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by

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and

Elias Sanidas

Abstract

This paper is differentiated from most previous studies in that it uses intra-ASEAN's (of the 5 founding counties) historical data and it assesses both exports and the export-GDP nexus by isolating the following three different historical policy interventions: the introduction of Preferential Trade Agreement (PTA) in 1977, the unilateral liberalisation following the severe recession of the mid-1980s and the ASEAN Free Trade Area (AFTA) formation in 1992. Our findings indicate that the ASEAN-5 countries' economies are moving together through time and emerged as a powerful integrated area as a consequence of all of the above three interventions. Unilateral liberalisation and ASEAN regionalism are complementary with each other. The ASEAN's story is unique and relies on both outward orientation and positive aspects of regionalism.

Key words: ASEAN-5, Exports, Export-GDP nexus, Trade Liberalisation, Intervention Time Series, Integration

JEL Codes: F15, F13, C4, O4

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1. Trade liberalisation in the ASEAN-5 countries

Five countries, Malaysia, Indonesia, Thailand, the Philippines and Singapore, formed the ASEAN-5 group in 1967 to promote cooperation in economic, social and cultural areas and to promote regional peace and stability.[1] Since then, three different economic policy interventions have heavily influenced the integration of the ASEAN-5. First the Bali Summit in 1976 adopted preferential tariff agreements (PTAs) which represented the first major commitment on the part of member countries towards a joint effort to liberalise intra-ASEAN trade (Imada, 1993). Second, unilateral liberalisation measures taken by the ASEAN-5 countries outside the ASEAN framework promoted intra-ASEAN trade flows in the second half of the 1980s (Ariff, 1994; Tan, 2004). Finally, to enhance the economic benefits of the region, the ASEAN initiated the Free Trade Area (AFTA) at the Fourth ASEAN Summit in Singapore in January 1992 which laid out a comprehensive programme of regional tariff reduction, to be completed in stages through to 2008.

Bali Summit in 1976

In February 1976, the Bali Summit adopted PTAs. The ASEAN-5 foreign ministers signed this agreement in 1977. The PTAs outlined a mechanism whereby the ASEAN-5 countries could liberalise trade at a pace that was acceptable to all member countries. Initially, 71 items were selected with a voluntary product-by-product approach under the PTAs. By June 1986, the PTAs covered 12,647 items using a more efficient across-the-board approach. There has been some concern that the ASEAN-5 countries were unable to reach stable agreements in terms of items under the PTA in order to enhance economic benefits associated with trade creation. By producing the same types of commodities and depending on wider markets outside the region, the ASEAN-5 nations were reluctant to give up their own benefits at the

bargaining table. However, it is quite clear that intra-ASEAN trade share has increased to some extent as a share of global trade due to PTAs (Imada, 1993; see also our results).

Unilateral liberalisation in the second half of the 1980s

Following the severe recession of the mid-1980s, and the steady fall in the price of oil, important policy reforms have been initiated by the ASEAN-5 countries at their own pace (Tan, 2004). The extent of reforms varies between these countries and over time but trade liberalisation as the bottom-line of all reform exercises remained the same. These reforms occurred in trade, finance, tax and foreign direct investment during the second half of the 1980s. Deregulation has been an important component in the reform agenda. Thus measures taken by the ASEAN member countries reduced the inefficiencies and transaction costs in the system and accelerated economic growth which in turn resulted in 'innovative and bold regional experiments' (Ariff, 1994).

The advantage of similar cultural values, low wages and strong fundamentals promoted export oriented investments and exports among the ASEAN-5 countries. The bulk of foreign investment was involved with export-oriented activities. In brief, the ASEAN member countries were integrated more than ever partly due to regional economic cooperation initiated by them and partly due to anonymous market forces initiated by globally oriented policy. Evidence shows that the unilateral liberalisation taken by the ASEAN-5 countries outside the ASEAN framework in the late 1980s united the ASEAN members in economic cooperation and contributed to increased intra-ASEAN trade flows (Imada, 1993: Ariff, 1994: Kettunen, 1998).

