POLICY RESEARCH WORKING PAPER 2697

Regional Integration and Industrial Growth among Developing Countries

The Case of Three ASEAN Members

Dorsati H. Madani

Has the revival of the Association of Southeast Asian Nations (ASEAN) in the early 1990s affected the industrial growth of Indonesia, Malaysia, and the Philippines? Perhaps not in the early years of the revival, primarily because of the countries' long history of intra-regional trade.

The World Bank
Development Research Group
Trade
October 2001

POLICY RESEARCH WORKING PAPER 2697

Summary findings

Has the revival of the Association of Southeast Asian Nations (ASEAN) in the early 1990s affected the industrial growth of Indonesia, Malaysia, and the Philippines? Madani uses two mechanisms to capture this potential impact: scale effects and intermediate imports variety. She performs the analysis on 22 industries (at the three-digit level of the International Standard Industrial Classification) over the period 1971–95.

The results show significant heterogeneity in industry-level returns to scale. Moreover, the three ASEAN members have very small, mostly negative cross-industry scale effects. As a result, they may not achieve large or across-the-board gains from their regional arrangement through scale effects.

The author finds unexpected results with respect to the role of intermediate imports variety in industrial growth. She finds no support for the hypothesis that nonregional (rest of world) suppliers and goods variety have a positive effect on ASEAN industries through the channel of imported intermediate inputs. The regional variety measure, however, seems to have a positive effect on the output growth of a handful of industries. This result seems due to the fact that these countries have long had a strong intra-regional and intra-industry trade, whose history predates and outweighs the ASEAN revival.

This paper—a product of Trade, Development Research Group—is part of a larger research project on regionalism. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Lili Tabada, room MC3-333, telephone 202-473-6896, fax 202-522-1159, email address ltabada@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The author may be contacted at dmadani@worldbank.org. October 2001. (39 pages)

Comments Welcome

Regional Integration and Industrial Growth Among Developing Countries: The Case of Three ASEAN Members*

Dorsati H. Madani
Dmadani@worldbank.org

PREM-EP

JEL: F14, F15, O4

* This paper is part of a research project (RPO-682-43) funded by the World Bank Research Group. All opinions expressed are solely those of the author. I greatly benefited from discussions with Alan Winters, Tony Venables, Maurice Schiff, David Tarr, Simon Evenett, Aart Kraay, Marcelo Olarreaga, Maria-Soledad Martinez Peria , Isidro Soloaga.

I. Introduction

The late-1980s and early 1990s have witnessed a revival in regional integration efforts. A few examples include Mercosur[1], the Andean Pact, CACM[2] and ASEAN[3,4]. But are the growth effects of a regional arrangement significant enough to warrant a developing country joining such a scheme?

This research proposes to answer a more specific question: how has adherence to ASEAN affected the industrial growth of Singapore, Philippines and Malaysia?

I use two mechanisms to capture this impact: the role of economies of scale and the increased variety of intermediate imports. In the presence of scale economies, the literature predicts that gains from specialization and agglomeration associated with regionalism and integration will be enhanced. However, Caballero and Lyons (1990, 1992) find no support for within industry scale, rather a strong cross-industry scale effect for a sample of developed countries[5].

Intermediate imports can affect growth by being conduits of technological knowledge across two countries. I test whether increased variety of intermediate imports, realized through liberalization of trade, has growth impact. Two import variety measures are used to test this proposition.

---

[1] Created in 1991 by Argentina, Brazil, Uruguay and Paraguay. Chile and Bolivia became associates in 1996.

[2] Central American Common Market (CACM) was founded in 1960 by Nicaragua, El Salvador, Costa Rica, Honduras and Guatemala and revived in the early 1990s with a strong trade impact. The Andean Pact consists of Bolivia, Chile (left in 1976), Columbia, Ecuador, Peru and Venezuela and was established in 1969. It was revised and reinvigorated in the late 1980s with reported strong impact on the level and intensity of its internal trade.

[3] ASEAN was established in 1967 by Indonesia, Malaysia, Singapore, Thailand and Philippines (Brunei joined in 1984 and Vietnam in 1995) as more of an agreement to foster peace and cooperation in the region than promote trade. The non-priority of trade relations is clear from the little impact the agreement has had on intra-regional trade.

[4] For more details on these regional agreements, refer to F. Fouroutan 's May 1997 draft "does Membership in an FTA Make a Country more or less Protectionist?", DEC/RG, World Bank.

[5] All the authors of the three chapters dedicated to the analysis of the potential gains from economies of scale in EC 1988 publication Research on The Cost of Non-Europe, Basic Findings, Volume 2 agree that European integration will lead to a definite exploitation of economies of scale (EOS). For instance, C. Pratten argues that "there are substantial scale effects for products and production runs to be obtained in a wide range of manufacturing industries" (pg. 162). J. Schwalbach presents estimates of changes in plant sizes and cost improvements due to increased trade for U.K. and Germany for the years 1965 and 1982. He finds that for Germany, "trade flows (during the period 1965-1982) basically doubled plant sizes within the observed time period" (pg. 192). He also reports that plant size improved cost efficiency.

I incorporate the two mechanisms of the regional effects using an expanded growth accounting methodology. The analysis focuses on industry level (3 digit ISIC) data for three ASEAN Group countries over 16 to 23 years.

The results provide new insight into the industrial structure and economic relationships of Singapore, Philippines and Malaysia. When significant, the external economies are very small and mostly negative for all three countries' manufacturing sector. These results match those found for three Andean Pact Countries (Madani, 2001) and are in line with work by Basu and Fernald (1995). They reject the argument proposed by Caballero and Lyons (1990, 1992) that large positive externalities exist at the manufacturing level. In line with work by Burnside (1996), I find industry level scale effect are significantly heterogeneous, suggesting that not all industries would benefit from the potential scale effect engendered by regional integration. These results provide empirical support from developing economies on analysis thus far undertaken largely on developed countries manufacturing economies[6].

Investigating the role of imports - specifically intermediate imports - in industrial growth leads to somewhat unexpected results. I find no support for the hypothesis that ROW (non-regional) suppliers and goods variety have a positive effect on ASEAN industries via the channel of imported intermediate inputs. The regional variety measure, on the other hand, seems to impacts the output growth of a handful of industries positively, notably electronic and non-electronic machinery industries. This result may not necessarily be due to the revival of the ASEAN Group in 1991, as intra-regional and intra-industry trade in the East Asia region has a long and strong history so that. Finally, tests did not validate the hypothesis that the regional revival vs. unilateral liberalization had an impact on industry and cross-industry scales.

The implications of these findings are two folds. First, given the heterogeneity of the industry scale effects and the very small cross-industry externality, the countries should not expect large or across the board gains from their regional arrangement via scale effects. Second, This analysis seems to have picked up the impact of longstanding

[6] One recent exception is work on Taiwan and Korea by Feentra, et. al. (1999), *Journal of Development Economics.*

and very integrated trade relations among East Asian economies on industry level output growth.

This paper is structured as follows. Section II reviews the literature while section III contains a brief overview of the developments in the ASEAN Group. Section IV lays out the theoretical construct of the exercise. Section V provides the empirical analysis. Section VI concludes.

II. Literature Review

Integration can affect growth in a number of ways. The traditional approach credits integration with expanding markets and therefore providing the domestic industries who are confined by the size of their national market an opportunity to gain from internal economies of scale. This would improve production efficiency and engender growth. Industries may also benefit from the agglomeration resulting from the integration process. Finally, integration may influence industries via cross-industry externalities.

The endogenous growth theory provides an alternative view: the benefits accrue to an industry and an economy through the economies of scale engendered by increased "trade knowledge". Trade knowledge includes and can be modeled as gains from foreign R&D embodied in traded goods, technology transfer through trade or foreign direct investment, process innovation, best practice implementation, and imported intermediate goods variety and quality. Furthermore, domestic human capital stock is built up due to exposure to new and more sophisticated intermediate and final goods (learning by doing, copying,)[7].

Baldwin and Venables (B&V, 1995) provide a succinct and valuable survey of the literature's attempt to capture the growth effects of a RIA including theoretical modeling, simulation exercises, and empirical analysis. They also note that this later aspect is far

[7] For a sample of recent works in this area see Baldwin and Seghezza, 1996; Coe and Helpman, 1995; Ben-David, 1994, 1995, 1996.

from mature[8]. This research seeks to contribute to the dis-aggregated empirical approach (econometric evaluation).

The empirical studies are typically based on Solow's neo-classical growth model. They assume perfect competition and constant returns to scale. They use a variety of independent variables and focus on the analysis of aggregate cross-country data or aggregate time series data for a single country. Most authors have attempted to integrate the impact of RIA using dummy variables (Brada & Mendez, 1988; Casella, 1996) or a measure of inter and intra-trade volumes and flows amongst member countries (Italianer, 1994; Caceres, 1994) . Some have attempted to incorporate the dynamic effect of integration by using investment series (De Melo, et. al., 1993) and human capital (Henrekson, et.al, 1996). Most studies use the EC as an empirical example[9].

An exception to this trend is the 1988 study by Brada and Mendez[10] in which they find very small growth effects and conclude that while RIA dynamic effects exist, they play an insignificant role on the growth rate of member country outputs. A more recent work by De Melo, et. al. (1992) supports the same conclusion[11]. De Melo, et. al. (1993) attempt to capture the dynamic effects of regional integration on growth by incorporating human capital and investment. They find that the former only contributes significantly to growth in developing nations. Investment has significant dynamic effect on growth

---

[8] According to B&V(1995), the empirical analysis in this area is "...far from mature, ... but tentatively suggests that some RIAs have had a positive impact on growth, at least in Europe (1995:1627-28)".

[9] Henrekson et. al. (1996) also includes EFTA.

[10] Their study spans 1951-77 and estimates the dynamic effects of six RIAs, including 3 in developing countries (CACM, LAFTA and EACM). Their country level analysis finds that for five out of six Regional integration agreements' investment levels had increased. In two out of six agreements, technological progress had occurred as well. However, overall, they find very small growth effects of these agreements. "The largest gain was achieved by the member countries of LAFTA for whom these dynamic effects, cumulated over the period 1960-1977, resulted in 1977 GNPs 1.09% higher than they would have been without integration (1988:163)". They conclude that while there are dynamic effects from regional agreements, they play an insignificant role on the growth rate of member country outputs.

[11] Their study includes a cross-sectional aggregate analysis of seven regional agreements, including four developing countries' (SACU, LAFTA, CACM and CEAO). Their study spans 1960-1985 and includes 23 developed and 78 developing nations. They use dummy variables in a basic neo-classical growth model to represent adherence to different RIAs and conclude that such a membership does not significantly impact growth.

across all countries while adherence to a regional arrangement does not impact long term growth[12].

