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Singapore's experience in ASEAN:
the nature of trade and inward investment

Mark Andrew Hiley

PhD thesis

University of Durham

Department of Economics

1994

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Abbreviations

AFTA	ASEAN Free Trade Agreement.
AIC	ASEAN Industrial Complementation.
AIJV	ASEAN Industrial Joint Venture.
AIP	ASEAN Industrial Project.
APEC	Asian-Pacific Economic Cooperation, a forum involving North American, East Asian and Australian economies, with a small secretariat in Singapore since late 1992.
ASEAN	Association of South East Asian Nations, formed in 1967.
EAEC	East Asian Economic Caucus.
EAEG	East Asian Economic Group.
EC	European Community.
EDB	Economic Development Board Singapore, was formed 1961.
FDI	Foreign direct investment.
GATT	General Agreement on Tariffs and Trade.
GDP	Gross domestic product.
GNP	Gross national product.
GSP	Generalised system of trade preferences for developing countries.
IIT	Intra-industry trade.
IMF	International Monetary Fund.
LAFTA	Latin American Free Trade Association, formed in 1960 and replaced by Latin American Integration Association in 1980.
MNC	Multinational corporations.
NAFTA	North American Free Trade Agreement, initialled in October 1992.
NICs	Newly industrialised countries.
OECD	Organisation for Economic cooperation and Development.
PAP	People's Action Party.
PTA	Preferential Tariff Agreements
RCA	Revealed Comparative Advantage
R&D	Research and Development
SITC	Standard International Trade Classification.
UK	United Kingdom of Great Britain and Northern Ireland.
UN	United Nations.
UNCTAD	United Nations Conference on Trade and Development.
US	United States of America.

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ABSTRACT

An attempt is made to examine the importance of the Pacific region to the economy of Singapore, using several standard methodologies in the international economics literature. Singapore's trade with and investment flows from the 'region' have been increasing significantly, while its interaction with Europe has diminished. Hence, in light of these developments, it is useful to explore the links between Singapore and the Pacific region, especially with respect to ASEAN.

The trade aspect of the thesis has been based on models developed by Balassa, who used them in an attempt to analyse the growth and development of the European Community. Firstly, in analysing the changing comparative advantage in the region, a measure of revealed comparative advantage is adopted, Balassa's export specialisation ratio (1965). Secondly, the changing pattern of trade in manufactured goods is examined in relation to changing country characteristics by the use of an econometric technique - ordinary least squares - (Balassa 1979). Then, using a measure of intra-industry trade (Grubel and Lloyd 1975), the figures are examined for ASEAN along with a study of intra-industry trade by commodity group for Singapore. Balassa's method of estimating trade creation and trade diversion (1963), is used in order to test the effectiveness of economic cooperation in ASEAN.

Singapore adopted an open strategy towards Foreign Direct Investment (FDI). The effects on Singapore can be conveniently reviewed under the standard industrial economics format of structure, conduct and performance. Using Dunning's adaption of the 'industrial organisation approach' (1973), it is possible to show, by examining the statistical relationship between a number of structural variables and the sectoral distribution within the manufacturing industry (correlation technique - bivariate normal distribution), that the ownership advantages of multinational corporations have assisted Singapore's economic restructuring towards higher allocative and technical efficiency; and that multinational corporations have adjusted to the changing locational advantages of Singapore's resource endowments rather more positively than national firms.

Introduction

The work undertaken aims to investigate the nature of the economic development of the ASEAN countries. However, if one is to investigate ASEAN, it is above all necessary to analyse Singapore's position within this grouping. Singapore's dominant position at the commercial heart of ASEAN is manifested in two ways. The island carries a great deal of weight in the exchanges that takes place within ASEAN, but it also acts as a channel for a considerable part of the flows between ASEAN and the rest of the world; it finds itself part of an intricate network of economic relations at once intra- and extra-regional.

An attempt is made to examine the importance of the Asia-Pacific region, particularly ASEAN, to the economy of Singapore. Singapore's trade linkages with the Asia-Pacific countries are rather extensive. They not only account for the bulk of Singapore's exports and imports but also contribute most significantly to the growth and expansion of its external trade. Using several standard methodologies in the international economics literature, an analysis of the relation between trade and development in Singapore is provided - decomposing Singapore's exports and imports by country and product, from the 1960s to the beginning of the 1990s. Particular emphasis is placed on the region's evolving pattern of trade in and production of manufactured goods, and the development of policies towards the manufacturing sector, including industrial development through foreign investment. It is hoped that this approach will give further insights into the factors that have played an important role in Singapore-Pacific trade relations.

Singapore has a very open and outward-looking economy. The share of international trade in the country's GNP is relatively high by developing country standards. Singapore's trade regime is liberal, with protection levels that pale in comparison with most developing countries. Government intervention has played a prominent role. Therefore, this growing Pacific orientation in Singapore's trade relations may be seen essentially as a product of deliberate policy distortions rather than just a market phenomenon. Liberal trade policies, export-oriented industrialisation, and export diversification, have helped Singapore to become what it is today. This implies that government policies have apparently worked with, rather than against, the market forces, thereby expediting progress towards the internationalisation of the economy of Singapore.

The preceding remarks are meant to pave the way for the analysis that is to follow. For, the approach adopted implies that changes in trade trends, shifts in the country's comparative advantage, and movements in its resource allocation cannot be considered in isolation without relating them to external factors. Thus, a change in the structure of Singaporean exports, for instance, may have to be related to industrial restructuring taking place elsewhere.

The interface between trade flows and investment linkages has helped strengthen the Singapore-Pacific nexus. Industrial development in Singapore is closely related to structural changes and industrial adjustments taking place in the industrial countries and the other NICs, especially those in the Asia-Pacific region. Some activities which have been edged out or phased out in the process of industrial restructuring in these countries have migrated to Singapore through foreign direct investment channels.

The process of rapid growth in output and intra-regional trade and investment in Asia is sometimes referred to as a 'virtuous circle' of economic development. Foreign capital inflows have combined with a favourable policy environment, industrialisation and trade expansion to achieve a sustained acceleration in economic growth. The efficient use of resources, increased trade and rapid growth have, in turn, stimulated an increase in the flow of intra-regional foreign investment. This process is gradually helping to internalise Asian growth and to reduce Asia's vulnerability to external shocks, although the latter factors are and will continue to wield significant influence on Asian economic performance. Foreign investment activities, in turn, have helped open up additional conduits for trade flows between the home and the host countries. As a result, the complementarity of the Singapore economy to the rest of the Pacific has grown even stronger, as manifested by the increased intra-industry trade flows between Singapore and its major sources of foreign direct investment in the Asia-Pacific region.

Singapore has benefited immensely from its strategic geographic location by taking advantage of opportunities arising from the dynamics of the Asia-Pacific region. Major structural changes have taken place in the industrial countries of the Asia-Pacific region since the 1970s, especially in Japan, partly prompted originally by the rapidly rising energy and raw material prices. The successful export thrust of Singapore has provided incentives for the rest of ASEAN to emulate it. Singapore did not lose the opportunity to profit from the international migration of industries forced by 'product cycles' (Vernon 1979).

As a response to the changing economic environment and domestic comparative advantage, the Asian countries have undergone significant structural change and readjustment. They are now in the process of finding their own niches in the production of goods and services for the world market. Therefore, changing comparative advantage will have to be dealt with in order to determine whether or not the case of Singapore accords well with the predictions of trade theory. This is done by identifying changes in a measure of revealed comparative advantage (RCA), the export specialisation ratio (Balassa 1965), for a number of countries in the Asia-Pacific region.

There is evidence to show that intra-industry trade flows between Singapore and the ASEAN countries, and for that matter, between Singapore and the developed countries of the region, are increasing, as will be seen in chapter three, and that industrial linkages between Singapore and the Pacific are growing stronger, as will be seen in chapter five. It is important to note, that the relationship between Singapore and the rest of the Pacific, especially the developed countries and ASEAN, is largely one of complementarity rather than competition, given the differences in their resource endowments.

One of the most important trends in trade, especially trade in manufactured goods, has been the growth of intra-industry trade (IIT). This has been defined as the simultaneous export and import of products belonging to the same industry (Grubel and Lloyd 1975). Since the introduction of the concept of intra-industry trade (Balassa 1966), a vast literature has developed on the subject. Efforts at the measurement of the extent of intra-industry specialisation (its relative importance within a country's total trade), have been followed by research on the theory of intra-industry trade and its determinants. Thus the changing pattern of trade in manufactured goods can be examined by the use of econometric techniques. One technique, as used by Balassa, analyses the determinants of intra-industry trade in terms of country characteristics affecting this trade. The results are interpreted in terms of changes in the extent, and in the determinants of intra-industry specialisation as countries reach higher income levels in the process of economic development.

Using the Grubel and Lloyd measure of intra-industry trade, the figures can be examined for the ASEAN region along with a study of intra-industry trade by commodity group for the economy of Singapore, to identify the growth sectors within the economy. The study should show that over time there has been a tendency for the ASEAN countries to move away from inter-industry trade. Furthermore, the commodity composition, in the case of Singapore, is of interest not only for the information it reveals about Singapore's trade patterns, but also because it gives some indication of how the development policies have changed over time.

The formation of the European Community represents one of the major economic events of the post war era. This so called 'economic community' encouraged the view that economic integration could be used as a means of developing trade, especially intra-regional, sustaining growth and thus becoming of interest for developing countries. The importance of ASEAN cooperation must be examined in order to determine whether this group of countries has had a favourable effect on economic growth. This is done by analysing the trade effects of ASEAN integration using a test of trade creation and trade diversion (Balassa 1963), investigating the pattern of imports prior to and after the point of integration. The method is based on the assumption that income elasticities of import demand would have remained unchanged in the absence of integration, ie. that the establishment of ASEAN was the

only major measure influence on changes in the pattern of imports as between the pre-integration and the post-integration periods.

The role of foreign capital in economic growth is controversial. Neither the theoretical arguments nor empirical evidence is clear-cut or conclusive. In the early 1960s a group of economists had argued that foreign capital inflows invariably had a favourable effect on economic efficiency and growth. (Rosenstein-Rodan, 1961). In the early 1970s the assumptions and findings of this group were challenged by the 'displacement theorists' who argued that foreign capital could be immiserising. (Areskoug, 1973). Recent developments and experiences in Asian developing countries have warranted a further consideration of this issue.

There appears to exist a close link between trade in manufactures and foreign investment activities in the economy of Singapore. This seems to be the case especially with regards to intra-industry trade flows, for intra-firm sales apparently constitute the bulk of such flows. Thus, an important explanation of Singapore's trade phenomenon lies in the pattern of foreign investment in the country. Foreign direct investment, especially from the Asia-Pacific countries, has facilitated the structural transformation of industry in Singapore and ASEAN, by injecting not only capital but also technology, as will be seen in chapters five and six. The significant demonstration effect of all this on the rest of the economy is discernible even though it is hard to quantify.

In Singapore, foreign direct investment and multinational corporations have played a major role in the development of the economy. However, in order to test the extent the operations of MNCs have affected economic structure or changes in economic structure in Singapore, the thesis will draw on the theory of foreign direct investment. First, in the 1960s and 1970s, a number of Western-based economists approached the study of overseas investment through micro-economic analysis of the multinational firm (Kindleberger, 1969; Caves, 1971; Hymer, 1976; Horst, 1978). Second, beginning in the late 1970s, a number of Japanese economists used a macro-economic perspective based on comparative advantage to analyse the special nature of Japanese overseas investment (Kojima, 1973; 1978). Both approaches focused heavily on the supply side - either the internal dynamic of the multinational firm, or the comparative advantage of the investor country.

Singapore adopted an open strategy towards Foreign Direct Investment (FDI) with the objective of taking advantage of foreign investment for the necessary restructuring of the economy of a small open state. Singapore relied on inward FDI in order to create the conditions for its own future outward FDI. The objective of this study is to analyse various aspects of foreign investment which were carried out by examining the statistical relationship between a number of structural variables and the sectoral distribution within the manufacturing industry. Using Dunning's adaption of the 'industrial organisation approach' (1973), it is possible to show that the ownership advantages of multinational

corporations have assisted Singapore's economic restructuring towards higher allocative and technical efficiency; and that multinational corporations have adjusted to changing locational advantages of Singapore's resource endowments rather more positively than national firms.

The authorities in Singapore took advantage of foreign investment in restructuring Singapore's manufacturing sector and overall development from a low wage and low productivity economy to a relatively high wage and high added value economy. The authorities did not hesitate to abandon whole low wage sectors of the economy to outward FDI of their own, in order to allow for higher added value productions at home. Thereby the government made use of certain political authoritarianism and of wage controls. But it did not regulate specifically inward or outward FDI, but rather the macroeconomic environment. This is a almost unique precedent in the developing world.

It is realised that the results will be limited as the question of restructuring ought to be answered on a world-wide scale, as the larger multinational corporations consider the world as their potential operating ground. The statistics on inward foreign direct investment in Singapore allow the testing of several hypotheses. The description of the development of Singapore's economy and its development strategy provides the background against which these hypotheses concerning determinants and effects of foreign direct investment in Singapore can be evaluated.

Intervention has been widespread by governments in the region. While less protectionist than the third world as a whole, few accepted western free trade principles. Many have used import controls to protect strategic sectors. At one time or another state-owned industries have played an important role in many of the economies, including South Korea, Taiwan, Indonesia, Singapore and Thailand. Many have not hesitated to direct the supply of credit to particular sectors.

Government intervention has always played a dominant role in the successful development of Singapore. Upon independence Singapore was not a low income country by today's standards; it had a well trained civil service, a well developed infrastructure and port, an excellent location and, above all, no large agricultural sector to support. The merit of the government's pragmatic policies is that it has exploited these initial conditions to the full. It used interventionist policies and market signals to accelerate economic growth while at the same time satisfying basic needs and providing a high level of public services.

It is claimed that development would be fastest when the government concentrated on two jobs: maintaining macroeconomic stability through conservative fiscal and monetary policies; and investing in people through public education, training and healthcare programmes. Beyond this, developing countries should rely on market forces. They should create as competitive as possible a regime in industry, commerce and financial sector. They should also eliminate all barriers to trade and foreign investment. Development will be rapid, provided countries find a way of: accumulating capital

readily; allocating resources efficiently; and catching up technologically. However, there is no presumption that any of these functions should be reserved exclusively for the private sector. The Asian economies appear to have used a mixture of market incentives and state intervention in each of these areas.

Economists have failed to give a clear answer to the question of growth in East Asia (Leipziger and Thomas 1994). Instead the issue has been a battleground for two competing and contradictory, schools of thought. The first - the neoclassical school - argues that East Asia succeeded because it did certain basic things right: low inflation, a stable framework of law, lots of domestic and international competition, relatively undistorted prices and plenty of education. The other - the revisionist school - emphasises state intervention. East Asia succeeded, say the revisionists, precisely because of the 'distortions' that governments deliberately introduced: if other countries, rich or poor, want to grow as quickly, they should stop praising market forces and put their bureaucrats in charge (The Economist, Oct 2nd-8th 1993).

Over the last thirty years the ASEAN countries have experienced successful economic development. It is remarkable, that over this period, almost all the Asian developing economies have deliberately moved away from policies of extensive state control of the economy and inward-looking industrialisation toward market and export-oriented policies. Few would have forecast in 1960 that not only Hong Kong, Korea, Singapore and Taiwan, but also Indonesia, Malaysia, Philippines and Thailand, almost all the countries of South Asia and China and Vietnam, would make liberalisation of trade, deregulation of industry and increasing autonomy for state enterprises major objectives of national economic policy since the 1980s.

The motive behind these policy reforms has been the realisation that inward-looking industrial development for a protected domestic market was building up relatively inefficient, internationally uncompetitive industries and, more generally, that excessive state regulation of industry inhibited industrial development and economic growth. An ingredient in almost all the reforms has been the belief that greater reliance on market forces, international competition and the price mechanism would make for a more dynamic economy and more efficient allocation of resources.

It goes without saying that this economic miracle needs to be understood. Much of the third world, especially the countries of sub-Saharan Africa, remains desperately poor. If the secrets of East Asia's success could be discovered and applied in other developing countries, an enormous advance in human well-being would be within reach. Nor should the lessons be confined to the world's poor countries. For years the big Western economies have been growing far more slowly than East Asia.

The world economy enjoyed moderate growth in the closing years of the 1980s, but the auspicious picture was not uniform. The industrial countries saw favourable developments in growth, trade, and investment. The growth in trade flows with the accompanying expansion in foreign investment has been, according to Beeman and Frank (1988), a manifestation of the increasing integration of the world economy. This trend towards globalisation has been attributed to two factors. One is technological: the explosive advances in the speed and effectiveness of international communication and transportation and the concomitant shrinkage in their real costs. The other is economic: the reduction or dismantlement of national barriers to the international movement of goods, services, technology, and capital. Outside of Japan and Germany, the main beneficiaries of this tighter world nexus have been the Asian NICs.

The remarkable growth in the region only partly reflects market-oriented policies. Singapore, Malaysia, Thailand and, to some degree, Taiwan, have welcomed foreign investment. Early developers such as Japan and South Korea used other devices, such as licences letting them copy foreign technology. But unlike many other developing countries none tried to rely on home grown technology. All of these countries have intervened selectively to promote particular industries, with varying intensity and success. The process of trying to shift industrial output towards high value added sectors is described by enthusiasts as "getting prices wrong in order to create dynamic comparative advantage".

' One of the biggest challenges for economists today is understanding the extraordinary success of East Asia. The region has nearly quadrupled per capita incomes in the past quarter of a century - a record unparalleled in economic history. On present trends it may begin to overtake much of the industrialised west early in the 21st century. The region has done far better than conventional theories predict, even allowing for such quantifiable pluses as macroeconomic stability, high rates of investment and a focus on exports.' (M. Prowse : Financial Times. April 26th 1993).

The Asian example poses a dilemma for bodies such as the IMF and the World Bank, especially in former communist countries. Does it still make sense to advocate a form of 'shock therapy' - the doctrine that deregulating and privatising everything as fast as possible is the optimum policy? Or should they recommend East Asia's slower, more interventionist path to economic maturity? It all depends on whether East Asia's deviations from orthodoxy can be replicated.

Chapter 1

Trade and Economic Development in the World Economy

The problem of economic growth in the short and medium terms is related to the long-term problem of economic development, which involves economic transformation along a continuum from reliance simply on primary production for export to the establishment of sophisticated, integrated industrial sectors. Current and future rates of growth in these economies are therefore closely related to their ability to make investments in productive capacity and infrastructure. However, as the developing countries have a relative lack of technical know-how and domestic capital goods industries, such investments in turn typically require a high proportion of imported goods and services, in particular capital goods from the developed countries. These imports can be financed basically in two ways: out of current export earnings and reserves of foreign exchange and through external borrowing or foreign investment.

A basic assumption of the post-war orthodoxy regarding trade and development in the contemporary world economy has been the implicit belief that the industrialisation of developing countries depended upon, and could proceed only on the basis of, development of exports for the markets of the industrial countries. In this context, trade among developing countries, although recognised as having a place within regional integration schemes intended to create larger 'internal' markets, was thought to be both impractical and irrelevant. Impractical because, given the fact that their exports were largely primary commodities and, in accordance with the 'factors-proportion' model, only labour intensive manufactures were thought possible, there did not seem to be much scope for significant trade expansion amongst them; and irrelevant because, after all, a developing country needed the 'hard-currency' of industrialised countries in order to meet payments for capital equipment and technology, as well as interest payments on borrowings from the industrialised countries (Giersch, 1974). So long as growth in the industrialised countries was high and developing countries had few manufactured products to export to developed countries, the arguments of the orthodoxy seemed to hold. However, with the slowing down of growth in the economies of the industrialised countries and the growing volume of exportable products of the developing countries, the various arguments and assumptions of the orthodoxy began to be called into question (Lewis, 1980).

For one thing, slower growth has put severe strains on the economies of developed countries and rising imports from developing countries have threatened the survival of certain of their high-employment industries. These difficulties have brought into sharp relief the limits imposed by the absorptive capacity of the industrial country markets. Even if it were politically feasible for the present industrialised countries to implement structural adjustment measures of the kind usually advocated in order to absorb a larger volume of imports from the developing countries, it is doubtful whether they could adjust fast enough, bearing in mind the burden of continuous economic and social dislocations

and associated adjustment costs. Finding sufficient avenues into which to adjust so as to maintain acceptable levels of employment on a continuing basis. Moreover, if all of the developing countries attempted to expand their manufacturing capacity based on exports to the developed countries, sooner or later, owing to a limited demand in relation to supply, a secular decline in their combined export earnings from manufactures, similar to that experienced in the case of primary commodities, would be the likely result (Lewis 1980).

Analytical issues

In regard to the subject of trade among developing countries two basic questions may be asked. Is this trade important, quantitatively? And does it matter, qualitatively?

The first question is descriptive or 'positive'. Related questions are: how big is this trade as a proportion of the total trade of developing countries; and has its relative importance shown any tendency to increase over time and are recent trends likely to continue into the future? This begs another question: what explains the past growth of trade among the developing countries, on both the demand and the supply sides? For example, on the demand side, what has been the role of income growth and relative price differences (ie shifting comparative advantage)? And on the supply side, what has been the role of output and industrial growth, which reflect an increasing capacity to supply a range of goods? Are the explanatory factors mainly structural or non-market? Which countries so far have been the key ones in the growing network of trade among developing countries? And do these countries possess a common economic profile?

The second question - does trade matter? - is 'normative'. That is, what are the likely impacts of the expansion of this trade on the world economy and, more immediately, on the prospects for accelerating the economic growth and industrial development of the developing countries? Is there something qualitatively different about this trade, for the countries involved in it, as compared with other trade flows? Aside from differing potentials for trade expansion in various directions, the directions of a country's exports could matter if, to put it simply, they are product-specific and products in turn are production process- and/or factor specific. In principle, under assumptions of competitive market conditions and full information, no structural problem on the import side should arise. However, in practice, lack of information and imperfect market conditions could lead to outcomes, from the point of view of a country's imports, which are direction-wise 'structurally' sub-optimal in a welfare sense.

This raises several empirical questions in the context of developing countries' trade. Do the developing countries in general export to each other products which are different, in terms of production processes and factor contents, from those they export to the developed countries? If so, what benefits static and dynamic, flow from trade in different directions, given the relative sizes of

trade flows and potentials for expansion in each direction? To fully gauge these benefits it might be necessary to know who are the agents involved in a country's exports - whether they are predominantly domestic or foreign firms? Finally, one might also be interested in the kinds of policies and instruments which would be feasible and efficient for facilitating and promoting the expansion of trade among developing countries.

The study of Singapore's experience in ASEAN by no means claims to provide answers to all the foregoing questions. However, it is hoped that it will contribute to the understanding of some of these issues. The remaining part of this chapter aims to provide an overview of the ASEAN economies, highlighting the salient features, trade flows and linkages. An understanding of these trends and traits and the underlying factors enables a better appreciation and interpretation of the empirical results.

Since it is natural for those who are interested in trade among developing countries, whether for analytical or for policy reasons, to turn to standard theories of trade for guidance, chapter two presents the theory of international trade and deals with structural change in the Asia-Pacific region by investigating changing comparative advantage. Against this background, chapter three draws together the main insights from theory regarding the underlying determinants of the pattern of trade among developing countries, especially in terms of intra-industry trade in Singapore. Chapter four then examines the importance of ASEAN cooperation, using a test of trade creation and trade diversion.

The role of foreign capital in economic growth is controversial, thus, chapter five provides a review of existing theoretical approaches to overseas investment looking at both Singapore and ASEAN. Chapter six presents an analysis of foreign investment by examining the statistical relationship between a number of structural variables and the sectoral distribution within the manufacturing industry. Chapter seven deals with the role Singapore and ASEAN have played in the regional environment, looking at regional integration agreements and examining a number of possible prospects. Finally, in chapter eight, the findings and the major conclusions are summarised.

An Overview of Singapore and ASEAN

' The ultimate objective of development must be to bring about a sustained improvement in the well being of the individual and bestow benefits on all. If undue privileges, extremes of wealth and social injustices persist, then development fails in the essential purpose. '

UN General Assembly Resolution 2626 (XXV) 24 October 1970.

The five member countries of the Association of Southeast Asian Nations (ASEAN) have recently received increased international notice for their relatively strong economic growth performance and for their assertion of a collective approach to a range of foreign economic policy issues. ASEAN was established in 1967 when Indonesia, Malaysia, the Philippines, Thailand and Singapore came together in a loose association, mainly out of concerns for political security in Southeast Asia, (Brunei is the six member, but has been excluded from the present study as it did not join until 1984).

ASEAN born in 1967 in the shadow of the Vietnam War, shows signs of becoming an important and permanent regional organisation. After almost a decade of doldrums it was galvanised into renewed vigour in 1976 by the security problems which the reunification of Vietnam seemed to present to its member countries. The impetus to the formation of ASEAN, and to its recent renaissance, has been political and strategic. Since 1967, ASEAN's development can usefully be divided into three phases. The first phase spans the 1967-75 period ; the second from 1975 to 1979 ; and the third from 1979 onwards. In each of these phases ASEAN was responding primarily to developments in the international arena.

Phase I (1967-75)

The first eight years of ASEAN's existence was a period in which little of tangible value was achieved. Scarcely a year after the signing of the Bangkok Declaration, the Sabah dispute between Malaysia and the Philippines had resurfaced, and for an eight month period the activities of the Association were effectively suspended. The dispute was felt to be so serious that the establishment of a rival organisation was even mooted. At the end of 1968, relations were strained still further when two Indonesian marines who had been found guilty of sabotage and murder during the ' Konfrontasi ' were hanged in Singapore.

In view of impediments such as these, it is not surprising that the cause of Southeast Asian regionalism appeared to be in limbo. Admittedly some progress was made - a number of committees dealing, for example, with food and agriculture, communications, tourism and commerce and industry were set up - but there was virtually no concrete progress in regional economic or political cooperation. But this underestimates the significance of the first phase of ASEAN's existence.

The first undistinguished and undramatic phase of ASEAN's development was a period in which the member countries grew together. The habit of consultation became inculcated, greater mutual trust was developed, their world views became more harmonious, and an ASEAN identity began to evolve. These achievements are loose and ill-defined, and possibly as a result are underplayed, but without such a period the organisation might well have found the stresses of working together too great. This has certainly been the case with many other attempts at regional cooperation in the developing world. It is noteworthy that the nature of the Bangkok Declaration - open-ended and without specific objectives - helped in this regard, as it set no targets and placed the organisation under little pressure to produce results.

Phase II (1975-79)

In 1975 the USA finally withdrew from South Vietnam and the government in Saigon fell to the victorious forces of the communist North. This was quickly followed by the fall of anti-communist governments in Cambodia and Laos. For ASEAN, these changes in the geopolitics of the region marked the beginning of a period of great uncertainty. For although in public ASEAN appeared happy that the conflict in Indochina had finally come to an end, and messages of goodwill and good relations were transmitted to the Vietnamese government, there is no doubt that as a group its members were deeply worried. Vietnam had the largest and most powerful army in the region, and there was little sign that its leaders were favourably disposed towards the market economy, Western-oriented countries of ASEAN.

The communist victories in Indochina encouraged, possibly even forced, the members of ASEAN to strive to cooperate more closely. In spite of differing assessments of the Vietnamese threat, each of the member nations felt that it was imperative that a united response be made. This culminated in the Bali Summit of February 1976, a watershed in ASEAN's development. ASEAN ostensibly still remained an economic and socio-cultural association, not a political one. In addition to its move on security, the summit laid the foundations for intensified economic cooperation. This took the form of pledges to supply one another with basic commodities (particularly oil and rice), to build 'ASEAN Industrial Projects' in each country, and to exchange preferential tariffs. The important point, however, is that these agreements would not have been accomplished so quickly had it not been for the changes in Indochina. External political developments, albeit with serious ramifications, had the effect of galvanising a comatose ASEAN into action. As if to emphasise that the association now meant business, an ASEAN Secretariat was established shortly after the Summit had ended.

Phase III (1979 onwards)

In 1979, a second development in Indochina again forced ASEAN to reappraise itself. On Christmas Day 1978, Vietnamese forces invaded Cambodia. By January 1979 they ousted Khmer Rouge and installed a puppet regime under Heng Samrin. ASEAN, and in particular the front line state, Thailand

was appalled. The presence in Cambodia of more than two hundred thousand battle hardened Vietnamese soldiers put Thailand on the edge of a conflict that threatened the integrity of ASEAN. There were real fears that Vietnam, which had signed a defence treaty with the Soviet Union and joined COMECON, might invade the Kingdom of Thailand. ASEAN became, in effect, an informal security grouping, and the polarisation of the region, which had been in the offing since 1975, was finally firmly established.