The AFTA formation

The ASEAN group has learned with its own experience to reap the positive effects of economic regionalism without facing any negative consequences associated with preferential measures. The ASEAN's current activities promoted a positive side of regionalism without ignoring the potential benefits that arise from 'outward orientation'. To reap the potential economic benefits from the region, the ASEAN Free Trade Area (FTA) was formed in 1992.[2] The Common Effective Preferential Tariff (CEPT) Agreement, which was agreed upon under the AFTA,[3] identified commodities (the inclusion list) that were traded within the ASEAN region and were ready for tariff reduction, thus meeting the 40 per cent ASEAN's content requirement. These commodities were subject to reducing tariffs to 0-5 per cent by the year 2002/2003. The CEPT recognises that tariff reductions should move ahead on both the "fast" and "normal" tracks. Tariffs on goods in the fast track met the reduction of tariffs requirement by 2000 and the normal track by 2003. About 81 per cent of tariff lines within the ASEAN countries are covered by either the fast or normal track. It was expected to cover nearly 98 per cent of all tariff lines by 2003.[4]

Commodities that are not ready for tariff reductions are put under the temporary exclusion list. Tariffs on these commodities will ultimately be as well lowered to 0-5 per cent. Also sensitive commodities will not be subject to tariff reductions until 2010. Finally about 1 per cent of tariff lines fall into general exceptions for items related to national security, public morals, protection of artistic, historic and archaeological value. The average CEPT tariff rate in the inclusion list has been reduced from 12.76 per cent in 1993 to 2.68 per cent in 2003 (US-ASEAN Business Council, 2004).

After 1992, agreements were also reached for intra-ASEAN investment, non-tariff barriers, services, intellectual property, customs and tourism. However, a few studies indicate that the ASEAN integration can still be considered as an unfinished agenda (for example, see Menon, 1998). There is a tendency that some members are either more inward-looking in the wake of Asian crisis or are pursuing their own programmes of liberalisation. For example, Malaysia delayed the tariff reduction programme for its automotive industry until 2005 which was originally expected to be included as of 1 January 2000 in the inclusion list (Mahani, 2002).

2. Literature review and the aims of the present study

Low (2003) surveyed some empirical studies on the ASEAN group and concluded that measurement of the economic impact of the ASEAN regionalism is in its infancy. Our own survey (see also Jayanthakumaran, 2004, for a comprehensive review on trade liberalization and its measurement) also shows that it is in the measurement problem that empirical studies differ from each other. Inconsistency in time spans, focus of countries and methodology constitute a barrier against a meaningful comparison. The general findings of various studies indicate some positive performance due to integration. As a preliminary trend we can mention that the intra-ASEAN-5 trade share in relation to overall world trade has increased from 12.7 per cent in 1975 to 21 per cent in 2003. The above share was about 17.9 per cent in 1993. Among the ASEAN-5 countries, Thailand and the Philippines have increased their trade share (in relation to overall world trade) over time while the others maintained their existing shares. Hurley (2003) found that the intra-industry trade among the ASEAN-5 has been increased from 35 per cent in 1987 to about 60 per cent in 1996. Hurley incorporated bilateral foreign direct investment and found a substantial increase in vertical and horizontal intra-industry trade in Indonesia, Malaysia and Thailand, while promoting only vertical intra-industry trade in Singapore. The overall results show that the importance of intra-ASEAN

investment in promoting the region's export sector in both vertically and horizontally differentiated goods has been remarkable.[5]

A number of empirical studies focused on the ASEAN trade in relation to global trade rather than intra-ASEAN trade and obtained mixed results. Tang (2004) investigated the long-run relationship of the aggregate import demand function for the ASEAN-5 countries covering annual observations of global imports from 1960 to 1999. The results based on the bounds test show that the behaviour of import demand in Malaysia and Singapore does form a cointegrating relation but not in Indonesia, the Philippines and Thailand. Baharumshah, Lau and Fountas (2003) examined the sustainability of the global current account imbalance for the ASEAN-4 countries (Indonesia, Malaysia, the Philippines and Thailand) over the period 1961 to 1999. These authors identified two prominent structural shifts over the period and related them with the global price shocks of 1973-75 and commodity crisis of 1985.

Adams and Park (1995), by using a general equilibrium model[6], forecast that the ASEAN group would be better off from its integration (AFTA) and the trade volume within the ASEAN would increase. Sharma and Chua (2000) estimated a gravity model[7] for each one of the ASEAN-5 nations based on data from 1980 to 1995 and concluded that the intra-ASEAN trade did not increase but trade with the wider Asia Pacific Economic Cooperation (APEC) group did increase. Elliot and Ikemoto (2004) used a gravity equation[8] to evaluate the ASEAN intra- and extra-regional bias in bilateral trade flows during the period 1982 to 1999, and concluded that trade flows were not significantly affected in the years immediately after the implementation of the AFTA agreement and also that the traditional stand of ASEAN countries to outward-oriented economic activity has not significantly changed.

The studies that used data up to 1992 also show some mixed results. Ahmad and Harnhirun (1995) estimated the long-run behavioural relationship between exports of ASEAN countries globally and economic growth of the ASEAN countries for the years 1966 to 1990 and concluded that an export-GDP connection exists in Singapore but not in the other ASEAN member countries.[9] Imada (1993) examined how a closer integration would change patterns of exports, production and consumption by identifying the demand and supply side elasticities prior to 1992. The results of the disaggregated industry level analysis indicated that the intra-ASEAN trade would expand if intraregional trade is liberalised, partially or completely (ibid).