III. The ASEAN

The ASEAN Group - created in 1967 by Indonesia, Malaysia, Philippines, Singapore and Thailand - had a non-traditional raison d'etre[13]. The main objective of the regional arrangement was not that of a traditional RIA: rather than promote economic integration or even cooperation, it was to strengthen social and political stability and peace in the region. While ASEAN's PTA dates from 1977, it was limited in scope and effect, with members participating half-heartedly for an extended period.

The ASEAN Pact was renewed in 1991 with a proposal for an ASEAN FTA. This later was adopted in 1992 with a much broader scope in goods liberalization and a full implementation date of 2008. In 1993 and 1994 meetings the liberalization schedule was accelerated to achieve full implementation of fast-track items by the year 2000 and normal track tariff reductions by 2003. At the 1995 Bangkok summit, this schedule was further accelerated with regards to reduction in tariff schedules, removal of NTBs, transparency in standards, tariff harmonization.

In the meantime, members pursued their own domestic and international trade policies. Singapore has been known as a laissez faire economy with barely any trade restrictions. It's tariff levels have been estimated at 0.3-0.4 percent since the mid-1980s. Malaysia has reformed its trade regime over the past two decades. As of mid-1990s it had bound 95 percent of tariff items to less than one percent tariff rates. There were no tariff quotas. There were, however, import prohibitions and licensing requirements which were not fully transparent. This licensing seemed to apply to a wide range of products. Import quotas (QRs) were applied to specific imports to protect domestic producers. Export duties were levied on a few raw materials and mining products.

---

[12] The authors do point out that the statisical insignificance of RIA dummies' may be related to their correlation with other regressors (investment). In fact they find that investment rates in the EC and especially EFTA was some five- percent higher than in other developed countries. This would suggest a degree of dynamic effect of RIA on growth. They find no support for the inclusion of economies of scale.

[13] Brunei joined in 1984 and Vietnam in 1995.

Philippines began trade reform in 1980. The first step was to shift away from QRs to tariffs, followed by tariff rate reduction. On the tariff reform front, average nominal tariff level was reduced from 41 percent in 1980 to 28 percent in 1983. The tariff spread was reduced from 0-100 percent to 10-50 percent. The government adopted a phased tariff reduction program in 1991-92. This led to another major tariff reform implementation between 1991 to 1995: simple average tariff was reduced from 25 percent in 1991 to 20 percent in 1995. Weighted average tariff was 21 percent in 1980 and 18 percent in 1991. In 1994, new efforts at tariff reforms were made. Philippine also undertook a major quota reform between 1981 and 1994. By 1994 only 69 items were left on the quota list. There were still explicit import quota applied to horses, cattle, etc... and implicit import quota operated on certain products with non-transparency, such as cars and electronics. While there were no tariff quotas, import licensing is a regular practice since 1980.

ASEAN countries (Malaysia, Indonesia, Philippines, Singapore and Thailand) have been major trade partners to each other throughout the period 1970-1995. This trade history notwithstanding, graphs 1a and 1b present a picture of differentiated reliance on regional imports.

All four countries (Singapore, Malaysia, Indonesia and the Philippines) show a distinct increase in imports from the world since the 1970s. For all four, world imports surged in the mid-1980s. They also have increased their imports from regional partners, but at a much slower pace and well before the revival of the ASEAN Group in 1991. This revival seems to have impacted the countries differentially. Indonesia's ratio of regional to world imports (graph 1a) has not changed over the 25 year period, hovering at 8 percent. At the other extreme, Philippines has increased its ratio of regional to world imports from close to zero to 14 percent during the same quarter century. Both Malaysia and Singapore's ratio of regional to world imports have also increased dramatically from 10 percent to 22 and 35 percent respectively. The revival of the ASEAN pact seems to coincide closely with a noticeable further increase in Philippines and Singapore.

IV. Theoretical Base and Applications

The early theoretical and empirical analysis of growth is based on the assumption of perfect competition and constant returns to scales and uses a general production function, $Y_t=A.f(K_t,L_t,M_t)$. A is the index of Hicks-neutral technological progress, and $f(.)$ is a continuous, twice differentiable function that is homogeneous of degree one in capital (K_t) and labor (L_t) and material (M_t). We differentiate (Y_t) and obtain an expression for output growth as growth of weighted shares in factors and inputs plus total factor productivity (da_t, henceforth *TFP*). The latter reflecting the exogenous, "unexplained" element of growth.

(1) $dy_t = s_{lt}\, dl_t + s_{kt}\, dk_t + s_{mt}\, dm_t + da_t$ or

(1b) $dy_t = dx_t + da_t$

where, $dx_t = s_{lt}\, dl_t + s_{kt}\, dk_t + s_{mt}\, dm_t$. $dy_t = ln(Y_t) - ln(Y_{t-1})$; $dl_t = ln(L_t) - ln(L_{t-1})$; $dk_t = ln(K_t) - ln(K_{t-1})$; $da_t = ln(A_t) - ln(A_{t-1})$ and $dm_t = ln(M_t) - ln(M_{t-1})$. s_l, s_k, and s_m are average (over periods t and $t-1$) of shares of labor, capital and material in total gross output respectively[14].

A. Accounting for Economies of Scale

Subsequent work within the growth framework by Caballero and Lyons (1990, 1992) and Basu and Fernald (1996) and Burnside (1996) extend on the work by Solow (1956) and Hall (1988, 1990) to investigate the presence of scale effects versus (cross industry) external economies of scale.

I incorporate Caballero and Lyons methodology to analyze the impact of regional integration on industry growth for three ASEAN countries in light of scale effects and (cross-industry) external economies of scale. This is to investigate a first hypothesis - suggested by the traditional view in the integration literature- that in the presence of

[14] The literature favors the use of cost shares instead of revenue shares (Hall, 1990; Basu and Fernald, 1996). In the presence of imperfect competition, revenue shares may lead to potential mis-measurement in the contribution of factors to growth[14]. However, we do not have the necessary data for such calculations. We proceed with revenue shares, heeding the fact that our calculations include potential calculation bias.

externalities (within and across industries), the impact of such arrangements is several fold larger[15].

Using equations (2) and (3) below, Caballero and Lyons argue that in estimating industry level growth we need to take into account of the fact that the industry level (I) and aggregate level inputs (x_{it} and x_t) will be positively correlated. In the presence of external effects (cross-industry externality), therefore, the estimated coefficient γ in equation (2), will be upward biased[16]. e_{it} represents the external economy (cross-industry) index, is assumed to be unobservable and, is therefore lumped in with the error term.

(2) $dy_{it} = \gamma dx_{it} + (e_{it} + da_{it})$

(3) $dy_{it} = \gamma dx_{it} + \kappa dx_t - (\xi da_t + u_{it})$

C&L model external effects as $x_t = \sum_i x_{it}$ and its coefficient as κ, in equation (3), with the error term as an unobservable[17]. I will elaborate on and estimate a variation of equation (3).

B. Introducing measures of integration

I use three measures to test the hypothesis set forth by the new growth theory that potential integration gains to an industry and an economy accrue through the economy of scale engendered by increased "trade knowledge". The first two measures are constructed with the understanding that trade is an essential conduit of the impact of

---

[15] Specifically, existence of cross-industry externality should benefit member nations for it increases production efficiency. Also, if there is industry scale effect then, as suggested by the theoretical and simulation literature, developing countries adhering to an RIA could experience large benefits

[16] In the presence of external effects, therefore, the estimated coefficient in equation (2) , called θ from now on, will be upward biased. In fact, according to C&B (1990),

plim $p\lim\theta = \gamma + \psi\kappa$, where $\psi = \frac{\sigma_{dx_i dx_t}}{\sigma^2_{dx_i}}$.

[17] Note that $\xi = \frac{1}{1-\beta}$.

integration on growth[18] and that increased variety of intermediate imports plays an important role in output growth. The use of these two alternative measures is to better gauge the sensitivity and accuracy of our results. The third measure is the prevalent approach in the literature (Casella, 1996; De Melo, et. al., 1993): a dummy variable, which takes on a value of one at the onset (or revival) of an RIA.

B2. Import Variety Measures.

How would increased intermediate imports initiate a within and cross-industry scale response? Compared to an autarkic anti-monde, implementation of an RIA will increase availability of differentiated intermediate inputs[19], which leads to a scale effect and increased industrial growth. More specifically, the new varieties of intermediates imports as stores of foreign knowledge. They have a strong industry specific knowledge accumulation component, and a more diffuse overall/general knowledge component[20]. They affect the knowledge base in the importing country in the following two complementary manners. At the cross-industry level, they enlarge the general, public base of knowledge, providing further incentives for innovation by reducing innovation costs across all industries. Also, availability of new varieties of intermediate improves production efficiency and lowers input costs in industries using them for production of final goods[21].

---

[18] This, of course, is not a new idea. The endogenous growth literature has used the trade conduit as a modeling tool. See Ben-David (various papers) and Helpman and Coe (1996) for examples.

[19] The South-South RIA of the ASEAN can be likened to the Grossman & Helpman narrow gap imitation scenario (chp 11, pg. 294-298). They assume a North-South framework, with the former innovating and the later imitating (and potentially innovating less intensively). The narrow gap refers to the fact that the gap in manufacturing costs between North and South is not wide.

[20] Another way of modeling this dichotomy in the knowledge accumulation is to argue that the human capital is so specialized and productive in the set -up of the specific industry it is working in that it will "extract" more knowledge from its industry specific imports than the rest of the industries could. Alternatively, we could argue that human capital is differentiated by industry and therefore is less productive when having to absorb (or invent) in a general arena versus its own specific industry.

[21] We do not directly model the prerequisites for an agglomeration outcome since it requires cross-country factor movements and involves the more detailed analysis of centripetal and centrifugal economic forces between the integrating countries (see also Puga and Venables, 1997; Ruhashyankiko 1997). Therefore, I abstract from arguing that within industry externalities are directly correlated to agglomeration effects resulting from the RIA I still attribute these externalities to the increased variety of intermediate inputs.

Realistically, of course, none of the three countries has had a purely autarkic empirical anti-monde – has not excluded from the world trading system - in the 1970-1995 period. Rather the countries have made a graduated move from more restrictive trade practices to less restrictive (but possibly more distorted) ones. Thus, the experiment is essentially of whether the changes entailed in the RIAs have increased the net supply (quantity and quality) of intermediates. I control for the potential impact of unilateral liberalization by introducing import variety measures calculated for non-RIA member suppliers into our analysis. This allows us to simultaneously gain some insight into the impact of unilateral liberalization on these countries[22].