ASEAN reacted swiftly and decisively. An ad hoc meeting of its foreign ministers was convened a week after Pol Pot had been driven from Phnom Penh, and a statement deploring the invasion and calling for an immediate withdrawal was released. This response might seem unremarkable, but it is important to realise that ever since 1975 ASEAN had gone out of its way not to provoke Vietnam. The increasing numbers of Vietnamese boat people arriving in ASEAN waters in 1978, for example, had elicited only a weak response. The invasion of Cambodia changed the state of affairs. ASEAN became increasingly critical of Vietnam, political and security cooperation (formerly a taboo subject) was openly discussed, and the Association managed to organise a highly effective response to the invasion. Once again, an external threat had acted as a catalyst for greater cooperation. However this brief history of ASEAN since its formation in 1967 tells us little about the substance of regional political and economic cooperation.

Today, other dimensions are arguably more important than political security, especially the ASEAN economic arrangements to promote intra-bloc cooperation in investment and trade. The ASEAN schemes to coordinate investment projects, which were established mainly with a view to attempting to increase the complementarity of economic structures in the ASEAN countries, have proven particularly unsuccessful, mainly because of the opposition of national interests concerned for the profitability of their local investments.

The ASEAN system of preferential trading arrangements (PTA), established in 1967, sought to expand intra-ASEAN trade through the extension of reduced tariff and nontariff barriers to goods produced in member countries. Only negligible increases in intra-bloc trade, however, have been achieved because of persistent (and even increasing) reliance on administered protection in many ASEAN countries and, more fundamentally, because of the opposition of many of the same vested interests that have prevented the success of the coordinated ASEAN investment programs.

Concerned for increasing bilateralism in the trade relations of the major industrial countries and the uncertainty of a successful outcome of the Uruguay Round, the ASEAN heads of state signed an agreement to establish the ASEAN Free Trade Area (AFTA) in January 1992. Under the new trading arrangement, which began in 1994, each ASEAN country will seek to reduce the level of its tariffs on imports of manufactures, including capital goods and processed agricultural products, to a minimum

range of 0-5% by the year 2008. Also, the plan calls explicitly for the simultaneous elimination of nontariff barriers to intra-ASEAN trade in manufactures. Notably, liberalisation of intra-bloc trade in primary commodities is excluded from the plan, raising some important uncertainties about the implications of the new free trading area for agriculture and natural resource-based sectors in the ASEAN countries (DeRosa, 1994).

Sources of data

Trade statistics in Singapore come from three sources, namely, the national accounts, balance of payments, and data on exports and imports published by the Singapore Trade Development Board (STDB). The basis of compilation differs across these three sources. In the national accounts, there are no separate figures for exports and imports as they are given on a net basis. Furthermore, the data in the national accounts are for the computation of gross domestic product while those from the balance of payments are intended for the gross national product. The net factor income component is difficult to measure within such a balance of payments structure.

Data from the STDB pertain only to merchandise trade with exports on a free on board (fob) basis and imports on a cost, insurance and freight (cif) basis. Trade with Indonesia is excluded. For commodity trade, use has been made of information from the STDB whereas figures for trade in services are found in balance of payments accounts. In addition to published Singapore trade statistics from the sources mentioned, data from the United Nations, the World Bank and the International Monetary Fund were also used where appropriate, for Singapore and the other countries included in the analysis.

The structure of the Singaporean economy has evolved from being a mere entrepot economy thriving on colonial trade and locational advantages to one that is modern and diversified. Entrepot trade had contributed from 15% to 18% of gross domestic product (GDP) in the 1960s with a peak of 18.4% even in 1970, before tapering off to 16.8% in 1973 (Yearbook of Statistics, 1973/4). In later years for which statistics on the entrepot sector were no longer available, the contribution of commerce, which best approximates it, remained high.

Entrepot trade was the essential feature of Singapore's successful economic development during the colonial period. Up till 1960-65, 40% of its external commerce was still tied to Malaya and Indonesia, processing industry was still embryonic, and 70% of employment and 75% of revenue depended on the tertiary sector - linked either to the commercial and financial activities of the entrepot or to the British naval and air base which guaranteed its security.

While remaining statistically important, the entrepot function declined throughout the 1960s and 1970s and, besides, underwent some radical changes. Because of its entrepot trade, Singapore's

imports are registered either as re-exports pure and simple, or as being destined for re-exportation almost immediately. With such a definition, it should be possible to evaluate this kind of interchange; however a series of problems makes this exercise less straightforward than it seems. First, imports destined for the entrepot do not always correspond, in either volume or value, with the expected re-exports; and it was only in 1976 that Singapore's official statistics began to include re-exports as a separate category among exports as a whole, whereas imports in transit only were not singled out at all (Law, 1975). Secondly, there is a moveable boundary between 'domestic exports' and 're-exports'. The latter can include simple re-exports, ingenious repacking of goods, incomplete assembly of parts, and 'paper transactions'. To this should be added a vague classification of certain kinds of transaction, such as the distinction between 'manufactured goods' and 'miscellaneous goods' (Chua and Morgan, 1972).

As well as these difficulties, the official figures show that re-exports, which in 1960 accounted for 43% of Singapore's external trade (and 93.7% of total exports), subsequently took a dive - to 24% (and 61%) in 1970 and 16.4% (and 35.1%) in 1990, (see table 1.1).

Table 1.1
Singapore's re-export trade, by country (1970-90)

Country	1970			1980			1990		
	Total Exports	Re-exports	%	Total Exports	Re-exports	%	Total Exports	Re-exports	%
SE Asia	1,661	963	33	9,571	5,122	36	13,245	7,105	34
ASEAN	1,210	879	30	9,205	4,268	30	12,699	6,803	32
NE Asia	709	361	13	8,588	1,905	13	13,505	4,188	20
Japan	362	145	5	3,338	418	3	5,449	1,300	6
Hong Kong	194	71	2	3,196	525	4	3,815	1,274	6
N America	584	369	13	5,555	1,337	9	15,179	2,589	12
USA	527	380	13	5,272	1,245	9	14,695	2,455	11
W Europe	904	628	22	5,899	1,691	12	8,113	2,751	13
EC	740	525	18	5,081	1,337	9	7,353	2,461	12
W Asia	104	67	2	2,476	968	7	1,933	917	4
Saudi Arabia	12	-	-	825	341	2	579	276	1
S Asia	81	45	2	2,393	825	6	2,618	1,427	7
Oceania	227	106	4	3,252	405	3	2,525	700	3
Australia	160	-	-	1,671	298	2	1,650	1,328	2
Africa	137	68	2	1,916	984	7	-	-	-
Latin America	85	72	2	602	560	4	428	297	1
E Europe	233	203	7	1,241	447	3	613	359	2
TOTAL (World)	4,756	2,882	100	41,493	14,244	100	60,268	21,194	100

Source : Singapore Trade Statistics, Department of Statistics.

All the same, such results show that this type of business is far from defunct: sixty warehousing companies still practise it, and numerous studies by consultants have estimated that to obtain a true picture, one should add 10-15% to the foregoing figures (Industrial Market Research Ltd, 1978). Furthermore, since 1983-85 the growth of Singapore's external trade has depended partly on a revival in re-exports of food products, primary products, energy and manufactured goods (see table 1.2).

Table 1.2
Singapore's external trade by product,
as a percentage of total trade (1980 & 90)

Commodity	1980			1990		
	Import	Export	Re-export	Import	Export	Re-export
Food	59	41	28	59	41	30
Beverages, tobacco	64	36	13	34	66	56
Primary products	42	58	44	43	57	50
Energy	55	45	1	56	44	20
Oils, fats	48	52	33	50	50	12
Chemicals	65	35	20	52	48	18
Manufactured goods	68	32	19	68	32	23
Infrastructural and transport equipment	58	42	17	51	49	16
Various manufactured items	53	47	12	52	48	16
Unclassified products & transactions	18	82	11	24	76	17

Source : Singapore Trade Statistics, Department of Statistics.

Singapore's intermediation takes a number of forms. In petrochemicals, for example, value added is a mere 12%: crude petroleum is imported from the Middle East, Malaysia and Indonesia, processed and then exported to countries such as Indonesia, Hong Kong, Australia, Japan and Malaysia. Significantly Singapore only uses 13% of the output of its petroleum products industry and most exports are destined for intermediate use elsewhere. In industrial, electrical and electronic machinery the value added is rather higher, but otherwise the process is the same. Parts are imported into Singapore or produced locally (by MNCs); processed/utilised; and the final output is largely exported overseas (most demand in Singapore is, in fact, intermediate). A similar analysis applies to most other industries, showing the importance of entrepot trade, and indicates that MNCs are encouraged to produce locally because of low import duties (see Mirza, 1988).

While the traditional entrepot activities have not completely disappeared, Singapore has modernised and diversified into manufacturing-while maintaining and enhancing its trading role and developing modern services such as banking. There has also been constant upgrading and diversification within each of those three main activities. Entrepot trade now includes more industrial commodities and countertrade. The manufacturing sector has restructured along lines of high technology, skill-intensive and service-related production. Similarly, the service sector has diversified into financial and business, transport and communications and tourist activities.

Although entrepot trade has played an important role in the growth and development of the economy of Singapore, the statistics on re-exports have not been used in any of the empirical studies in the thesis due to the inaccuracy of this data over the period the study covers, especially from 1967 to 1985.

Measures of growth and development

Whether growth and development are judged in purely economic terms or by a combination of economic and welfare criteria, the East Asian and the ASEAN countries have established a clear lead over other developing countries. Despite the world wide recession of the early 1980s, Singapore is now catching up with the high income industrial countries and several other East Asian market economies are poised to do so. The economic performance of Thailand has been particularly striking for it was among the very low income countries of the world in the 1950s. Even the Philippines, a poor performer among this group of countries, has a better than average record among developing countries.

The ASEAN countries range in population size from city states to middle-sized countries and have widely divergent resource endowments and economic histories, but they have faced the same international environment as other countries. Table 1.3 on the physical size of ASEAN countries shows that Indonesia had the largest population while Singapore had the smallest population. The Philippines and Thailand have comparable population figures. Singapore, however, enjoyed the highest GNP of US\$14,210 compared to US\$610 in Indonesia in 1991. By World Bank's criteria, they are, respectively, a high-income (OECD level) and a low-income country. The highest rate of GDP growth over the period 1980-91 was, however, experienced by Thailand at 7.9%, followed by Singapore at 6.6%. The rate of inflation is highest in the Philippines.

Table 1.3
Population, GNP per capita, GDP and inflation
of ASEAN countries

Country	Population millions 1991	GNP per capita		GDP 1980-91 %	Inflation 1980-91 %
		Dollars 1991	Growth rate 1965-90 %		
Indonesia	181.3	610	4.5	5.6	8.5
Malaysia	18.2	2,520	4.4	5.7	1.7
Philippines	62.9	730	1.3	1.1	14.6
Singapore	2.8	14,210	6.5	6.6	1.9
Thailand	57.2	1,570	4.4	7.9	3.7

Source : World Bank, World Development Report 1993.

Table 1.4 shows the contribution of the main sectors to GDP. The decline in the primary sector and the increasing shares of manufacturing and new services, as in transport and communications and finance and business services, are salient features of the economy since the 1980s.

Table 1.4
Percentage contribution to GDP by industry (Singapore),
selected years (current market prices)

	1960	1970	1980	1990
Agriculture	3.5	2.3	1.3	0.4
Quarrying	0.3	0.3	0.3	0.2
Manufacturing	11.4	20.0	29.1	26.1
Utilities	2.3	2.6	2.2	2.3
Construction	3.4	6.8	6.4	4.8
Services	76.4	66.8	64.6	70.1
- Commerce	32.3	27.1	21.7	15.7
- Transport & communications	13.3	10.6	14.0	12.7
- Finance & business	13.8	16.2	19.6	29.1
- Others	17.2	12.0	9.2	11.6

Source : Economic Development Board Yearbook, Singapore (various years).

The success of the ASEAN economies lies in the fact that 'unshackling exports' (that most of the East Asian countries had themselves at first shackled) has been the key. However, it is also clear that successful performance needs several policy strands. Political stability and the rule of law are essential. Economic policies apparently distorted prices less than was the case in most other developing countries; macroeconomic management was relatively successful, all economic sectors, particularly agriculture, were developed, and public investment in social and physical infrastructural facilities was productive. Where these economic conditions did not prevail, as in the Philippines, the economy faltered. Governments thus provided the environment for growth; but private enterprise, despite risk and uncertainty, made the investments necessary, and through exposure to international competition, became efficient and profitable. There seems little doubt that if other developing countries had followed similar economic policies they would also have grown more rapidly and would thus have been able to alleviate the poverty of their low income groups as well as avoiding high national indebtedness.

ASEAN includes one state, Singapore, that has adopted a thoroughly open and outward-looking approach to foreign economic relations. It includes three states, Malaysia, the Philippines and Thailand, which display ambivalence between outward-looking and inward-looking approaches to trade policy. The fifth state, Indonesia, remains strongly protectionist.

All five economies have extensive economic links with a wide range of OECD countries. During and immediately after the colonial era, the foreign economic relations of the Philippines had been focused

almost entirely on the United States, and those of other ASEAN countries strongly on Europe. But by the seventies, there had been considerable diversification of external economic links, and Japan was the largest trading partner of all five countries.

As Myint (1983, p26-27) observes in the context of widely divergent growth rates within Asia 'The truth of the matter is that the currently available theoretical explanations do not seem able to provide a convincing account of the wide difference in the growth rates between the mainly outward-looking Southeast Asian countries and the mainly inward-looking South Asian countries'.

It is extremely difficult to measure comparative levels of development. The statistical methods available may be thought fairly reliable for obtaining acceptable measures of rates of growth of living standards and of ordinal rankings as to whether one country is more developed than another, but they exhibit great deficiencies when used as cardinal measures of by how much or how many times one country is more developed than any other. It is recognised that, in the end, no universally acceptable, value free indicator of overall performance is attainable (Herrick and Kindleberger, 1983).

The fundamental cause of the measurement difficulty lies with the definition of development. Many of the criteria or objectives by which development is to be judged are qualitative ones. Such criteria as the standard of living, health levels, the educational level, and the extent of grass-roots participation in government are all qualitative ones which cannot be measured directly. They have to be measured indirectly using indicators which are directly measurable quantities. For example, the number of people per trained doctor, infant mortality rates, or the average life expectancy; and for standard of living one might use such indicators as average national income per person, the proportion of families with piped water to their living quarters, the proportion of households supplied with electricity, and so on.

Since the concept of development only acquires substance through a process of measurement, it is important to examine briefly some of the development indicators used in the present study, and some of the criticisms levelled at them:-

" Measurements, when they are well formulated and accurately performed, allow us to evaluate progress toward the society's development goals. The spirit of the age insists on systematic empirical measurement, rather than rational introspection or casual impressionism. "

(Herrick and Kindleberger, 1983)

Measurement of gross national product

International standards and conventions now have found world wide acceptance in the calculation of national income and in the gathering of census statistics on population and its composition. International comparisons reveal the difficulty in closing quickly the widening gap that separates the

incomes of different countries. Per capita incomes are used as development indicators despite their sensitivity to the presence of very high incomes. Social indicators are suggested as possible alternatives, both because of their directness, and thus presumed accuracy, and because they are less sensitive to extremes in the income distribution. Therefore, it is worth discussing a few problems of the measurement of GNP and its suitability as a measure for development (Singer and Ansari, 1978).

The mere existence of all of the measurements of GNP and GDP is cause for concern. First, the measurements must conceptually be analogous to the phenomena measured. A second cause for concern is associated with methodological difficulties in the measurements themselves. The value of the output of homeworkers' services produced and consumed in the home is not counted as part of a country's aggregate output under national income accounting conventions. Yet clearly in societies with low levels of specialisation, households are more self sufficient. Accordingly, a greater proportion of economic functions are performed in homes in low-income countries than are performed in homes in richer countries. National income is thus understated in the former, relative to the latter. This has been highlighted in the work of Usher (1980), who studied the economic development of the Thai economy.

A third area of concern is the reliability of statistics. At least three basic sources of inaccuracy exist: difficulties in measuring physical quantities or enumerating events, problems of valuation, and possible bias resulting from an incentive to misstate. All of these problems are present to some degree in the statistics of any nation but seem relatively more severe in poor countries. Cross-checks can sometimes be made in assessing the reliability of a particular set of statistics, the more difficult is the task of policy analysis and decision making.

A country's economic size and power is sometimes measured by the size of its total income or output, regardless of the number of workers necessary to produce it or the number of citizens who will consume it. Per capita income, on the other hand, takes into account changes in population size that may accompany the increasing output, and it can provide some information about both the efficiency of production and the success in reaching a country's economic goals. The biggest drawback of income per capita is its nature as an arithmetic average. As an average, it does not give any direct information about the distribution of income and therefore about the economic welfare of the people.

While it is wise to maintain a healthy scepticism about the use of statistics on average incomes, one should be aware that the accuracy of different measures varies. Figures on population size, the denominator in per capita income, are by no means accurate for the poorest countries, particularly those whose first censuses came after their post-war independence from official colonial status. Uncertainties of 20% or more, involving tens of millions of people in some cases, have been cited.

Population figures are, however, more accurate than those of the labour force or hours worked. Estimates of the labour force, and especially of women working in agriculture, are subject to wide margins of error. Data on hours of work are even worse, particularly in agriculture, petty commerce, and many services where statistics hardly exist at all. As a result, labour inputs are measured only in the most imperfect way. The uncritical acceptance of labour force measurements obviously can cause policy miscalculations of a sort that poor countries can ill afford.

When making international comparisons the problems of measurement multiply. The average growth rate of GDP for Singapore from 1980-91 was 6.6%. These figures are deceptive for the purpose of international comparison. Singapore, firstly, is a city state, and its GDP is thus bound to be much higher, owing to its small geographical size and the large volume of entrepot trade. Secondly, a large part of the GDP is not indigenous in character. It belongs to the multinational corporations that invest in Singapore. For the purpose of reflecting international welfare, a figure of two thirds of the given Singapore GDP, would be more realistic, not just with respect to its present position but also, if not much more so, in the future.

If the monetary authorities of a country do not permit free convertibility of their domestic currency into foreign exchange, then it is hard to choose an exchange rate that appropriately expresses a country's output in terms, say, of dollars. Even where currency exchanges are unrestricted, conversion of income data between currencies is biased because the internationally traded goods and services may not be representative of price and value relationships among the country's total goods and services (Gilbert and Kravis, 1954).

Most poor countries have overvalued exchange rates. This means simply that if the national income data are converted, stated in units of their local currency, into dollars using official exchange rates as the conversion factor, the dollar amounts will be overstated. Substituting 'free market' (black market) exchange rates for official rates does not escape the problem. The black market is usually small relative to the overall size of a country's foreign-exchange flows. The black market rate thus would not be equal to an equilibrium rate generated by an unrestricted market. If anything, the local currency may be undervalued in the black market, leading to opposite interpretations about the dollar equivalent of local incomes. Finally, in those countries using multiple exchange rates, the choice of a single rate or of some weighted average is likely to be arbitrary at best.

Singapore and Malaysia, consistent with their liberal trade regimes, have adopted the system of managed floating exchange rates. Indonesia and the Philippines have also been floating their currencies with periodic government interventions. Thailand has adopted a system of exchange control, although the Thai baht has been tied to the US dollar since 1981. The only country in which a

significant black market for foreign exchange exists - indicative of disequilibrium foreign exchange pricing - is the Philippines.

Once an appropriate exchange rate has been chosen, the conversion into a common standard can be made. But research made it clear that when national output is internationally compared, item by item, using a common price level, a different relation emerges than when the national product in local currency and at local prices is converted at the going exchange rate. The International Monetary Fund (IMF) has at last faced up to this problem. Previously, the IMF used to convert local currency GDP's into dollars at market exchange rates. Now it has decided to use purchasing-power parities (PPP), which take account of international differences in prices. 'The result is a sharp jump in developing countries' share of world output, to 34% from 18% on the old method. The share of Eastern Europe and the former Soviet Union has edged up from 9% to 11%. By contrast, the share of industrial economies has dropped from 73% to 54%. Perhaps the proof that the previous figures were flawed is that they suggested that Asia's weight in world output had fallen from 7.9% in 1985 to 7.2% in 1990, although it was by far the fastest growing region. This was owing to a sharp decline in some Asian countries' exchange rates against the dollar.' (The Economist May 15th - 21st 1993).

Many developing countries have experienced rapid rates of growth of GDP, yet it is increasingly obvious that this has often brought little, if any benefit, to the substantial minority, or perhaps even the majority, of the population of these countries. Economists, planners and international agencies have expressed concern over the fact that perhaps one third (the World Bank's estimate) of the population of developing countries have received no net benefit from growth. In some countries, the proportion of the population excluded from receiving the benefits of growth will be even higher and, in certain cases, large sections of the population may have sunk into even greater poverty as a result of the specific processes of change taking place within these societies.

If the prices of traded goods were equal everywhere, then wages in each country would depend on the productivity of its traded-goods industries. Countries with low productivity would have low wages. In these countries, producers of non-traded goods would also tend to get lower wages than their counterparts in more productive economies. However, productivity differs less from country to country for non-traded goods than for tradeables. So developing countries tend to have cheaper services. Also, third world governments often keep housing and energy artificially cheap. Converting these countries' GDPs with market exchange rates therefore systematically understates their real output.

The UN's International Comparison Program (ICP) is the most ambitious effort to revalue developing countries' output at international prices. It attempts to estimate PPPs every five years on the basis of a detailed comparison of prices in each country. The IMF has used the ICP estimates for its new

weightings for all countries except China, where the Fund used its own more modest estimate, thinking the ICPs unrealistically high (The Economist May 15th - 21st 1993).

Although most economists agree that PPPs give a more accurate measure of the relative size of economies than market exchange rates, this still leaves a problem: the original local-currency figures may themselves be unreliable. For example, poor-country governments may have an incentive to report GDP as low as possible to qualify for soft loans from international financial institutions, or to get favourable trade treatment. It is also likely that poor countries have bigger 'informal' economies than do rich ones.

Taking all this into account, some developing countries may be even higher up the world GDP league. The industrial economies' share of world output may already have dropped below half. Therefore, as GDP and GNP figures will be used throughout this study, along with other indicators, the results should be interpreted with caution and taken to be indicative of general trends rather than exact magnitudes.

Trade Structure and Growth

The ASEAN economies have experienced significant structural changes in the last thirty years. There has been a continuous and substantial relative decline in agriculture, accompanied by a large increase in industry. The sectoral contribution to GDP in 1991 is shown in Table 1.5. Singapore has always had a higher dependence on manufacturing and services than the other ASEAN countries, as they were all able to build on their agricultural-base. Now all the members of ASEAN are largely industrial based, with Singapore leading the way in the service sector.

Table 1.5
Sectoral share to GDP, 1991 (in percent)

Country	Agriculture	Industry	(Manufacturing)	Services
Indonesia	19	41	21	40
Malaysia	na	na	na	na
Philippines	21	34	26	45
Singapore	0	39	29	61
Thailand	12	39	27	49

Source : World Bank, World Development Report 1993.

All the ASEAN countries enjoyed higher rates of growth for exports than for imports in the period 1980-91, with the highest rate of export growth enjoyed by Thailand as shown in Table 1.6. In terms of energy as a percentage of merchandise exports the Philippines had the highest figure of 20% closely followed by Singapore, which had a figure of 16% in 1991 because of its oil refineries and petrochemical plants. Indonesia and Singapore had the most favourable terms of trade in 1991 (1987 = 100).

Table 1.6
Terms of trade, energy imports, and growth of trade

Country	Average annual growth (%) 1980-91		Energy import as % of merchandise export 1991	Terms of trade (1987 = 100) 1991
	Export	Import		
Indonesia	4.5	2.6	8.0	101
Malaysia	10.9	7.2	5.0	93
Philippines	3.3	3.0	20.0	91
Singapore	8.9	7.2	16.0	101
Thailand	14.4	11.1	12.0	91

Source : World Bank, World Development Report 1993.

Table 1.7 shows the structure of merchandise imports and exports in the ASEAN countries in 1990. Imports of machinery and transport equipment dominate in all the ASEAN countries. The largest export item from Indonesia was fuel and minerals while from Malaysia it was other primary commodities (especially rubber and tin). The largest export item for both the Philippines and Thailand

was other manufacturing. As an oil refiner rather than a producer, Singapore had an oil share of 17%. Reflecting its entrepot status, other primary exports formed 8% of total exports while machinery and equipment and other manufactures together constituted about 74% of Singapore's exports.

Table 1.7
Percentage share of merchandise imports and exports
in 1991

Imports					
Country	Food	Fuels	Other primary	Machinery & transport equipment	Other manufacturing
Indonesia	5	9	9	45	32
Malaysia	6	4	5	55	30
Philippines	7	15	7	26	46
Singapore	6	14	4	44	32
Thailand	5	9	8	39	38

Exports					
Country	Fuels	Other primary	Machinery equipment	Other manufacturing	(Textile)
Indonesia	43	16	2	99	14
Malaysia	17	22	38	23	6
Philippines	9	20	14	57	9
Singapore	18	8	48	26	5
Thailand	2	32	22	45	17

Source : World Bank, World Development Report 1993.

Table 1.8 shows that only Singapore enjoyed a current account surplus in 1991. Singapore also had the highest gross international reserves in terms of months of imports, closely followed by Thailand. All the ASEAN countries were dependent on private capital inflows. Only Singapore had a negligible amount of official development assistance and external debt.

Table 1.8
Balance of payments, capital, aid flows
and international reserves

	Current account balance after official transactions (US\$m) 1991	Gross international reserves in months of imports (mths) 1991	Private capital flow (US\$m) 1990	Official Development Assistance (US\$m) 1991	Total external debt (US\$m) 1991
Indonesia	-4,080	3.3	153	1,854	66.4
Malaysia	-4,530	3.2	649*	289	47.6
Philippines	-1,034	3.3	262	1,051	70.2
Singapore	4,208	5.4	1066*	8	-
Thailand	-7,564	4.8	74	722	39.0

* indicates data for 1988

Source : World Bank, World Development Report 1993.

As could be expected, five countries with such different economic structures and approaches to trade policy have sought very different benefits from regional cooperation. This contributed to the cautious pace of progress. Singapore, with its worldwide trading links and interests, could have much to lose from any major diversion of trade towards less competitive neighbours. But, as a small island state in a region that has had the potential for great political tension, Singapore has an important strategic interest in close and constructive relations among the ASEAN partners. At the other extreme, Indonesia has felt that its own industrial growth requires the preservation of its domestic market for its own production, and has been reluctant to grant open access to producers in other ASEAN countries. Malaysia, the Philippines and Thailand have tended to be more willing to contemplate costs of trade diversion than Singapore, and less jealous about preserving the whole of their local markets for domestic production than Indonesia, but have nevertheless each been very careful in the calculation of national advantage. By contrast, there has been much greater awareness of convergence of interest among the five countries on common problems that have emerged in economic relations with the rest of the world : commodity market stabilisation issues; access to the markets of OECD countries; and bilateral relations with Japan, the EC, the United States and Australia.

Table 1.9 shows the composition of intra-ASEAN trade for 1970, 1980 and 1986, at 1980 prices, for some historical perspectives. This data set was provided by the Institute of Developing Economies (Tokyo) through the Asian and Pacific Development Centre. First, for intra-ASEAN trade in three main commodities, namely, primary, oil and manufacturing, the dominance of primary commodities dropped from 65.2% in 1970 to 22.4% in 1986. Trade in oil also declined while manufacturing saw a rapid rise from 13.3% in 1970 to 49.2% in 1986. Except for 1970, total ASEAN exports exceeded total ASEAN imports. Total intra-ASEAN trade figures as a percentage of total ASEAN imports and exports, respectively, were 17.1% and 16.4% in 1986, both of which were increases over the figures in 1970, reflecting more intra-ASEAN trade.

Table 1.9
Composition of intra-ASEAN trade (1980 prices)

	1970		1980		1986	
	(US\$m)	%	(US\$m)	%	(US\$m)	%
(1) Primary commodity	489	65.2	3478	31.3	2361	22.4
(2) Oil	161	21.5	3856	34.7	2991	28.4
(3) Manufacturing	100	13.3	3778	34.0	5175	49.2
(4) Total intra-ASEAN trade	750	100.0	11112	100.0	10527	100.0
(5) Total ASEAN imports	7329		63317		61627	
(6) Total ASEAN exports	6066		66517		64026	
(7) (4) as percent of (5)		10.2		17.5		17.1
(8) (4) as percent of (6)		12.4		16.7		16.4

Source : Institute of Developing Economies (Tokyo)

Table 1.10 shows a breakdown of the import and export contributions of member countries to total ASEAN imports and exports. The most noticeable feature in table 1.10 is Singapore's dominance in intra-ASEAN trade. Its share of ASEAN imports grew from 33.91% in 1970 to 50.82% in 1990 while its export share rose from 25.61% to 46.74%. Both Indonesia and Malaysia are also important in intra-ASEAN trade, followed by Thailand and the Philippines. In the case of the Philippines, its share of both ASEAN imports and exports have declined over the period 1970-90. Thailand's exports have increased while its imports have fallen over the period. Indonesia's share of ASEAN exports was higher in the early 1980s probably because of oil, while the same was not observed for Malaysia.