In the present paper, we establish that both unilateral liberalisation and the ASEAN integration (both through PTAs and the AFTA) are by nature complementary and help promoting trade flows and income among the ASEAN-5 countries. Our study is differentiated from most of other previous studies in that it uses intra-ASEAN-5 data and it assesses both exports,[10] and the export-GDP nexus by employing econometric analysis that isolates the impact of trade liberalisation on the ASEAN integration at the following cut off years: the introduction of PTAs in 1977, the unilateral liberalisation in the second half of the1980s (hence we have chosen 1987 as the mid point of the second half of the 1980s to represent our cut-off year) and the AFTA formation in 1992.

Unlike previous studies on ASEAN, which examined global trade of the ASEAN group, this paper strictly investigates the impact on intra-ASEAN-5 trade and GDP growth. Our paper is a comprehensive analysis focusing on the impact of all the above three policy interventions on exports, and the export-GDP nexus. A recent survey shows that this nexus exists (Lewer and Van den Berg, 2003). The contribution of the present paper sheds light on individual

country benefits from these main three trade liberalisation interventions in terms of greater exports and income. Also, due emphasis is given to Singapore's economy which is closely linked with the region through trade (Tang, 2004: Ahmed and Tongzon, 1998).

3. Empirical analysis

Exports data for the intra-ASEAN 5 countries are from the Direction of Trade Statistics (DOTS) yearbook published by the United Nations, while real GDP figures are collected from the DX Database, and the World Bank World Tables 2003.

Exports analysis

Figure 1 shows the exports in terms of US$ for the 5 founding ASEAN countries. It is apparent in this graph that these major partners seem to have experienced a relative boost in their exports after the 3 following approximate dates: 1977, 1987, and 1993 (as explained above).[11] Out of these three 'structural changes' the last one seems to have been the strongest. Around the year 1998 the Asian financial crisis is also apparent with a sudden drop in 1998 and further disturbances around that year.

[Insert Figure 1 about here]

In Figure 1 it is also apparent that Singapore and Malaysia are the most important exporting countries. Singapore as a commercial hub seems to 'dictate' the pattern of exports. Hence an examination of this country's exports as a pilot case should be illuminating. In addition, as will be shown below, all five countries are cointegrated in terms of their exports. Overall, we propose the following sequence in our quantitative analysis. First, Singapore's exports will be fully examined according to the broad directions set by Enders (1995) (see also Mehanna and

Shamsub, 2002, for an example of application of these directions on the North American Free Trade Agreement –NAFTA- group of countries) regarding intervention analysis. Second, we will briefly show that the five countries are cointegrated in terms of their exports, or put it more simply, they seem to move in the same way through time and in particular they have the same timing regarding the impact of the five governments' three main policy changes to liberalize and integrate their countries. Third, the best model chosen for Singapore will also be applied to the other four countries and adjusted if necessary to their special nature.

Hence starting with *Singapore exports*, we first checked their order of integration in order to determine an optimal ARIMA model. The ADF test on *Singapore exports*, *dsingapore exports* (first differences of *Singapore exports*) and *ddsingapore exports* (second differences in *Singapore exports*) indicate that *Singapore exports are* integrated of order one. This test was conducted for the period from 1967 to 1992 (the year before the AFTA formation, hence 1967 to 1992 is the largest period out of the two sub-periods, the other one being 1993 to 2003). The second step was to determine the best model of *dsingapore export* (expressing the first order integration) in terms of the order of autoregression and error moving average (Enders, 1995; Pesaran and Pesaran, 1997). According to the maximum value of the information criteria of Akaike and Schwarz we arrived at the optimum[12] model (period examined 1967 to 1992) of ARIMA (3, 1, 1).

The third step was to include the intervention variable in order to test for the significance of this variable and also to confirm whether or not the ARIMA(3, 1, 1) model is also significant for the whole period (1967 to 2003) together with the intervention variable[13]. With the inclusion of the latter in the chosen model, some variables became insignificant. Hence a new model was searched and the final ARIMA model was chosen to be ARIMA (2, 1, 0). The

results of this OLS regression[14] (model *M1*) are shown in Table 1 where it is seen that a dummy variable *dum4* with the value of one for the year 1998 was also included in order to take into account the Asian financial crisis[15]. The coefficients of all three variables are very significant and have the right sign. In particular the intervention variable *dum1* (0 from 1967 to 1992 and 1 from 1993 to 2003) shows that since 1993 integration became stronger because exports have increased by about 2.7 billion US$ per year.