I construct alternative indices of variety to capture the shocks of new imported intermediate inputs. They can be formulated using available three digit ISIC data over individual supplier countries or blocks of supplier countries, see below. The two indices for variety considered here are: first date of imports as measured by the number of suppliers and first date of imports as measured by an index of goods variety. Below we provide details about these measures.

a. Goods Variety

I construct a variety measure described in Feenstra and Markusen (1994). Starting out with a single, competitive firms with constant returns to scale, and assuming a CES production function:

$$(4)\quad Y = f(x,N) = \left[\sum_{i=1}^{N} a_i x_{ii}^{\theta}\right],\ 0<\theta<1,$$

where x is the quantity of inputs $I= 1,...N$ and $x=(x_1,...x_N)$ denotes the vector of inputs, and Y is the output. The elasticity of substitution between the inputs is given by $\sigma = 1/(1-\theta)$. $P_i > 0$ is the price of inputs and assume that $x_i > 0$ solves the cost minimization problem of the firm.

---

[22] Variety trade diversion can increase the regional varieties as the expense of larger numbers of varieties from the rest of the world. This may be especially relevant if the regional grouping is not variety rich.

Assuming two ranges of inputs $N_s \leq N_t$, Feenstra and Markusen (1994) show that[23] : their proposition 1 that:

(5) $f(x,N_t) = f(x,N_s)\lambda^{(1/\theta)}$, where $\lambda = \left[\dfrac{\sum_{i=1}^{N_t} p_i x_i}{\sum_{i=1}^{N_s} p_i x_i} \right]$ and $\lambda^{(1/\theta)} \geq 1$.

The outputs obtained with the ranges of inputs at s (denoted N_s) and t (denoted N_t) , ($N_s \leq N_t$) are related by a "growth factor" λ that is measurable as the ratio of expenditure on the full (N_t) versus the restricted set (N_s) of inputs. As θ becomes smaller λ increases because the new inputs become less substitutable for existing inputs, leading to larger increases in output.

Feenstra et. al.(1999) and Madani (1997) use a closely related methodology and highly dis-aggregated exports to the US to estimate the impact of relative industrial goods variety for Taiwan (China) and Korea on their industrial growth. For each industry *I*, changes in variety is captured by:

(6) $$VAR_{ist} = \ln\left(\frac{\sum_{n\in N_t} p_{nt}x_{nt} \Big/ \sum_{n\in N} p_{nt}x_{nt}}{\sum_{n\in N_s} p_{ns}x_{ns} \Big/ \sum_{n\in N} p_{ns}x_{ns}} \right)$$

Where $p_{nt}x_{nt}$ is the value of input x_{nt} by industrial category *I* from supplier *n* at time *t*.

This paper considers the *imported inputs variety* and therefore, to interpret equation (6) above, assumes the case where the set of imports is growing, and denote these sets by $G_s = \{1,....,N_s\}$ and $G_t = \{1,....,N_t\}$ with $G_t > G_s$. Then the common set of imports supplied in both periods is $N = N_s$, and the denominator of the equation above is unity. The numerator will exceed unity, indicating that product variety has increased. This formula fits the case where goods disappear as well.

[23] See proposition 1 of the Feenstra & Markusen (1994) paper.

The variety measure is calculated for two subsets of importers: the members of the regional agreement (variable VARREG) and the non-members (rest of the world – called VARROW) and for each country's 22 3-digit industries over 26 years.

Estimation equation (3) above is therefore altered to:

$$(3')\ dy_{it} = \alpha_t + \gamma_i dx_{it} + \kappa_i dx_t + \eta_i VARROW(-1) + \theta_i VARREG(-1) + [\xi da_t + u_{it}]$$

Given the assumption of south-south RIA underlying the analysis and the fact that these three economies have relatively similar industrial structure (especially compared to developed countries), I expect very little regional variety effect. The assumption that ROW will have a larger variety of intermediate inputs to offer industries of RIA member countries leads to the expectation that unilateral liberalization should have a positive - and larger - impact on output growth than import of intermediate inputs from other RIA members.

This method has two drawbacks. First, it may not pick up too much variation in product variety due to the aggregate nature of the data[24]. Second, the data is on import values in US dollars and may be biased by changes in import prices. Using unit values would resolve this potential bias, but complete data on unit values is not available.

Clearly, imported goods are used as intermediate inputs in different industries and as final goods. Thus, using our variety measure, we could pick up several effects: a complementary effect of intermediate goods on industrial production; a competitive effect of these intermediate goods on the import competing industries; a competitive effects of imported final goods on domestic industrial production. In the two latter cases the negative correlation between increased imports and domestic industrial production springs from the rationalization of domestic industry faced with foreign competition. I am interested in the first effect: the complementary effect of intermediate imports.

The series are scaled to isolate the complementary effects of regional vs. ROW suppliers of import variety on output growth from its competitive impact. The positive

[24] We have constructed the 4 digit SITC version of this measure and will investigate this aggregation issue at a later date.

complementarity arising from the fact that these imported varieties are intermediate inputs feeding into - and improving - the production process of the domestic industries[25].

The trade data mirrors the same potential scrambling of signals/effects as above. The three digit ISIC-categorized imports are not all used by the industry associated to their category. Rather, they represent all imports into the country that match this type of industrial categorization. For instance, imports categorized as 311 (food products) are not all used in the Malaysian food products industry. Rather, they are imports that matched the category 311 and will be distributed across the economy to be used as intermediate inputs or final goods.

To isolate the complementary effect I scale the supplier and import variety series with country specific input-output tables[26]. The measures are weighted so that:

$$(7) \quad wVAR_{ijt} = \sum_{i} v_{ij} VAR_{ist}$$

where v_{ij} is obtained from the input-output table and is the share of inputs by industry I into industry J. The scaled variety series used in industry J therefore accounts for all potential variety changes from all its industrial suppliers.

b. First Date of Imports as Measured by the Number of Suppliers:

We use this measure to pinpoint the date of first import from a foreign supplier. Assume Malaysia is our importing country and its supplier is country Z. The available three digit ISIC-categorized Malaysian imports are differentiated by their supplier country. This will allow us to argue that first date of import from supplier country Z represents launching a new variety of intermediate good in the Malaysian industry. In consequent years, we register the entry or exit of suppliers. Tracking the change in the pool of suppliers over 1970-1994 for each industry provides a good proxy for the import variety available in the Malaysian market before and after the RIA renewal[27].

---

[25] Here I assume that there is substitution among intermediate inputs, but no redundancy.

[26] 1987 input-output tables for Malaysia, 1985 for Philippines and Singapore.

[27] If the new imported goods are highly substitutable to the existing ones, the dynamic growth impact will not be large. If the new imported good is not very substitutable to the existing intermediate goods, its dynamic growth impact - AKA economies of scale - will be large.

In this case, I hypothesize that against a backdrop of restrictive trade practices, adding a new supplier (a new variety of intermediate input) to the existing pool of suppliers will be interpreted as easing access into the Malaysian market. The measure of ROW suppliers (SUPLROW) captures the effects of unilateral liberalization. As in the case of the variety measure, since it allows for a larger variety of intermediate inputs, I expect a positive and significant coefficient. On the other hand, I expect little (or non-significant) variety effect from our regional analogue measure (SUPLREG) on industrial growth.

As in the case of the import variety measure, the supplier is scaled with country specific input-output tables to isolate the complementary effect of intermediate input variety on industrial growth (see equation (7) above).

This variety measure has several shortcomings. First, the first date of imports does not necessarily signify consistency of available imports from that source[28]. This would mean that the impact of new inputs on growth is over-emphasized. Second, this approach - assuming one variety from each country - may bias our results in two ways. First, this simplification will most likely lead to under-counting of the variety of imports provided by non-regional suppliers. For instance, large suppliers like the U.S. will likely supply multiple varieties of goods to a Malaysian industry, whereas regional suppliers supply fewer varieties. Second, if there is trade diversion from world exports to RIA exports to Malaysia, it will be registered as having a positive dynamic effect on industry level output growth even though the total number (variety) of intermediate inputs may not have changed or its quality component may have been reduced. Our measure is therefore biased in favor of RIA approach and against the unilateral liberalization policy approach.

B2. The dummy variable.

Our final measure of integration is the literature staple: a dummy variable that captures the 1991 renewal of the RIA. We define the dummy as:

---

[28] I have noted that in looking at imports from Andean Groups (especially) Bolivia. They tend to be erratic and sporadic in many instances. There seems be a degree of increased value and consistency in imports from Bolivia after 1989 in many of the 28 ISIC industries.

D = 0 up to 1990

D = 1 1991-1995[29].

We introduce this dummy into the above Caballero and Lyons framework. Equation (3) above will now become the estimation equation:

(3'') $dy_{it} = \alpha_t + \gamma dx_{it} + \kappa dx_t + \tau_i dTariff + \lambda D + [\xi da_t + u_{it}]$

where α_t is a constant; $x_{it} = \alpha_{1it} l_{it} + \alpha_{2it} k_{it} + \alpha_{3it} m_{it}$[30] and $[\xi a_{it} + u_{it}]$ is the error term. The λD is an intercept dummy and will capture any shift in the overall level of growth. In the literature a positive and significant λ is interpreted as a positive and significant impact of regional integration arrangement (RIA) on the industrial growth of a member country. I control for the simultaneous unilateral liberalization by including a proxy in our regressions: a country -specific time series ad-valorem tariff collection[31].

In effect, however, it is difficult to interpret accurately the coefficient on the dummy variable as the impact of the regional integration if we cannot isolate this impact from other simultaneously occurring economic events in the countries. The dummy may be picking up other influences such as world wide demand shock, productivity shock or major domestic policy (trade, macro or industrial) changes coinciding with the revival of the RIA.

V. Data and methodology.

[29] Note that for the ASEAN Group renewal is traced back to 1991. The RIA is considered to have had a small impact up to the late 1980s as it was mostly political and geared towards ensuring regional stability. Also note that most cross-country (cross-sectional) macro analysis include a dummy for the launching of the RIA process. In our case (panel data) this is not possible since both agreements were formed before the starting date of our data.

[30] by using the x_{it} terminology and not directly estimating the coefficients we lose information about the changes in the contribution of labor , material and capital to production. One interesting extension of this exercise would be to perform this analysis with estimated beta coefficients.

[31] The literature has used trade or import shares, recognizing their limitations and the endogeneity issues attached to their use. The use of tariff ad-valorem collections or schedules is still considered problematic but an improvement on use of trade or import shares. Of course, the series we use is not a full proof proxy for liberalization. We could only obtain nationwide data on tariff. This measure therefore also captures the reduction in regional tariff rates as well.

The analysis is based on 22 industries[32] and concentrates on Malaysia, Philippines and Singapore[33] over the 1971-1995 period. The 3-digit data on the countries' industrial gross output production, gross fixed capital, number of workers, wages and intermediate inputs were obtained from United Nations Industrial Development Organization database. The bilateral import data is from COMTRADE United Nations database (see appendix 1 for further information on the data).