Table 1.10
Percentage distribution of intra-ASEAN trade

	Indonesia	Malaysia	Philippines	Singapore	Thailand	ASEAN
Imports						
1970	12.29	19.30	16.69	33.91	17.81	100.00
1975	20.31	15.01	16.07	34.65	13.96	100.00
1980	17.11	16.95	13.10	37.91	14.93	100.00
1985	16.17	19.32	8.58	41.37	14.56	100.00
1990	8.42	19.76	5.44	50.82	15.56	100.00
Exports						
1970	17.39	27.83	17.48	25.61	11.69	100.00
1975	34.12	18.48	11.02	25.83	10.55	100.00
1980	32.94	19.45	8.70	29.13	9.78	100.00
1985	27.15	22.36	6.76	33.33	10.40	100.00
1990	11.57	28.62	2.71	46.74	10.36	100.00

Source : Calculated from data in IMF Direction of Trade Statistics (various years).

Table 1.11 shows the direction of intra-ASEAN trade. Over the period 1970-90, both intra-ASEAN imports and exports increased, the former from 10.26% to 13.05% with a peak of 19.19% in 1985, the latter from 12.28% to 13.92% with peaks in 1980 and 1985. Imports of ASEAN from Japan, the US and the EC declined between 1976 and 1985 but picked up after 1986, more so for Japan than the other two. Exports to Japan increased up to 1980 before falling in 1985 and 1990 while exports to the US rose throughout the period. In contrast, ASEAN exports to the EC fell consistently throughout 1970-85. In 1990, the largest share of ASEAN imports came from Japan (22.25%) while the US constituted the largest market for ASEAN exports (22.18%), followed very closely by Japan (20.48%). In 1990, ASEAN imports from the EC and ASEAN exports to the EC were quite balanced at 14.57% and 14.76%, respectively. By 1990, the EC had caught up with the US in terms of supplying imports to ASEAN.

Table 1.11
Direction of ASEAN trade (in percent)

	1970	1975	1980	1985	1990
Imports					
ASEAN	10.26	9.58	17.55	19.19	13.05
Japan	25.05	25.36	20.37	17.43	22.25
US	14.84	14.27	13.71	12.03	13.29
EC	17.14	13.89	11.58	11.56	14.57
ROW	32.71	36.91	36.79	39.79	36.84
Total	100.00	100.00	100.00	100.00	100.00
Exports					
ASEAN	12.28	10.81	16.70	17.79	13.92
Japan	22.72	27.07	26.80	23.88	20.48
US	17.74	19.86	16.98	20.31	22.18
EC	16.69	13.84	13.38	11.38	14.76
ROW	30.57	28.42	26.14	26.64	28.66
Total	100.00	100.00	100.00	100.00	100.00

Source : Calculated from data in IMF Direction of Trade Statistics (various years).

Table 1.12 shows ASEAN's exports and imports as percentages of world totals. For exports, ASEAN's share in world exports rose from 1.9% to 3.9% while its import share also grew from 2.3% to 3.7%. Clearly, the Southeast Asian region, together with the rest of Asia-Pacific, experienced relatively robust rates of growth throughout the 1980s. Growth in the ASEAN region (which is resource abundant except for Singapore) had been export-led. With rapid development, ASEAN's import growth also provided a strong impulse for world trade and the world economy as a whole.

The years up to and including 1990 had been exceptional for trade in most Asian-Pacific countries. Starting with the larger sphere, the growth of intra-Asian trade had been particularly strong, especially during the period 1987-90. Trade among eleven major Asian countries (five ASEAN countries, Japan, South Korea, Taiwan, Hong Kong, China and India) grew by 31.9% compared with

the 29% growth in 1987. This amount of intra-Asian trade exceeded Asia's exports to North America 1990. It implied a lessening in the traditional dependence on the US economy and improved regional prospects. In 1988, 37.0% of Asia's exports were absorbed by the region while 43.0% of its imports came from outside.

Table 1.12
Shares of ASEAN's exports and imports in world totals

	ASEAN	Japan	US	EC	ROW	Total
Imports						
1970	2.32	5.12	12.51	35.03	45.02	100.00
1975	2.69	5.79	10.74	33.22	47.57	100.00
1980	3.18	6.22	12.06	35.04	43.50	100.00
1985	3.28	5.76	16.72	30.68	43.56	100.00
1990	3.70	6.70	16.76	36.26	36.58	100.00
Exports						
1970	1.94	6.18	13.62	35.86	42.40	100.00
1975	2.38	6.39	12.16	34.15	44.91	100.00
1980	3.34	6.50	10.68	33.23	46.26	100.00
1985	3.54	9.08	11.01	31.78	44.59	100.00
1990	3.91	10.08	12.01	39.98	34.02	100.00

Source : Calculated from data in IMF Direction of Trade Statistics (various years).

Japan is clearly the factor behind these trade growth trends, accounting for 56.0% of total trade, or US\$228.2 billion. Excluding Japan, intra-Asian trade in 1990 was only US\$100.4 billion. ASEAN countries were similarly dependent on the Japanese factor. Thailand was among the Asian countries which experienced the sharpest increases in exports to Japan in 1990, as these rose by 51% while imports from Japan increased by 73.0% in 1990. Imports from Japan by Malaysia and Singapore also grew in excess of 30% in 1990.

Apart from Japan, exports from other Asian NICs to Indonesia, Malaysia, the Philippines and Thailand also registered a strong increase of 40.9% in 1990. Exports from these ASEAN countries to the Asian NICs grew by 42.9%. In particular, Singapore's exports to Indonesia as recorded in Indonesia's trade statistics and to Thailand enjoyed strong growth in 1990.

Excluding Brunei, intra-ASEAN trade in 1990 grew by 33.5% to US\$18.3 billion. As usual Singapore dominated total intra-ASEAN trade; its exclusion gave a growth of only 11.7%, to US\$2.3 billion. For Singapore, trade with Malaysia accounted for over one-half of the total. This reached US\$9.3 billion and grew by 27.0%.

Table 1.13 provides a detailed bilateral trade pattern for 1986 and 1988. In 1986, Japan was the largest market for exports from Indonesia and Malaysia, accounting for 30.8% and 23.3% of their exports respectively. For the other three ASEAN countries, the US market was the most important country for both 1986 and 1988. For Malaysia in 1988, Japan lost its top importer spot as its percentage of Malaysian exports fell to 15.4%, possibly owing to oil exports, and was overtaken by the US with a share of 17.3%. The importance of the US and Japan to Singapore's exports seemed to remain quite stable, just as the US was to the Philippines. For Thai exports, the US market led Japan by only 4.0%. For all the ASEAN countries, Asia excluding Taiwan has become an important export outlet, especially for Malaysia and Thailand.

Table 1.13
Direction of ASEAN exports to major markets

Country	1986				1988			
	US	Japan	Europe	Asia*	US	Japan	Europe	Asia*
Indonesia	16.1	30.8	5.8	14.5	na	na	na	na
Malaysia	16.4	23.3	14.9	35.1	17.3	15.4	14.6	40.4
Philippines	35.8	17.9	19.1	16.9	35.7	20.1	18.3	16.9
Singapore	23.4	8.6	11.7	38.4	23.8	8.6	14.2	38.6
Thailand	18.1	14.2	23.1	27.3	19.5	15.5	22.0	36.9

*Excludes Taiwan.

Source : IMF, Direction of Trade Statistics.

The main factors favouring trade growth within the Asian and ASEAN region include the need to diversify trade away from traditional but protectionist trade partners like the US and Europe. Japan and other Asian countries, while equally suffering from the brunt of protectionism, appear to have taken up the diversified trade from the ASEAN countries. Its doors are nonetheless urged to be more open.

Growth in domestic demand in the ASEAN economies themselves also propels larger import needs. Commodity prices have performed fairly well in the last few years, boosting rural income and demand in primary producing countries. In Singapore and other manufacturing-oriented ASEAN members, steady foreign capital inflows require further imports to satisfy investment and consumption needs. For Malaysia and Thailand in particular, they are enjoying the relocation of relatively lower-end manufacturing activities from East Asia as well as the rapid growth symptoms as near-NICs. Thailand, for instance, has benefited from large inflows of Japanese, Korean and Taiwanese investment. Apart from cost conditions, exchange rate depreciation has also pushed some lower-end consumer industries out of the Asian NICs. Indonesia and the Philippines have also become recipients of relocated industries even from Singapore. These ASEAN countries are in the right stage themselves to take over these lower-end industries.

Such industrial relocation induces greater intra-regional trade. In other words, East Asia is expected to figure more prominently in ASEAN trade as these investment and trade flows mature. Not only

would there be goods flowing back to these investing countries, their products from the ASEAN countries would be likely to find access to countries which still offer benefits under the Generalised System of Preferences (GSP) schemes. Thus, while the Asian NICs have lost their GSP privileges to the US, they can tap these in ASEAN countries like Malaysia.

Economic deregulation in many ASEAN countries such as Malaysia and Indonesia and other Asian countries including China have also helped to stimulate inter- and intra-ASEAN trade. The region is also benefiting from the effects of liberalisation policies pressured by the US on countries such as Japan, Taiwan and South Korea which have been accused of unfair trade practices.

Another factor favouring greater intra-regional trade is exchange rate realignments. In particular, the currencies of Japan and the NICs except that of Hong Kong have appreciated against the US dollar in the last three to four years. Those of the Southeast Asian countries have moved in the opposite direction. A faster rate of increase in exports from Southeast Asian countries to Japan and the NICs has thus resulted.

Balance of payments considerations have also affected intra-regional trade flows. Countries with trade and current account surpluses, such as Japan, South Korea and Taiwan, as well as those with deficits in the ASEAN economies except Singapore, have been trying to adjust accordingly. Current trends in economic cooperation among the ASEAN countries and the efforts from the Asia Pacific Economic Cooperation forum (APEC) have also placed sharper focus and emphasis on intra-regional trade.

Industrialisation

Industrialisation is essential for economic growth in most countries. Whatever economic indices are selected - from the more general such as growth rates to the more specific such as value-added in manufacturing or numbers employed in manufacturing industry - it seems that, at the regional level there has been a more rapid growth in industrialisation than in other regions of the developing world which are conventionally considered to be in the forefront of industrialisation.

These developments have led many theorists to reject previous explanations of industrialisation based on perspectives such as growth or dependency, or on models of import substituting industrialisation. Most would now conclude that, after a post-war period in which the major focus was the domestic market, export-orientated strategies have played a crucial role in the recent industrialisation of Southeast Asian economies (Chia, 1984).

The level of industrialisation varies considerably among the ASEAN countries. Differences among the ASEAN countries may be attributed to differences in domestic market size, resource endowments, historical factors and the general level of economic development. Singapore, with a small domestic

market, sparse natural resources and a long tradition of entrepot trade has become the most industrialised, while Indonesia, with a vast domestic market, rich natural resource endowment and a historically strong primary trade specialisation, is the least industrialised among the five founding member countries of ASEAN. Actually, it is the Philippines which has the longest history of industrialisation as it began to industrialise seriously from the early 1950s, with Singapore, Malaysia and Thailand lagging behind by almost a decade, and Indonesia by nearly two decades. It is no accident that all these countries followed the familiar path of import substitution before they began to adopt export orientation in their manufacturing (Ariff and Hill, 1985).

The switch from import substitution to export oriented industrialisation in the ASEAN region has by no means been easy or smooth. Again, there have been considerable intra-regional variations in industrial experience during the transition. The ASEAN countries began to adopt export oriented industrialisation strategies beginning with Singapore in the mid 1960s, followed by Malaysia, the Philippines and Thailand in the late 1960s and by Indonesia in the early 1980s.

In the developing countries, wages are on average one tenth of those in the industrialised countries. Transport costs have been greatly reduced in recent years. Manufacturing industries such as electronics have been scaled down to a series of clearly demarcated stages, many of which are elementary and easily movable from one location to another.

Debates currently centre on whether or not export-orientated industrial strategies have generated a basis for self sustaining industrialisation in the economies of the region, and whether or not they can lead to significant improvements in the standard of living (Chia, 1980, 1984).

Indices pointing to regional trends in growth and industrialisation should be treated with some caution. As aggregates they conceal marked disparities, since much of the increase in industrialisation levels is concentrated in Singapore, and to a lesser extent in Malaysia and Thailand. Other states such as the Philippines and Indonesia are performing at relatively lower levels. It should be recalled that there are several economies Vietnam, Laos, Burma and Kampuchea - whose industrialisation, although at much lower levels, remains directed primarily towards agriculture, and whose development strategies place much greater emphasis on labour intensive production as a means for creating a viable national economic base.

When it is argued that the East Asian countries succeeded because of exogenous circumstances, what is usually implied is either that they got a headstart on industrialisation, and/or that they were lucky to possess certain critical, non-reproducible assets or resources in greater proportion than other countries. There are few key issues: first, whether these resources were indeed more abundant in ASEAN; and second, whether their abundance is in fact given exogenously.

There was a time when being well endowed with natural resources was considered a distinct advantage. That was before the mineral poor, land-scarce East Asian NICs outperformed everyone, including the oil-exporting countries. There are, however, some reasons why a lack of natural resources, in particular land, might be interpreted as an advantage. For example in the case of Singapore. 'Singapore holds the richest asset for success in the post industrial world - the asset of having nothing: no long standing heavy industry to deaden its itch for change: no rich raw material resources, like North Sea Oil, to provide a treacherous cushion. Singapore's only exports that spring from its natural resources are goldfish and orchids.' (Large, 1985)

It might be thought that having a relatively small mining or agricultural sector would ease the potential for political resistance to industrialisation. Productivity growth in agriculture tends to be lower than in other sectors, so that the smaller the agricultural sector the easier it is presumably to achieve high growth rates. While that logic might seem adequate to deal with the record of Hong Kong and Singapore, it fails altogether for any of the other East Asian countries.

Not all external resource flows to developing countries are determined exogenously. The ability to attract private direct investment and to borrow in international financial markets and, to a lesser extent, from official multilateral lending agencies depends to some degree on growth and export prospects. Foreign aid is a different matter, it tends to be allocated to countries more on the basis of humanitarian, political and strategic considerations. That fact by itself casts doubt on whether foreign aid should necessarily be considered a positive exogenous factor for economic growth.

That aid is not a necessary condition for growth is underscored by the experience of some other East Asian countries. Hong Kong did not receive much aid, but did get undisclosed amounts of mainland and overseas Chinese capital in the 1950s; Singapore borrowed heavily in the early 1960s from the World Bank and the Asian Development Bank, but on relatively hard terms. In both cases it was presumably their ability to make good use of the resources that counted more than anything else.

Human resources must be measured in terms of both quantity and quality. All of the ASEAN countries, apart from Malaysia and the outer islands of Indonesia, are densely populated. At the outset of industrialisation, all had or were soon to have more labour than they could employ. In this regard, they were no different from many other developing countries today. What distinguishes the ASEAN countries, in particular Singapore, is the quality of its labour force. Diligence, loyalty, hard work and a strong appreciation of education are virtues which appear to be more abundant in ASEAN and the East Asian NICs than elsewhere. Since these countries have common historical roots, the explanation has been found in culture.

Some have suggested that part of the explanation of the success of the East Asian countries' relative success is that they simply got a headstart. The facts, however, do not bear this out. All, with the exception of Thailand, were under colonial rule until the end of the Second World War. Both Taiwan and the Republic of Korea are sometimes regarded as having had a more favourable colonial experience, in terms of economic progress, than other countries, though Singapore and Malaysia were undoubtedly the richest at the end of the war. Whatever advantages Taiwan and the Republic of Korea might have had were largely destroyed by war. Indeed, all the East Asian countries began the 1950s still suffering the effects of war. In this respect, their circumstances were less advantageous than those of many other developing countries (Page, J. 1994).

The role of the government

In East Asia governments have played an important and active role in development. This has taken place in many forms varying from country to country, the importance of which can be seen in the example of Singapore. There is no escaping the fact that governments have been deeply involved in the economics of all of the East Asian countries. In addition to serving minimal functions, including the provision of necessary infrastructure, governments have intervened in three broad areas: Firstly, they have been actively engaged in managing the system of industrial incentives (Chia 1984); secondly, they have claimed exclusive responsibility for maintaining macroeconomic stability; thirdly, they have established some public enterprises apart from utilities to produce what are essentially private goods (McCawley, 1979; Soehoed, 1967).

There has been very little systematic analysis of government regulation in developing economies. There is, of course, an extensive literature on development planning, but this has been concerned mainly with the objectives of development and the techniques of planning. For example, the two standard texts, Lewis (1966) and Tinbergen (1967), barely discuss the economics of regulation although Lewis observes that 'licensing is one of the obstacles to development in poorer countries... In most poor countries licensing means inordinate delays, and inexplicable decisions' (Lewis 1966, p266). In the field of industrial policy there has been considerable discussion of the effect of government intervention in the pricing of factor inputs and in fiscal incentives on industrial efficiency and technology choice. With the exception of Little, Scitovsky and Scott (1970), there is little else on the subject. Government regulation in developing economies remains an under-researched topic (Ariff and Hill, 1985).

For one thing, regulation - like protection - affects manufacturing performance and export growth: directly, as regulation affects the international trade sector, and indirectly, through its effect on industrial efficiency and international competitiveness. For another, the nature and extent of regulation varies enormously within ASEAN. The most important difference concerns not the amount of regulation but rather the type of such intervention. Singapore and Indonesia constitute extreme

cases. Both governments intervene extensively in the economy. But in Singapore, which has a small and relatively efficient bureaucracy, intervention generally enhances the operation of market forces. By contrast, regulation in Indonesia generally impedes the operation of market forces and reduces efficiency (Lim, 1983).

Without the macroeconomic stability that the East Asian countries enjoyed, in varying degrees, it is unlikely that their success, not only in achieving rapid growth and export expansion, but also in improving income distribution and other measures of 'quality of life', would have been anywhere near as great (Page, J. 1994). The area of government involvement most difficult to evaluate is the management of the system of incentives which guide private economic activity. It is certain that government manipulation of incentives can be extremely effective (Wong and Kalirajan, 1984). Every major shift in industrial policy in the East Asian countries was followed by a significant change in economic performance. Particularly impressive have been the responses of manufacturers to the removal of impediments to exporting, although there is nothing unique about this.

There remains the question, however, whether governments' main contribution to economic success in the East Asian countries was not principally in removing the obstacles to growth which they themselves put there in the first place. Taking everything at face value, this would seem to be largely the case. Under import substitution they generally stagnated; removing the obstacles to exporting, they generally flourished. Backsliding towards protectionism, as in the Republic of Korea in the 1970s, led to decline.

Chapter 2

Revealed Comparative Advantage

In the last three decades the ASEAN economies have been among the most rapidly growing in the world. With a few exceptions, manufacturing has been the region's leading growth sector. The ASEAN manufacturing sector is of interest not only because of the pace of industrialisation but also because in each country manufacturing has undergone a major transformation. One element of this process is the increase in manufactured exports. Another is the profound change in the structure of manufacturing, involving the transition from simple consumer goods and resource-based processing activities towards more sophisticated industrial structures.

It is widely recognised that the comparative advantage of a country is by no means static in a dynamic world. It is subject to changes such as shifts in resource and factor endowments, technology and demand. Experience has shown that it is not unusual for a country to lose its comparative advantage in certain lines of production over time or to develop a competitive advantage in an entirely new set of products (Porter 1989). In industrial countries, several industries have exhibited distinct product cycles which have resulted in the international relocation of the labour-intensive and standardised production phases.

In theory, comparative advantage is essentially related to pre-trade relative prices, whereas in empirical research one has to improvise with post-trade data (Hillman, 1980). This difficulty was largely responsible for the emergence of the concept of 'revealed comparative advantage' (RCA) in empirical research. The concept of 'revealed' comparative advantage, introduced by Balassa (1965) pertains to the relative trade performances of individual countries in particular commodities. On the assumption that the commodity pattern of trade reflects inter-country differences in relative costs as well as in non-price factors, this is assumed to 'reveal' the comparative advantage of the trading countries. A number of indicators of RCA are available in the literature, but for the present study, one of the more popular measures has been chosen, the export specialisation ratio. The export specialisation ratio provides an insight into the shifting pattern of comparative advantage or disadvantage in manufacturing of a number of countries allowing an examination of the extent to which changes in the manufacturing sector conform to the theoretical predictions. This is preceded by a brief review of the relevant literature on international trade and changing comparative advantage.

Needless to say, international shifts in comparative advantage constitute so complex a phenomenon that no single explanation is adequate. There are so many forces at work that no simple two-factor model would suffice. These include the role of factor movements, human capital, natural resources, infrastructures, technology transfers and reversals and research and development. In this chapter, an attempt is made to detect shifts in comparative advantage in the Pacific region, with special reference

to Singapore's manufactures. The examination of structural change will aim to determine what light the theory of changing comparative advantage has shed on the process of structural change, and how well the observed changes conform to the theoretical expectations.

To summarise the approach, a three-stage transformation process is envisaged. In the early stages of industrialisation, the manufacturing sector consists predominantly of simple processing and resource-based activities. As capital accumulation - both human and physical - proceeds, a range of non-resource-based activities emerge, initially consisting mainly of those which are unskilled labour-intensive, but subsequently of products which are more capital and technology-intensive.

Despite some similarities in the general reorientation of industrial policies, the ASEAN countries' industrial sectors are quite dissimilar in many other respects. For one thing they are at different stages of industrialisation. At one extreme is Singapore, a high wage NIC. At the other extreme is Indonesia, a low wage economy with, until fairly recently, one of the least developed industrial sectors for its size in the world. In between are the other three countries, which are commonly labelled 'near NICs'.

Singapore, the most advanced member of ASEAN, has found it increasingly difficult to maintain its comparative advantage in labour-intensive exports and since the late 1970s has been actively pursuing a policy of industrial restructuring directed at shifting the manufacturing sector towards more skill-intensive activities. While the next-tier ASEAN NICs continue to rely heavily on unskilled labour-intensive exports, they are aware that this phase of growth will be of limited duration. Anticipating the erosion of their comparative advantage by other low-wage developing countries, these countries have also adopted programmes of upgrading labour force skills which it is hoped will facilitate the transition to specialisation in more skill-intensive activities.

There are two main difficulties associated with empirical investigation of the nature and consequences of changing comparative advantage. The first is to develop appropriate measures of changing factor endowment, the underlying causes of changing comparative advantage. The second is to develop a suitable schema for disaggregating production and trade flows, and to verify the impact of these changes on the structure of production and trade. From the data presented in chapter one it can be seen that the ASEAN economies are neither resource-rich nor resource-poor in the Asia-Pacific region. The best endowed countries in ASEAN are Malaysia and Indonesia, while the Philippines has the poorest endowment. But even the well endowed countries do not have a resource base as rich as Australia and the United States; similarly, even the poor Philippine endowment is superior to that of Japan and Korea.

A word on data limitations is important at the outset. Unlike international trade flows, which are fairly well documented and easily measured, the reliability of industrial production, employment and

value-added statistics of some ASEAN countries is questionable. Satisfactory time series data, on which an analysis of structural change must rely, are particularly difficult to obtain. There are considerable variations in the coverage of industries and firms, and the level of disaggregation between countries and over time. In the absence of appropriate data on production costs in the manufacturing industries of individual countries, it may be proposed to rely on prevailing theories of international specialisation for determining the pattern of comparative advantage. Among these doctrines, the Heckscher-Ohlin theory and the classical theory of comparative advantage can claim our attention.

Literature

Models of international trade serve as vehicles for discussing the sources of international comparative advantage and the consequent effects that government interventions may have. The sources of comparative advantage are: differences in technology; differences in factor supplies; economies of scale; differences in tastes; and barriers to entry.

The myth of positive economics would make us expect to find in the literature some decisive empirical tests that have led the profession to discard one or more of these models. In fact, only two empirical findings seem to have had a major impact on the way that economists think. The first was Leontief's (1953) discovery that US imports were more capital intensive than US exports. This was widely regarded to be a great blow against the Heckscher-Ohlin model. The second major empirical finding was the extensive amount of 'intra-industry' trade catalogued by Grubel and Lloyd (1975), which will be discussed in the next chapter. The extent of intra-industry trade is also regarded as a blow against the generality of the Heckscher-Ohlin model and is at least partly responsible for the large theoretical literature on models with increasing returns to scale and product differentiation. Other than these two results, beliefs about the sources of international comparative advantage have not been greatly affected by any observations (Greenaway and Winters, 1994).

The theory of international trade is founded on the principle of comparative advantage. As Ricardo in 1817 first explained it, for a nation to gain from trade all that is necessary is that its relative cost of producing various goods differ from the relative cost of producing the same goods in other countries. No matter whether a country is absolutely more (or less) efficient in producing all goods, it will gain from trade, exporting those goods whose relative cost is low. Since virtually every country in the world has a comparative advantage in something, and hence a comparative disadvantage in something else, every country in the world should gain from trade, rather than going it alone and remaining an autarky (Ricardo, 1871).

One of the most celebrated attempts at testing the Ricardian theory was undertaken by MacDougall (1951), who in noting that before World War Two 'American weekly wages in manufacturing were

roughly double the British', concluded that the US ought to have had a comparative advantage in industries where output per worker was more than twice the British. An examination of 1937 trade data disclosed that, in general, the US industries in question upheld a larger share of the world export market than did its UK competitors. On the strength of these results MacDougall considered the Ricardian theory to be validated, especially since his figures revealed that where US labour productivities were less than double those of the British, UK exports exceeded American ones by very large margins. While not questioning the accuracy of MacDougall's observations, it is not clear that the inference he draws is consonant with the theory's essence. The theory is usually formulated in terms of bilateral trade, where one country exports to the other, goods in which its labour force is comparatively more efficient. While no allowance is made for the same goods to be exported simultaneously by both countries, MacDougall's approach is cast in terms of comparative export market shares sustained in third party economies. This is supposedly justified on the grounds that in the review period, trade between the US and the UK was severely restricted because of inordinately high tariffs. Although there appears to be no theoretically sound bias for such a procedure, it has been accepted by many as 'a valid translation of the classical comparative costs model into a multi-country setting' (Caves, 1967). MacDougall recognised that, theoretically, if either the US or the UK 'had any comparative advantage, however small, she would get the whole export market' (MacDougall, 1951). That in practice, both had at least some share, even if labour productivity ratios diverged from relative wage ratios, is accounted for by the existence of imperfect markets, non-homogeneous products and transport costs. None the less MacDougall felt reassured that the labour theory was indeed confirmed since there was a clear 'tendency for each country to get a larger share of the market the greater its comparative advantage'.

Economists generally regard the Heckscher-Ohlin model to be superior to the Ricardian model. The first and by far the most influential study of the Heckscher-Ohlin model was done by Leontief (1953) who found that a given bundle of US exports in 1947 was apparently produced with a smaller input of capital per man than an equivalent bundle of competitive imported substitutes. As the US was generally believed to be capital abundant compared to the rest of the world, this finding contradicted theoretical expectations from the simple factor proportions theory.

This generated two main responses. On the one hand, there were those who, eager to verify Leontief's claims, conducted similar tests on the other country's data (Stopler and Roskamp, 1961; Wahl, 1961; Bharadwaj, 1962; Roskamp, 1963). On the other hand, there were those who attempted to 'explain' the paradox by turning on the alleged invalidity of specific Heckscher-Ohlin assumptions (Lancaster, 1957; Minhas, 1963; Travis, 1964; Keesing, 1965, 1966; Kenen, 1965; Vernon, 1966; Hirsch, 1967; Baldwin, 1971; Metcalf and Steedman, 1972). It was out of this second group that the 'new' theories of trade emerged in the mid-1960s as extensions of the factor proportions theory.

The new theories of trade, suggested resolutions of the Leontief paradox, fall into three broad categories. Each originates from a relaxation of specific Heckscher-Ohlin assumptions and can be denominated respectively as the skill level hypothesis, the technological gap hypothesis and the scale economy hypothesis.

The explanation offered by Leontief (1953) is that an average US worker was three times as effective in production as his foreign counterpart. Though this figure of three times greater efficiency has been found to be exaggerated (Kreinin, 1965), subsequent evidence (Leontief, 1965; Keesing, 1966, 1968) has shown that, across industries, US exports are indeed more skilled labour intensive in production than their import competing counterparts (Kravis, 1956; Waehrer, 1968). These empirical analyses suggest that an additional factor - labour skill or human capital - as well as physical capital and raw labour is a significant determinant of the pattern of US trade.