[Insert Table 1 about here]

The fourth step was to further improve the model *M1* by using the Cochrane-Orcutt approach to error autocorrelation[16]. The results are shown in Table 1 as model *M2*. The superiority of *M2* over *M1* lies in two factors: first all the test statistics of *M2* are better than those of *M1* (e.g. the R^2); second an examination of the histogram of residuals in *M2* shows an improvement over that of *M1*, in terms of normality, thus further confirming the validity of model *M2*. As a side effect of *M2* the *dum1* shows that since 1993 exports have increased by about 3.4 billion US$ (much higher than for the OLS method). The fifth step was to extend the intervention variable to include the second and third interventions (as mentioned above) in 1987 and 1978 respectively. The same model as determined up to the fourth step was applied subsequently with the inclusion of the two extended intervention dates and the results are shown in Table 1. When the intervention of 1987 is included, models *M3* and *M4* show the results (the *dum5* variable takes the values 0 from 1967 to 1986, 1 from 1987 to 1992, and 2 from 1993 to 2003). When the intervention of 1978 is included, models *M5* and *M6* show the results (the *dum7* variable takes the values 0 from 1967 to 1977, 1 from 1978 to 1986, 2 from 1987 to 1992, and 4 from 1993 to 2003). All these models are consistent in their

performance in terms of the significance of all[17] variables included and the appropriate diagnostic tests.[18] The main conclusion is that all three interventions are very significant.

The next major stage is to briefly show that the five countries' exports are moving together through time thus exhibiting the same reactions to the three major interventions regarding trade liberalization and integration (see above). The Johansen's cointegration approach was therefore applied to the five exports series and the results are shown in Table 2 (only the first and strongest cointegrating vector[19] is shown together with the corresponding standard errors of the coefficients). Both the level and first differences are examined because the ADF tests were inconclusive as to whether *all* five level export variables are integrated of order one or two[20]. Both cointegrating vectors (that of levels and that of first differences) are found to be highly significant (very small standard errors). To support these results, cointegrating vectors for four pairs (the first differences *dsingapore exports* against the other four nations' exports in first differences) are also estimated (not shown here) which led to similar conclusions[21]. Furthermore for the other pairs such as *dmalaysia exports* as a function of *dthailand exports*, or *dthailand exports* as a function of *dphilippines exports*, and so on, OLS regressions or Cochrane-Orcutt estimations once more confirm our conclusions that exports are moving together through time and react in a similar way to all three trade policy interventions.

[Insert Table 2 about here]

Consequently we will now apply the same model found in the first stage about Singapore to the other four nations (the intervention variable *dum7* contains all three interventions for 1978, 1987, and 1993). The results are shown in Table 3. All countries show a strong impact of the trade liberalization and integration interventions on their exports performance: exports

have approximately doubled after each intervention (since the intervention variable has the values 0, 1, 2, and 4 for the four periods 1967-77, 1978-86, 1987-92, and 1993-03 respectively).

[Insert Table 3 about here]

GDP analysis

Figure 2 shows the five series of national GDP. A different to exports analysis for the five countries' GDP will now be carried out in order to further confirm the impact of the three main interventions on this macro variable and hence on trade liberalization and integration. This analysis will be based on the close relationship between GDP growth and exports (on this relationship see for example a recent survey by Lewer and Van den Berg, 2003). In general we expect that GDP changes are dependent on export changes in a positive way. This is especially true among the trade dependent countries. In addition we expect that the intervention variable *dum7* will also have a direct positive effect on GDP as trade liberalisation reflects export oriented trade and investment among the regional partners. Table 4 summarizes the results for the five countries (small differences in the model structure are necessary to take into account the peculiarities of each country as explained below).

[Insert Figure 2 about here)

It is evident from these results that GDP growth depends on intra-ASEAN exports (the poorest performance is for the Philippine GDP). Also, GDP growth depends on the trade interventions[22] as captured by the dummy variable *dum7* (and *dum6* for Thailand: 0 for 1967 to 1977, 1 from 1978 to 1986, 2 from 1987 to 1992, and 3 from 1993 to 2003[23]). The

financial Asian crisis of 1998 has significantly affected Malaysia, Thailand, Indonesia and Philippines but not Singapore.

The integration of the five founding countries can be further confirmed by some basic econometric tests as to their statistical cointegration. For this reason, first ADF tests gave some convincing evidence that GDP series are cointegrated of order one although not completely convincing that all of them are so (Malaysia could be a I(2) process, especially if a trend is not included). In any case as we have mainly been dealing with first differences in our models so far, both the levels and first differences of the five countries' GDP were subjected to the Johansen's method of cointegration as we did for exports. The results are shown in Table 2. It is evident from these results that effectively the five countries' economies are cointegrated, which confirms our hypothesis that these countries have been integrated as a strong commercial union according to our analysis in this paper.