For industry level analysis of equations (3') and (3'') – across the three countries - , we rely on 3SLS methodology to account for the endogeneity of explanatory variables, and for the potential contemporaneous cross-industry correlation of the error terms. I also correct for heteroskedasticity. Here we assume that each of these industries have similar structure across the three countries. I tested for country specific characteristics. Inclusion of country dummies did not change the results of our analysis.

Finally, I also modeled a cross-effect between the RIA measures and industry scale and cross-industry economies of scale[34]. In this case, equation (3') becomes:

$$
\begin{aligned}
(3''') \quad & dy_{it} = \alpha_t + \gamma dx_{it} + \kappa dx_t + \tau_{i1} REGVARmeasure + \tau_{i2} ROWVARmeasure \\
& + \mu_{i1}(REGVARmeasure * x_{it}) + \mu_{i2}(ROWVARmeasure * dx_{it}) \\
& + \omega_1(REGVARmeasure * x_t) + \omega_2(ROWVARmeasure * dx_t) \\
& + [\xi a_t + u_{it}]
\end{aligned}
$$

The μ_i and ω coefficients on the cross-effect terms are the impact of integration on economies of scale (both within and across-industries) and by extension on growth. Ceteris paribus[35] [36], I expect the μ_i s and ω s to be positive and significant.

---

[32] We discarded coal and petroleum (354, 353), leather products (323) , other chemical industries (352), non-ferrous metals (372), and pottery, china, etc...(361) for either severe data deficiencies or severe and implausible changes in data values.

[33] Thailand and Indonesia lacked sufficient data for the analysis.

[34] Harrison (1994) uses a similar set up for her analysis of the impact of trade liberalization on firm behavior in Cote d'Ivoire.

[35] According to the literature, assuming the dummy is capturing an active regionalism effort, both μ_i and ω would be positive and significant: regionalism enhances industry scale economies through agglomeration and cross-industry externality through market expansion.

Throughout the analysis, I used the two alternative variety measures as well as the dummy variable specification (seen in equation (3'')).

Appropriate corrections were made to correct for potential heteroskedasticity problems that may arise in a panel data framework[37] .

Capital services may fluctuate as capacity utilization changes over the business cycle (Basu and Fernald, 1995; Burnside, Eichenbaum and Rebello, 1996). Since I have capital stock rather than an accurate measure of capital services I include a proxy to control for changes in capacity utilization. Following precedence in the literature, I use country specific manufacturing level electricity utilization over the period 1971-1994 in both equations (3) and (3'''). Harrison (1994) uses a measure of total energy use while Burnside, Eichenbaum and Rebelo (1995) use electricity use as proxy[38].

All the variables are differenced to avoid the effects of non-stationarity typically present in this type of data[39]. However, using first differenced variables is not without its shortcomings: the cross-industry dimension of the data is lost. Also, first differencing is criticized for a tendency to emphasize measurement errors (or noise) over signal. This decreases the signal to noise ratio and raises the possibility of poor precision in estimation.

An issue of serious concern is the endogeneity of some of the explanatory variables. The solution should be to instrument these variables. However, the use this

---

[36] I am not comparing to unilateral liberalization.

[37] I used Breusch-Pagan heteroskedasticity tests to diagnose this problem. Judge et. al. (1985) warn about the weaknesses of such tests by pointing out that White's test significance may be indicating mis-specificiation (omitted variables or incorrect functional form) rather than heteroskedasticity. In the early IV analysis, the results were always heteroskedasticity corrected using the white method.

[38] They reference Griliches & Jorgenson, 1967 and Costello, 1993 for precedence. Studying capacity utilization and returns to scale, they find constant returns to scale. They conclude that "their results strongly supports models which emphasize cyclical movements in capacity utilization rates as an important determinant of movements in conventional measures of total factor and labor productivity" (pp. 105).

39. This is a common practice in the literature. I tested for non-stationarity using the Dickey-Fuller test at the industry and country levels and found an overwhelming number of series have unit roots. I tested for cointegration and find that again a large number of the relationships have unit roots and can't be used in levels. I check for the presence of autocorrelation for the industry level data and find it present. In the presence of autocorrelation the LS coefficients will be unbiased but not efficient. The covariance matrix will be biased and the standard errors and consequent interval estimates and hypothesis tests will be invalid.

methodology has been questioned on two grounds. Hall (1998) highlights the first issue: lack of truly exogeneous instruments that are highly correlated with the endogenous variable and not with the error term. Among the instruments Hall uses the price of oil is the one with the highest correlation with the endogenous variables. It is also the most questionable instrument, because of the possibility that technical progress is not Hicks-neutral[40]. The second difficulty is that poorly fitting instrumental variables may lead to substantial small-sample bias[41].

Tested several alternative sets of instrumental variables based on the ones used by Harrison (1994), Hall (1988) and Burnside (1996)[42]. I also tried the Anderson-Hsiao methodology: using one or more lagged log level of the endogenous variables as instruments for their corresponding first differenced values. Over-identifying tests suggested that the instrument sets were generally valid[43]. That is there was no correlation between the instruments and the error term. However, these variables violated another major requirement for good instruments: relevance. Their correlations with the endogenous variables were rather low[44]. I use the most promising set: the Anderson-Hsiao instruments.

---

[40] In her research on Cote d'Ivoire, Harrison (1994) argues that the OLS (fixed effects) and IV results are not qualitatively different. She bases her assessment on the Hausman test and the over-identification test results. Caballero and Lyons (1990) also point out that while Hall's concern about specification errors are warranted, the lack of good macro-instruments made the instrumental variable procedure powerless. They note that the reason for our concern over specification error is our interest in consistent parameter estimates. They argue that the inconsistency in coefficient estimates is small if the size of the variance of the regressors relative to their covariance with changes in productivity growth is small. In this case, there would be no need to give up on the least square approach[40].

[41] Here Basu and Fernald (1995) refer to Nelson and Startz (1990).

[42] Harrison uses log of nominal exchange rates, log of price index for energy, the log of sectoral wages and the log of debt. Based on her work we use : log of nominal exchange rates log of price of oil and manufacturing sector wages. Burnside (1996) analyses and ranks 5 alternative instrument sets. We tried one of the better performing and higher ranked ones: the current and three lagged values of growth rate of world oil price. However, as Hall points out, this instrument set is suspicious. Other instrument sets Burnside suggests (including Hall's) were not available for the set of country in our study.

[43] Note however that this test is actually a joint null hypothesis of correct model specification and validity of the instrument matrix (Davidson & Mackinnon, 1993).

[44] The results obtained from these IV exercise involving Burnside's and Harrison's were mixed and non-robust. Equation (4) coefficient estimates (especially those of within-industry scale) tended to vary greatly without being significant (or significantly different from 1 in the case of the scale term). Burnside (1996) points out that this may be due to the high correlation between aggregate IVs and the external economy

VI. Results and Policy Implications

Table 2 reports the results of the 3SLS results related to equation (3''). These results are heteroskedasticity and auto-correlation corrected for each industry across the three countries. The log difference of real output is the dependent variable. The table includes terms capturing industry and cross-industry scales, and electricity as a proxy for capacity utilization. It also contains alternative measures of variety and number of suppliers for regional integration and unilateral liberalization. The results associated with the regressions using the dummy variable/import tariffs specification(specification (3'')) matched those prevalent in the literature: the dummy variable was mostly insignificant, signaling that RIAs do not have an impact on growth in member countries[45].

I draw three main conclusions from panels two and three of table two.

The first set of results is related to the industry level economies of scale. I find that the scale coefficients range from 0.415 to 1.394 and are significantly different from zero, matching results in a sister study on the Andean Pact (Madani, 2001). Theses findings provide further evidence for Burnside (1996) 's argument that there is significant heterogeneity among the industries[46]. The heterogeneity of industry level economies of scale was confirmed by the country specific analysis[47]. Therefore, the benefits of regional integration claimed by the theoretical literature may only accrue to a select number of industries.

When cross industry scales are significant, they are so for a few industries(textiles, plastic products, etc,...). However, even when significant, they are very small and, in a majority of cases, negative. Country level-industry specific analysis supports this result[48]. Again, these results match those found by (Madani, 2001) and

---

term. He recommends use of more industry specific IVs, which in our case are not available consistently across three countries.

[45] They are not reported here, but are available from the author.

[46] A large number of them are also significantly different than 1.

[47] Here, the coefficients' range was wider, but heterogeneity was definitely and significantly present.

[48] See footnote 50.

Basu and Fernald's (1995). These later find that across-industry scale is negative, and in the scale of 0.02 to 0.035. Our aggregate estimates range from 0.015 to 0.035.

The final set of results addresses the impact of intermediate import variety on output growth. The effect of imported intermediate input variety (measured either by change in number of suppliers or growth in import variety) is industry specific and small. This matches my expectation as the variety impacts are second order effects. Also, not all industries should be affected (or affected equally) by imported intermediate input varieties.

The variety measure is positive and significant for only a few industries[49] These findings are also surprising: regional varieties of intermediate inputs seem to have more of a positive impact on industrial growth, especially in electrical and non-electrical machinery, than ROW varieties. This result goes against the hypothesis that world variety (or unilateral liberalization) should have more of a positive impact than a those from a South-South regional arrangement because it would allow for more diversified and knowledge laden intermediate goods imports.

This result may be due to the unique nature of the intra-regional trade among the East Asian countries. They have had long-standing and integrated trade relations independent of whether the ASEAN pact was moribund or active. The Malaysian case is a good example. The ASEAN countries (Brunei, Indonesia, Philippines, Singapore and Thailand) have been Malaysia's major trade partners throughout the period 1975-1991. Their share in Malaysian exports has slightly increased from 24.8 percent in 1975 to 29.2 percent in 1991 at the expense of EEC destinations. Imports originating from the ASEAN were 15 percent of total imports to Malaysia in 1975. By 1991, this number had reached 19 percent[50]. Graph (1) provides further evidence of this long term relationship for some of the other countries.

Divan and Hoekman (1999) provide further support for this relationship. They report that in 1995 the share of intermediates in global imports of select East Asian economies from their regional partners ranges from 34.8 percent (Indonesia) to 47

[49] The impact of changes in regional v. ROW suppliers on industrial growth is even weaker (see table 2 – panel 2).

[50] World Bank, 1992. Malaysia CAS. Report No. 10758-MA

percent (Malaysia). These import shares are much higher than their corresponding shares from North America or Europe. Furthermore, the share of intermediate products in Malaysia's total imports from Indonesia, Philippines, Thailand and Singapore is 66.2, 93.8, 74.4 and 75 percent respectively. Finally, table 4 reports that the intensity of intermediate goods exports is generally above one and large, proving that trade is more "intense" among these regional partners than would be expected or normal[51].