As well as the labour skill approach, the human capital resolution of the paradox (Kenen, 1965) has shown that including the physical and human capital inputs to production can give empirical results which are consistent with the predictions of the Heckscher-Ohlin theory. This has been criticised on both theoretical and empirical grounds. First, the notion that wage differences between skill levels are exclusively due to differences in human capital is not entirely valid. Though Waehrer (1968) found a significant correlation between wage payments and skill inputs these may be due, in part at least, to such socio-economic factors as labour productivity differences and labour market imperfections. Secondly, Baldwin (1971) suggests that it is theoretically inappropriate to aggregate the human and physical capital elements. Finally the different labour skills are unlikely to be perfectly substitutable though this is assumed by the human capital approach.

The technological gap hypothesis is based on the premise that, contrary to the Heckscher-Ohlin assumption of identical technology, lags and leads in product innovation between trading countries may explain the observed pattern of trade in manufactured products (Posner, 1961; Vernon, 1966; Hirsch, 1967). Indeed, empirical evidence based on American trade data and industry characteristics have established that a significant positive relationship exists between the technology intensity of the production process and competitive export performance in foreign markets (Gruber, 1967; Keesing, 1968; Weiser and Jay, 1972).

The scale economy thesis suggests that, contrary to the Heckscher-Ohlin assumption of constant returns to scale, economies of large scale production figure in the production technologies of a wide variety of manufactured goods (Linder, 1961). Large countries have a relative advantage over smaller ones in foreign trade in products whose outputs are subject to increasing returns. Empirical verifications of the scale theory by Keesing (1968) and Weiser and Jay (1972) have shown that there

is a strong positive correlation between US competitive export performance and the average size of its industries.

The Heckscher-Ohlin model has often been studied empirically with cross-commodity comparisons implicitly based on the assumption that the export performance 'should' depend on the characteristics of the industry. Simple correlations were rather common early in the literature, but these gave way to multiple correlations in the 1970s.

For example Keesing (1966) reports some simple correlations of export performance (US exports)/(group of 14 countries' exports). The results of the study are suggestive of human capital abundance in the US because the largest positive correlations occur at the highest skill levels and because the unskilled labour share is actually negatively correlated with export performance.

The basic Heckscher-Ohlin model has been extended in a variety of directions. One of these is the synthesis by Kruger (1977) and Garnaut and Anderson (1980) which, drawing on the model developed by Jones (1971), have incorporated natural resources into the model. The inclusion of natural resources is particularly relevant to the ASEAN countries, given that most have a moderately rich resource endowment. In this formulation a two-good model is proposed, consisting of manufactures and natural resources. There are three factors of production: capital, which is specific to the production of manufactures; natural resources, which are specific to natural resource based goods; and labour which is required for both.

In the early stages of development, when the capital stock is small, the wage rate is determined largely by the ratio of natural resources to labour, that is, the lower the ratio the lower the marginal productivity of labour. At this stage, the country will export natural resource based goods and import manufactures. As capital accumulation proceeds, labour is attracted into the newly developing manufacturing sector, and the country gradually shifts from being a net exporter of natural resource based goods to a net exporter of manufactures. According to this formulation, the speed at which labour is reallocated to manufacturing, and the 'cross-over point' - at which manufactured exports exceed those of natural resource based goods - will be determined by the initial per capita endowment of natural resources: the greater the endowment, the greater the capital accumulation and the higher the wage necessary to achieve the cross-over, and the longer the period of specialisation in the production and export of natural resource based goods.

Conventional trade theory stresses the differences in factor endowments between countries and differences in the factor proportions required for producing different goods as the basis for comparative advantage. Countries are differently endowed by nature with the various factors of production (land, labour and capital) required for production. This means that, in the absence of trade,

the relative prices of these factors will differ between countries. Land will be relatively cheap in countries well endowed with land, labour will be relatively cheap in countries well endowed with labour and capital relatively cheap in countries well endowed with capital. By implication, this assumes that factor markets are perfectly competitive. At the same time, different factor proportions are required for the production of different goods. Some productive processes are highly labour intensive, others capital intensive, others land intensive. Thus, it follows that a country will find a comparative advantage in those goods which use the relatively abundant factor of production relatively intensively. In other words, relative labour abundant developing countries are predicted by the theory to have a comparative advantage in relatively labour-intensive goods, while relatively capital abundant developed countries find a comparative advantage in capital-intensive goods. The theory can be extended to allow for many factors of production and many countries without losing much of its generality.

Trade theory has traditionally identified the relative factor endowments of land, labour and capital as the primary determinants of the composition of trade. Recognising the growing importance of manufactures in world trade, most theories since the 1970s have emphasised criteria such as economies of scale, skill intensities, and technical innovation, (Hufbauer 1970). These various theories on the determinants of comparative costs and the commodity composition of trade contain certain implications regarding which developing countries are likely to have a comparative advantage in exporting manufactures. Some of the country characteristics, which various trade theories have stated are favourable to increasing manufactured exports, are discussed below.

Domestic market size

The underlying theory of the market size hypothesis is that economies of scale give a country a comparative advantage in exporting manufactured goods with increasing returns to scale. Linder (1967) took this argument to the extreme, stating that a country cannot successfully export manufactures without a large domestic market. Keesing (1967) has provided empirical support for the market size hypothesis.

The market size hypothesis of the study is not that a large domestic is a precondition for successful performance in exporting manufactured goods. Besides constituting a pessimistic forecast since most developing countries have small domestic markets, a precondition hypothesis would contradict the evidence that some small countries have provided by increasing significantly their manufactured exports such as Singapore and Hong Kong. Indeed, manufactured exports are in a way even more important for small countries, since foreign trade is a means by which they can effectively increase the size of their markets and obtain the important scale and competitive benefits.

There are several ways in which small countries can overcome their size handicap in exporting manufactures. One solution is to concentrate on manufactured goods with constant returns to scale. A good example which has yielded substantial returns in recent years for some developing countries is the assembly and processing operations subcontracted from multinational corporations. The major subcontracting developing countries in Asia for the United States are Taiwan, Hong Kong, Singapore, Korea and the Philippines. Most of these countries have small domestic markets. The main determinants of comparative advantage in international subcontracting, low labour costs and proximity to a large market, do not discriminate in favour of large countries.

A policy recommendation emanating from this might be to encourage small countries to consider regional integration. This appears to have been the case for Singapore as it has, over the years, attempted to convince its partners of the need to elaborate effective regional economic cooperation. Through regional integration countries can increase the size of their 'domestic markets' and be more capable of exporting manufactured goods which exhibit economies of scale. Unfortunately, efforts at regional integration have not been very successful, making impossible an empirical conformation of this policy recommendation. It must also be remembered that a large domestic market is not a precondition for increasing manufactured exports, however, and indeed may in some cases encourage policies which discriminate against exports.

Level of economic development

The higher the level of economic development of a country, other things being equal, the greater should be its capability of producing manufactured products that are competitive on the world market. The degree of industrialisation, technology, efficient infrastructure, and levels of skills and organisation combine to give a more developed country a comparative advantage in producing products with the quality and economy necessary to be competitive in world trade.

Just as with the market size factor, however, a high level of economic development is not a precondition for success in exporting manufactures. The relationship between level of economic development and manufactured export performance is not categorically positive. In their study of the pattern of export growth in developing countries, Chenery and Hughes (1972) have shown that the first stages in exporting manufactures is generally in products intensive in low-skilled labour and simple technology. Later stages normally exhibit increased sophistication in manufactured goods. This is the pattern that the ASEAN countries have attempted to follow.

The underlying assumption which has been called into question is that there is a common worldwide stock of technical knowledge to which all countries have equal access. Even if technology is ultimately diffused around the world, it takes time for this to happen. Therefore, countries which are better able to generate new technologies gain a comparative advantage, albeit a temporary one, in producing new

goods which use newly minted technology, what are often called 'high-tech' goods. Over time as new products become standardised for mass consumption, their production may shift from the country which created them to other countries with lower production costs. Singapore was able to take advantage of this situation through a number of subcontracting arrangements and investment from foreign owned MNCs. As costs began to rise production has shifted down the line, first to Malaysia and Thailand, then to Indonesia and the Philippines. This pattern is consistent with Vernon's 'product cycle hypothesis' (Vernon, 1979). That products have a life cycle and that countries specialise at different stages in the product life cycle has been offered as an alternative to the Heckscher-Ohlin hypothesis. However, the product cycle theory fails as a separate theory of trade because it begs the question of why some countries are better able than others to create new products and new technologies. If the reason is that if some countries have more skilled labour and scientific resources to devote to research and development, then the product cycle theory comes close to being nothing other than an extended version of the Heckscher-Ohlin proposition.

Natural resource endowment

There are several ways in which a developing country's endowment of natural resources can affect its performance in exporting manufactures. This section proposes that the dominant effect of a large endowment of natural resources is to discourage manufactured exports. Following directly from the Heckscher-Ohlin factor endowment theory of comparative advantage, it is expected that a country rich in natural resources will tend to specialise in producing primary products or goods intensive in primary factors, as has occurred to a large extent in Indonesia and Malaysia. On the other hand, a country poor in natural resources, such as Singapore, is expected to specialise in manufactured products. The assumption of no country-specific resources clearly does not apply to natural resources which are distributed very unevenly around the world. Obviously, if a country does not have certain natural resources, it will import them regardless of the capital or labour intensiveness of their extraction, this has been a characteristic of a number of Asian economies, most notably Japan, Hong Kong and Singapore..

The fact that a country is poor in natural resources does not, however, by itself confer a comparative advantage in manufactures. Since the country is poor in natural resources, it must concentrate its efforts on manufactures if it wishes to export. Comparative advantage is not a static phenomenon and dependent only on given endowments. A country can develop a comparative advantage in manufactures by working to develop certain factors which can be changed over the short and medium run (Little, 1979).

A lack of natural resources does not necessarily mean that a country will never be a successful exporter of manufactures. To the extent that industrialisation and diversification are synonymous with economic development, this assertion would imply that countries rich in natural resources are thereby

handicapped in their efforts to develop their economies. The experience of some of the developed countries obviously refutes this assertion.

When discussing only the developing countries, however, it is valid to apply the Heckscher-Ohlin theory to the extent that countries are expected to depend at least, in the first stages of development, on their abundant natural resources for export. When a country rich in natural resources reaches a certain level of development, it might begin to industrialise and depend more on manufactured exports if it wishes to progress further.

Abundance of natural resources can, in fact, provide a basis for the expansion of manufactured exports in developing countries through the further processing of the locally produced raw materials. For a variety of reasons, this avenue for increasing manufactured exports has not been extensively used in developing countries. The processing industries, particularly the extractive industries, often require large capital investments and a skilled labour force. In addition, the escalation of tariffs by stages of production in developed countries discriminates against the processing for export of locally produced raw materials in developing countries. Even if the developing countries offset the tariff obstacle through export subsidies to their processing industries, they still risk (and have, in fact, experienced) retaliation in the form of countervailing duties by the developed countries.

An hypothesis of this study is that the above obstacles have proved to be effective constraints on the ability of developing countries to process successfully for export locally produced raw materials, thus reenforcing the prediction of the Heckscher-Ohlin theory that countries rich in natural resources will not be successful exporters of manufactures. In the case of ASEAN, Singapore is the most successful exporter of manufactures and has a poor resource endowment. However, the remaining four countries are resource rich and, to varying degrees, have become successful exporters of manufactures. To say that the Heckscher-Ohlin theory predicts that countries rich in natural resources will not be successful exporters is inaccurate, it is just that some countries, such as Indonesia, are slower at developing their exports breaking away from the reliance on their natural resources.

Labour skills

Several empirical studies have shown that differences in labour skills play a major role in determining comparative advantage and trade patterns. Countries well-endowed with skilled labour will have a comparative advantage in skill-intensive goods, and countries with a scarcity of skilled labour will tend to produce goods intensive in unskilled labour. The empirical tests for the labour skills hypothesis have shown that trade patterns can be explained when industries are ranked according to their relative skill intensities. In order to measure the different skill intensities of industries, Kenen (1965), Kravis (1971), used differences in average wage rates as proxies. Keesing (1979) used the

actual share requirements of skilled labour man years by industry. Baldwin's (1981) variable for skilled intensity measured the differences in the education of labour in various industries.

It seems reasonable to assume that developing countries as a whole should have a comparative advantage in products intensive in the use of unskilled labour. The product cycle theory of Vernon provides a theory in support of this proposition (Vernon, 1979).

Since most developing countries have more than enough unskilled labour, this particular resource should not be very helpful in explaining relative performance in exporting manufactures. It would be a mistake, however, to categorise the labour forces of all developing countries under the same label of unskilled, implying no cross-country differences. There are significant degrees of differences in the quality of labour existing in the various developing countries, and there are even sizeable pools of skilled labour in some of these countries. For example, some of the East Asian countries, notably the NICs, undoubtedly owe significant parts of their successful manufactured export performance to the relatively high quality of their labour forces.

Empirical support has been presented for the argument that labour skills are a major determinant of the direction and composition of trade. Based on a factor endowment theory of trade, the hypothesis is that a country with a skilled labour force will have a comparative advantage in manufactured goods whose production is intensive in skilled labour.

This study hypothesises that a skilled labour force should be positively related to manufactured export performance in developing countries. Skilled labour enables a country to produce a greater variety of products with the quality necessary to be competitive on the world market. Countries such as Singapore, Hong Kong, Korea and Taiwan are able to achieve levels of diversification in their manufactured exports which are not possible for countries lacking in skilled labour. For example, there are some developing countries lacking in skilled labour which have been able to achieve reasonably high levels of manufactured exports, but these exports are heavily concentrated in a product like textiles with unfavourable growth prospects. It is desirable to have a wide base of export products both for reasons of stability and because the growth prospects for textiles and clothing exports are not nearly as bright as they were in the 1960s. These two product categories certainly cannot provide the road to success in manufactured exports for many more countries.

Although the theory is wanting in many respects, it has not lost its intellectual appeal. The principal of comparative advantage makes considerable sense to those concerned with allocative efficiency, although what constitutes comparative advantage and what contributes to it are subject to debate. None the less, the factor endowment hypothesis exhibits considerable robustness with respect to both inter-industry and intra-industry trade. (Ethier, 1982)

In theory, comparative advantage is essentially related to pre-trade relative prices, whereas in empirical research one has to improvise with post-trade data. This difficulty was largely responsible for the emergence of the concept of 'revealed comparative advantage' (RCA) in empirical research. The concept of 'revealed' comparative advantage, introduced by Balassa (1965) pertains to the relative trade performances of individual countries in particular commodities. On the assumption that the commodity pattern of trade reflects inter-country differences in relative costs as well as in non-price factors, this is assumed to 'reveal' the comparative advantage of the trading countries.

For one thing, comparative advantage would be expected to determine the structure of exports (Liesner, 1958); for another, under the assumption of uniformity in tastes and a uniform incidence of duties in every industry within each country, export-import ratios would reflect relative advantages. Thus, while the heterogeneity of statistical commodity groups allows for exports and imports within the same category, the greater is a country's advantage in producing the commodities in question, the higher the ratio of the f.o.b. value of exports to that of imports is likely to be.

The assumption of the uniformity of tastes and uniform incidence of duties is not fulfilled in the real world, however. Rather, imports will be affected by intercountry differences in the degree of protection. Moreover, in the case of intermediate products, export-import ratios are influenced by demand for purposes of further transformation in producing for export. To take account of these influences, separate consideration has to be given to the special circumstances relating to individual products, which fact reduces the generality of the comparisons.

On the other hand, as long as all exporters are subject to the same tariff, data on relative export performance are not distorted by differences in the degree of tariff protection. Correspondingly, in evaluating 'revealed' comparative advantage, greater weight is given to export performance than to export-import ratios. In doing so it avoids the lengthy discussion of protection policies, although it is recognised that patterns of both export and import specialisation are of considerable importance as indicators of comparative advantage in a world in which there are many commodities and intra-industry trade.

Export Specialisation Ratio: A Measure of Revealed Comparative Advantage

International shifts in comparative advantage constitute so complex a phenomenon that no single explanation is adequate. The interaction between the determinants of comparative advantage is such that the concept of comparative advantage itself is increasingly looked upon as a dynamic one. There are so many more forces at work than was originally envisaged in the simple two-factor model. These include the role of factor movements, human capital, research and development, natural resources, and technology transfers and reversals (Kennan, 1970; Keesing, 1966; Wells, 1972; Vernon, 1970).

In an attempt to detect shifts in the comparative advantage of ASEAN manufactured exports, no single satisfactory measure is readily available. For, in theory, comparative advantage is essentially related to pre-trade relative prices, whereas in empirical research one has to improvise with post-trade data (Hillman, 1980). It is mainly this difficulty which led to the notion of 'Revealed Comparative Advantage' (RCA) in empirical research (Balassa, 1965), assuming of course that the relative costs as well as differences in non-price factors are reflected in the pattern of commodity trade.

A number of indicators of Revealed Comparative Advantage are available in the literature. However, the most commonly used are the net exports/total trade ratio, the export performance ratio and the export specialisation ratio. A rough insight into a country's shifting pattern of comparative advantage or disadvantage in manufacturing may be gleaned from changes in the ratio of net exports to total trade.

Net export/total trade ratio

$$NX_{ij} = (X_{ij} - M_{ij}) / (X_{ij} + M_{ij})$$

where :-

X_{ij} = country i's export of product j

M_{ij} = country i's import of product j

Changes in the ratio of net exports (exports minus imports) to total trade (exports plus imports) at a fairly disaggregated level can provide rough insights into a country's shifting pattern of comparative advantage. This measure NX_{ij} expresses net exports of commodity j as a ratio of total trade in commodity j, for country i (see formula above). This measure yields negative figures in the case of net imports, and the ratios can theoretically range between -1 (where a product is imported but not exported) to +1 (where a product is exported but not imported). Although the positive sign thereby indicates that the country exports the good it does not necessarily indicate revealed comparative

advantage; nor does a negative sign necessarily suggest revealed comparative disadvantage. However, an increase in the ratio may be taken as a likely indication of some strengthening of 'revealed' comparative advantage. The net export/total trade ratio has also been expressed in percentage terms, with the values ranging between -100 and +100 (multiplying the formula by 100). UNIDO (1982) provides an empirical application of such a model. A word of caution, however, is in order in interpreting the net export ratios. The ratios are affected by the level of aggregation. Even at the two-digit level, the ratios can conceal a lot of interesting variations and deviations. In addition, the ability of this measure to 'reveal' the shifts in the country's comparative advantage pattern is affected by the structure of protection in the export markets (which distorts exports) and at home (which distorts imports). Where domestic market protection is substantial, the ratio may indicate little about changes in 'real' comparative advantage. These caveats notwithstanding, the net export ratios do serve as a useful tool of analysis, especially when used in conjunction with other RCA indicators.

The next two measures to be considered - the export performance ratio and the export specialisation ratio - have an intuitive appeal as an RCA measure, especially since they obviate the need for import data. However, they are not free from policy distortions, since exports are also influenced by policy interventions by both importing and exporting countries. Nonetheless, the danger of such distortions appears to be much less than that for the net export/total trade ratio, as government interventions generally distort a country's import-mix more than its export-mix.

The first of these two measures is the 'export performance ratio'. This measure EP_{ij} expresses the share of country i 's export of product j in total world exports of product j , as a ratio to the share of country i 's total exports of manufactures in the world total exports of manufactures.

Export performance ratio

$$EP_{ij} = (X_{ij} / X_{wj}) / (X_{im} / X_{wm})$$

where :-

X_{ij} = country i 's export of product j

X_{wj} = world exports of product j

X_{im} = country i 's total manufactured exports

X_{wm} = world total exports of manufactures

In interpreting the data for the export performance ratio (see formula above), it needs to be emphasised that the ratio, in effect, standardises for a country's share of world manufactures. Thus, for example, low figures for one country are not attributable to that country's small aggregate manufactured exports, but rather to the export performance of the particular product. An export performance ratio of unity would imply 'normal' export performance of product j relative to the size of

country i as an exporter, while a ratio of two would suggest that the product j's share in country i's exports is twice the corresponding share, and so on. Although the ratio in theory can range from zero to infinity, large numbers beyond two digits are uncommon. As this measure does not require import data, unlike the net export ratio, the results are less distorted by policy interventions. An export performance ratio exceeding unity is usually taken as an indication of comparative advantage, while an increase in the ratio supposedly suggests a strengthening of the comparative advantage so revealed. While ASEAN exports have increased rapidly, so too have exports of the same products from many other developing countries.

The second more commonly used measure of RCA - the one used in the present study - is the export specialisation ratio (see formula below) which was introduced by Balassa (1965). This measure (ESij) is based on the ratio of the share of a commodity in the total merchandise exports of a country to the commodity's share in world merchandise exports.

Export specialisation ratio

$$ES_{ij} = (X_{ij} / X_i) / (X_{wj} / X_w)$$

where :-

X_{ij} = country i's export of product j

X_i = country i's total merchandise exports

X_{wj} = world exports of product j

X_w = world total merchandise exports

The export specialisation ratio is in effect simply a more general measure than the export performance ratio, the difference being that the ratios are presented with respect to total merchandise exports rather than to manufactured exports. It is an indication of the extent of commodity specialisation in a country's exports relative to that of other exporting countries. However, this ratio like the export performance ratio, must be used cautiously as an RCA measure (Bowen 1983). RCA indices need to be interpreted with caution, since they represent 'proxies' and portray 'ex-post' situations. An export specialisation ratio of unity would imply 'normal' export specialisation of product j relative to the size of country i as an exporter, since the amount of product j country i exports is equivalent to the amount of product j the world as a whole exports. Although the ratio in theory can range from zero to infinity, large numbers beyond two digits are uncommon. Any value above one implies the greater importance of product j in country i's exports compared to the world average (a concentration or specialisation in a particular product). An export specialisation ratio of more than unity is usually taken as an indication of comparative advantage as a country i must have some sort of advantage in order to be able to produce more of product j than would normally be expected. In addition an increase in the ratio over time supposedly suggests a strengthening of the comparative advantage.

An index of less than one implies that country i 's export of a particular product j in relation to its total exports is less than 'normal' (ie less than the world exports of product j in relation to world total merchandise exports). An index that is increasing, but is still less than one however, suggests a strengthening of the comparative advantage so revealed as a country begins to develop an advantage, enabling it to produce more of a particular product. Over time the country in question may gain a comparative advantage in producing the product as indicated by a ratio of greater than one. Similarly, any index that decreases over time implies that the country is beginning to lose its comparative advantage in producing a particular product. Eventually the index will fall below one as other countries begin to gain a comparative advantage in the production of the product.

The inquiry has been limited to manufactured goods, partly because these provide the lion's share in trade among countries, and partly because a large number of primary products are subject to subsidies, quotas, and special arrangements, so that the ensuing trade pattern can hardly reflect comparative advantage. Manufactured goods have been defined to include the products classified in commodity categories five to eight of the Standard International Trade Classification, the exception being unwrought metals which - following the customs of international organisations - are regarded as primary products.

In order to test the theory of changing comparative advantage it is necessary to develop a broadly consistent commodity classification. The minimum requirement is resource-intensive and labour-intensive goods; technology-intensive goods should also be identified separately. It is necessary, further, to devise a universal ranking of industries, which can be applied consistently to each of the ASEAN countries.

The usual procedure is to rank industries according to the production characteristics in the United States, on the assumption that the United States economy is relatively undistorted, and that its manufacturing data are the most comprehensive and reliable. The most frequent objection to this procedure is that the ranking of production characteristics may differ between developed and developing countries. However, limited evidence suggests the rankings are largely invariant to the level of economic development, that is, that the phenomenon of 'factor intensity reversals' is of limited importance. The most widely used classification, first developed systematically by Lary (1968), is a ranking based on United States per capita value added within manufacturing. A major limitation of this classification is that it fails to identify resource-based goods, which are important both in our theoretical formulation and in a number of the ASEAN countries. Another classification developed subsequently by Krause (1982) is essentially a modification of the Lary-type classification, categorising commodities into four broad groups according to the dominant factor input: natural resource, unskilled labour, technology and human capital. In the Krause classification, labour

intensity is measured on the basis of the US data relating to per capita value-added, while technology intensity is gauged using the US research and development expenditure data. A further modification by Tyers and Philips (1984) splits resource goods into agriculture and mineral resource-intensive goods. Krause's SITC classification is reproduced, with some modification at the 3-digit level.

Several points need to be made regarding this classification. First, what is an internationally mobile factor input - and therefore excluded from the classification - is to some extent arbitrary. For example, the movement of physical capital is severely restricted by some countries, although its exclusion in the case of the ASEAN countries may be justified on the grounds that these countries have fairly open capital markets. It may also be argued that resources and technology are freely traded and that their production is not location specific. However, there are often substantial economies in at least early-stage processing on-site, and for some perishable agricultural commodities such processing is essential. The same may be said for technology-intensive goods, in the sense that the international relocation of production facilities requires basic technical competence in the host country.

There is also the question of the definition of manufacturing. The conventional national accounts definition for the purposes of production is ISIC 3, whereas in the case of trade it is SITC 5-8 (less 68). Neither definition is clearly superior, and yet there are substantial differences in coverage. It would be possible in theory to adopt a common definition. But this raises a maze of methodological problems, compounded by the difficulty of a satisfactory and workable SITC-ISIC concordance.

The model used appropriately, redefines capital to include both physical and human capital (Johnson, 1968), it is conceptually desirable to distinguish between the two types of capital. Empirical support for this proposition has been provided by Balassa (1979), who found that human capital was a significant determinant of export specialisation in half of a sample of 36 developing countries. Secondly, it is necessary to distinguish those products whose development and production is particularly technology intensive. A large body of literature, developed by Hufbauer (1970) and others, and incorporating the product life cycle theory, asserts that research and development expenditure (or some suitable alternative measure of technology) is an important determinant of the pattern of trade flows.

Hence the classifications used in this study are :-

Natural resource intensive

SITC 61, 63, 661-3, 667, 671.

Unskilled labour intensive

SITC 65, 664-666, 81, 82, 83, 84, 85, 89 except 896 and 897.

Human capital intensive

SITC 55, 62, 64, 69, 775, 78, 79, 885, 896, 897.

Technology intensive

SITC 54, 56, 57, 58, 59, 752, 759, 76, 77 except 775, 88 except 885, 87.

Physical capital intensive

SITC 51, 52, 67, 68, 71, 72, 73, 74, 751.

Although the classification is generally transferable across countries, there are some activities whose production characteristics differ sharply between countries. Such differences are marked especially between developed and developing countries, exacerbated by the phenomenon of factor intensity reversals. Thus, what is classified as an unskilled labour-intensive activity in one country may well be technology-intensive in another (see Lary, 1968; Krause, 1982).

The model predicts first, a resource-based processing stage; secondly, a period of sustained growth in unskilled labour-intensive manufactures; and thirdly, the emergence of a more sophisticated industrial structure encompassing more skill and capital-intensive activities. Abstracting from policy interventions, the two key variables which explain the dynamics of the model are relative resource endowment and the rate of capital accumulation.

On a priori expectations regarding trends in the composition of ASEAN manufacturing exports, one would expect the most rapid change to have occurred in Singapore. The two key variables are resource endowment and growth in per capita income. Singapore is exceptional on both grounds, having the poorest resource endowment and the most rapid growth in ASEAN. At the other extreme is Indonesia, which grew slowly in the 1960s and has a relatively good resource endowment. Malaysia, also, is well endowed with resources - which would be expected to inhibit the rapid movement of inputs out of this sector - but its growth has been rapid. The Philippines, which has the poorest endowment of the 'other four' and, should also have exhibited a significant transformation, although less rapid than Singapore. Thailand, in addition, is in an intermediate position.

A wide range of policy interventions are likely to affect the predictive power of the model. Government intervention or, more generally, 'resistances', defined by Drysdale and Garnaut (1982) as "any factors which prevent or retard the immediate international movement of commodities in

response to price differentials", will substantially distort the pattern of production and trade. Apart from considerable inter-industry variations in the structure of protection, some countries appear to discriminate against activities in which they appear to have a strong comparative advantage. Trading partners' (principally developed countries) protection also has an impact on trade and production composition. Consequently, while the composition of exports, being less distorted by domestic policy interventions, should provide a better indication of changing comparative advantage, it does not entirely escape the effects of these policy distortions. Moreover, domestic government policy frequently has an important effect on the export performance of particular products.

The theory will be difficult to test for production in the case of a small industrial sector characterised by significant production of 'home goods', substantial state ownership, and sizeable tariff and other trade barriers. By contrast, a larger economy, and one characterised by closer domestic and international economic integration, should provide a more reliable test for theory. Exports should also provide a better test of the model, although again small volumes may easily be 'swamped' by factors not easily explained in comparative advantage terms (for example, irregular exports of state enterprises, or intra-firm transactions). Only in the case of significant volumes of production and trade would it be reasonable to attempt empirical verification of the model.

