4.8947]	-3.6692** [-3.3649]	8.2088*** [7.7610]	9.8955 [0.7797]
lnFDI(-1)	-4.5911** [-2.8888]	-6.7452*** [-4.3963]	-3.6053*** [-8.5571]	-2.3734* [-2.2614]
lnSIZE(-1)	-1.3260** [-3.4252]	-2.6625*** [-4.3239]	-1.1588*** [-8.7158]	-2.1375*** [-4.8577]
lnINFDF(-1)	0.3459* [2.2097]	1.3173** [3.4444]	0.1713*** [6.7447]	0.5637* [1.8698]
lnBGTDF(-1)	0.8278** [3.1597]	1.8941** [3.1505]	1.1896*** [4.8273]	0.1642* [2.1973]
lnDBTDF(-1)	0.7588* [1.9400]	0.5949* [2.6842]	0.6692** [2.8335]	0.1744 [0.0352]
Δ lnFDI(-1)	- -0.3340**	- -1.8758**	-	-0.0459*** [8.1082]
Δ lnSIZE	[-3.5509] -0.7658*	[-3.2625] 1.5965	- -0.1617	0.1138 [1.4384]
Δ lnINFDF	[-1.9123]	[1.5957] 1.6251*	[-1.5810] -0.2615	- 0.0204*
Δ lnBGTDF	- -0.1169	[2.8608]	[-1.2287]	[2.5723] 0.0557
Δ lnDBTDF	[-1.3521]	-	-	[1.5717] -3.0105
Δ lnFDI(-2)	- 1.4788**	- 0.8515*	-	[-0.6670] 1.8907
Δ lnSIZE(-1)	[2.7373] -2.8733*	[3.0213]	- -0.5488***	[0.1621]
Δ lnINFDF(-1)	[-2.0171]	- -6.0875	[-4.2854] 12.1147***	- -0.0038***
Δ lnBGTDF(-1)	-	[-1.5597] -5.1787**	[11.7206]	[-5.9967]
Δ lnDBTDF(-1)	-	[-3.5048]	-	-
Panel II: Model Criteria				
Adj-R ²	0.8340	0.7021	0.8113	4.4326
AIC	- 1.2550	- 1.1704	-3.3840	-2.8463
Panel III: Diagnostic Tests				
Normality ^a	0.7918{0.67}	0.0422{0.97}	1.0212{0.60}	4.4444{0.11}
Serial Corr. ^b	0.3488{0.71}	1.2836{0.32}	0.6885{0.52}	0.1071{0.89}
Heterogeneity ^c	0.3960{0.54}	1.1848{0.29}	0.9031{0.35}	1.4429{0.13}

Note: Asterisk * denote significant at least at 10%. Figure in [] stand for t-value. Figure in { } refers to p-value. ^a Jacqua-Bera is the test for the normality of the residuals. ^b Serial Correlation LM Test is the test for autoregressive. ^c White Test is the test statistic for possible heteroscedasticity in the residuals. Stability test is conducted by using CUSUM test and available upon request.

Table 3. Bound Cointegration Test

	MT	MP	MI	MS
F-stat	9.2514**	5.3956**	8.0108**	10.3490**
CRITICAL VALUE	Lower bound		Upper bound	
1 %	3.41		4.68	
5 %	2.26		3.35	
10 %	2.62		3.79	

Note: Asterisk ** denotes significant at 1% critical value. Asymptotic critical value bounds are obtained from Table CI, Case III: unrestricted intercept and no trend (Pesaran et al., 2001, p. 300).

Table 4. Long-run relationship

	MT	MP	MI	MS
SIZE	0.2888**	0.3947**	0.3214**	0.9006**
INFDF	- 0.0753**	- 0.1953**	- 0.0475**	- 0.2375**
BGTDF	- 0.1802**	- 0.2808**	- 0.3229**	- 0.0692**
DBTDF	- 0.1652**	- 0.0882**	- 0.1856**	0.0735

Note: Asterisk ** denote significant at least at 10% critical value.