Finally, we also estimated equation (3''') to capture the cross-effect regional revival and unilateral liberalization may have on within and cross-industry externality. This last exercise did not net us much insight. In general cross-effect terms were very small and non-significant. One obvious reason for this set of results is the built-in multi-collinearity between cross-effect and original terms.

VII. Conclusions and Future Research.

The three ASEAN Countries in our study have very small, mostly negative external economies. Furthermore, I find that there is significant heterogeneity in within industry externalities. The combination of these two results casts doubt on the argument that countries may benefit from RIA because of industry and cross-industry scale effects, especially in a South-South arrangement. In fact, a handful of industries may benefit from industry scale effects, but no cross-industry effects appear present in the sense intended by the theoretical literature.

I obtain some expected and some un-expected results related to the impact of the revival of the ASEAN Group via the imported intermediate input variety channel.

At the cross country level the variety measures have a significant impact on a handful of industries' growth. Within this set, the regional variety appears to have more of a positive impact. This result may be due to the long term and very integrated trade relations among these countries that outdates the ASEAN revival. In this light, the 'traditional' South-South form of a regional arrangement may not be the model to use to

[51] Export intensity measures control for the size of the import market absorbing exports and help determine whether trade flows are more concentrated within the region than would be "normal" given the region's share of the world economy. If the measure is greater than one, trade is more "intense" than would be expected.

analyze ASEAN's intra-regional relations and consequent effect on their industrial growth.

Two potential avenues remain for further investigation. One lies in further refining the import variety measures to provide us with more insightful results. The variety series here were calculated on a rather aggregate 3-digit ISIC level. More dis-aggregation will capture more variations in our variety measures. Second, further analysis of the long standing intra-regional trade between the ASEAN Group -- with concentration on select industries - will help shed light on its potential positive impact on member countries' industrial growth.

Table 1: Mean and Standard Deviation of Supplier and Variety Series by Country:

Malaysia	Non-regional Supplier				Regional suppliers		Regional suppliers		Growth in Non-regional variety		Growth in Regional variety	
	Mean	Std. Dev	Initial number	Final number	Mean	Std Dev.	Initial number*	Final number	Mean	Std. Dev	Mean	Std Dev.
1 Food products	62.5	7.638	55	70	4	0	4	4	0.00058	0.0281	0	0
2 Beverages	50.269	10.258	35	60	4	0	4	4	0.00247	0.0077	0	0
3 Tobacco	33.577	2.956	29	39	3.962	0.196	4	4	-0.00023	0.0055	-0.00003	0.0002
4 Textiles	15.154	1.994	15	18	3.077	0.392	3	4	0.01952	0.0997	-0.00005	0.0029
5 Wearing apparel	55.423	12.741	42	85	4	0	4	4	-0.00057	0.0045	0	0
6 Leather prods	35.154	8.929	32	54	4	0	4	4	-0.00023	0.0141	0	0
7 Footwear	30.5	8.733	22	50	3.808	0.402	4	4	0.00769	0.0253	0.00027	0.0013
8 Wood prods	26.231	5.867	18	37	3.615	0.571	2	4	0.00176	0.0065	-0.00045	0.0107
9 Furniture	36.192	7.183	26	44	4	0	4	4	-0.00833	0.0576	0	0
10 Paper and prods	45.07	8.83	34	61	3.808	0.402	3	4	0.00103	0.0049	0.0000	0.0001
11 Printing and pub	45	12.309	29	58	4	0	4	4	0.00166	0.0143	0	0
12 Industrial chems	65.231	15.662	43	84	4	0	4	4	0.00208	0.0133	0	0
13 Other chemicals	56.231	12.382	38	79	4	0	4	4	0.00144	0.0115	0	0
14 Petroleum ref	28.885	4.00	27	35	3.808	0.402	4	4	0.00648	0.1081	-0.00015	0.0012
15 Coal & pet misc prd	28.923	3.969	23	39	3.462	0.905	2	4	-0.00087	0.0061	0.00025	0.0016
16 Rubber prods	36.846	8.308	22	39	3.808	0.491	3	4	-0.00068	0.0034	0.00115	0.0052
17 Plastic prods	38.038	11.511	24	52	3.769	0.429	3	4	0.00030	0.0086	0.00002	0.0003
18 Pottery, china, etc..	32.038	6.453	21	41	3.885	0.431	4	4	-0.00157	0.0137	0.00233	0.0097
19 Glass prods	36.769	7.089	28	53	3.962	0.196	4	4	-0.00433	0.0151	0.00527	0.0264
20 Other non-metallic	37.539	6.433	33	53	3.692	0.471	3	4	0.00082	0.0078	0.00078	0.0039
21 Iron and steel	42.885	14.345	26	78	3.885	0.431	4	4	0.00097	0.0070	-0.00130	0.0089
22 Non-ferrous metals	42.077	13.434	28	72	3.923	0.272	4	4	0.00338	0.0228	-0.00004	0.0021
23 Fab. Metal prods	55.038	16.428	41	87	4	0	4	4	-0.00093	0.0039	0	0
24 Machines non- elec	62.231	20.288	41	107	3.962	0.196	4	4	-0.00051	0.0022	0.000167	0.0014
25 Machinery elec.	59.423	23.358	36	104	3.923	0.272	3	4	-0.00028	0.0062	0.00320	0.0150
26 Transport equip.	45.615	11.693	30	65	3.923	0.272	4	4	0.00056	0.0087	0.00049	0.0021
27 Prof and scientific	48.885	14.943	29	67	3.769	0.429	3	4	-0.00110	0.0095	0.00095	0.0057
28 Other manuf. prods	45.308	10.071	32	57	4	0	4	4	-0.00185	0.0080	0.	0

Data for initial year is 1971. Final year is 1995

Table 1 - continued

Philippines	Non-regional Supplier				Regional suppliers		Regional suppliers		Growth in Non-regional variety		Growth in Regional variety	
	Mean	Std. Dev	Initial number	Final number	Mean	Std Dev.	Initial number*	Final number	Mean	Std. Dev	Mean	Std Dev.
1 Food products	39.884	7.479	40	64	3.885	0.326	4	4	0.00113	0.0264	0.00149	0.0120
2 Beverages	31.038	7.592	25	44	3.885	0.326	3	4	-0.00344	0.0491	-0.01442	0.0745
3 Tobacco	23.423	4.709	16	30	2.050	1.099	.	4	-0.01362	0.0820	0.04050	0.1883
4 Textiles	6.9615	2.720	2	13	1.800	0.837	.	3	0.01138	0.2479	0.04237	0.0653
5 Wearing apparel	32.615	8.588	26	58	3.520	0.770	.	4	-0.00133	0.0079	0.01691	0.0753
6 Leather prods	16.154	4.838	10	27	3.000	0.973	.	4	-0.00289	0.0361	0.01011	0.0446
7 Footwear	20.115	6.256	11	34	2.550	1.356	.	4	0.00967	0.0426	0.06097	1.2900
8 Wood prods	11.076	4.698	5	21	2.462	1.127	.	4	0.00626	0.1437	0.33520	0.7382
9 Furniture	20.038	7.068	9	37	2.950	0.998	.	4	0.02625	0.1062	0.01220	0.1556
10 Paper and prods	29.000	6.040	25	47	3.040	1.136	1	4	0.00691	0.0263	0.01992	0.1605
11 Printing and pub	26.961	5.149	26	37	3.231	0.091	3	4	0.00256	0.0151	-0.00065	0.0049
12 Industrial chems	51.385	8.050	42	65	3.846	0.368	4	4	0.00452	0.0192	0.07906	0.3998
13 Other chemicals	42.961	7.246	34	57	3.807	0.491	4	4	0.00129	0.0064	-0.00545	0.0065
14 Petroleum ref	23.692	3.896	22	25	3.000	0.748	4	4	-0.03931	0.4685	0.03982	0.3645
15 Coal & pet misc prd	23.000	3.589	19	31	2.538	1.104	1	4	0.01096	0.0626	0.01189	0.0582
16 Rubber prods	27.769	4.633	27	38	3.346	0.629	3	4	-0.00028	0.0046	-0.00155	0.0131
17 Plastic prods	26.962	7.902	20	48	3.385	0.852	2	4	0.00632	0.0254	-0.09343	0.4826
18 Pottery, china, etc..	20.077	5.137	14	27	2.762	1.221	.	4	0.00577	0.0295	0.00618	0.0354
19 Glass prods	25.000	5.138	20	40	3.192	1.096	1	4	0.01128	0.0340	0.02593	0.1944
20 Other non-metallic	28.077	3.815	23	37	3.000	0.979	2	4	0.00834	0.0387	0.02682	0.2139
21 Iron and steel	33.615	8.010	27	49	3.000	0.957	2	4	0.00930	0.0200	0.07531	0.3229
22 Non-ferrous metals	30.731	6.385	21	42	3.423	0.945	4	4	0.00210	0.0252	0.00733	0.0985
23 Fab. Metal prods	35.615	6.425	33	52	3.615	0.571	4	4	-0.00598	0.0281	0.00218	0.0245
24 Machines non- elec	45.692	8.279	45	72	3.808	0.402	4	4	-0.00287	0.0116	0.00027	0.0021
25 Machinery elec.	38.346	12.709	33	84	3.615	0.571	3	4	-0.00498	0.0240	0.00019	0.0055
26 Transport equip.	39.038	8.224	37	60	3.846	0.368	4	4	0.00379	0.0467	-0.00165	0.0065
27 Prof and scientific	32.308	4.183	30	46	3.115	0.909	2	4	-0.00332	0.1403	-0.00700	0.1455
28 Other manuf. prods	29.269	6.122	21	46	3.077	1.055	1	4	0.00289	0.0157	0.00977	0.8155

Data for initial year is 1971. Final year is 1995

Table 2: ASEAN Industry specific results. Panel 1 - regional and ROW variety change