Structural Adjustment and Changing Comparative Advantage

Table 2.1
Revealed Comparative Advantage

Natural resource intensive								
Year	Japan	Hong Kong	Korea	Singapore	Thailand	Malaysia	Indonesia	Philippines
1970	0.27	0.45	0.60	1.71	2.34	2.15	2.33	2.31
1980	0.15	0.31	0.40	1.13	2.11	2.11	2.66	1.75
1990	0.09	0.32	0.24	1.05	2.20	1.71	2.46	1.31
Unskilled labour intensive								
Year	Japan	Hong Kong	Korea	Singapore	Thailand	Malaysia	Indonesia	Philippines
1970	2.60	6.90	5.62	0.96	0.23	0.18	-	0.12
1980	1.13	6.23	5.33	0.92	1.66	0.46	0.10	1.27
1990	0.60	4.51	3.88	0.81	2.23	0.67	0.73	1.38
Human capital intensive								
Year	Japan	Hong Kong	Korea	Singapore	Thailand	Malaysia	Indonesia	Philippines
1970	1.83	0.51	0.22	0.34	0.05	0.10	0.02	0.01
1980	2.56	1.25	0.99	0.61	0.16	0.13	-	0.07
1990	1.24	1.44	0.93	0.79	0.41	0.19	0.10	0.24
Technology intensive								
Year	Japan	Hong Kong	Korea	Singapore	Thailand	Malaysia	Indonesia	Philippines
1970	2.50	1.61	0.60	0.62	0.07	0.05	-	-
1980	2.10	1.59	1.51	1.93	0.49	1.01	0.04	0.12
1990	2.11	1.64	1.85	2.50	0.61	1.74	0.05	0.44
Physical capital intensive								
Year	Japan	Hong Kong	Korea	Singapore	Thailand	Malaysia	Indonesia	Philippines
1970	1.32	0.11	1.14	0.23	0.53	0.89	0.03	0.05
1980	1.75	0.25	0.69	0.55	0.72	0.70	0.15	0.27
1990	1.55	0.56	0.54	1.38	1.35	1.67	1.82	1.26

Source : Calculated from data in IMF Direction of Trade Statistics - country currency (various years).

Export specialisation ratios for the five ASEAN countries, Japan, Hong Kong and Korea are presented in table 2.1, calculated using the formula on page 59. From table 2.1 it can be seen that the more advanced nations, namely Japan and the NICs are beginning to lose their comparative advantage in the category unskilled labour intensive as all the ratios show a noticeable decline. The four remaining ASEAN countries show an increase as they move in to 'fill' the gap with the ratios for Thailand and the Philippines rising to over one by 1990, indicating a comparative advantage in this particular category. All of the ASEAN countries have moved out of the first phase of specialisation in natural resource based manufactured exports - Singapore was never really in this phase owing to its poor resource endowment. The shift away from resource intensive manufactures is to be expected, although

there has been a slight resurgence of this group since 1980, owing mainly to the governments' promotion of certain industries. Malaysia, Thailand, Indonesia and the Philippines have all entered the second phase, but are showing signs of progressing to the third stage. Singapore, the most industrialised economy in the ASEAN region, is already in stage three but is being closely followed by Malaysia and Thailand.

The ASEAN-4 also show an increase in the share of human capital intensive and technology intensive manufactures although the values are not particularly large, less than unity for all countries except for Malaysia in the case of technology intensive manufactures, but the fact that they are increasing suggests a strengthening of the comparative advantage. The remaining countries' share fluctuates throughout the period in both categories. Only Singapore shows a steady increase in the share of human capital intensive and technology intensive manufactures, reflecting its more advanced industrial sector.

Singapore and the other ASEAN countries also show an increase in the share of physical capital intensive manufactures, all above unity, with Indonesia registering the most significant increase which implies that they have a comparative advantage in this category. Hong Kong shows an increase, although not to the extent of the ASEAN countries, as the ratio only rises from 0.11 to 0.56. Japan shows a decline since 1980, although the ratio is still above unity in 1990 (1.55), and South Korea shows a decline throughout the period from 1.14 to 0.54. The slow down in the growth or the decline of the share of manufactures indicates a loss in comparative advantage as other countries begin to compete and fill the niche in the market.

The Philippine pattern bears some resemblance to that of Indonesia, and for similar reasons. Resource based activities have declined, as would be expected. However, the rise in the human-capital intensive group is due to the very high protection conferred on a number of activities, notably electric machinery, in both the Philippines and Indonesia. This probably explains much of these industries growth as domestic production of human capital-intensive products received considerable encouragement in the 1970s. Thus the more inward-looking economies, Indonesia and the Philippines, do not accord very closely to the model's predictions, precisely because of the effects of government intervention.

The results of the other three more outward looking ASEAN economies is a good deal more encouraging. In Thailand the resource based category has generally declined, albeit around a fluctuating trend. At the same time, the unskilled labour-intensive product group has increased its share rapidly from 0.23 to 2.23, higher than all the other ASEAN countries. The share of technology and human capital-intensive products has remained fairly modest although an increase has occurred indicating a strengthening of comparative advantage in both categories. Trends in the composition of

Malaysian manufacturing production also conform to the model's predictions. The share of resource-intensive manufactures has declined from 2.15 to 1.71, with a rise in unskilled labour-intensive manufactured exports from 0.18 to 0.67, and more recently an increase in technology-intensive exports to 1.74 by 1990. Trends in Singapore accord best with the theoretical predictions. In the early 1960s, resource and human capital-intensive activities were particularly important, reflecting the nature of its economic relations with, and its factor endowments relative to, its ASEAN neighbours. The importance of unskilled labour-intensive activities grew strongly, especially in the late 1960s, until rising real wages resulted in their sharp absolute and relative decline beginning in the late 1970s. As in the case of manufactured exports, Singapore began to move into the third phase of Balassa's 'stages' approach in the late 1970s, as technology and human capital-intensive products became increasingly important.

Rapid structural changes taking place in developed countries in the wake of the changing patterns of international division of labour have contributed significantly to the intra-regional movement of capital in the Pacific Basin (Yamazawa, 1980).

Japan lost its comparative advantage in labour-intensive manufactures in the late 1960s, but managed to maintain its competitive lead in technology-intensive manufactures. The NICs enjoy strong comparative advantage in unskilled labour-intensive manufactures and have also gained new competitive strengths in human capital-intensive manufactures.

Table 2.2 shows Revealed Comparative Advantage (RCA) changes by major industrial groups in Japan, the NICs and ASEAN, from 1970-90.

Table 2.2
RCA changes in Japan, the NICs and ASEAN (1970-90)

	Year	JAPAN	NICs	ASEAN
Total textiles	1970	1.30	3.25	2.11
	1990	0.41	4.22	4.00
Synthetic fibres	1970	2.01	0.14	0.12
	1990	1.68	3.75	1.56
Textile yarn and thread	1970	1.37	1.50	0.27
	1990	0.84	2.69	1.35
Clothing	1970	0.93	10.00	2.02
	1990	0.11	3.97	3.12
Electronic home appliances	1970	4.80	1.22	0.75
	1990	1.10	2.43	4.98
Electronic parts & components	1970	1.00	1.39	1.66
	1990	3.54	2.43	4.64
Electronic industrial machinery	1970	1.00	1.00	0.94
	1990	2.09	2.05	1.96
Iron and steel - primary	1970	2.50	0.33	0.26
	1990	1.70	0.80	1.00
Iron and steel - secondary	1970	1.00	0.86	0.47
	1990	0.76	2.64	1.73

JAPAN

NICs : South Korea, Hong Kong, Singapore

ASEAN : Malaysia, Thailand, Indonesia, Philippines

Source : Calculated from data in IMF Direction of Trade Statistics - country currency (various years).

The data shows that by the end of the 1970s Japan no longer had a comparative advantage in textiles, textile yarn and thread, or clothing. It had been losing its comparative advantage in these industries compared to the NICs and ASEAN (Yamazawa, 1980). In synthetic and regenerated fibres Japan is still leading the ASEAN countries (1.68 and 1.56 respectively) but has been overtaken by the NICs with a ratio of 3.75. In electrical and electronic home appliances, Japan's lead has rapidly been eroded by the ASEAN countries and the NICs. With the ASEAN countries recording a ratio of 4.98 by 1990, higher than both the NICs and Japan (2.43 and 1.10 respectively). In electrical and electronic parts and components, Japan still enjoys a comparative advantage in world markets, but in the key subsector of semi-conductor assembly the ASEAN countries have an advantage against Japan, and the NICs restructured to shift from assembly to design and fabrication work. In industrial electrical and electronic machinery Japan enjoyed a rising comparative advantage (1 to 2.09) but the NICs and ASEAN are catching up (1 to 2.05 and 0.94 to 1.96 respectively). In most heavy-industry subsectors, Japan led the NICs and ASEAN by a large margin, but both groups overtook Japan in iron and steel secondary products and finished products, the NICs in the 1970s and ASEAN in the early 1980s.

The continuing structural change provided an important stimulus for the NICs exports, initially as a major potential competitor began to withdraw from the market, and subsequently as a new export market emerged. The more advanced Northeast Asian NICs and Singapore were better placed to take advantage of the transformation of the Japanese economy, although there was some spill-over effect to the other ASEAN countries.

A similar transformation has occurred in the NICs, as they began rapidly to lose their comparative advantage in labour-intensive manufactures. Just as the NICs benefited from changes in the Japanese economy, so the ASEAN economies are well placed to expand their manufactured exports, including eventually to these same countries. There are, of course, many other 'near NICs' outside ASEAN. But the four ASEAN countries enjoy the advantage of geographical proximity and close commercial contact.

Of course, the realisation of this potential for future Western Pacific trade growth depends on the Northeast Asian countries continuing to be prepared to accept major structural adjustments. Continued adjustment in Northeast Asia depends as well on these countries having access to expanding worldwide markets for more sophisticated manufactures. The prospects on this issue appear favourable since markets for more capital-intensive commodities, and especially for the products of Japanese advanced technology, are probably less vulnerable to protection in the advanced industrial countries than markets for less complex labour-intensive manufactures.

In a dynamic situation, the pattern of comparative advantage is constantly changing. While some industries 'migrate' from the more advanced industrial countries to the industrialising ones in the region, as the former move up the ladder, in what has been characterised as the 'flying geese pattern' in the Japanese international economics literature (Akamatsu 1962). Hitotsubashi University has taught for many decades the doctrine of the 'flying geese pattern', but it has been written into the international literature only recently. Its importance to latecomers in industrial development has been mentioned explicitly by Hong (1975) and Balassa (1977). The pattern envisages a group of countries in the region flying together in layers, signifying the different stages of economic development achieved in different countries. Countries in the higher layer will pass on their outdated industries to the next layer of countries because of changing comparative advantage over time. The leader of the flying geese is of course Japan which is followed by the Asian NICs, (Singapore, Hong Kong, Taiwan and South Korea). Next come the ASEAN countries, of which Malaysia and Thailand fly closer to the NICs than the Philippines and Indonesia. This pattern of development suggests that countries in the region will engage in different stages of industrial development. Even for countries in the same stage of development, specialisation is normally possible for the achievement of complementarity.

It is well known that Japan attained extraordinarily high rates of growth initially through strong specialisation in the export of labour-intensive manufactures on to world markets. A few years later the NICs travelled down a similar path. Japan is sometimes thought of as the 'first generation', and the NICs the 'second generation' of rapidly-industrialising East Asian countries. The successful growth of Japan facilitated the emergence of this 'second generation', through the reduction in competition in worldwide markets for labour-intensive manufactures, through the opening up of opportunities for export to Japan itself and through Japan providing a major new source of direct investment and finance.

The changing composition of trade is associated with the introduction of more sophisticated technology. The experience of the NICs in the importation, adaptation and spread of new technology will be invaluable to the Asian developing economies as they strive to capture export markets vacated by the NICs. Undoubtedly, the NICs have played a major role in placing Asia at the forefront of the development process. However, the prospects for sustaining this position and for providing the growth momentum within Asia will require increasing economic cooperation between the Asian economies.

It is sometimes argued that the latecomer developing countries have lost their chance to specialise strongly in the export of manufactures, because world market opportunities have come to be more monopolised by others. It is also said that Japan and the NICs achieved their phenomenal industrial growth in an era of strong worldwide growth and trade liberalisation and that similar success is not possible for new countries. The idea that markets for labour-intensive manufactured goods have become overcrowded and that there is no room for newcomers is a plausible one. The alternative view is that the very success of established exporters of these commodities weakens their comparative advantage in labour-intensive manufactures, so that they move on in stages to specialise in increasingly complex manufactures. The idea that there are stages of comparative advantage falls readily out of dynamic comparative cost theory.

The record of the NICs, and Singapore in particular, was instructive for the ASEAN countries in two respects. First, it effectively demolished the arguments of the 'export pessimism' school, prevalent in the 1950s and 1960s, regarding the feasibility and desirability of rapid export-led growth. Secondly, the very success of the NICs resulted in rising real wages and pushed their comparative advantage increasingly towards more capital and skill-intensive activities. The lesson for ASEAN was clear. Just as the NICs became the 'second generation' exporters of labour intensive manufactures in the 1960s, occupying the position vacated by Japan, so ASEAN could become the third generation exporters, as rapid structural change altered the NICs' competitive position.

The second factor was the conducive international trading environment, which coincided with the reappraisal in most of the ASEAN countries. Structural changes in the industrialised countries

facilitated the relocation of many industries to developing countries. The Japanese economy, in particular, underwent major structural changes during the 1970s in the face of the rapidly increasing energy and raw material prices, slower growth, sharp appreciation of the yen and the successful export thrust of the NICs (Yamazawa, 1981).

Foreign direct investment has been a third factor facilitating the structural transformation of ASEAN industry. However, there does appear to be a significant difference in the pattern of investment from the US and Japan, the two major investors in ASEAN. In particular, Japanese investment - globally more heavily concentrated in developing countries - has tended to locate in resource-based and labour-intensive manufacturing activities in ASEAN (Sekiguchi and Krause, 1980). Differences in the pattern and motivation of Japanese and US investors have led Kojima to develop his well known thesis regarding the alleged superiority of 'Japanese-style' investment, on the grounds that it is 'trade-creating', and more likely to locate in industries consistent with the host country's comparative advantage (Kojima, 1977). While containing many useful insights into the process and nature of Japanese foreign investment, Kojima's thesis has been effectively challenged on both empirical and welfare grounds (Arndt, 1974; Sekiguchi and Krause, 1980).

The involvement of MNCs in ASEAN manufactured exports is probably more extensive than that of direct investment in production. This is an area where systematic data collection and research are very limited. Foreign investment in the trade sector of ASEAN is extensive (von Kirchbach, 1983), but not all of this investment relates to international trade, and in any case it excludes the most important group, that of international trading houses.

The results given in Table 2.3 show the export specialisation ratio for selected commodities in Singapore, calculated using the formula given on page 59 at the three digit SITC commodity level.

Table 2.3
Export Specialisation Ratio : Singapore

SITC	Commodity	1970	1974	1978	1982	1986	1990
553	Perfume, cosmetics	1.17	0.57	0.47	0.59	0.65	0.67
554	Soaps, cleaning preparations	1.67	0.81	0.57	1.00	1.00	1.53
562	Fertilisers	0.87	0.95	0.85	1.34	0.36	0.34
598	Chemicals nes	0.36	0.29	0.26	0.72	1.20	1.37
621	Materials of rubber	0.55	0.30	0.22	0.53	0.45	0.36
628	Rubber articles nes	0.61	0.58	0.68	0.94	0.79	0.71
634	Veneers, plywood	2.64	3.60	3.76	4.04	3.28	3.00
635	Wood manufactures	0.22	0.51	0.26	0.83	0.38	0.81
641	Paper and paperboard	0.34	0.21	0.16	0.17	0.30	0.29
651	Textile yarn	0.23	0.64	0.47	0.36	0.37	0.44
652	Cotton fabrics woven	2.38	1.79	1.29	0.91	0.67	0.67
653	Woven man made fibres	0.96	1.01	1.18	1.40	1.40	1.28
661	Lime, cement, building prod.	0.72	0.59	0.64	0.72	0.26	0.21
664	Glass	0.20	0.29	0.30	0.44	0.33	0.30
666	Pottery	1.60	0.20	0.08	0.17	0.18	0.33
672	Iron and steel	0.04	0.13	0.02	0.03	0.02	0.01
678	I+S tubes, pipes etc	0.22	0.35	0.69	0.92	0.69	0.68
692	Metal tanks, boxes etc	3.64	1.73	0.57	0.86	0.69	0.83
696	Cutlery	0.25	0.49	0.63	0.73	0.50	0.38
712	Steam engines, turbines			0.23	0.13	0.38	0.53
714	Engines and motors			0.49	0.60	0.27	0.27
723	Civil eng equip			1.39	1.50	1.24	1.35
724	Textile, leather mach	0.15	0.26	0.23	0.27	0.26	0.47
751	Office machines	0.59	2.04	1.18	2.05	1.13	1.57
764	Telecommunications equip	0.48	1.96	0.19	1.18	1.43	2.70
771	Electrical power machinery			0.50	1.10	2.16	2.44
775	Household type equip	0.28	0.07	0.71	1.40	1.55	1.28
842	Mens outerwear non knit			1.29	0.92	0.90	0.83
843	Womens outerwear non knit			1.25	1.19	1.07	0.93
851	Footwear	0.51	0.40	0.26	0.23	0.13	0.18
871	Optical instruments			0.17	0.14	0.50	1.22
885	Watches and clocks	0.82	1.03	1.53	1.34	1.02	0.95
892	Printed matter	0.98	1.25	0.87	0.76	0.93	1.09
893	Articles of plastic	0.25	0.45	0.33	0.91	0.75	0.70
894	Toys, sporting goods	0.43	0.70	0.87	1.16	1.28	1.35
895	Office supplies	0.50	0.63	0.33	0.99	1.55	2.00
896	Works of art etc	0.25	0.14	0.14	0.06	0.20	0.06
897	Gold, silverware, jewellery	0.33	0.27	0.25	0.60	0.70	1.03

Source : Calculated from data -

Research and Statistics Unit of the EDB (Singapore dollars), Singapore.

Resource based manufactures do not play a significant role in the case of Singapore, probably because Singapore has few natural resources to exploit and other developing countries will wish to reap their own rewards. The only outstanding result of products among the resource based manufactures is (SITC 634) veneers, plywood, with iron and steel tubes and pipes (SITC 678) showing an increase to 1982 (2.64 to 4.04 and 0.22 to 0.92), which has since fallen slightly, then levelled out at around 0.7 in both cases. Thus it can be clearly seen that Singapore's lack of resources does restrict its development in this area.

In the labour intensive category, textiles are an important group. The more capital intensive stage of textile production such as yarn and thread (SITC 651), has recorded a lower ratio, while the more labour intensive process, woven cotton fabric (SITC 652), has a much larger ratio, although this ratio has declined from 2.38 in 1970 to 0.67 by 1990 as Singapore began to lose its comparative advantage in this particular category. Similar trends can also be identified for other textile products - Mens outerwear non knit (SITC 842) and Womens outerwear non knit (SITC 843). Toys and sporting goods (SITC 894) have assumed greater importance over the years with ratios increasing from 1970 to 1990, and since 1982 the ratios have been greater than one indicating a comparative advantage. Among what may be labelled technology intensive, electrical power machinery (SITC 771) and telecommunications equipment (SITC 764) have quite large revealed comparative advantage ratios (2.44 and 2.70 respectively), which appears to be the direction Singapore is taking.

As recently as 1980, there was no such thing as a Singaporean computer components industry. Today the island republic is the world's largest manufacturer of computer disk drives, accounting for more than half of world production, and a big supplier of a wide range of other computer peripherals, semiconductors and electronics equipment. In the early 1970s, the textile industry accounted for some 17% of manufacturing equipment in Singapore. Now the figure is well below 10% and declining as the economy continues to lose its comparative advantage in a number of the textile categories, as highlighted by the falling RCA ratios in table 2.3.

These are two examples of the extraordinary swirl of change that continues to invigorate the Singaporean economy. They help to illustrate how a country with no natural resources, a minuscule land area and a static indigenous workforce has managed to carve out its position as a leading competitive player in a number of international industries, from consumer electronics to oil refining and petrochemicals.

"The Austrian economist Joseph Schumpeter would have recognised what is happening. Writing in the first half of this century, he called it "creative destruction" - the process of unremitting innovation and renewal in an economy affected by the free play of market forces. In Singapore's case, the market

is the world, and it has exposed itself to - and benefited from - the full force of international competition by maintaining a stance towards foreign investment as open and unrestrictive as you will find anywhere". (Financial Times March 29th 1993)

Singapore is uniquely unsentimental about preserving industries which have lost their competitive edge: the timber business, for example, once a local mainstay, is now virtually extinct, while textile manufacturing on the island has moved inexorably to the high-value end of the market while spinning off low-cost operations as it began to lose its comparative advantage to Malaysia and other neighbouring countries. Their place has been taken by productive, technology-driven industries such as consumer electronics, telecommunications equipment and precision engineering.

The last twenty years provide countless examples of this shift - as always, under the guiding hand of government bodies such as the Economic Development Board (EDB). Having established itself as an oil refining and bunkering centre, Singapore moved into bulk petro chemicals and is now assiduously developing higher-value products such as speciality chemicals and pharmaceuticals.

The trick consists not just in attracting new investors: more importantly, it involves encouraging heavy investment by those already installed. Singapore has remained especially alert to global changes in the consumer electronics industry. It is now positioning itself as an important production base for digital compact cassette players and notebook computers.

This constant drive for higher value-added makes sense given Singapore's severe physical and demographic constraints. It is also getting more urgent all the time in view of the intensifying competition for investment among low wage Asian economies, which are themselves gradually following Singapore "up the value chain". To understand why, compare labour and land costs in Singapore with those elsewhere in the region. The starting wage for a production worker in Singapore is S\$630 a month; in Penang, Malaysia, it is S\$264 a month; and in Vietnam it is S\$80 a month. In Singapore, a square metre of industrial land costs ten times what it does in Penang and thirty times what it does in Vietnam (Singapore Economic Development Board, Yearbook 1990/91).

Unable to compete on wages, land or on the size of its domestic market, Singapore has quite deliberately priced itself out of the business of low-cost manufacturing; partly for political reasons, the government will not prop up labour-intensive industries by allowing companies to import more foreign workers. Instead it has been forced to develop alternative attractions to retain the loyalty of its multinational partners. The Singapore experience accords well with the theory of changing comparative advantage. Indeed, because of its more advanced industrial structure and poorer resource endowment, it has progressed further along the 'stages' approach forwarded by Balassa. The share (RCA) of unskilled labour intensive manufactures began to decrease about the mid 1970s, when rising

real wages and human capital intensive manufactures began to erode the economy's comparative advantage in these products. Correspondingly, the share of technology and human capital intensive manufactures began to increase gradually. As would be expected, the share of these two groups in Singapore's manufactured exports is by far the highest in ASEAN, even allowing for the absence of resource based exports.

The share of physical capital intensive manufactures also increased, but not at the same rate as the other ASEAN countries. Care should, of course, be taken when using this as a measure in the RCA analysis, as some economists believe it is no longer an important determinant of a country's comparative advantage, especially where liberal foreign investment policies are pursued, as in the ASEAN countries.

A recent analysis (1988) by the United Nations Industrial Development Organisation (UNIDO) has provided some interesting insights into the shifting pattern of dynamic comparative advantage. According to this study, the fastest growing industries are:

- paper and paper products (ISIC 341)
- industrial chemicals (ISIC 351)
- other chemical products (ISIC 352)
- plastic products (ISIC 356)
- non-electrical machinery (ISIC 382)
- professional goods (ISIC 385)
- electrical machinery (ISIC 386)
- 'other' manufactures (ISIC 390)

Industry branches in which developing countries as a whole grew more than twice as fast as developed countries during the period 1980-85 include the following:

- food products (ISIC 311)
- beverages (ISIC 313)
- tobacco (ISIC 314)
- textiles (ISIC 321)
- footwear (ISIC 324)
- wearing apparel (ISIC 322)
- wood products (ISIC 331)
- glass and glass products (ISIC 362)
- pottery and china (ISIC 361)
- industrial chemicals (ISIC 351)
- petroleum refineries (ISIC 353)
- iron and steel (ISIC 371)
- non-ferrous metals (ISIC 372)

Industries which are declining in developed countries and rapidly expanding in East and South East Asian developing countries include:

food manufacturing	(ISIC 311)
tobacco	(ISIC 314)
textiles	(ISIC 321)
rubber products	(ISIC 355)
non-ferrous metals	(ISIC 372)
metal products	(ISIC 381)
'other' manufactures	(ISIC 390)

It appears that Singapore has potential or actual comparative advantage in many of these products. Much would, of course, depend on Singapore's factor endowments and the factor intensity of the products in question. Much would also depend on how Singapore's factor endowments compare with those of its major trading partners. There is considerable diversity within the Asia-Pacific region for Singapore to complement its production with that of others.

The results reported in table 2.3 confirm the earlier notions regarding the revealed comparative advantage of the Singaporean manufactured exports. It appears that Singapore has an overwhelmingly high revealed comparative advantage in technology-intensive manufactures. It is interesting to observe an improvement in human capital-intensive manufactures, which is not surprising in view of the policy emphasis on the upgrading of labour skills since the 'second industrial revolution'. Another pertinent observation is that the revealed comparative advantage index for unskilled labour-intensive products has been declining. It is clear that Singapore is specialising in the export of products in which it has an overwhelming comparative advantage.

Summary

All the ASEAN countries have shown extraordinarily rapid rates of economic growth, industrial growth and the expansion of manufactured exports. From the analysis of Singapore, the transformation of the industrial sector can be seen: from production of resource-based processing activities and of simple consumer goods towards a more sophisticated industrial structure, and from the production primarily for the domestic market towards increasingly export oriented activities. The importance of 'policy' can also be seen to have played a role, both facilitating the industrial transformation and in determining the extent to which Singapore is able to reap the benefits of changing comparative advantage.

The traditional Heckscher-Ohlin model can be used to explain why certain countries, such as Singapore have a comparative advantage in the provision of services connected with entrepot and re-export trade. Singapore lies along major sea routes, near great populated areas and has natural harbour facilities with an abundant supply of labour required for the provision of these services.

The RCA analysis suggests that, broadly speaking, export growth has been in accord with the regions changing factor endowments. Singapore is a rapidly growing and industrially advanced country with a very poor resource endowment. The last few years have witnessed a major transformation in the structure of industrial production and exports. It has shed its labour intensive industries as its comparative disadvantage in these activities has developed. Increasingly its industrial structure has evolved towards more skill and capital intensive activities. Its extremely open economy and the nature of the government intervention have facilitated the industrial upgrading process.

Chapter 3

Trade Specialisation

This chapter will examine the trade specialisation undertaken by the ASEAN countries, with reference to economic cooperation among the member states. Firstly, an attempt will be made to explain intercountry differences in the extent of intra-industry trade in manufactured goods by reference to country characteristics affecting such trade. Secondly, the intra-industry trade for Singapore will be examined by selected commodity groups. This will be followed, in the next chapter, by an investigation of ASEAN in terms of economic cooperation, using a test of trade creation and trade diversion.

One of the most important trends in post-war trade, especially trade in manufactured goods, has been the growth of intra-industry trade. This has been defined as the simultaneous export and import of products belonging to the same industry.

Much of what is written in the international economics textbooks is still couched in terms of inter-industry specialisation. Models are constructed in which each country specialises in a particular industry or activity in which it enjoys a comparative advantage. In such models, the opening up of trade between any two countries or the removal of barriers to trade leads to each country concentrating on particular activities. This implies a contraction of certain other industries as resources shift into the expanding industry. Such inter-industry specialisation results in a relocation of economic activity.

Although inter-industry specialisation does still take place, this has not been the form which specialisation between countries has largely taken over the post war period. Individual countries have not concentrated on whole industries or activities. Rather, they have undertaken a much narrower type of specialisation. This has involved specialisation in the production of particular products or groups of products within a given industry. Such specialisation is known as intra-industry specialisation. With this type of specialisation there is no wholesale contraction or disappearance of certain industries from particular countries following the opening up of trade.

Although much trade in primary commodities still takes place in the form of inter-industry specialisation, a growing proportion of trade in manufactured goods has involved intra-industry specialisation. Where intra-industry specialisation follows the lowering of trade barriers, international specialisation may give rise to fewer adjustment problems. There need be no wholesale disappearance of single industries from particular countries. Hence there will be less of a need to redeploy resources (especially labour) in other industries. One can expect less resistance to trade barriers. On the other

hand, the gains from such specialisation will not be the same as those which result from conventional inter-industry specialisation.