[Insert Table 4 about here]

4. Conclusions

This paper is differentiated from most of the previous empirical literature in that it uses intra-ASEAN-5 countries' historical data for the period 1967 to 2003 and it assesses both exports and the export-GDP nexus by isolating the following three entirely different historical policy interventions: the introduction of PTAs in 1977, the unilateral liberalisation following the severe recession of the mid-1980s and the AFTA formation in 1992. Although evidence indicates that the ASEAN-5 countries experienced difficulty reaching stable agreements in terms of items under the PTAs, trade among ASEAN-5 countries increased due to PTAs. The evidence tends to show that unilateral liberalisation measures taken by the ASEAN-5

countries outside the ASEAN framework promoted intra-ASEAN-5 trade flows in the second half of 1980s and beyond. This area has not been quantitatively assessed. As some empirical work tends to show that there is a positive impact due to the AFTA formation, the present study has further explored this furthermore and confirmed this positive impact. Unlike previous studies on ASEAN countries, which examined the global trade of ASEAN, this paper strictly investigates the impact on the intra-ASEAN-5 trade and income (GDP). Overall, this paper has shed some light on individual country benefits from the main three trade liberalisation interventions, in terms of greater exports and income.

In summary, we started our intervention analysis with Singapore's exports, using ARIMA models and further improved this model by using the Cochrane-Orcutt approach to error autocorrelation. The results show that all three interventions (expressed via *dum 1, dum 5, dum6, or dum7*) are significant. The AFTA formation generated an impact as strong as the other two policy interventions in 1977 and 1987 (Table 1). Based on Singapore's model (with certain adjustments) we assessed the other four countries by including all three policy interventions (*dum 6 or dum 7*). All three interventions are positive and approximately doubled exports after each intervention (Table 3). It was also found that the exports of the four ASEAN countries (except perhaps Indonesia) are moving together through time including the impact of all three policy interventions by using Johansen's cointegration approach (Table 2).

Finally, the export-GDP nexus is explored among the ASEAN-5 countries and included all three interventions (via the *dum 7* variable). We found that a strong export GDP nexus exists among the five countries of the ASEAN group (Table 4). This indicates that the higher the ASEAN integration is the higher the GDP growth will be. The results regarding this GDP-

exports link allow us to be more comfortable about our overall conclusions: the three interventions on trade liberalization and integration have had a considerable impact on the ASEAN-5 countries' economies (GDP related) as well as on their intra trade. The financial crisis of 1997/98 has significantly affected the four countries of the ASEAN group but not Singapore so much (Table 4). The continuation of implementing the CEPT agreement even after the Asian financial crisis generated a positive impact on the ASEAN-5 group. Furthermore, all five countries' economies are cointegrated (the Johansen's procedure is again applied and the results are shown in Table 2) in terms of GDP (hence all three policy interventions are indirectly included).

For the ASEAN-5 countries, it is proposed and quantitatively confirmed that the unilateral liberalisation is complementary to intra-ASEAN integration. The advantage of low wages, distance, cultural links and strong economic fundamentals reflected in increased export oriented trade among the regional partners and generated more integration and associated economic benefits to the region. Fortunately, the ASEAN-5 countries had the capacity and capabilities to exploit the efficiency gains that have been generated by unilateral and non-unilateral liberalisation of member countries. We firmly believe that the ASEAN countries shed some light in this regard (on unilateral and non-unilateral trade liberalisation and a smooth way of integration) to the other developing world.

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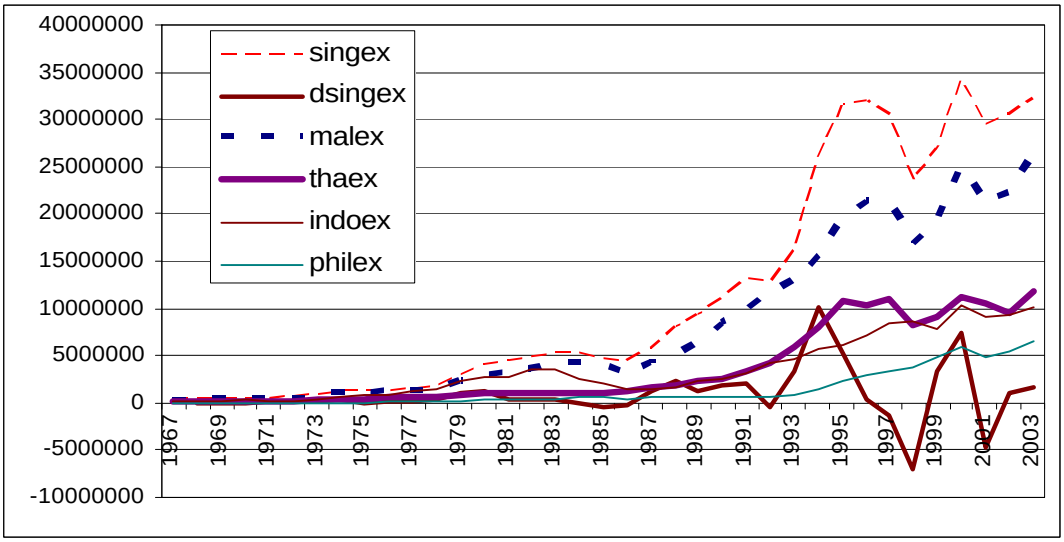
Figure 1 Export series for the five countries (in US$000)