	INDUSTRIES	INDUSTRY SCALE	CROSS-IND SCALE	ELEC	ROW VARIETY (-1)	REG VARIETY (-1)
1	Food products	***0.9849***	-0.0069	0.0049	-0.0139	----
		15.55	-1.33	0.087	0.069	
2	Beverages	***0.4653***	0.0098	-0.0167	***0.1671***	----
		5.22	1.35	-0.17	***2.06***	
3	Tobacco	***0.8757***	***-0.0237***	0.1009	0.0071	0.0138
		8.71	***-2.12***	0.79	0.02	0.34
4	Textiles	***1.2169***	***-0.0286***	0.0366	-0.0822	0.0066
		19.48	***-3.22***	0.37	1.39	0.29
5	Wearing apparel	***1.0281***	***-0.0144***	-0.0651	0.0039	----
		21.38	***-2.43***	-0.97	0.12	
6	Footwear	***0.7266***	-0.0023	-0.0693	***0.5435***	-0.0263
		5.61	-0.18	-0.55	***2.10***	-1.56
7	Wood prods	***1.1200***	-0.0125	***0.1538***	***-0.1658***	***0.0626***
		22.81	-1.83	***2.00***	***-2.54***	***6.77***
8	Furniture	***1.0528***	***-0.0334***	0.1280	-0.0112	----
		10.84	***-3.61***	1.25	-0.10	
9	Paper and prods	***1.1224***	-0.0146	0.2057	-0.7455	-0.0143
		11.10	-1.08	1.40	1.19	-0.41
10	Printing and pub	***1.3413***	-0.0190	0.1087	***-1.2156***	0.0682
		13.15	-1.68	0.87	***-2.15***	1.79
11	Industrial chems	***0.8285***	-0.0136	0.1516	-0.3122	----
		18.43	-1.45	1.45	-0.73	
12	Other chemicals	***1.0189***	***-0.0236***	***0.2719***	0.1922	----
		13.18	***-2.74***	***2.83***	0.41	
13	Rubber prods	***1.2352***	-0.0095	-0.0732	-0.1122	----
		15.90	-1.12	-0.88	0.58	
14	Plastic prods	***1.2678***	***-0.0196***	-0.0631	***-0.7078***	0.0272
		21.66	***-2.88***	-0.92	***-5.01***	0.74
15	Other non-metallic	***0.6646***	***0.1636***	-0.0950	-0.1307	***0.3833***
		7.36	***1.97***	-1.03	0.29	***3.91***
16	Fab. Metal prods	***1.3809***	***-0.0264***	0.0036	-0.4584	----
		45.48	***-4.94***	0.061	1.55	
17	Machinery etc. non elec	***0.9425***	-0.0087	-0.0333	-0.1716	***0.1168***
		11.19	0.80	0.27	-0.24	***2.82***
18	Machinery elec.	***1.0050***	0.0047	0.0538	0.0996	***0.0981***
		20.44	0.77	0.81	0.28	***3.19***
19	Transport equip.	***1.3747***	-0.0060	-0.1375	***-1.8108***	-0.0792
		26.56	-0.076	-1.54	***-2.51***	1.08
20	Prof and scientific	***0.7678***	0.0211	-0.2447	-1.752	-0.0836
		7.64	1.57	1.79	1.39	1.71

T -stats in second line of each box. Regression results In log first differences- dependent variable is log difference of real output.

Table 2: ASEAN Industry specific results. Panel 2 - regional and ROW suppliers

	INDUSTRIES	INDUSTRY SCALE	CROSS-IND SCALE	ELEC	ROW SUPPLIER(-1)	REG SUPPLIER (-1)
1	Food products	***1.0428***	-0.0068	0.0160	-0.0380	----
		18.93	-1.53	-0.29	-0.73	
2	Beverages	***0.4146***	***0.0181***	0.0151	***-0.3067***	----
		4.39	***2.20***	-0.16	***-2.38***	
3	Tobacco	***0.9628***	-0.0162	0.0967	0.1070	0.2099
		11.17	-1.66	0.74	0.64	0.35
4	Textiles	***1.2625***	***-0.0245***	0.0258	-0.0912	0.0390
		20.23	***-3.09***	0.268	-1.13	0.77
5	Wearing apparel	***1.0737***	***-0.0132***	-0.0597	***-0.1163***	----
		24.26	***-2.55***	-0.90	***-3.73***	
6	Footwear	***0.6568***	-0.0077	0.0261	-0.0108	0.0289
		6.06	-0.67	0.21	0.08	0.69
7	Wood prods	***1.096***	-0.0094	0.1191	-0.0318	-0.0223
		19.67	-1.30	1.31	-0.48	-1.01
8	Furniture	***1.0908***	***-0.0252***	0.1093	0.0523	---
		12.22	***-3.09***	1.08	0.59	
9	Paper and prods	***1.0464***	-0.0078	0.2216	-0.1506	-0.0491
		12.11	0.66	1.59	0.72	-1.47
10	Printing and pub	***1.2715***	-0.0212	0.0662	-0.2224	-0.0833
		14.19	0.30	0.53	1.37	1.85
11	Industrial chems	***0.8010***	-0.0024	0.1336	-0.0818	----
		16.20	0.30	1.28	0.93	
12	Other chemicals	***0.9479***	***-0.0189***	***0.2481***	-0.1029	----
		12.15	***-2.47***	***2.59***	0.91	
13	Rubber prods	***1.1880***	-0.0095	-0.0658	-0.0423	----
		17.82	1.36	-0.81	0.37	
14	Plastic prods	***1.3938***	***-0.0262***	-0.0688	-0.0604	***0.1936***
		24.36	***-4.02***	-0.95	-0.72	***2.28***
15	Other non-metallic	***0.7900***	***0.0208***	-.1551	0.0452	0.0261
		8.58	***2.81***	-1.65	0.32	0.35
16	Fab. Metal prods	***1.3925***	***-0.0221***	-0.0067	-0.0334	----
		41.02	***4.57***	0.11	0.64	
17	Machinery etc. non elec	***0.9207***	-0.0075	-0.0886	0.1567	0.0631
		12.97	0.75	0.72	1.53	1.61
18	Machinery elec.	***1.0657***	0.0001	0.01920	-0.0533	-0.0041
		20.55	0.023	0.28	0.59	0.07
19	Transport equip.	***1.3853***	-0.0088	-0.1359	-0.0231	0.0441
		25.13	1.24	1.57	-0.21	0.37
20	Prof and scientific	***0.5875***	***0.0269***	-0.2200	-0.0665	0.0225
		5.28	***2.02***	-1.57	-0.37	0.16

T -stats in second line of each box. Regression results In log first differences- dependent variable is log difference of real output.

Table 3 : Intensity of Intermediate Goods Exports, 1996

	IDN	MYS	PHL	THA	SGP	WLD
IDN	na	1.64	2.73	0.86	3.50	0.99
MYS	1.45	na	1.71	2.20	7.89	0.98
PHL	0.85	2.47	na	3.10	2.76	0.99
THA	1.25	1.90	1.09	na	5.63	0.98
SGP	na	12.6	2.85	3.76	na	0.97

Source: Diwan, Ishac and Bernard Hoekman, *Competition , Complementarity and Contagion in East Asia.* Centre for Economic Policy Research Discussion Paper No. 2112, March 1999.

References and Bibliography

Abbott, T.A., Z. Griliches and J.A. Hausman. 1989. "Short Run Movements in Productivity: Market Power Versus Capacity Utilization" (mimeo).

Baldwin, R. and E. Seghezza. 1996. Testing for Trade-induced Investment-led Growth. NBER Working Paper 5416.

----------. 1997. "International Integration and Investment-led growth in Developing Nations", paper prepared for the World Bank - IECIT.

Baldwin, R. E. and A. J. Venables. 1995. " Regional Economic Integration". Chapter 31 in Handbook of International Economics, Vol. III. Edited by G. Grossman and K. Rogoff, North Holland, Amsterdam.

Baltagi, B. 1995. Econometric Analysis of Panel Data. John Wiley & Sons Publications, New York.

Basu, S. and J.G. Fernald. 1995. "Are Apparent Productive Spillovers a Figment of Specification Error? NBER Working Paper, # 5073.

Burnside, G. Eichenbaum and Rebello. 1996. "Capital Utilization and Returns to Scale", NBER *Annual Volume On Macroeconomics*.

Burnside, G. 1996. "Production Function Regressions, Returns to Scale, and Externalities", *Journal of Monetary Economics*, 37, 177-201.

Brada J.C. and J.A. Mendez. 1988. "Notes: An Estimate of the Dynamic Effects of Economic Integration", *The Review of Economics and Statistics*, 163-168.

Caballero R. and R. Lyons. 1992. "External Effects in U.S. Procyclical Productivity" , *Journal of Monetary Economics*, 29, 209-225.

Caballero R. and R. Lyons. 1991. "External Effects and European Integration" in L.A. Winters and A.Venables (eds.) European Integration: Trade and Industry. Cambridge University Press.

Caballero R. and R. Lyons. 1990. " Internal Versus External Economies in European Industry", *European Economic Review*, 34, 805-830.

Caceres, L. R. 1994. "Central American Integration: Its Costs and Benefits", *Cepal Review*, 54, December, 111-128.

Cassella, A. 1996. "Large Countries, Small Countries and the Enlargement of Trade Blocs", *European Economic Review*, 40, 389-415.

Coe, D and E. Helpman. 1995. "International R&D Spillovers", *European Economic Review*, 39, pg. 859-887.

Davidson, R. and J. G. Mackinnon. 1993. Estimation and Inference in Econometrics, Oxford University Press, Oxford.

De Melo, J., C. Montenegro and A Panagariya. 1993. "l'Integration Regionale Hier et Aujourd'hui", *Revue d'Economie du Developpement*, February, 7-48.

De Melo, J., A. Panagariya, and D. Rodrik. 1992. " The New Regionalism: A Country Perspective", CEPR Discussion Paper No. 715, London.

Diwan, Ishac and Bernard Hoekman, *Competition , Complementarity and Contagion in East Asia.* Centre for Economic Policy Research Discussion Paper No. 2112, March 1999.

Echavarria, J. J., 1998. "Trade Flows in the Andean Countries: Unilateral Liberalization or Regional preferences?", Organization of American States, Washington.

Edwards, E. 1994. "Trade and Industrial Policy Reform in Latin America", NBER paper No. 4772. Boston, MA.

Feenstra, R.C. 1994. "New Product Varieties and the Measurement of International Prices" *The American Economic Review*, Vol 84, No. 1, March, 157-177.

Freenstra, R.C. and J.R. Markusen. 1994. "Accounting for Growth with New Inputs", *International Economic Review*, 35, No. 2.

Feenstra, R. C., and D. Madani, T. Yang, C. Liang. 1999. "Testing Endogenous Growth in South Korea and Taiwan", Journal of Development Economics, Volume 60, issue 2, pages 317-341.

Foroutan, F. 1997. "Does Membership in an FTA Make a Country More or Less Protectionist?" Draft, May, International Trade Division, The World Bank.

Grossman, G. and E. Helpman. 1991. Innovation and Growth in the Global Economy. The MIT Press, Cambridge, MA.

Hall, Robert E. 1990. "Invariance Properties of Solow's Productivity Residual" in Growth/Productivity/Unemployment edited by Peter Diamond. MIT Press, Cambridge, MA, pg. 71-112.

Hall, Robert E. 1988. "The Relation between Price and Marginal Cost in U.S. Industry" *Journal of Political Economy* , Vol. 96, No. 5, pg. 921-947.