In recent years the healthy atmosphere that has pervaded the international economic system has been tainted by the revival of protectionist attitudes. This has been brought about by the trade friction between the US, the EC and Japan. There is a growing fear that the drift towards globalisation will be replaced by an extreme form of regionalism which is characterised by 'the formation of blocs, fragmentation of the trading system, and a relapse to the disastrous conditions of the thirties'. The uncertainty spawned by the instability of the world financial system has also contributed to a reassessment of globalist policies (Global Strategies Conference, 1990).

The political factors outlined, have likewise played a crucial role. With the deterioration of the US economy and the consequent erosion of its leadership, and the collapse of the old order in Eastern Europe, there is a strong possibility that a multi-polar world will evolve out of the shadows of the Cold War. There has been speculation that the three major economic zones will be formed, namely : an integrated European community, possibly incorporating Eastern Europe with a united Germany at its helm ; the free trade zone in North America ; and the last bloc consisting of Asian nations mostly in the West Pacific rim with Japan as the focal point. How the Asian-Pacific zone will progress, however, is far less clear than the other two, owing to both the dynamism and diversity of the individual countries involved.

The relationship among these three regional groups need not be confrontational. Given the degree of integration the world has achieved, the extreme form of regionalism described is not feasible. What is more conceivable is a type of 'open regionalism' which roughly translates to 'a way for a group of countries that share some common features to more efficiently face the present economic challenges by gathering their forces'. (Brender 1989). In this sense, regionalism could prove to be a complement to a multilateral trading system rather than a substitute. Lorenz (1989) also points out that the idea of regionalism has some affinity with the one promoted previously of constructing an international economic order or re-integrating the world economy from the bottom upwards and not the reverse.

Under these circumstances, it is neither appropriate nor possible for the member countries of the Association of South East Asian Nations (ASEAN) to outline their future prospects purely from a domestic point of view. While ASEAN has been effective as a political organisation, 'regional economic cooperation has been more a recipient of platitudes'. The swift pace of change makes it progressively more important for the countries of the region to share a common understanding of their independent economic relations and mutual interests. In the context of the accomplishments of ASEAN, this requires a review and restructuring of past efforts at economic cooperation in view of the

present global metamorphosis. These include the ASEAN Preferential Trading Arrangement, the ASEAN Industrial Scheme, and various harmonisation policies.

Models and Literature

Definition and measurement

Intra-industry trade is defined as the simultaneous export and import of products belonging to the same industry. Inter-industry trade is the exchange of products which belong to different industries. Inter-industry specialisation involves a country specialising in a whole industry or activity. Inter-industry specialisation leads to inter-industry trade and intra-industry specialisation will lead to intra-industry trade. However it is possible for intra-industry trade to take place between any two countries without either country undergoing intra-industry specialisation. Therefore not all the increase in intra-industry trade of recent decades need be caused by intra-industry specialisation.

It is apparent that, because of the difficulty in agreeing on a precise definition of an industry, the concept of intra-industry trade suffers from a degree of ambivalence. It may prove difficult in practice to decide how to clarify different products and, therefore, how to distinguish between inter- and intra-industry trade. Some kinds of trade may assume the form of a hybrid of inter- and intra-industry trade (Dunning and Norman 1985). Systems of international trade classification are often based more on statistical convenience than any set of economic criteria. For these reasons it is generally not possible to measure accurately the extent of intra-industry trade.

The first measure of the extent of intra-industry trade was proposed by Balassa in 1966. He proposed that it be measured by the extent to which exports of a given good are offset by imports of an equivalent good. Algebraically, if X_i is the value of the exports of commodity i by a country, and M_i is the value of the 'matching' imports then the Balassa index is:-

$$A_i = \frac{|X_i - M_i|}{(X_i + M_i)}$$

If there is no intra-industry trade then either there are no exports ($X_i = 0$) or no imports ($M_i = 0$), and so $A_i = 1$. If there is 'perfectly matching' intra-industry trade then $X_i = M_i$ and $A_i = 0$.

The Balassa index has not found much favour. Most studies use the Grubel and Lloyd index. Grubel and Lloyd (1975) measured intra-industry trade as the percentage of a country's total trade (exports plus imports) in the products of a given industry which was matched or balanced, that is exports equals imports. For an individual product group of industry i , the formula is:-

$$IIT = \frac{(X_i + M_i) - |X_i - M_i|}{(X_i + M_i)}$$

Where X_i and M_i stand, respectively, for the exports and imports of product group i . The straight brackets around $X_i - M_i$ denote that the sign of the trade balance is ignored. If all trade was balanced, the measure would be equal to 1. If all trade was one way, the measure would be equal to zero. Thus the closer the measure is to 1, the greater the importance of intra-industry trade.

The Grubel and Lloyd index has taken precedence over the Balassa index because the values taken by the former are intuitively more appealing. The Grubel and Lloyd index has a value of zero when there is no intra-industry trade (either X_i or M_i zero) and a value of one when there is 'perfectly matching' intra-industry trade; that is, it is positively related to the level of intra-industry trade. The Balassa index, on the other hand, is positively related to the level of inter-industry trade. For the purpose of the current study the Grubel and Lloyd measure will be used throughout (see Sodersten and Reed, 1994).

One of the greatest problems involved in accurately measuring the extent and importance of intra-industry trade is the aggregation problem. It has been argued that intra-industry trade is largely a statistical phenomenon because it is owing to a large number of different products being treated as belonging to the same industry. At least, it is argued, the true extent of intra-industry trade has been exaggerated. Even if we reject this argument, it has to be conceded that accurate measurement of intra-industry trade is, in practice, quite difficult.

Trade data are published according to a specified form of classification. The most commonly used is the Standard International Trade Classification (SITC). Products are grouped together at several different levels of aggregation. Thus it is possible to choose the level of aggregation which is considered most appropriate. Most empirical intra-industry trade studies have been based on two- or three-digit SITC data, and, in practice, there has been no great difference between estimates calculated at these two aggregation levels. The three-digit level of the SITC is thought to be the most accurate as product groups defined at this level of aggregation are generally thought to accord as closely as possible to an economic definition of an industry. However, it is sometimes argued that, even at this level of aggregation, intra-industry trade is overestimated. Products are often grouped

together which fail to meet the criteria generally used in the definition of an industry. Economists may disagree about how serious is such aggregation bias, but none would deny that some element of aggregation bias exists.

There are a number of ways of testing for the degree of aggregation bias. One obvious approach is to calculate intra-industry trade at a higher level of disaggregation, for example to use four- or even five-digit product groups. It is extremely time consuming to carry out a comprehensive study of a country's level of intra-industry trade using highly disaggregated data of this kind. The number of product groups involved will be very large and the amount of calculation very great. Moreover, product groups defined at the fourth- or fifth-digit level of SITC may not be economically meaningful. Products with the same factor intensities may appear in different product groups.

Greenaway and Milner calculated the average level of intra-industry trade for the United Kingdom at the third-, fourth-, and fifth-digit levels of SITC. The average level of intra-industry trade was found to fall from 56% to 47% to 46.5% as the level of aggregation fell from the third- to the fourth- to the fifth-digit level. (Greenaway and Milner 1986).

Literature

Recent writings on the potential of trade among developing countries have sometimes noted the possibility of benefit from trade in 'competitive' products among the more advanced developing countries. In particular, it is argued that since these countries are on the whole similar in industrial endowments and hence have comparative advantage in similar products (generally standardised, labour-intensive goods, but perhaps also capital goods), trade among them might involve trade in similar but slightly differentiated products, or what is commonly labelled as 'intra-industry trade' (IIT). It is well known that among industrial countries with similar factor endowments, a large proportion of trade is such two way trade, rather than trade in clearly distinct 'complementary goods' of different factor intensities. While there has been some debate on the literature available as to whether the large amount of intra-industry trade among industrial countries is something other than Heckscher-Ohlin trade, or whether it is a statistical artifact, the broad consensus appears to be that, as Corden (1980) suggests: "less weight should be given to factor proportions theory.... [and] it is desirable that there be developed a rigorous general equilibrium model with economies of scale possibly embodying some dynamic elements and allowing for more than two products". The statistical fact of a large amount of intra-industry trade has led to some theorising on such trade flows, for example, Lancaster (1980) and Krugman (1980), emphasising economies of scale and product diversity in monopolistic competition.

The objective of this work is to explain intercountry differences in the extent of intra-industry trade in manufactured goods by reference to country characteristics affecting such trade. The subject matter

chosen for the investigation is a neglected area as most contributions have examined the effects of commodity characteristics on intra-industry specialisation. Exceptions are Loertscher and Wolter (1980), Havrylyshyn and Civan (1983), and Clair, Gaussens and Phan (1984). But these papers covered only developed country trade, the exception being the Havrylyshyn and Civan paper which included the trade of both developed and developing countries. Studies of centrally planned economies have also been undertaken by Pelzman (1978), and Drabek and Greenaway (1984).

The empirical work of Grubel and Lloyd (1975), though not the first application of the concept of intra-industry trade, is perhaps the most extensive of these and became the focus of discussion about the implications of these results for trade theory. Grubel and Lloyd inferred from the fact of high levels of intra-industry trade of industrial countries (50% to 60% for manufactured goods in 1967) that at best half of trade flows could be explained by the conventional factor-endowments model. The remainder, being two-way trade in similar commodities with presumably similar factor characteristics could not be attributed to differing factor endowments. While some writers expressed doubt that intra-industry trade was in fact trade in commodities with similar factor characteristics [Finger (1975), Lipsey (1976) and Finger and De Roosa (1979) in particular], most trade theorists have agreed that there is some truth in the Grubel and Lloyd contention, and several authors have attempted to develop a theoretical explanation for trade in similar goods: Lancaster (1980), Krugman (1980), Caves (1980).

The dissenting views consist of saying that within a 3-digit SITC category 'overlapping trade' can still be Heckscher-Ohlin trade because there is as much if not more variation in factor characteristics within these industry groups as among them. In effect, this suggests that the high IIT values may only be a statistical artifact resulting from inadequate disaggregation to capture true industries with unique capital-labour ratios.

One may encounter this criticism first on a conceptual level. While some IIT would disappear if one defined industries in more disaggregated statistics, some two-way trade in different statistically defined categories may be in goods with the same capital intensity, and in principle therefore non Heckscher-Ohlin trade. After all, the fundamental point of factor endowment theory pertains neither to arbitrarily defined categories of statisticians, nor to specific end-use characteristics of products, but rather to the factor characteristics of goods. Second, calculations of IIT using more disaggregated data, while they diminish its value, by no means make it small enough to ignore. Thus (Gray, 1979) finds that disaggregation does not cause the IIT phenomena to disappear. Finally, one should consider that even as far back as 1967, industrial countries had quite similar factor endowments. It should be no great surprise that a theory explaining trade on the basis of factor endowment differences is not applicable to a large portion of trade among industrial countries.

This is not to say that the theory of Heckscher-Ohlin is to be ignored, for the critics of intra-industry trade are right to some degree. There is a statistical problem, and an overstatement of the extent of

such trade. Furthermore, whatever the explanations of intra-industry trade, its values are what matter, for intra-industry trade is not a theory but an observation. And when such explanations are considered they consist of elements that have either always been a part of the trade theorists' perception - scale economies, tastes - or of elements which may add to factor endowment but do not contradict it - differentiated products and monopolistic competition.

Even if the factor endowment theory has become less important in explaining trade among similarly endowed industrial countries, it surely remains important in determining the pattern of trade between developing and industrial countries. As to trade among developed countries, their similar factor endowments should lead one to expect a greater amount of intra-industry trade than in trade with developing countries. However, the overall level of intra-industry trade for developing countries may be lower than for industrial countries because production of highly differentiated goods is not very important in such economies.

Previous results

A variety of hypotheses have been put forward as to the effects of country characteristics on intra-industry trade. Consideration will be given to general country characteristics, including the level of economic development, the size of domestic markets, distance and the existence of common borders. The investigation will further cover the participation in integration schemes.

The higher the level of a country's per capita income, the greater the demand for variety. As per capita income rises, so consumers demand more variety. The demand for variety leads to an increase in the degree of product differentiation. This promotes intra-industry trade and reduces inter-industry trade as a component of total trade.

The more equal the level of per capita income of any two countries, the greater the amount of intra-industry trade that will take place between them. Level of per capita income is known to exert a strong influence on the pattern of demand. It follows that the pattern of demand will be similar in countries with a similar level of per capita income. Therefore it is likely that products initially developed to meet local tastes will sell best in other countries with a similar per capita income. Cultural similarity and close geographical proximity will further enhance such trade. Much of this trade will take the form of intra-industry trade (Linder 1961). Strong empirical support exists for this hypothesis. Thus Balassa found that inequality of per capita income had a significant negative effect on the United States' level of intra-industry trade with different trading partners (Balassa 1986).

The higher the stage of development of a country, the greater the importance of manufacturing industry in national output. Since intra-industry trade is higher in manufacturing products, the country's level of intra-industry trade will be higher. Obviously there is a close relationship between a country's stage of economic development and its level of per capita income, so these two factors will

work together to influence the level of a country's intra-industry trade. However, it is possible for a country to have a high per capita income yet be at quite a low stage of development. If so, the level of its intra-industry trade will also be quite low despite having a high per capita income. Empirically, it is impossible to measure separately the influence of per capita income and stage of development on the level of a country's per capita income.

When any two countries are at different stages of economic development, inter-industry trade is likely to be relatively more important than intra-industry trade (Helpman 1981). This is because the stage of development affects the ratio of capital to labour. Differences in factor endowments promote inter-industry not intra-industry specialisation. The level of intra-industry trade is lower for trade between developed and developing countries than between developed and other developed countries. However, one can expect that, as developing countries industrialise and accumulate more capital, more of their trade with developed countries will assume the form of intra-industry trade.

There are grounds for believing that the level of intra-industry trade will be higher in larger countries. What is important is not the geographical size of a country but the size of its gross domestic product (Dixit and Norman 1980). Countries with a large GDP offer producers a wide market within which to sell. This is important for differentiated products produced under conditions of increasing returns to scale. It is less important for standardised goods where unit costs rise with output. Thus, large countries will tend to be relatively more competitive in differentiated goods, small countries in standardised goods. However, it does not follow that all small countries will have low intra-industry trade ratios and all large countries high intra-industry trade ratios.

The next question concerns the introduction of transportation costs. In models of intra-industry trade, such as that of Krugman (1980), transportation costs will reduce the volume of such trade. The greater the geographical distance separating any two countries, the smaller will be the level of intra-industry trade taking place between them. Intra-industry trade is greatest between countries which either share a common border or are in close geographical proximity. Of course, large geographical distances and the consequent high transport costs reduce trade in general, whether it be inter-industry or intra-industry trade. The literature does not provide us with the presumption that intra-industry trade will be affected relatively more or less than inter-industry trade. Such a presumption may be established if information flows are taken into account. There is less need to provide information on the characteristics of standardised (non-differentiated) products such as copper metal, steel ingots, and caustic soda, which have uniform specifications across the world; hence their trade is determined by relative costs, giving rise to inter-industry specialisation. However, there is need for information on the characteristics of differentiated products such as machinery, transport equipment, and consumer goods, which are subject to intra-industry trade. At the same time, it can be assumed that the availability of information decreases, and its costs increase, with distance. The existence of common

borders will also contribute to information flows. Furthermore, as Grubel and Lloyd suggested, in countries sharing a common border, intra-industry trade may occur 'in products which are functionally homogeneous but differentiated by location' (1975).

High levels of intra-industry trade exist between countries which are part of a regional trading zone, such as a free-trade area, customs union, or common market. Balassa has shown that the establishment of the EC led to intra-industry and not inter-industry specialisation. He calculated 'representative ratios of trade balances' for each of the six, a fall in the ratio indicating increased intra-industry specialisation. The level of intra-industry trade increased in all six countries. Other studies of integration include Grubel and Lloyd (1975), Kreinin (1979), and Ezran and Laird (1984).

Regional economic integration between countries appears to be one factor promoting intra-industry trade. This will be the case whenever the countries in question have similar per capita incomes, are at a similar stage of development, and situated close to each other, and share a similar culture. If, however, these factors are missing, it is equally possible that regional integration may lead to inter-industry specialisation.

Theoretical Explanations for Intra-Industry Trade

On the face of it, intra-industry trade appears to be something quite distinct from trade based on comparative advantage since it appears to be motivated by similarities rather than differences among countries. One of the main reasons why economists have been interested in the growth of intra-industry trade is that, on the whole, it contradicts the predictions of conventional trade theory. According to conventional trade theory, each country will specialise in those products in which it enjoys a comparative advantage. It will exchange those products for others in which other countries possess a comparative advantage. Conventional trade theory stresses (1) differences in factor endowments between countries and (2) differences in the factor proportions required for producing goods as the basis for comparative advantage.

Traditional theory argues that trade occurs largely in response to differences among countries in production capabilities. The possible exception to this is intra-industry trade which occurs predominantly among the developed countries and in any case may be more an aggregation phenomenon than a fundamental contradiction of the traditional trade theory. The implications of trade theory for intra-Asian trade are obvious - where sufficient differences in production capabilities exist among the Asian countries, international trade is likely to arise, provided that there are no significant barriers to these flows, such as high transportation costs or policies restricting trade.

The Heckscher-Ohlin theory may be modified to make it more realistic. For example, instead of just three factors of production - land, labour and capital - these categories may be subdivided into narrower groups, for example skilled and unskilled labour, physical and human capital, agricultural and non-agricultural land, and so on. Technology may be incorporated as another factor of production to ensure that a further important determinant of trade is included. Thus some countries well endowed with scientists and engineers may enjoy a comparative advantage in knowledge intensive science based industries. However, even with these modifications, the Heckscher-Ohlin theory leaves a lot of actual trade unexplained. Some patterns of trade fail to accord with the predictions of the Heckscher-Ohlin theory. Many of the industrialised and newly industrialising countries possess broadly similar factor endowments. Moreover, most of this trade has taken the form of intra-industry trade. Yet the Heckscher-Ohlin theory largely, but not wholly, predicts inter-industry trade.

Trade in functionally-identical commodities

Functionally-identical commodities are commodities which have perfect substitutability in use. They are perfect substitutes for each other. Another way of putting this is to say that they have a positive cross elasticity of demand. Consumers have no reason to prefer one to the other. Conventional trade theories, such as the Heckscher-Ohlin theory, generally make such assumptions about commodities.

Although normally trade in such products will take the form of inter-industry trade, intra-industry trade can take place.

The problem of aggregation bias has already been discussed. It is possible that products may be grouped together which are not close substitutes in production, that is they are not produced using the same factor proportions or input requirements. As such, they belong to different industries. Therefore, what appears to be intra-industry trade is in fact inter-industry trade. It may well be caused by differing factor intensities and relative factor prices in accordance with the Heckscher-Ohlin theory.

Cross-border trade can occur in products which are 'weight-gaining'. This means products whose weight, in relation to the unit value of the product, increases with the degree of manufacturing. Examples might be bricks, cement, glass bottles, and so on. This necessitates locating production as near as possible to the market. Because of the costs of transporting such products, it will not be profitable for producers to transport the product long distances. The existence of tariffs and other trade barriers may serve to reduce such trade. In this case, the removal of such restrictions will lead to a flourishing of such trade. It is believed that some of the intra-industry trade in iron and steel products following the establishment of the European Coal and Steel Community (ECSC) in 1952 may have been of this type (Adler 1970).

Some goods are only available at certain times of the year. Fresh fruit and vegetables come into this category. It may be that during these times of the year such products are imported from abroad, while, at other times of the year, some of the locally grown produce is exported. In this event intra-industry trade results.

Some products are produced jointly. In some cases the proportions in which they are produced cannot be varied. Apparently, this is quite common in the chemical industries. Unless local demand combines these products in the same proportions, the result will be excess supply of some products and excess demand for others. The result may be that the country in question will both export certain products and import other products. The result will be intra-industry trade.

Entrepot trade refers to the importation of a finished product for packaging, labelling, warehousing, and so on, before being re-exported to the final market. Such trade is very important for certain countries, such as Singapore. Singapore is well situated with suitable ports and other facilities for such trade. Over the years, Singapore has acquired a great deal of experience and acumen in conducting such trade. Much of this trade will show up in trade statistics as intra-industry trade.

Cross hauling by multinational corporations refers to the practice of multinationals relocating the processing or final assembly stages of manufacturing at sites based in developing countries.

Processing or final assembly takes place at these factories using components, parts, and other semi-finished goods imported from the parent company of the multinational or one of its subsidiaries in one of the industrialised countries. When finished, the product is then exported back to the developed country before being sold to the final consumer. This practice has become increasingly popular in recent decades, especially in the electronics and textile/clothing industries. In some cases it has been encouraged by special tariff provisions in the industrialised countries, which treat imports of such products more leniently than other equivalent imports. Such trade more closely resembles the inter-industry trade of the Heckscher-Ohlin theory. It is based on relative factor intensities, specifically the comparative advantage which developing countries possess in labour-intensive activities. Thus, such trade should be regarded as inter-industry rather than intra-industry, although it may appear as intra-industry trade. This is because trade statistics often group together components, parts, semi-finished goods, and finished goods. For some purposes this is appropriate. Since, however, such trade conforms more closely with conventional Heckscher-Ohlin predictions, it might be preferable to treat it as inter-industry. Some economists differ over this point and chose to treat this as a special type of intra-industry trade. Sometimes, the term 'vertical intra-industry trade' is used to distinguish this from the more common horizontal intra-industry trade.

Thus, intra-industry trade is possible in functionally-identical commodities. It follows that the Heckscher-Ohlin theory is not wholly incompatible with intra-industry trade. However, none of the above cases could properly be described as examples of intra-industry specialisation. They illustrate how it is possible to have intra-industry trade (or what shows up as intra-industry trade) without intra-industry specialisation. Statistically, there is no way of saying how important such types of intra-industry trade are. However, it does seem unlikely that they can explain much more than a small proportion of intra-industry trade.

Trade in differentiated commodities

Most intra-industry trade takes place in commodities which are differentiated. It is this which leads to intra-industry specialisation. Differentiated commodities are like commodities which are close, but not perfect, substitutes for each other. They have high cross elasticity of demand. Where products are differentiated, a basis exists for intra-industry trade, although the existence of product differentiation does not amount to a sufficient condition for intra-industry trade. Alongside the existence of product differentiation, there must exist some element of increasing returns in production, or decreasing average costs, which causes producers to specialise. If average cost were constant or rose as production increased, producers would seek to supply consumers with all available varieties of a given commodity. They do not do so because the production of each variety involves incurring substantial fixed production costs. A large output is needed over which to spread these costs. Yet no one producer can achieve this output if all producers seek to produce the full range of varieties. So each producer

specialises. Product differentiation can take a number of different forms. Three broad types of differentiation are identified below :-

Horizontal differentiation occurs where commodities share certain 'core' attributes but combine these in different proportions. Consumers have diverse preferences for the different varieties available. Such differentiation is very common in industries such as the tobacco industry (different brands of cigarettes) or the detergents industry (different brands of soap powder) etc. Indeed, to varying degrees, horizontal differentiation is present in most industries. Nevertheless, in certain industries it is the predominant type of differentiation. Such differentiation partly reflects consumer demand for more variety and choice with rising per capita incomes. It may also be the result of competition with each producer seeking to increase their market share by differentiating their product from their rivals. This is the case in monopolistic competition. Equally, product differentiation may be the result of attempts by producers to erect barriers to deter potential new entrants to the industry.

Vertical differentiation occurs where products differ in quality from one another. For example, a Rolls Royce is known to be a superior quality car to an Austin Metro. Such quality differentiation is extremely common in the motor car industry. Firms compete by making quality improvements to their various model ranges. It is common in many other consumer goods industries - for example watches, musical equipment, personal computers, typewriters, and so on. The essence of vertical differentiation is that consumers are able to rank the different varieties in some kind of order according to the quality of the product.

Technological differentiation refers to the kind of differentiation which results from technological change, specifically, the development of new products. Product innovation is very common in certain industries. One example is the pharmaceutical industry. New drugs to treat particular illnesses or conditions are constantly being brought onto the market by drugs producers. The electronics industry is another example of an industry where the rate of product innovation has been extremely rapid in recent years.

Although intra-industry specialisation may occur with all three kinds of product differentiation, each case may be slightly different. It has been suggested that technological differentiation is more likely to lead to inter-industry specialisation consistent with the Heckscher-Ohlin model of trade. The Heckscher-Ohlin model may be adapted to incorporate technological change. Technology may be treated as an additional factor of production. This would lead to the prediction that countries well endowed with technological knowledge (those with large numbers of scientists and engineers) will produce the greatest number of new products. Therefore they will enjoy a comparative advantage in the 'newest', most technologically advanced, science based industries. This is inter-industry and not intra-industry specialisation.

Technological differentiation may give rise to intra-industry specialisation, where a country develops an innovative capability in a certain range or type of product. The existence of increasing returns to scale in science based industries would appear to be another factor leading to intra-industry specialisation. Such industries are typified by high levels of research and development (R&D) expenditure relative to turnover. These expenditures have to be incurred before a product is actually produced and sold. They are recuperated in later years to the extent that the new product is a success and sells well. However, even a successful new product is likely to have quite a short life. For example, in the pharmaceuticals industry, new patented products normally have market lives of only six to ten years. This is a comparatively short time in which to recuperate the amounts spent on R&D and earn a decent return on these expenditures. An innovating firm must therefore sell as much as possible and for the highest price that the market will bear. These conditions lead to the expectation that, in many science based industries, intra-industry specialisation will in fact be quite great. By specialising on a small range of products, producers can spread their fixed R&D costs over a large output and recuperate these costs more quickly.

At the other end of the spectrum is the case of horizontal differentiation. One of the causes of such differentiation is the existence of diversity of consumer tastes. Different consumers have different preferences for products. They differ in their preference for the actual type of 'attribute mix'. It has been suggested that tastes differ between countries. The result is the emergence of what may be called 'national varieties' of a particular product. However, where there exists a strong local demand for a particular variety, exports may follow. The existence of diversity of preferences even within individual countries means that a potential demand always exists for the exporter of a 'national variety'. The result is intra-industry trade. At the same time the existence of increasing returns means that it is not possible for each producer to produce all the varieties demanded by the consumer. Intra-industry specialisation results.

Industries characterised by such horizontal differentiation are not, in general, research intensive. There is little product innovation or product improvement. Rather, the emphasis is upon altering the appearance, packaging, style, etc of the product to cater for diversity of consumer preference and to increase market share. Advertising costs and sales promotion expenditures will constitute high fixed costs such that a large output may be needed to recuperate these costs. This would favour intra-industry specialisation. Foreign direct investment is often quite important in such industries. Firms may initially seek to tap an overseas market through exports. Once, however, sales have reached a certain level, the firm may prefer to produce abroad. In this case it will have the advantage of being close to the consumer and better able to adapt its product to the particular preferences of consumers in the foreign market. Foreign production also enables the firm to minimize transport costs and get round any tariff or non-tariff barriers to imports. The relatively simple nature of the product in

question may also mean that fixed production costs are small. Geographically dispersed production will therefore not be too profitable. In this case intra-industry trade may be quite low.

Finally, there is the case of vertical differentiation. In this case consumers rank different varieties by quality. Each country exports products of a certain quality while importing products of a different quality. For example, a country may export large automobiles with heavy fuel consumption while importing small economy type models. Once again the existence of increasing returns to scale can explain intra-industry specialisation. As with technological differentiation, levels of R&D expenditure are likely to be quite large relative to turnover, but not as large as in industries where product innovation is more common. Since the emphasis is on quality improvements rather than product innovation, the 'development' aspect of R&D is likely to be more important than the 'research' aspect. However, the occurrence of high levels of R&D expenditure means that unit costs will fall with output. Intra-industry specialisation will therefore be beneficial.

It has been suggested that the case of trade in vertically differentiated goods fits in with the Heckscher-Ohlin theory of trade (Falvey 1981). The argument is that the production of higher quality goods is more capital intensive than the production of lower quality goods. Then capital abundant countries will export the higher quality ranges and labour abundant countries the lower quality ranges. This conforms with the predictions of the Heckscher-Ohlin theory. Alternatively, one could say that higher quality goods require larger inputs of skilled labour and lower quality goods larger inputs of unskilled labour. This also conforms with a modified version of the Heckscher-Ohlin theory. If this is true, it is the case that the Heckscher-Ohlin theory can explain more kinds of intra-industry trade than it may first seem. On the other hand, it ignores the influence of the demand side determinants of trade.

Demand for high quality alternatives is likely to be greater in countries with a high per capita income. In this case, the lower per capita income countries will export the lower quality ranges. Another possibility is that demand patterns vary with the distribution of income. Demand for higher quality alternatives will be greater in countries with a more uneven or skewed distribution of income. In both cases the existence of strong local demand for high quality substitutes may lead a country to specialise in these goods. However, the existence of economies scale means that it is not profitable for all producers in the country concerned to produce all the quality ranges. To satisfy demand at the lower end of the income scale, lower quality manufactures are imported.