Notes: (a) dsingex is the first differences in Singapore's export, hence it fluctuates around zero; (b) philex (Philippine's export) is the lowest series on the graph; malex is Malaysia's exports; thaex is Thailand's exports; indoex is Indonesia's exports.

Table 1 Singapore's exports performance (variable *dsingapore export*)

Variable	*M1 OLS*	*M2 CO, AR(3)*	*M3 OLS*	*M4 CO, AR(3)*	*M5 OLS*	*M6 CO, AR(3)*
dSingapore exports (-2)	-0.386 (-2.9)	-0.61 (4.9)	-0.40 (-3.1)	-0.56 (-4.1)	-0.40 (-3.1)	-0.57 (-4.3)
dum1	2656 (3.2)	3437 (2.5)				
dum5			1519 (3.6)	1798 (3.6)		
dum7					851 (3.5)	1043 (3.3)
dum4	-10300 (-4.5)	-11800 (-5.8)	-10300 (-4.7)	-11900 (-5.8)	-10300 (-4.7)	-11800 (-5.7)
constant	710 (1.6)	806 (1.0)	332 (0.7)	404 (0.70)	-43 (-0.08)	-153 (-0.2)
R^2	0.50	0.60	0.53	0.61	0.53	0.60
DW statistic	1.6	1.8	1.7	1.7	1.7	1.7
Serial correlation	0.31		0.53		0.50	
Functional form	0.61		0.80		0.77	
Normality	0.00		0.00		0.00	
Heteroscedasticity	0.46		0.45		0.45	
Histogram of residuals to check normality	Not normal	Improv/nt on *M1*	Not normal	Considerable improvement on *M3*	Not normal	Considerable improvement on *M5*

Notes: (a) for the significance of models *M1* to *M6* see text; (b) OLS stands for ordinary least squares; CO stands for Cochrane-Orcutt; and AR (3) stands for autoregressive residuals of order three; (c) for the diagnostic tests, the figures in the Table indicate the probability values of rejection (as per Microfit program, Pesaran and Pesaran, 1997); (d) the *dum1* (0 from 1967 to 1992 and 1 from 1993 to 2003) expresses billions of US$; (e) for the *dum5:* 0 from 1967 to 1986, 1 from 1987 to 1992 and 2 from 1993 to 2003; for the *dum7:* 0 from 1967 to 1977, 1 from 1978 to 1986, 2 from 1987 to 1992 and 4 from 1993 to 2003; for the *dum4: 1 for 1998 and 0 for all other years.*

Table 2 Cointegration of exports; GDP

	Exports VAR(2)	Exports VAR(4)	GDP VAR(1)	GDP VAR(2)
Singapore exports Singapore GDP	1.00		1.00	
dSingapore exports dSingapore GDP		1.00		1.00
Malaysia exports Malaysia GDP	-0.61 (0.09)		-1.05 (0.175)	
dMalaysia exports dMalaysia GDP		-0.85 (0.08)		-2.24 (0.37)
Thailand exports Thailand GDP	-2.07 (0.16)		-2.85 (1.10)	
dThailand exports dThailand GDP		-1.05 (0.19)		-2.23 (0.73)
Indonesia exports Indonesia GDP	-0.10 (0.07)		3.89 (1.33)	
dIndonesia exports dIndonesia GDP		-0.13 (0.05)		3.54 (0.91)
Philippines exports Philippines GDP	1.18 (0.11)		0.51 (0.18)	
dPhilippines exports dPhilippines GDP		1.06 (0.11)		0.54 (0.18)
Trend	-33248 (13903)	-12463 (1788)	-4.67 (1.54)	0.16 (0.06)