Harrison, A. E. 1994. "Productivity, Imperfect Competition and Trade Reform", *Journal of International Economics*, 36, 53-73.

Henrekson, M, et. al. 1996. Growth Effects of European Integration, CEPR Discussion Paper No. 1465, September, London.

Hsiao, C. 1993. Analysis of Panel Data. Econometric Society Monographs No. 11. Cambridge Univ. Press. Cambridge

Italianer, A. 1994. "Whither the Gains from European Economic Integration?", *Revue Economique*, No.3, May, 689-702.

Judge, G., et. al. 1985. Chapter 11 of The Theory And Practice of Econometrics, Second Edition. John Wiley & Sons Publications, New York.

Madani, D. H. 1997. "Imperfect Competition, Economies of Scale and the Impact of Government Policies on Productivity: S. Korea and Taiwan, 1972-1991". Ph.D. Dissertation Manuscript, University of California, Davis.

Madani, D. H. 2001. "South-South Regional Integration and Industrial Growth: The Case of the Andean Pact", DECRG-Working Paper Series, The World Bank.

Markusen, J. R. and A. J. Venables. 1998. "Foreign Direct Investment as a Catalyst for Industrial Development". Mimeo. DECRG, The World Bank.

Ng, Francis. 1994. Trade Liberalization Review. Mimeo. DECRG-Trade, World Bank.

Puga, D. and A. J. Venables. 1997. "Trading Arrangements and Industrial Development". Policy Research Working Paper No. 1787. The World Bank.

Rivera-Batiz, L. and D Xie. 1992. "Endogenous Growth in Open Economies" in *American Economic Review Papers and Proceedings*, Vol. 82, No. 2, May, 422-427.

Rivera-Batiz, L. and P. M. Romer. 1991. "Economic Integration and Endogenous Growth" , *Quarterly Journal of Economics*, Vol. 56, Issue 2, May, 531-555.

Robson, P. 1993. "The New Regionalism and Developing Countries", *Journal of Common Market Studies*, Vol. 31, No. 3, September, 329-348.

Ruhashyankiko, J. 1997. "Does Regional Integration Create Specific Dynamic Effects?" Draft. DECRG (trade), World Bank.

Walz, Uwe. 1997. "Dynamic Effects of Economic Integration: A Survey".*Open Economies Review*, 8:3, 309-326.

Appendix 1

MALAYSIA – brief review[52]

General:

Malaysia is a mid-size economy, with a population of some 18.5 millions.
The country experienced a recession in 1985-86. Since then and up to 1992, the country has averaged annual GDP growth of 9 percent.
1992 was marked with rising price levels, tightening labor markets, an appreciated currency and a leveling off of FDI.
External balance: concerns about the large and growing deficit in the services account.
Also, while exports remained strong in 88-92, rapid imports growth has wiped out the trade surplus of early 1990s. Most of the current deficit is due to the services account deficit and the high import content of domestic manufacturing.

The recent rapid growth of imports 88-91 is associated with the rapid expansion of the manufacturing sector in Malaysia, which is highly import dependent.
For instance, the import of manufacturing investment goods increased an annual average of 45.7 percent in 1987-1991. The dependence of the Malaysian manufacturing sector imported raw material grew by 28.3 percent in 1987-91.

This high dependence on imports filters through to the high import content of exports, leading to low net export values and low foreign exchange retention. For instance, in 1991, gross total exports of manufactured goods was M $61 Billion, but net exports (less intermediate and investment goods), was M$14.8 Billions, or 24.1 percent of total manufactured goods. This signals industrial shallowness and could be remedied in the long run as industrialization deepens.

Trade Policy:

Import tariffs are not very high, but there are a host of administrative tools used as protectionist measures.
Between 88-92: tariff reductions were made from 1100 to 600 items. Simple average ad valorem tariff was 15% in '92 and 14% in 1993. In 1991 about 31% of the imports were duty free and 47% of imports were subject to 0-5% tariff.
Malaysia has bound 95% of tariff items to <1% tariff rates. There are no tariff quotas.
There are import prohibitions and licensing requirements which are not fully transparent in Malaysia. This licensing seems to apply to a wide range of products. Import quotas (QRs) are applied to specific imports to protect domestic producers. Export duties were levied on a few raw materials and mining products. Malaysia has maintained a strong export promotion program without having direct export subsidy.

---

[52] Data information on Malaysia was obtained from F. Ng's background paper (1994) and Malaysia CAS, 1992, Report No. 10758-MA.

Trade composition:

Exports:
In 1975, 64.4 percent of exports was in primary goods (petroleum, palm oil, rubber, tin, etc...) while manufactured goods constituted 22 percent of exports.
By 1991, manufactured goods were 64.8 percent of total exports, half of which is concentrated in electrical and electronic machinery and appliances. The net export value is rather low in this export sub-sector.
Textile, clothing and footwear only form 5 percent of total exports while primary products (woods) captured 34.4 percent of total exports.
The comparative advantage of the country lies in woods, engineering goods and textiles. And there is need for diversification of the export base.

Imports:
Primary products imports has fallen from 35 percent in 1975 to 12.1 percent of total imports in 1991. Manufacturing imports has risen from 55.3 percent to 77 percent in the same time period, with the largest increase concentrated in Machinery and transport equipment (from 32.6 to 53.6 percent of total imports).

Market diversification:
ASEAN countries (Brunei, Indonesia, Philippines, Singapore and Thailand) are major trade partners throughout the period 1975-1991.

Their share in Malaysian exports has slightly increased from 24.8 percent in 1975 to 29.2 percent in 1991 at the expense of EEC destinations. The US share in Malaysia's exports increased were a slightly over the 25 years, (16 to 16.9 percent). Japan started out with 14.3 percent, its share as Malaysia export destination increased in the 1980s (22-24.5 percent) to fall back to 16 percent by 1991.

On the import side, EEC has lost markets in Malaysia, while the US, Japan and the ASEAN have gained. Imports originating from the ASEAN were 15 percent of total imports to Malaysia in 1975. By 1991, this number seemed steady at 19 percent. Japan's (US) share in Malaysian imports has risen from 20 to 26 percent (10.7 to 15.3 percent) in the same time period.

Exchange rate management: fairly liberal system. Some authorization for borrowing and fund transfers, but nothing extraordinarily limiting.
Steady 4.5 percent depreciation of real effective exchange rate between 1986-1991. In early 1992, nominal exchange rate appreciated by 10 percent.

1992: domestic demand is pushing the growth. External sector, strong export growth expected, but so is strong import growth: so no significant contribution to overall growth from there.

PHILIPPINES – brief review[53]

General:

From 1983-1993 : a severe debt crisis and un-sustained growth , affected income so severely that in 1993 real per capita income was the same as 1977. 1993 was a year of pronounced growth.
Export of manufactured goods boomed by 20 percent in dollar terms, fostering total merchandise export growth of 16 percent. Imports increased sharply as well (16 percent), driven by a 40 percent increase in imported capital equipment, especially power generators. (1992 growth potential was stumped by repeated and extensive electricity shortages).
Philippines has always had a high import intensity of exports, especially for the two major product categories: electronics and garments. The average import content of these two main exports in 1977-85 was 75 and 60 percent respectively. However, reforms in trade, privatization, liberalization of the exchange rate and other structural reforms in the mid-late eighties are beginning to have an effect: this import dependence has decreased to 58 and 55 percent respectively for the 1986-93 period.

In the 70s, sustained yet fragile economic growth averaging 5 percent per year was periodically interrupted by foreign exchange crises brought on by surging imports. The mid-1980s the country experienced a severe debt crisis.
Post reform robust growth during 1986-1989 did not continue in the 1990s.

1992 was also accompanied by a liberalized foreign exchange regime that lead to large foreign capital inflows to benefit from high domestic interest rates and the political and social stability. The resulting appreciation of the peso hurt growth and exports.
Before 1992 reform, despite the fact that there always was a de facto openness because of workers remittances, foreign exchange trading was limited to a few registered dealers and exporters were required to surrender all foreign exchange earnings.
The 1992 foreign exchange market liberalization led to virtual convertibility of the peso. Foreign exchange retention by exporters was first set at 40 percent and then moved to 100 percent, easing access to dollar. Only minor foreign exchange restrictions have been retained.

The sectoral shares of employment have changed only slowly, with the small changes being from informal agriculture to informal urban services. The move from agriculture to services employment has been indeed slow: from 60% of employment in 1970 to 41 percent in 1993.
Labor employed in manufacturing, where labor productivity is five time the level of agriculture and three times that of services has hovered at 10-12 percent for 30 years.

---

[53] Information obtained from F. Ng's 1994 Background paper and "Philippines – recent macroeconomic developments and reform efforts" World Bank – report no. 13109-PH. 1994.

About two-thirds of the tax revenue comes from domestic sources and one-third from international trade taxes.
Since the tax reforms of 1986-88 import duties are declining in importance, having provided over 25 percent of taxes at the beginning of the 1980s.

Trade Policy Reform:

Philippines began trade reform in 1980 supported by two World Bank structural loan reform. First step was to shift away from QRS to tariffs, the second was to reduce tariff rates.
On the tariff reform front, average nominal tariff level was reduced from 41 percent in 1980 to 28 percent in 1983. The tariff spread was reduced from 0-100 percent to 0-50 percent.

The government adopted a phased tariff reduction program in 1991-92. This led to another major tariff reform implementation between 1991 to 1995: simple average tariff was reduced from 25 percent in 1991 to 20 percent in 1995. Weighted average tariff was 21 percent in 1980 and 18 percent in 1991.
The phased reform involved revision of tariff codes, lowering overall levels of tariffs protection and dispersion across sectors. It is set out a four year phase down of rated, capped at 50 percent, with most items between 3-30 percent.
In 1994, new efforts at tariff reforms were made. It is expected that by 2001 a uniform tariff of 5 percent will be in place.

The quota reform was also major: between 1981 and 1992, 2761 items were removed from the QR protection list. By 1993, still 135 items under QR protection. By 1994, only 69 items left . There are still explicit import quota applied to horses, cattle, etc... and implicit import quota operated on certain products with non-transparency, such as cars and electronics.

While there are no tariff quotas, import licensing is a regular practice since 1980.
During 1980-83 921 consumer items were liberalized but most still were subject to import approval, especially during the crisis period 1983-85. With the resumption of liberalization in 1986 936 items or 62 percent of items subject to import approval were completely liberalized. In terms of the number of categories, about 10 percent of import items were still subject to import restrictions compared to more than 30 percent in 1980 . By 1988, only 5 percent of the import items were subject to import restrictions.

Reforms of the indirect tax system removed most of the discriminatory aspects of the domestic tax structure against imports.

Appendix 2

ASEAN Group

- Created in 1967 by Indonesia, Malaysia, Philippines, Singapore and Thailand. Brunei joined in 1984, Vietnam in 1995.