Some of the literature on intra-industry trade has attached more importance to market structure than product differentiation. Specifically, the growth of oligopolistic markets in the industrialised countries is seen as the primary cause of increased intra-industry trade. It is important to see the linkage between market structure and trade involved. The essence of oligopoly is that the market is

concentrated in the hands of a few firms each of which controls a significant share of the market. It involves extreme uncertainty for each producer because, in determining his price output policy, he has to take account of the likely reaction of his rivals. Because of this uncertainty, firms may avoid overt price competition which reduces the joint profits of all producers. Instead, firms may seek to increase their market share by methods other than price competition. This will include product differentiation.

At the same time, the oligopolistic nature of markets may force firms to seek expansion overseas. Individual firms may be reluctant to upset the equilibrium existing in the domestic market. Yet the only way of increasing domestic sales further may be by entering into more fierce competition with rivals. The international expansion of the firm may be a means of overcoming this dilemma. The firm seeks to increase sales by extending its influence to foreign markets. Tamir Agmon has suggested that intra-industry trade is one stage in this process of international expansion. Firms first seek to expand internationally through exports. Later, this gives rise to overseas production (Agmon, 1979).

Economic Integration and Intra-Industry Trade

Interest in the measurement and explanation of intra-industry trade can be dated from attempts to explore (ex post) the trade effects of economic integration in Western Europe. Early studies (such as Balassa 1966 and Grubel 1967) reported evidence which suggested a direct association between the formation of the EEC and the growth of intra-industry exchange. Subsequently studies have investigated whether similar links apparently hold for less developed countries (Willmore 1972, Balassa 1979) and even centrally planned economies (Pelzman 1978).

Drawing on the evidence provided by several studies, Greenaway (1989) concludes that there is a causal link between these two phenomena and that this has been corroborated for both developed and developing countries. The same author points out, however, that the theoretical analysis of the underlying mechanisms is still unsatisfactory and that their empirical relevance is strongly related to country specific assumptions. In other words, intra-industry trade may be stimulated by economic integration, but this effect is mediated by factors such as preference diversity and overlapping demand, decreasing costs in production and intra-firm trade, oligopolistic competition and product differentiation.

Economic integration and intra-industry trade have also been described as two phenomena, which are generated by other basic forces. These forces need be identified and the ways they shape actual trade flows and/or influence the formation of trade blocs explained, but there is no obvious link between the two issues. In earlier studies, arguments in support of this hypothesis were usually based on empirical tests rather than theoretical reasoning (Pomfret, 1979; Caves, 1981). At present, the analytical separation of intra-industry trade and economic integration is a fact as can be seen in the large number of studies which alternatively concentrate on one or another of the two issues, disregarding the link.

A third logical alternative - that growing intra-industry trade as an independent phenomenon can provide a motive for economic integration - has usually been ignored in the literature. This presumably depends on the difficulties in finding some rationale for this hypothesis within the framework of trade theory. The notion that the objective of increasing intra-industry trade can push integration forward, however, makes sense when translated into the real world of trade negotiations and conflicts.

It is not difficult to explain why little work exists by way of systematic theoretical analysis of links between intra-industry trade and economic integration. Traditional (Vinerian) customs union theory, with its stress on three-country, two-commodity and two factor models, cannot easily accommodate preference diversity, multiple products and imperfect competition. Either and Horn (1984) demonstrate the difficulties of incorporating such market imperfections into customs union theory.

However, despite the absence of a clearly articulated and widely accepted theoretical point of reference, it is possible to establish a number of possible causal connections between economic integration and intra-industry trade.

Trade liberalisation

One of the most distinctive features of an integration arrangement is the liberalisation of tariff barriers among the integrating economies and (in the case of a customs union) the erection of a common external tariff against 'outside' countries. One could argue that trade liberalisation is likely to promote intra-industry trade on the grounds that liberalisation promotes trade expansion in general. Whilst it seems reasonable to suppose that discriminatory trade liberalisation is likely to promote intra-community trade expansion (whether this be of a trade creating or trade diverting type), there are no a priori reasons why trade liberalisation per se should stimulate the growth of intra- as opposed to inter-industry trade.

Drabek and Greenaway (1984) argue that intra-union tariff liberalisation will give a greater stimulus to intra-industry trade than multilateral tariff liberalisation will, if the integrating economies have similar patterns of demand and production. The existence of similar, and therefore competitive as opposed to complementary, production structures is a necessary condition for intra- as opposed to inter-industry specialisation. (The common external tariff may also exclude lower cost producers outside the union). Similarity of demand conditions, ie taste overlap, is then an incentive to horizontal differentiation and specialisation within industries in order to reap the benefits of large scale production. To the extent that there are dynamic benefits from integration that result in rising per capita incomes then the demand for variety and the scope for intra-industry trade can be expected to rise. This expected positive association between economic integration and intra-industry trade may be reinforced by any liberalisation of capital flows concomitant on integration, which encourages vertical specialisation by, for instance, multinational corporations.

In order to find reasons why economic integration may stimulate intra-industry exchange to a greater degree than inter-industry exchange, one needs to focus more closely on features of the pre-union market structures.

Preference diversity and overlapping demands

Theoretical analysis suggests that the distribution and intensity of preferences has an important bearing on the potential for intra-industry trade. Other things being equal, the more evenly preferences are distributed across a given product spectrum, the greater the potential for intra-industry exchange. Moreover, it is not only the horizontal product spectrum (ie diverse preferences for alternative combinations of a given set of attributes) which is relevant, but also the vertical spectrum (ie diverse preferences for alternative quality gradings). In addition, as Lancaster (1980) and

Greenaway (1982) demonstrate, the extent of any taste overlap between potential trading partners is relevant. Other things being equal, the greater the overlap of preferences, the greater the potential scope for intra-industry trade. Thus, if the pre-integration economies have similar preference structures, and produce similar, but differentiated, commodities, a greater stimulus will be given to intra-industry exchange than would be the case with multilateral liberalisation. If it is predominantly countries with similar factor endowments, similar per capita incomes and similar demand structures which form customs unions, this will be an important basis for intra-industry exchange. Many analysts would agree that this has been particularly relevant in the case of the EC.

Factor movements and intra-firm trade

Liberalisation of capital flows tends to be a concomitant of economic integration. The conventional wisdom on the relationship between factor movements and trade in goods is that they are substitutes rather than complements. This proposition, however, derives from the structure of the Heckscher-Ohlin model, and in particular the assumption that initial factor endowments differ (since this leads to complementarity in production structures). Markusen (1983) argues that this may be a result which is peculiar to the Heckscher-Ohlin model, and as such may be the exception rather than the rule. It is argued that, in many circumstances, factor movements and intra-firm trade may be complementary. For example, Agmon (1979) argues that where intra-industry trade is concerned, it is likely that factor movements and trade will be complementary. The vehicle of transfer turns out to be the multinational corporation which engages in foreign direct investment in order to specialise in different varieties in different countries. Foreign direct investment followed by intra-industry trade allows the firm to exploit the rents associated with firm specific advantages, as well as providing a means for reconnaissance of foreign markets. In turn, the latter facilitates new product development and further expansion.

This horizontal specialisation is not the only mechanism whereby foreign direct investment leads to intra-firm trade which is then recorded as intra-industry trade. Vertical specialisation may also be a contributory factor. In other words, firms may 'peel off' parts of the production process in order to take advantage of the opportunities offered by further division of labour in a larger market. Some commentators have argued that this is in fact the principal explanation of recorded intra-industry trade (Pomfret 1986). It need not necessarily result in intra-firm trade; this depends on whether the requisite ownership-location-internalisation preconditions exist. It is probable, however, that for a given set of ownership-location-internalisation advantages the probability of foreign direct investment occurring which results in intra-firm trade is higher in a common market than a non-integrated market since this facilitates the movement of capital within the integrated market. Thus there are sound a priori reasons for expecting the potential for intra-firm trade, which may be recorded as intra-industry trade, to be greater in an integrated market than in a non-integrated market.

Intra-Industry Specialisation

This section investigates the determinants of intra-industry trade in manufactured goods based on the work of Balassa who used a cross country framework by taking the trade of individual countries with the rest of the world as the unit of observation. Its objective was to explain intercountry differences in the extent of intra-industry trade in manufactured goods by reference to the country characteristics affecting such trade.

It is hypothesised that the extent of intra industry trade across countries will be:-

- 1 : Positively correlated with per capita incomes, representing the extent of demand for differentiated products.
- 2 : Positively correlated with country size, indicating the possibilities for increasing the variety of differentiated products manufactured under economies of scale.
- 3 : Negatively correlated with average distance from the country's trading partners, representing the availability and the cost of information necessary for trading differentiated products.
- 4 : Positively correlated with the existence of common borders with trading partners, indicating the possibilities for intra-industry trade in response to locational advantages.
- 5 : Positively correlated with the participation in regional integration schemes, indicating the possibilities of intra-industry trade in the framework of regional integration schemes.

The investigation was limited to manufactured goods where product differentiation predominates, with the exclusion of natural resource products whose trade is much influenced by the availability of such resources in individual countries. The commodity classification scheme utilised has been established on the basis of the Standard Industrial Trade Classification, with four-digit SITC categories merged in cases when the economic characteristics of the products in question were judged to be very similar.

The investigation covered twenty six countries for the year 1990 (table 3.1). The index of intra-industry trade for a particular country (IIT) - the dependent variable - has been derived using the formula shown and defined earlier (page 81). A number of country characteristics have been presented as independent variables in order to determine the extent of intra-industry trade across countries: The level of development has been defined as Gross Domestic Product per capita, (GDP/population). Market size has been represented by the Gross National Product (GNP) - (GNP has been expressed in US dollars, using purchasing power parities as conversion ratio). While the domestic consumption of manufactured goods would have been a more appropriate measure of the size of domestic market for these products, the necessary data are not available for several countries and are subject to considerable error for others. At the same time, from available information it appears that the consumption of manufactured goods and the Gross National Product are highly correlated.

<div> <div>Table 3.1</div> <div>Intra-industry trade indices by country, 1990</div> </div>							
Developed Industrial Economies				Newly Industrialised Countries		Developing Economies	
Country	IIT	Country	IIT	Country	IIT	Country	IIT
Japan	26.0	United Kingdom	81.0	Singapore	66.9	Malaysia	32.4
United States	59.4	France	80.3	Hong Kong	40.8	Thailand	17.3
Canada	66.9	Germany	62.7	Korea	34.9	Indonesia	16.1
Australia	25.3	Belgium	79.2	Mexico	31.9	Philippines	15.0
New Zealand	25.9	Netherlands	74.2	Brasil	37.8	China	15.3
		Italy	59.0	India	37.4		
		Industrial Economies	56.4	NICs	41.6	Developing Economies	19.22

Source : Computation of World Bank and IMF trade data.

Geographical distance has been introduced in the form of a variable for proximity. This was measured by taking the average distance in miles between the principal trading partners of each country in question (using an international air mile classification - 'ABC World Airways Guide').

The border trade variable has been given a value of 1 for countries that have a common border with at least one trading partner covered by the investigation. Dummy variables were also introduced for membership in the Association of South East Asian Nations (ASEAN), as well as for Singapore that has considerable entrepot trade involving intra-industry specialisation.

Empirical results : Balassa

Table 3.2 shows the results obtained in the Balassa study by ordinary least squares. The investigation covered thirty eight countries for a single year, 1979.

Table 3.2
'Balassa (1979)'
Estimates of intra-industry trade for exporting
manufactured products
(t-values in parentheses)

	Ordinary least squares	
Constant	0.176	(5.26)
Proximity	0.141	(5.72)
Border dummy	0.098	(2.90)
Per capita GNP	0.061	(4.10)
GNP	0.054	(4.84)
Trade orientation	0.128	(4.52)
Singapore dummy	0.333	(3.95)
R-squared	0.8977	
Standard deviation	0.067	
Number	38	

Source : B. Balassa European Economic Review (1986) 27-42.

In using ordinary least squares Balassa found that the regression coefficients of income per head, the gross national product, the trade orientation variable (defined in terms of deviations of actual from hypothetical values of per capita exports), the proximity variable, and the Singapore dummy were all statistically significant at the 1% level while the border dummy was significant at least at the 5% level. The coefficient of determination is 0.90.

Table 3.3 shows the results obtained from the current study using ordinary least squares.

Table 3.3 Estimates of intra-industry trade for exporting manufactured products						
	Ordinary least squares				Ordinary least squares	
	Coefficient	Standard error	T-value		Coefficient	Standard error
Constant	0.4116	0.1021	4.03		0.4114	0.0996
Per capita GNP	0.0148	0.0031	4.84		0.0146	0.0028
GNP	0.00027	0.00028	0.96		0.00026	0.00027
Proximity	-0.0432	0.0196	-2.21		-0.0423	0.0185
Border dummy	0.0518	0.0698	0.74		0.0561	0.0641
Singapore dummy	0.3106	0.1819	1.71		0.3273	0.1532
ASEAN dummy	0.0171	0.0935	0.18			
Adjusted R-squared	0.7681				0.7677	
Standard deviation	0.0675				0.0675	
Standard error	0.0844				0.0845	
F(6, 19) / F(5, 20)	10.486				13.215	
Mean of dependent	0.4888				0.4888	
Number	26				26	
Diagnostics						
Serial Correlation	F(1, 18)	0.876			F(1, 19)	1.046
Functional Form	F(1, 18)	0.001			F(1, 19)	0.006
Normality	Chi-sq	1.1984			Chi-sq	1.099
Heteroscedasticity	F(1, 24)	4.02			F(1, 24)	3.906
Data 1990						

Diagnostic tests

Diagnostic tests, or mis-specification tests, are designed to test the adequacy of the specification of a regression equation. Before any regression model is deemed acceptable it is subjected to a battery of diagnostic tests, and any reported regression will be the outcome of some iterative process in which an initial model has first been estimated and has been modified in some regard as a result of the outcome of diagnostic tests. The tests are conducted with a null hypothesis which states that the regression is well-specified but do not have well-defined alternative hypotheses; hence if any diagnostic test results in a significant statistic the unambiguous conclusion is that the regression model is, in some way, mis-specified, but the direction of the mis-specification is not indicated.

If the model is to be modified in consequence of a significant diagnostic test it is advisable that any modification is made in the light of relevant economic theory, rather than as a mechanical reaction. The diagnostic statistics included in the ordinary least squares regression are for testing the following hypotheses:-

Residual serial correlation

Functional form mis-specification

Normality of residuals

Heteroscedasticity

For each of these hypotheses two statistics are computed: a Lagrange Multiplier (LM), or score statistic, and an F statistic. The LM statistic is asymptotically distributed as a chi-square (CHI-SQ) variate (see Godfrey, 1988). The F statistic also known in the literature as 'LM F' or 'modified LM' statistic is taken approximately to have the F distribution (see Harvey, 1981). The LM and the F statistic have the same distribution asymptotically. But, on the basis of Monte Carlo results, Kivet (1986) has shown that in small samples, such as the one in the present study (N=26), the F version is generally preferable to the LM version.

Serial Correlation: The assumption that errors corresponding to different observations are uncorrelated is important in (both time-series and) cross-section studies. When the error terms from different observations are correlated, we say that the error process is serially correlated or autocorrelated. As a general rule, the presence of serial correlation will not affect the unbiasedness or consistency of the OLS regression estimators, but it does affect their efficiency. In the case of positive serial correlation this loss of efficiency will be masked by the fact that the estimates of the standard errors obtained from the least squares regression will be smaller than the true standard errors. In other words, the regression estimators will be unbiased, but the standard error of the regression will be biased downward. This will lead to the conclusion that the parameter estimates are more precise than they actually are. There will be a tendency to reject the null hypothesis when, in fact, it should not be rejected (Godfrey, 1988). Therefore:-

H_0 = the disturbances are serially uncorrelated

H_a = the disturbances are autocorrelated

The critical value of F at the 5% level is:-

$$F(1, 18) = 4.41$$

$$F(1, 19) = 4.38$$

Since the calculated F statistics of 0.876 and 1.046 (from table 3.3) are both less than the critical values (4.41 and 4.38 respectively), we accept the null hypothesis at the 5% level of significance.



Functional form mis-specification: The general linear model is assumed to be linear in the regressors, and if the assumption of linearity is false then any estimation of the model restricted by this assumption will lead to false inferences. The simplest test of the assumption of a linear functional form is that due to Ramsey (1969, 1970). It is to be noted that economic theory rarely indicates a specific functional form of the relationship, and the assumption of linearity is an acknowledged approximation. In the absence of an obvious alternative hypothesis to that of linearity, the Regression Equation Specification Error Test (RESET) can be used. Linearity is therefore rejected if the computed F statistic lies in the right-hand tail of the relevant F distribution.

$$H_0 = \text{model is linear (appropriate functional form has been chosen)}$$

If the RESET test rejects the hypothesis of linearity it should be noted that no precise alternative functional form has been utilised as an alternative hypothesis (nor, indeed, has any precise alternative hypothesis been stated), and so the investigator is merely alerted to the presence of a problem but is not necessarily alerted to the direction in which a better specification lies. Moreover, a significant RESET statistic is not necessarily an indicator of a mis-specified functional form; for example, if there is a structural break in the relationship this too can give rise to a significant RESET F statistic.

The critical value of F at the 5% level is:-

$$F(1, 18) = 4.41$$

$$F(1, 19) = 4.38$$

Since the calculated F statistics of 0.001 and 1.006 (from table 3.3) are both less than the critical values (4.41 and 4.38 respectively), we accept the null hypothesis at the 5% level of significance.

Normality: The most popular test of normality in regression analysis is the Jarque-Bera test (Jarque and Bera, 1980). In small samples the normality of the OLS estimator is assured if the errors are normally distributed; in large samples resource may be made to asymptotic theory to demonstrate this result, under a wider class of assumptions about the error. However, a test of the normality of the error, via a test of the fitted residuals, can provide evidence not only of a possible non-normal distribution, but also of the presence of outliers.

$$H_0 = \text{normality}$$

$$H_a = \text{non normal distribution of the errors}$$

In this instance the F statistic is not reported therefore we must make use of the LM version. Since the statistics of 1.19 and 1.09 are both less than the critical value (15.4 - Chi-square test), we accept the null hypothesis at the 5% level of significance.

Heteroscedasticity: When Heteroscedasticity is present, OLS estimation places more weight on the observations which have a large error variances than on those with small error variances. The implicit weighting of OLS occurs because the sum of squared residuals associated with large variance over terms is likely to be substantially greater than the sum of squared residuals associated with low variance errors. The regression line will be adjusted to minimise the total sum of squared residuals, and this can best be accomplished by guaranteeing a very good fit in the large-variance portion of the data. Because of this implicit weighting, OLS parameter estimates are unbiased and consistent, but they are not efficient; ie the variances of the estimated parameters are not the minimum variances. In addition, the estimated variances of the estimated parameters will be biased estimators of the true variance of the estimated parameters (Goldfeld and Quandt, 1965).

$$H_0 = \text{Homoscedasticity}$$

$$H_a = \text{Heteroscedasticity}$$

The critical value of F at the 5% level is:-

$$F(1, 24) = 4.26$$

Since the calculated F statistics of 4.02 and 3.91 (from table 3.3) are both less than the critical value (4.26), we accept the null hypothesis at the 5% level of significance.

The first set of results reported in table 3.3 includes six explanatory variables. Per capita income is expected to have a strong positive effect on IIT, since as per capita income rises, so consumers demand more variety. The demand for variety leads to an increase in the degree of product differentiation which promotes IIT and reduces inter-industry trade as a component of total trade. As expected the per capita income coefficient is positive and statistically significant at the 1% level.

There are grounds for believing that the larger a country is the greater the effect on IIT. What is important is not geographical size of a country but the size of its GNP. Countries with a large GNP offer producers a wide market within which to sell. Therefore the second variable, GNP, is expected to have a strong positive effect on IIT. The GNP coefficient is positive but insignificant at even the 10% level.

A variable of proximity was included. Distance between countries is expected to have a strong negative effect on IIT. Of course, large geographical distances and the consequent high transport costs reduce trade in general, whether it be inter-industry or intra-industry trade. As expected the proximity coefficient is negative and statistically significant at the 5% level.

The fourth variable, a border dummy is expected to have a positive effect on IIT, as the existence of common borders, besides lowering transport costs contribute to information flows. The border dummy

is positive but was not significantly different from zero. Dummy variables have also been introduced for membership in ASEAN and for Singapore. The ASEAN dummy variable is expected to have a strong positive effect on IIT, as regional economic integration between countries appears to be one factor promoting IIT. However the variable was found to be insignificant at even the 10% level. The dummy variable for Singapore was introduced as it has considerable entrepot trade involving intra-industry specialisation. Therefore, the Singapore entrepot variable is expected to have a strong positive effect on IIT. As expected the Singapore dummy is positive and statistically significant at the 5% level.

While the results are generally good (three significant t-values and an adjusted R-squared of 0.76. The standard error of 0.0844 is best interpreted in relation to the mean value of the dependent variable, in this case 0.489. The standard error is approximately 17% of the dependent variable mean.

The second set of results reported in table 3.3 include five explanatory variables as the ASEAN dummy has been dropped. Regional economic integration between member countries appears to be one factor promoting IIT. The ASEAN dummy variable has been dropped as it may involve a misspecification picking up the statistical impact of other variables (multicollinearity). The idea of regional integration agreements implies that the countries in question will have similar per capita incomes, are at a similar stage of development, situated close to each other, and share a similar culture. Similar results were also observed for the EC in the work of Balassa (Balassa, 1986). Dropping the ASEAN dummy variable causes the adjusted R-squared to fall from 0.7681 to 0.7677, only a slight fall. However, the fact that the standard error of the equation has decreased slightly is indicative of a gain in predictive power.

The adjusted R-squared of 0.76 allows us to conclude that the independent variables help to explain over three quarters of the variation in the level of intra-industry trade (IIT) for the sample of 26 countries. The F statistic allows us to test the null hypothesis of no relationship between the independent variables and IIT. To do so, we use a table of the F distribution to determine the critical value associated with a 5% level of significance and six and nineteen degrees of freedom in the numerator and denominator, respectively (five and twenty in the second set of results). The six degrees of freedom are used because the model includes six explanatory variables, while the nineteen degrees of freedom result from the fact that there are 26 observations and seven parameters to be estimated.

In this case the critical value of F at the 5% level is:-

$$F(6, 19) = 2.63$$

$$F(5, 20) = 2.71$$

Since the calculated F statistics of 10.49 and 13.22 are both greater than the critical value, we reject the null hypothesis at the 5% level of significance.

Building on the results presented in table 3.3 a number of transformations were performed in order to improve the statistical significance of the variables and the explanatory power of the regression equations.

The poor performance of the market size variable (GNP) is explained by its introduction in untransformed form. As shown in table 3.4, this variable improves statistically if expressed in logarithmic terms, which compresses the extreme observations and reduces the variability of GNP that is quite large compared to the variability of the index of intra-industry trade. The ASEAN variable has been omitted and the per capita income, GNP and proximity variables are all presented in logarithmic form. All the statistical results are reported in table 3.4.

The index of intra-industry trade defined below:-

$$IIT = \frac{(|X_i + M_i| - |X_i - M_i|)}{(X_i + M_i)}$$

takes values between 0 and 1. There is no guarantee, however, that the predicted values of the regression equation will fall within this range. Such an outcome is ensured if a logistic function is chosen:-

$$IIT_j = 1 / (1 + \exp(-B'x_j))$$

where x_j is the vector of the explanatory variables.

Table 3.4
Alternative Estimates of Intra-Industry Trade
(Regression Coefficients; OLS)

	Ordinary least squares			Logistic function : OLS		
	Coefficient	Standard error	T-value	Coefficient	Standard error	T-value
Constant	0.2809	0.084	3.34	0.2199	0.027	8.14
Per capita GNP	0.1016	0.017	5.77	0.0241	0.005	4.27
GNP	0.0201	0.018	1.11	0.0071	0.005	1.43
Proximity	-0.0652	0.030	-2.20	-0.0373	0.009	-3.93
Border dummy	0.0386	0.048	0.79	0.0067	0.015	0.43
Singapore dummy	0.2517	0.112	2.24	0.0833	0.036	2.31
Adjusted R-squared	0.8838			0.8692		
Standard deviation	0.0675			0.0610		
Standard error	0.1020			0.0328		
F(5, 20)	30.407			26.581		
Mean of dependent	0.4888			0.2585		
Number	26			26		
Diagnostics						
Serial Correlation	F(1, 19)	0.047		F(1, 19)	0.348	
Functional Form	F(1, 19)	0.940		F(1, 19)	3.555	
Normality	Chi-sq	1.0937		Chi-sq	1.2479	
Heteroscedasticity	F(1, 24)	3.153		F(1, 24)	0.220	

Data 1990

Diagnostic tests were also performed to test the adequacy of the specification of the regression equations reported in table 3.4. In all cases the null hypotheses were accepted implying that the regression equations have in fact been well specified.

Estimation by ordinary least-squares and utilising a logistic function give similar results in terms of the statistical significance of the variables and the explanatory power of the regression equations. The regression equations explain over 85% of the variance of the index of intra-industry trade in both cases and, with one exception, the statistical significance of the regression coefficients is also similar in the two studies. The regression coefficient for proximity improves from being significant at the 5% level in the OLS study, to being significant at the 1% level. The coefficients of income per head and the Singapore (entrepot) dummy variable both remain significant at the 1% level and the 5% level respectively. However, the GNP coefficient and the border dummy variables remain insignificant even at the 10% level, although the results have improved.

The coefficient of determination is 0.90 using ordinary least-squares and 0.87 using the logit procedure with ordinary least-squares. While differences in the estimation procedures do not allow a comparison of the adjusted R-squareds, the residual standard deviations are directly comparable. They are 0.067 and 0.061, almost identical in the two cases.

The results presented in the present study are not directly comparable to those obtained by other authors who also analysed the determinants of intra-industry trade among developed and developing countries. This is hardly surprising since the selection of a different set of countries will give rise to different results, as will using different commodity categories and applying different methods. Loertscher and Wolter (1980) used bilateral trade flows rather than each country's overall trade as observations. While this permitted testing for intercountry differences in per capita incomes and in market size, the coefficient of determination was only 0.15 and the results are marred by reason of the fact that the authors failed to weight the dependent variable. Weighted least-squares estimation was correctly used by Bergstrand (1983), but this investigation covered only SITC 7 and the coefficient of determination was not reported. Clair, Gaussens and Phan (1984) employed ordinary least-squares in an equation pertaining to the intra-industry trade of the developed countries in SITC 5 and 7, with the coefficient of determination ranging between 0.66 and 0.74 in the reported estimates.

The work in this section has set out to explain intercountry differences in the extent of intra-industry trade in manufactured goods by reference to hypotheses derived from contributions to the theory of intra-industry trade. Apart from the effects of economic integration on intra-industry specialisation, all the hypotheses put forward have been confirmed by the results and the explanatory power of the regression is high. The extent of intra-industry specialisation increases with the level of economic development and the size of domestic markets. The existence of trading partners with common borders and geographical proximity also contribute to intra-industry trade and its role as an entrepot increases the extent of such trade in Singapore.

In providing evidence on the determinants of intra-industry trade the findings of the current study support the work carried out by Balassa and complement the relevant theoretical literature. As noted by Balassa nearly thirty years ago, the existence of intra-industry trade has important policy implications (Balassa 1966). This is because the cost of adjustment associated with reductions in trade barriers will be much less in cases when this involves increased intra-industry specialisation than in cases when resources are reallocated among industries.

Intra-Industry Trade In ASEAN

Prior to export-oriented industrialisation, ASEAN's exports comprised almost entirely primary products, while imports consisted mostly of manufactures, resulting in a large volume of inter-industry trade flows. The increasing share of manufactures in the total exports of ASEAN countries since the 1970s has given rise to the possibilities of increasing intra-industry trade flows.

The phenomenon of intra-industry trade is explained by several factors. In the first place, the presence of transport, storage and selling costs can result in international trade in functionally homogeneous goods. Transport costs give rise to border trade especially where geographic regions are more closely integrated to other countries than to other regions within their own country. Singapore's entrepot trade is another example within this category, in the case of ASEAN. A second explanation for intra-industry trade is the existence of economies of scale, which may give rise to vertical intra-industry specialisation among countries and hence generate international trade of inputs, and intermediate and final products, within the same industry. A third factor is intra-industry trade emerging through product cycles and international subcontracting arrangements. In the case of the ASEAN manufacturing industries, governments have tended to promote domestic vertical integration of many activities (eg in the automotive and appliance industries). Consequently, the second and third explanations are unlikely to have generated substantially increased intra-industry trade within ASEAN. Export processing zones, however, are likely to have induced considerable extra-regional intra-industry trade, especially of the third variety.