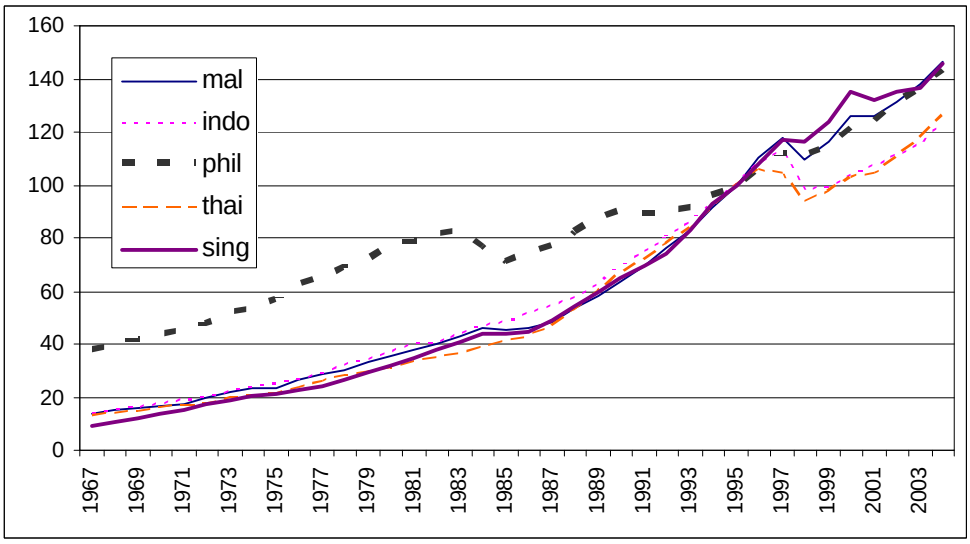
Notes: d indicates first differences.

Table 3 Exports performance of the other four ASEAN countries

	CO, AR(3)	CO, AR(3)	CO, AR(2)	CO, AR(1)
	dMalaysia exports	dThailand exports	dIndonesia exports	dPhillippines exports
dMalaysia exports (-2)	-0.60 (-3.5)			
dThailand exports(-2)		-0.84 (-7.0)		
dIndonesia exports (-1)			-0.60 (3.9)	
dPhilippines exports (-2)				-0.45 (2.6)
dum7	687 (4.2)	373.5 (2.7)	227 (2.0)	190 (4.4)
dum4	-6745 (-4.4)	-3637 (-6.5)		-61 (-0.2)
inton			-2318 (-4.0)	
constant	62 (0.2)	45 (0.1)	100 (0.4)	-112 (-1.1)
R^2	0.61	0.67	0.43	0.44
DW statistic	1.94	2.27	1.86	2.00

Notes: (a) d indicates first difference (b) Indonesia: the financial Asian crisis took place mainly in 1999 in this country; hence the dummy variable ‘inton’ replaces dum4 in the relevant column for dindonesia exports. (c) Philippines: the financial Asian crisis has not significantly affected their exports; (d) for other explanations see notes of Table 1.

Figure 2 GDP series for the 5 ASEAN countries



Note: The y-axis shows GDP indexes; mal stands for Malaysia's GDP index series, and so on.

Table 4 Exports, GDP and trade intervention policies

	dSingapore GDP C.O. AR(2)	dMalaysia GDP C.O. AR(1)	dThailand GDP OLS	dIndonesia GDP C.O. AR(1)	dPhilippines GDP C.O. AR(2)
dSingapore exports	0.00001003 (7.7)				
dMalaysia exports		0.000008233 (6.9)			
dThailand exports			0.000009632 (2.4)		
dIndonesia exports				0.000005355 (2.3)	
dPhilippines exports					0.00001368 (1.9)
dum6			1.12 (4.0)		
dum7	0.71 (2.9)	1.02 (4.2)		0.67 (2.5)	0.31 (1.68)
dum4	-0.60 (-0.3)	-11.6 (-9.1)	-13.1 (-5.8)	-18.0 (-17.2)	-5.0 (-3.4)
cris					-8.8 (-8.6)
constant	1.40 (2.5)	1.29 (2.2)	1.28 (2.8)	2.00 (2.8)	2.6 (6.9)
R^2	0.74	0.91	0.77	0.91	0.76
DW statistic	1.76	1.98	1.59	1.93	1.1
Serial corr/on			0.064		0.004
Func/al form			0.361		0.506
Normality			0.000		0.251
Heteroscedasticity			0.635		0.778

Notes: (a) d indicates first difference (b) OLS stands for ordinary least squares; CO stands for Cochrane-Orcutt; and AR (2) stands for autoregressive residuals of order two; (c) *dum6* for Thailand takes the values 0 from 1967 to 1977, 1 from 1978 to 1986, 2 from 1987 to 1992, and 3 from 1993 to 2003; d) for further explanations see notes of Table 1; e) for Philippines, the dummy variable 'cris' (1 for 1984 and 1985, zero otherwise - the Philippines was the only country that was *substantially* affected by the mid 1980s recession) was added for further improvement by capturing the severe recession or crisis in these two years.