- Main objective was to strengthen social and economic stability and peace in the region.

- Economic cooperation or reaping the benefits of a RIA were not a early primary goal. In fact, ASEAN's PTA dates from 1977.

- PTA was limited in scope and effect, with members participated half-heartedly.

- Renewal of the Pact in 1991 with a proposal for ASEAN FTA.

- ASEAN FTA adopted in 1992 with much broader scope in goods liberalization and a full implementation date of 2008.

- In 1993 and 1994 meetings the liberalization schedule was accelerated to achieve full implementation of fast-track items by the year 2000 and normal track tariff reductions by 2003.

- At the 1995 Bangkok summit, this schedule was further accelerated with regards to reduction in tariff schedules, removal of NTBs, transparency in standards, tariff harmonization...

- Results: No strong impact on trade patterns yet. It may be too soon. The ASEAN group may have had indirect positive impact on regional trade because of its avowed political and social goals.

Frankel and Wei (1996), Foroutan (1997), official website of Asean Secretariat

Appendix 3

Data

The major concern throughout is compatibility of data across countries and the procedures applied to them to ensure the possibility of comparative analysis. For this reason, and serious weaknesses with data originating from national sources, we have relied on standardized international organization databases such as IMF, World Bank, UNIDO and Comtrade, using domestic sources as complementary sources when possible.

The analysis is based on 22 industries[54] for 1971-1994. The analysis concentrates on Philippines, Malaysia and Singapore[55]. The 3-digit data on the countries' industrial gross output production, gross fixed capital formation, number of employees, labor remuneration and intermediate inputs were obtained from UNIDO database. We calculate intermediate inputs as the difference between gross output and value added. Labor and intermediate input shares are calculated as shares of gross output and capital as the remainder. We used GDP deflators to create real series when necessary.

Capital stock is calculated using the modified version of Goldsmith perpetual inventory method:

$$K_i(t) = I_i(t) + (1-d_i)I_i(t-1) + (1-d_i)^2 I_i(t-2) + ...+ (1-d_i)^n K_i(t-n)$$

Investment series was deflated using each country's implicit invesment price deflator and some industry level data gaps were filled using the national gross domestic fixed investment growth rates. Both sets of data are from IMF statistics. A 10 percent discount rate was applied in the formula. This is typical in the literature (e.g. Caballero and Lyons) when actual depreciation rates are not available.

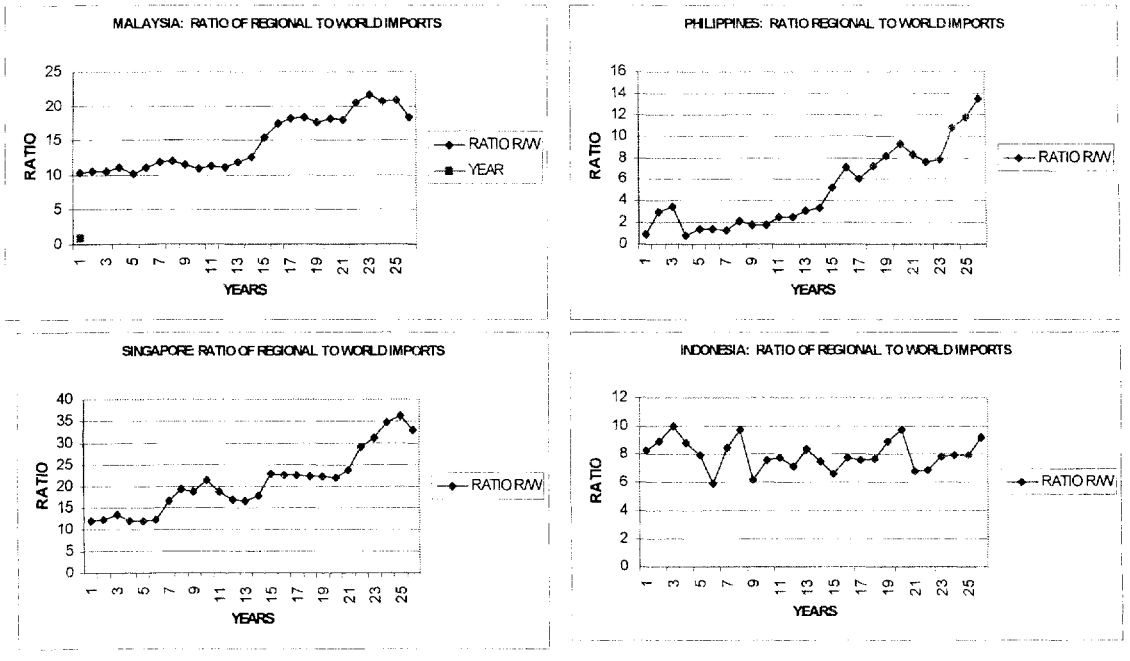
The import data is from COMTRADE UN database. It reports the value of bilateral imports in US dollars by industrial or product categories for 1970-1994. We use 3 digit ISIC and 4 digit SITC data series from this database. After calculating the supplier and variety series by industry categorization and supplying nation, we scale them using country specific input-output tables. This is to account for the impact of the imported intermediate inputs on own and other industries.

---

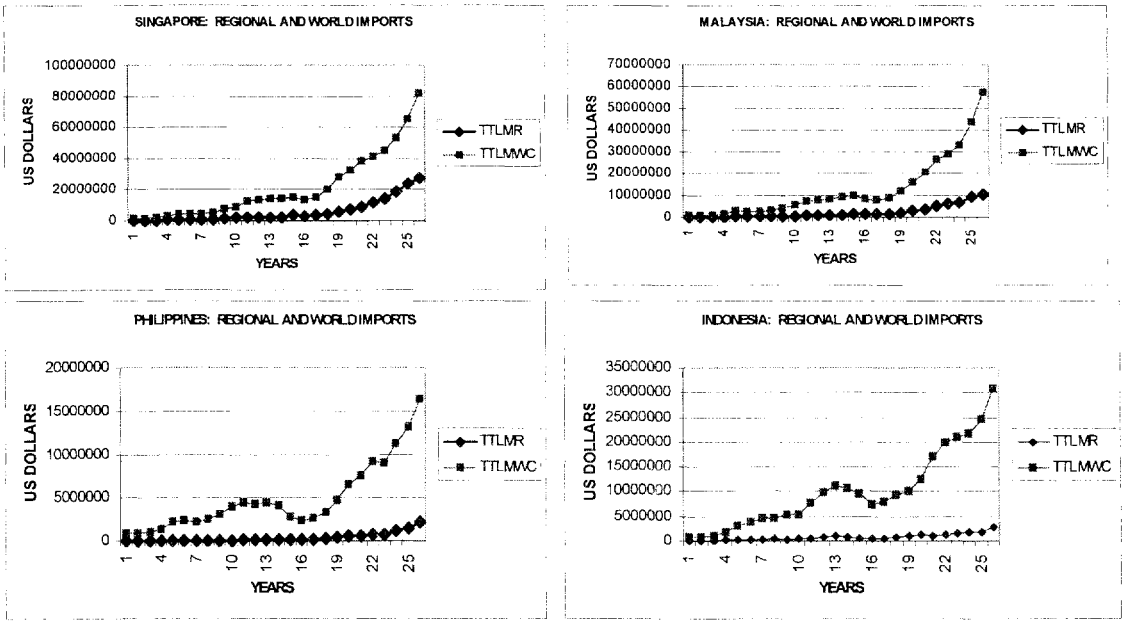
[54] We discarded coal and petroleum (354, 353), leather products (323) , other chemical industries (352), non-ferrous metals (372), and pottery, china, etc...(361) for either severe data deficiencies or severe and unexplainable changes in data values.

[55] We could not pursue the study of Thailand and Indonesia because of significant missing data problems.

Graph 1a: Ratio of Regional to World Imports by 4 ASEAN Members
(Industrial Products, 1971-1995)



graph 1b: Regional and World Imports by 4 ASEAN Members
(Industrial Products, 1971-1995)



Policy Research Working Paper Series

	Title	Author	Date	Contact for paper
WPS2681	On the Duration of Civil War	Paul Collier Anke Hoeffler Måns Söderbom	September 2001	P. Collier 88208
WPS2682	Deposit Insurance and Financial Development	Robert Cull Lemma W. Senbet Marco Sorge	September 2001	K. Labrie 31001
WPS2683	Financial Policies and the Prevention of Financial Crises in Emerging Market Economies	Frederic S. Mishkin	October 2001	R. Vo 33722
WPS2684	From Monetary Targeting to Inflation Targeting: Lessons from Industrialized Countries	Frederic S. Mishkin	October 2001	R. Vo 33722
WPS2685	Monetary Policy Strategies for Latin America	Frederic S. Mishkin Miguel A. Savastano	October 2001	R. Vo 33722
WPS2686	Education, Earnings, and Inequality in Brazil, 1982–98: Implications for Education Policy	Andreas Blom Lauritz Holm-Nielsen Dorte Verner	October 2001	S. Benbouzid 88469
WPS2687	Geographic Patterns of Land Use and Land Intensity in the Brazilian Amazon	Kenneth M. Chomitz Timothy S. Thomas	October 2001	S. Hendrickson 37118
WPS2688	Aid, Shocks, and Growth	Paul Collier Jan Dehn	October 2001	A. Kitson-Walters 33712
WPS2689	Global Trade and Food Safety: Winners and Losers in a Fragmented System	John S. Wilson Tsunehiro Otsuki	October 2001	L. Tabada 36896
WPS2690	Ringing in the 20th Century: The Effects of State Monopolies, Private Ownership,and Operating Licenses on Telecommunications in Europe, 1892–1914	Scot Wallsten	October 2001	P. Sintim-Aboagye 37644
WPS2691	Evolution of Earnings and Rates of Returns to Education in Mexico	Gladys López-Acevedo	October 2001	M. Geller 85155
WPS2692	Introduction to Property Theory: The Fundamental Theorems	David Ellerman	October 2001	B. Mekuria 82756

Policy Research Working Paper Series

	Title	Author	Date	Contact for paper
WPS2693	Helping People Help Themselves: Toward a Theory of Autonomy-Compatible Help	David Ellerman	October 2001	B. Mekuria 82756
WPS2694	Financial Development and Financing Constraints: International Evidence from the Structural Investment Model	Inessa Love	October 2001	K. Labrie 31001
WPS2695	Trade, Credit, Financial Intermediary Development, and Industry Growth	Raymond Fisman Inessa Love	October 2001	K. Labrie 31001
WPS2696	Firms as Financial Intermediaries: Evidence from Trade Credit Data	Asli Demirgüç-Kunt Vojislav Maksimovic	October 2001	K. Labrie 31001