Endnotes

[1] The ASEAN-6 emerged by incorporating Brunei in 7 January 1984. The ASEAN-10 countries emerged by incorporating Burma, Cambodia, Laos, and Vietnam in the 1990s. Our research focuses on the ASEAN-5 founding nations mainly because of continuous data availability.

[2] The preparation for forming the AFTA began in 1990. The AFTA Council was formed as an institutional arrangement which comprises Ministers from the ASEAN member States and the Secretary-General of the ASEAN. The AFTA Council was made responsible for supervising, coordinating and reviewing the implementation of the CEPT agreement that covers manufacturing, processed and unprocessed agricultural commodities.

[3] The new members of ASEAN - Cambodia, Laos, Burma and Vietnam - are scheduled to reduce tariff rates to the 0-5 per cent level according to different timetables.

[4] The CEPT status for ASEAN-5 in 2001 was as follows: tariff lines in the inclusion list 37391, in the temporary exclusion list 239, in the general exception list 175, and in the sensitive list 144.

[5] Fan and Dickie (2000) found a positive contribution of FDI to growth of the ASEAN-5 by using the growth accounting method.

[6] Forecast values of trade obtained from this general equilibrium model may not adequately show the reality. For example this analysis did rely on many assumptions as usual and did not consider the unexpected Asian crisis and its aftermath. The early forecast estimates fell short from reality.

[7] For an exposition of the gravity equation's inherent limitations, see Evenett and Keller, 2002; Mehanna and Shamsub, 2002. The extensive use of dummy variables in the gravity models to test the hypothesis that trading regions significantly explain trade volumes may be mis-specifying and may lead to inaccurate interpretations and improper economic inference.

[8] See previous endnote.

[9] Lewer and Van den Berg (2003) re-examined the existing empirical literature on the trade-growth nexus and concluded that a one percentage point increase in the growth of exports is associated with a one fifth percentage point increase in economic growth.

[10] The difference between exports (in FOB prices) and imports (in CIF prices) in a bilateral trade is mainly based on the difference between FOB and CIF calculations. Hence, exports or imports could be equally investigated. However, we chose exports as they also are a more direct performance indicator for trade and economic reforms.

[11] Exchange rates remained stable immediately or after the intervention cut-off dates of 1977, 1987 and 1992 for all the ASEAN-5 countries. Based on this we ignored the effect of these rates in our analysis and assumed their role insignificant in determining substantial impacts on exports and GDPs *during the intervention policies*.

[12] Despite the maximum value of the information criteria for ARIMA(3,1,1) we suspected that this model might not be the right one because its coefficients are not significant.

[13] As Enders (1995) correctly remarks, once the intervention variable is included, the original chosen ARIMA model should be altered if the coefficients of the related ARIMA variables are not significant.

[14] The constant was found insignificant in most models.

[15] The exclusion of that variable from the model would not lead to as robust results as with its inclusion because the Asian financial crisis created a very significant disturbance of the export series around the 1998 year.

[16] For the Cochrane-Orcutt models the order of autoregression in residuals is 3, which was found to optimize the fitness and normality tests (higher order produced unstable processes).

[17] The variable 'constant' is consistently insignificant in all models examined. When this variable was omitted from the models of Table 1, the results did not significantly improve.

[18] Although the normality of residuals is considerably improved with the use of the Cochrane-Orcutt approach, we can still expect some tendency for non-normality due to the extreme disturbances caused by the financial crisis of 1998.

[19] Both the maximum eigenvalue and the trace statistics indicate the presence of at least one cointegrating vector even when the correction term (N-vp)/N (where N is the number of observations, v is the number of variables in the VAR system, and p is the order of the VAR system) for small samples is applied (Reinsel and Ahn, 1992), thus the significance of the first strongest cointegrating vector that corresponds to the largest eigenvalue is confirmed.

[20] Both periods 1967 to 1992 and 1967 to 2003 were examined.

[21] OLS and Cochrane-Orcutt estimations on these pairs of relationships reconfirmed the integrated market of the five ASEAN nations examined here.

[22] Philippines is the only country that does not exhibit this strong relationship as much as the other countries (for Philippines the coefficient of dum7 is significant only at the 10 per cent significance level).

[23] Hence Thailand's GDP is less affected by the integration intervention policies than the other countries, since for the latter the dummy value doubles in each period but not so for Thailand. This might be due to the Asian financial crisis affecting this country more severely than the other countries.