Table 3.5 shows the indices for each of ASEAN's major trading partners during the periods 1967-75 and 1976-84 in percentage terms, calculated at the three-digit SITC level, excluding petroleum. (see page 81 for Grubel and Lloyd formula on IIT). These two periods were chosen as they represent similar stages of the business cycle, whilst also giving an indication of differences in the years before and after the 1976 Bali Summit. It can be seen that the indices for each of the ASEAN countries were high and increasing except in the case of Indonesia, probably owing to the omission of petroleum products. Intra-industry trade is of the greatest importance for ASEAN trade with the US and the Northeast Asian NICs (Hong Kong, Taiwan and South Korea). The indices concerning trade with the EC rose rapidly. However, what is surprising is that the indices remained small in the case of Japan, although they too did rise rapidly but from a much smaller base. The third explanation for intra-industry trade mentioned is likely to account for these figures. The US and Japan invest considerable amounts in export-oriented manufacturing in ASEAN, as do the NICs in some of the ASEAN countries but not on such a large scale.

Table 3.5
Intra-Industry Trade Indices for ASEAN Manufactures
by Major Trading Partner
in percentage terms (1967-75, 1976-84)

	EC	USA	Japan	Australia	N E Asian NICs	Other ASEAN	World
Singapore							
1967-75	15.2	23.3	2.8	49.7	35.2	43.5	50.1
1976-84	37.1	44.6	11.4	40.3	47.3	49.8	65.7
Malaysia							
1967-75	5.3	3.5	1.7	9.1	9.8	43.1	16.8
1976-84	23.7	58.3	8.1	28.6	28.4	71.7	38.2
Thailand							
1967-75	4.8	6.5	3.7	7.9	12.1	25.2	9.6
1976-84	11.9	25.3	7.2	19.2	36.3	30.4	32.5
Indonesia							
1967-75	4.1	0.3	0.3	0.5	0.4	6.1	2.5
1976-84	3.2	1.8	1.4	3.9	8.1	26.3	7.9
Philippines							
1967-75	1.1	5.3	2.7	0.9	10.9	11.1	5.8
1976-84	20.8	46.1	29.4	17.5	37.4	20.5	42.3
ASEAN							
1967-75	6.1	7.8	2.24	13.6	13.7	25.8	16.9
1976-84	19.3	35.2	11.5	21.9	31.5	39.7	37.3

Source : Calculated from data in United Nations Yearbook of International Trade Statistics 1992.

The importance of intra-industry with extra-regional trading partners varies considerably among the ASEAN countries. As would be expected, Singapore generally has the highest index, especially since it is the most export-oriented of the five countries. Singapore's entrepot trade is also the most extensive in the region, although this factor is more important in explaining intra-regional trade. Indonesia is at the other end of the spectrum. Of the three main explanatory factors of intra-industry trade, only the first is likely to be of some importance for Indonesia, and only in the context of intra-regional trade. It is therefore not surprising that intra-industry trade assumes some significance only in the case of Indonesia's trade with the other ASEAN countries. The indices for the other three countries also rose quite sharply, especially in the case of the EC and the US. Here again, export-oriented foreign investments are likely to have been a major factor.

To check the emerging hypothesis that close proximity in terms of geographic and economic (and probably socio-political) distance is a major factor in the intensity of intra-industry trade, trade between the ASEAN countries is examined. From table 3.5 it appears that, on the whole, the intra-

industry trade ratio is the highest in trade among the ASEAN countries compared to that between the ASEAN countries and other trading partners.

Intra-regional intra-industry trade is especially significant for Singapore, and is also important for the Philippines. Nevertheless, compared to the first period (1967-75), its significance in the second period (1976-84) relative to intra-industry trade with the world declined somewhat. This suggests that the second and third explanations for intra-industry trade, which would tend to encourage trade with countries beyond the ASEAN region, have been more important in the second period than the first explanation, which tends to account for much of the intra-regional trade.

Economic cooperation amongst the ASEAN countries may account for part of the increase in the indices, but the development of larger economies and more sophisticated industrial structures were undoubtedly the more important factors. It is interesting that Malaysia had the highest index rather than Singapore, the region's centre for entrepot trade. The fact that the definition of manufactures used excludes petroleum and other primary commodities undoubtedly accounts for this finding. Nevertheless, the high figure for Malaysia is not altogether surprising in view of the fact that it shares a common border with three of the other ASEAN countries (all but the Philippines). Care should of course be taken in interpreting these figures, even at the three-digit level, since some of the intra-industry trade flows are very small. But the general direction of the trends is quite unambiguous.

Intra-Industry Trade In Singapore

Table 3.6
Intra-Industry Trade indices for Singapore
(in percentage terms)

SITC	Commodity	1970	1974	1978	1982	1986	1990
553	Perfume, cosmetics	44.51	35.42	41.49	48.36	52.13	56.71
554	Soaps, cleaning preparations	89.31	64.52	75.63	77.84	84.61	94.24
562	Fertilisers	64.60	71.79	87.69	90.03	93.80	99.59
598	Chemicals nes	35.70	41.60	46.18	53.69	92.25	89.57
621	Materials of rubber	30.25	33.24	38.96	48.13	56.33	52.70
628	Rubber articles nes	83.58	68.16	76.30	78.14	77.47	69.66
634	Veneers, plywood	58.74	47.08	49.97	61.01	57.80	69.89
635	Wood manufactures	51.25	86.31	85.26	70.65	85.79	60.59
641	Paper and paperboard	21.26	31.40	32.65	36.93	57.96	58.68
651	Textile yarn	27.39	75.28	88.18	88.32	84.89	95.71
652	Cotton fabrics woven	48.30	68.87	68.05	63.32	51.24	50.76
653	Woven man made fibres	27.16	33.81	55.62	56.75	64.51	72.96
661	Lime, cement, building prod.	31.81	20.97	44.51	41.76	21.51	32.20
664	Glass	33.88	31.86	46.19	49.71	39.88	41.19
666	Pottery	88.34	13.05	20.71	24.39	28.78	49.41
672	Iron and steel	11.49	50.64	26.41	6.53	7.08	4.84
678	I+S tubes, pipes etc	31.43	22.02	70.25	58.31	72.46	57.74
692	Metal tanks, boxes etc	91.75	66.84	83.25	83.33	90.62	77.34
696	Cutlery	23.41	39.96	45.45	64.63	58.69	71.04
712	Steam engines, turbines			10.70	20.21	38.63	86.90
714	Engines and motors			83.82	69.68	36.77	30.76
723	Civil eng equip			65.17	79.62	93.62	85.80
724	Textile, leather mach	26.02	47.08	63.65	81.42	84.69	85.35
751	Office machines	90.09	54.29	65.88	71.93	90.67	74.74
764	Telecommunications equip	49.36	45.01	52.37	78.48	89.07	94.55
771	Electrical power machinery			37.39	56.84	69.26	74.23
775	Household type equip	37.55	79.84	98.19	69.82	77.23	75.81
842	Mens outwear non knit			53.69	70.47	63.42	63.47
843	Womens outwear non knit			43.57	58.08	81.66	73.72
851	Footwear	77.08	98.40	84.27	49.08	36.14	55.90
871	Optical instruments			45.22	46.73	83.86	97.29
885	Watches and clocks	28.19	32.85	66.05	59.46	60.59	57.90
892	Printed matter	78.04	88.98	94.88	96.07	97.29	87.35
893	Articles of plastic	54.64	60.68	66.30	93.44	84.48	86.08
894	Toys, sporting goods	42.87	60.11	85.27	89.01	95.25	80.70
895	Office supplies	22.66	26.62	30.09	44.80	75.12	90.84
896	Works of art etc	68.10	68.25	75.67	52.46	82.15	95.38
897	Gold, silverware, jewellery	29.30	26.45	62.75	86.65	63.58	54.50

Source : Calculated from data -
Research and Statistics Unit of the EDB (singapore dollars), Singapore.

Care should, of course, be taken in interpreting the intra-industry trade indices even at the three digit level, since large indices are not inconsistent with small trade volumes. However the uptrend in intra-industry trade is not at all surprising, given Singapore's export-oriented industrialisation in which direct foreign investment plays a crucial role.

The intra-industry trade indices for Singapore's manufactures (calculated at the three digit SITC level) are given in Table 3.6 in percentage terms (see page 81 for Grubel and Lloyd formula on IIT). Most indices increased during the 1970s and the very high indices for several commodities deserve a brief comment. Fertilisers (562), and chemicals (598) respectively have both shown a growing tendency towards intra-industry trade. For example, fertilisers increased from 64% in 1970 to 99% in 1990. Chemicals increased from 35% in 1970 to 89% in 1990 with its peak of 92% occurring in 1986.

Industrial growth in the late 1960s early 1970s was concentrated mainly in labour-intensive industries such as textiles, food, paper and wood products. Paper and Paperboard (641) shows an increase from 21% in 1970 to 58% in 1990 indicating a switch from inter-industry to a growing tendency towards intra-industry trade. Pottery (666) shows a similar trend apart from the fact that in 1970 a measure was recorded (probably due to entrepot trade) before Singapore commenced production of its own where upon values rose from 13% in 1974 to 49% by 1990. Steam engines, turbines (712) also increases from 10% in 1978 to 86% in 1990. This strategy of labour-intensive manufacturing, especially but not exclusively for export continued from 1966-73, by which time full employment and emerging domestic labour shortages had led to plans for industrial upgrading into less labour-intensive activities.

Since the mid 1970s manufacturing growth has been concentrated in higher value added industries, namely petroleum refining, electrical and electronic machinery, shipbuilding and oil rig construction, metal engineering and precision equipment, and chemicals. Except for petroleum chemicals, these industries employ large numbers of unskilled workers, but they have all been upgrading themselves in response to labour shortages and competitive pressures. Telecommunications Equipment (764) and office supplies (895) have both shown a dramatic increase. Telecommunications Equipment rose from 49% in 1970 to 94% in 1990 (with a dip in 1974 to 45%). Office supplies rose from 22% in 1970 to 90% in 1990. Other categories show similar patterns, textile yarn (651) increased from 27% in 1970, to 95% in 1990. Woven man made fibres fabric (653) rose from 27% in 1970 to 72% in 1990. Household type equipment (775) has increased from 37% in 1970 to 75% in 1990 with its peak occurring in 1978 of 98% after which point the figures barely fell below 70% indicating intra-industry trade. The same can be said for the commodity metal tanks, boxes etc. (692) for which the lowest figure recorded was 66% in 1974. All these trends show a tendency towards intra-industry trade away from inter-industry trade. Numerous other commodities shown also follow similar trends, though not

all at the same rate as those mentioned, whilst others show the reverse trend. Iron and steel (672) which fell from 55% in 1974 to 4% in 1990.

The onset of the severe 1974-75 world recession, which particularly affected labour-intensive export industries, delayed the intended restructuring of the economy. It may also account for anomalies in the data for the period 1974 as seen for products such as telecommunications (764) and metal tanks, boxes etc. (692). No new industrial policies were introduced during the market-led post recession recovery from 1976-78 until 1979 when the government introduced 'the second industrial revolution'.

Singapore has lost its comparative advantage in resource-intensive manufactures (since Indonesia and Malaysia have developed their own capabilities in these areas). This may help to explain distortions in the data through the years as Singapore loses out in some resource and labour-intensive commodity categories. Singapore has not lost out altogether as it has gained a comparative advantage in technology-intensive activities.

A useful classification of grouping products (in intra-industry trade) consist of dividing all goods by production characteristics and end-use characteristics. (Havrylyshyn and Wolf, 1983). First, a distinction is made between capital-intensive and resource-intensive goods. Second, a mutually exclusive distinction is made between intermediate, investment and consumption goods. The allocation of SITC 3-digit categories into these groupings is shown (Table 3.7).

Table 3.7
Commodity Groups

Commodity group	SITC groups
Intermediate goods	
Labour-intensive	5(excl 515) 621 641 662 663 664 693 694
Capital-intensive	661 691 692 698 812
Capital goods	
Labour-intensive	695 712 714 718 719 731 733 861
Capital-intensive	711 722 723 726 729 732 734 735
Consumer durables	
Labour-intensive	667 697 864 891 897
Capital-intensive	724 725 892 893 896
Consumer non-durables	
Labour-intensive	665 666 696 892 893 894 899
Capital-intensive	553 554 895

Source : UN Broad Economic Categories

Table 3.8
Intra-industry trade among Asian countries
by type of good - 1990

Country	Capital intensive	Labour intensive	Intermediate goods	Investment goods
Singapore	66.69	58.43	50.55	72.76
Indonesia	43.89	42.94	43.22	59.11
Malaysia	46.83	56.05	65.80	56.50
Philippines	27.29	34.67	50.20	29.50
Thailand	29.15	56.25	67.11	44.50
Hong Kong	72.85	60.71	59.27	72.92
Korea	50.46	43.33	50.45	44.69
Av ASEAN	42.77	49.67	55.38	52.47
Av NICs	63.33	54.16	53.42	63.45

Source : Calculated from data in United Nations Yearbook of International Trade Statistics 1992.

Table 3.8 which shows the values of intra-industry trade by these groupings and country. In the case of the ASEAN countries only Singapore and Indonesia have IIT values in capital intensive goods greater than those for the labour-intensive goods, with the latter only just falling into this category. The three remaining countries show the reverse. There is greater intra-industry trade in goods that are capital-intensive in production, compared to those that are labour-intensive and also there is greater intra-industry trade in goods used for investment as these categories have a much greater tendency to be two-way trade or trade in 'similar' products, than is the case for labour-intensive goods, or intermediate goods and consumer goods. When looking at the average values for ASEAN it can be seen that Singapore's position is outweighed by the rest, ie the IIT in capital-intensive goods is lower than in labour-intensive goods (42.77% v 49.67%). Also investment goods have a lower IIT index 52.47% than do intermediate goods 55.38%.

However, when looking at the figures for Singapore a different picture can be seen. IIT in labour-intensive goods is considerably lower than in capital-intensive goods (58.43% v 66.69%). Investment goods have a much higher IIT index (72.76%) than do intermediate goods (50.55%). This trend is also followed by the NICs. One should expect IIT to be higher in trade for industrial countries (56.35%), than for developing countries as a whole (19.22%), and between the two the NICs (41.61%) - (see table 3.1, page 98). It is also certainly true that the developing countries do more intra-industry trading with each other than with the developed industrial economies. This is especially true when considering the values for the ASEAN countries: IIT among them is high while IIT in their total trade with the world is relatively low (see table 3.5, page 109, for IIT statistics 1967-75 and 1976-84).

The specific products which have the highest levels of IIT in Singapore are :

554	Soaps, Cleaning Preparations	94.24%
562	Fertilisers	99.59%
598	Chemicals nes	89.57%
651	Textile Yarn	95.71%
712	Steam Engines, Turbines	86.90%
723	Civil Eng Equip	85.80%
724	Textile Leather Mach	85.35%
764	Telecommunications Equip	94.55%
871	Optical Instruments	97.29%
895	Office Supplies	90.84%
896	Works Of Art etc	95.38%

Most of the products listed above are in the capital intensive category. On the whole, products with a high measure of IIT are more 'sophisticated' goods in some sense of that word. This is because Singapore has had to adopt new technologies because of changing comparative advantage. The share of unskilled labour-intensive manufactures began to decrease about the mid 1970s, when rising real wages and human capital development began to erode the economy's comparative advantage in these commodities. Correspondingly, the share of technology and human capital-intensive manufactures began to increase gradually.

The indices for extra-regional and intra-regional trading partners are not presented here, but some observations are pertinent, in terms of the level and trends of intra-industry trade. In the case of extra-regional trade, most indices have increased since the 1970s. Very high indices for several products deserve brief comment. A number of high, or increasing, indices are for products whose production tends to be concentrated in export processing zones. Most notable are electrical power machinery (771), telecommunication equipment (724) and certain textile products (651). In fact, international subcontracting arrangements would appear to be the key factor in explaining variations in the indices among industries. The theory of intra-industry trade suggests that the products which are significant in extra-regional intra-industry trade will not necessarily be as important in intra-regional trade. This contention is broadly supported by the data, with the notable exception of SITC 771 - electrical power machinery. The more important products tend to be resource based processing activities, in whose trade Singapore figures prominently. These include rubber products (621) and paper products (641).

Of the trade that the ASEAN countries do with each other a sizeable part (about 40% in the second period, 1976-84) is in the form of intra-industry trade or 'competitive' trade. This is lower than for trade among industrial countries, but that is not surprising as it has been shown elsewhere that intra-industry trade varies with the degree of development. These findings are broadly in conformity with theory: unlike inter-industry trade which depends basically on the pattern of factor endowments, as stipulated by the Heckscher-Ohlin model. This is not surprising that Singapore, the most advanced of all the ASEAN countries, accounts for the bulk of ASEAN's intra-industry trade with the developed

countries. Nor is it surprising to find that intra-industry trade indices among the ASEAN countries are higher than those with third countries, but for a few exceptions. The increased intra-ASEAN intra-industry flows may partly be due to official interventions such as the Preferential Trading Arrangements (PTA). Their intra-industry trade with each other is higher than with the rest of the world, and the trade diversion in the integration schemes probably accounts for this. But given the costs of trade diversion, the higher intra-industry trade in ASEAN may not be beneficial. Certainly the fact that intra-ASEAN intra-industry trade indices have increased significantly since the 1970s is indicative of growing intra-industry specialisation in the region.

It appears that countries such as Singapore, which have relatively more open trade regimes also have higher levels of intra-industry trade. On theoretical grounds, it can be said that expansion in trade - inter- or intra-industry alike - as a response to a general liberalisation would yield increased efficiency and mutual benefits with a greater certainty compared to the case with trade created by specific measures (Balassa, 1966;; Dixon, 1978; and Lloyd, 1979). The implications of this for the developing countries are obvious.

On the other hand, it is incumbent on the developed countries to eliminate the escalation in protection at higher levels in the processing chain (Helleiner, 1979). This is an imperative if there is any truth in the argument that the costs of adjustment to intra-industry trade are significantly lower (see UNCTAD, 1980). Also, the developed countries have to bring to a halt the tendency to make increased use of - indeed to start removing - non-tariff barriers. To a large extent these are discriminatory, and frustrate the developing countries in their efforts to diversify their manufactured exports (UNCTAD, 1984).

Widening the scope of existing general measures to promote North-South trade is also an issue which involves intra-industry trade. Notable in this context are improving the conditions and enlarging the scope of the generalised system of preferences (GSP), and a greater use of value-added tariff provisions, such as those that exist in the EC or under the provisions of United States tariff items.

As the findings in this chapter indicate, there is a great potential in intra-industry trade between developing countries. The determining factor in this will certainly be the further industrialisation of developing countries. Since most developing countries are geographically apart, the emergence of the new NICs - such as the ASEAN-4 - help to fill in the gaps, a chain reaction with respect to intra-industry trade is most likely. At the same time, in addition to general measures increasing the openness of their economies, there are a number of specific policy areas which can contribute to South-South trade in general, and intra-industry trade in particular: greater economic cooperation among developing countries, in particular regional integration schemes, and probably a general

preferential treatment scheme - such as that envisaged in the global system of trade preferences (GSTP) - would be the main items.

Without the cooperation of the other member states of ASEAN, it is doubtful whether the growth of the Singapore economy would have been as prolific. The fact that Singapore was at a higher level of development in the integrated region implies that with a head start in industrialisation it was able to strengthen its position and increase its lead as a result of integration.

It can, of course, be argued that the trade expansion induced by special arrangements between developing countries can have distortive effects and may not yield net benefits. However, such arrangements deserve consideration for at least three reasons. First, there are market imperfections such as 'traditional' transport, marketing and finance channels which, to say the least, do not favour South-South trade. Secondly, returns to scale and minimum optimal scale requirements are of much greater importance in the developing countries due to smallness of their markets - especially in some manufacturing products (Erzan, 1983). Hence there is a substantially greater scope of exploiting returns to scale through, for example, regional integration schemes, than is the case with developed countries. Thirdly, most developing countries, for economic and non-economic reasons, desire to reduce their dependence on a small number of suppliers of what they consider to be critical or strategic products. They also believe that they have to keep up with the new technologies in at least some fields. Hence, the costs of import substitution would be significantly reduced by economic cooperation among the developing countries which, as consequence, would lead to increased intra-industry trade.

Chapter 4

Regionalisation of International Trade

This chapter aims to assess the effect of the regional integration of the ASEAN economies on trade and welfare. The first part of the chapter focuses on pointing out how history, geography and even non-preferential trade policies can effect the geographic distribution of a country or region's trade. A simple method for disaggregating the change in the geographic distribution of a region's trade into component parts is provided. In the process indexes of intensity and propensity to trade intra- or extra-regionally are defined. The traditional intensity index overcomes several problems associated with using trade shares as indicators of trade bias. It is defined in the case of extra-regional trade as (roughly) the share of a region's trade with the rest of the world relative to the rest of the world's share of global trade. But even this indicator ignores the possibility that the region may be trading more or less with the rest of the world because of external trade policy changes.

The work then draws on a number of theoretical and empirical literatures for various regional integration arrangements, so that an investigation of the ASEAN countries may be undertaken. The importance of ASEAN cooperation must be examined in order to determine whether this group of countries has had a favourable effect on economic growth. The ex-ante and ex-post approach is one of the most popular approaches in measuring the effects of integration. It permits the evaluation of the integration framework by comparing an integration 'parameter' before and after integration. This is done by analysing the trade effects of ASEAN integration using Balassa's (1963) test of trade creation and trade diversion.

Balassa's quantitative approach in measuring integration was first based on his work on the integration effect of the EEC. Other authors of integration like Lamfalussy (1963), Verdoon and Schlochtern (1964), Kreinin (1972), Truman (1974) and Donges (1979) also adopted quite similar criteria in estimating the trade creation and trade diversion effects. Truman and the EFTA Secretariat, for instance, applied the same tool in measuring the trade effect of EFTA, while Donges (1979) provided the model for the possibility of Spain's accension into the EEC. However, in the latter case, estimation was undertaken using the price elasticities of each commodity group and also the tariff level on intra-imports according to the preferential trading agreement provisions of each commodity. In the developing world, the work of Patterson (1980) in assessing the CACM integration via a similar approach should not be forgotten. Despite its limitations the Balassian approach is an important and popular approach in assessing integration. It is a simple yardstick in guaging integration through trade effects. The results of the current study are reported in the second half of the chapter.

Global economic integration through extra-regional trade has, of course, been going on for centuries (Tracy, 1991). But with the rapid decline in the cost of ocean transport in the later nineteenth century, as iron and then steel replaced wood in ship construction and steam substituted for sails, intercontinental trade became much less costly (North, 1958). That, in the presence of strong imperial-colonial ties, often stronger trade complementarities between European and less-industrialised countries than among European countries, and intermittent animosities among European countries, ensured that for a hundred or so years from 1830 there was faster growth in inter- rather than intra-continental trade. Moreover, this extra-regional trade bias was reinforced by imperial preference policies that were strengthened in the early 1930s. It was only after the post World War reconstruction period that those preferences began to be dismantled - only to be replaced by regional preferences first in Europe and then in North America. Simultaneously, the volume of intra-industry trade among high-income industrial economies in sophisticated merchandise has become more important over time than those economies' inter-sectoral trade with exporters of primary products.

About half of Asia's trade is intra-regional at present, as was the case in the inter-war period. But in the third quarter of the century it was barely 40%. To understand why requires first examining Japan's international trade. That trade was very heavily focused on its neighbours in the inter-war period: as much as two-thirds of Japanese trade was then with other Asian economies. However, following the collapse of the Japanese empire in the mid-1940s and the decline of barriers to Japan's trade with other industrial economies between the 1950s and 1970s, the share of its trade with other Asian economies dropped to half the inter-war level. (See table 4.1).

Table 4.1
Intra-regional trade share (%)

	1928	1938	1948	1958	1968	1979	1990
Western Europe	51	49	43	53	63	66	72
North America	25	23	29	32	37	30	31
Asia	46	52	39	41	37	41	48
Japan	63	68	60	36	32	31	35
Australasia	16	16	14	25	31	49	51
Developing Asia	47	55	44	47	45	48	56
TOTAL WORLD	39	37	33	40	47	46	52

Western Europe includes Yugoslavia and Turkey

North America refers to Canada and the United States

Australasia refers to Australia and New Zealand

Developing Asia excludes Japan - incorporates NICs and ASEAN countries.

Source : Calculated from data in:-

United Nations Yearbook of International Trade Statistics (various years).

The World Banks World Tables (various years).

History, Geography and Regional Integration

Both history and geography, in addition to government policies, play fundamental roles in shaping the pattern of world trade. Through influencing the size of nations, history also influences the share of GDP traded internationally, because large economies tend to trade a smaller proportion of their GDP (Perkins and Syrquin, 1989). Historical events also influence national factor endowment ratios and thereby comparative advantages, and hence the commodity composition of countries' international trade.

Geography influences all four determinants of the pattern of an economy's international trade (its GDP, share of GDP traded, commodity composition of trade, and relative transaction costs of doing business with different countries). The output and real income of a nation can be affected directly by proximity to a more affluent economy, as shown so dramatically in the 1980s by the reductions in trade barriers between southeast China and Hong Kong. Also a nation's trade-to-GDP ratio is smaller the lower the cost of transacting business domestically compared with internationally, and this is determined by transport and communication costs. These costs vary across trading partners as well and change over time. They thereby influence the direction of a country's trade not only directly but also indirectly through altering its inter-sectoral and intra-industry commodity composition (Krugman, 1991).

Government policies also alter the determinants of the pattern of international trade (Clarida and Findlay, 1992). Even a uniform international trade tax for all commodities is inherently discriminatory, in at least two respects. First, it discriminates between domestic and international trades and so is likely to lower both GDP (especially for small countries) and the nation's international trade-to-GDP ratio below their free trade levels. And second, it alters domestic producer incentives among tradeable industries because a given change in good prices translates to differential changes in value-added, especially when the value-added share of output varies by industry and elasticities of substitution in production and consumption differ across commodities. In the usual case in which a government's trade taxes (and other policies) do differ across industries, these differences add to the distortions to domestic production and so lower GDP further. Also such differences tend to reduce trade more for those trading partners whose trade with the taxing country is concentrated in the goods taxed most. Moreover, these changes to goods trade will be accentuated if the country's trade policy allows international factor flows. Thus even if a country's policies were to contain no overtly discriminatory or preferential trade arrangements, they nonetheless would have an impact on the geographic distribution of the country's trade.

For all these reasons the share of intra-regional trade in a region's total trade is a very inadequate indicator of preferential policy-induced regional trade bias. But there are two other reasons as well,

based simply on arithmetic, as to why the intra-regional trade share can be misleading. They have to do with the definition of a 'region'. One is that the share is affected by the number of countries in a region. To overcome this problem, one might be tempted to suggest defining regions to include a similar number of countries. But that raises a second and realtered problem, namely, that the value of total trade matters. The problems can be avoided, and determinants of the share of one country's trade that goes to another country or country group can be identified formally, by making use of measures of trade intensities.

Trade intensities

I_{ij} is the index of intensity of country i 's export trade with country (or country group) j :

$$I_{ij} = x_{ij} / m_j$$

$$= x_{ij} / (q_j * r_j)$$

where

* = multiplied by

x_{ij} = the share of country i 's exports going to country j .

m_j = the share of country j in world imports.

q_j = the share of country j in world GDP.

r_j = the 'relative openness' of country j , defined as j 's import-to-GDP ratio divided by the world's import-to-GDP ratio.

This index (and its counterpart for import trade) has the property that if trade is not geographically biased in the sense that the share of i 's trade going to j equals j 's importance in world trade, then it will have a value of unity for all j . (Drysdale and Garnaut, 1982).

The share of developing Asian economies' trade within Asia fell a little with the collapse of the Japanese empire in the 1940s, but increased again over the post-war years as the region's share of world trade grew. Throughout the period their intra-regional trade intensity has remained high (Table 4.2), reflecting not only relative proximity in terms of distance and culture but also strong complementarity with the more advanced economies of the region, especially Japan.

Table 4.2
Intensity of intra-regional trade index

	1928	1938	1948	1958	1968	1979	1990
Western Europe	1.13	1.14	1.21	1.38	1.51	1.57	1.60
North America	2.59	2.91	2.39	3.07	3.57	3.63	3.50
Asia	2.61	2.83	2.74	3.15	2.84	2.77	2.31
Japan	4.17	4.65	4.29	3.28	3.81	3.08	2.33
Australasia	0.97	0.93	1.08	2.00	2.47	3.32	2.47
Developing Asia	2.66	2.96	3.10	3.56	3.37	3.17	2.64
TOTAL WORLD	1.85	1.92	2.43	2.65	2.81	2.64	2.62

Western Europe includes Yugoslavia and Turkey

North America refers to Canada and the United States

Australasia refers to Australia and New Zealand

Developing Asia excludes Japan - incorporates NICs and ASEAN countries.

Source : Calculated from data in:-

United Nations Yearbook of International Trade Statistics (various years).

The World Banks World Tables (various years).

There is another indicator that is useful in addition to I_{ij} . It is claimed by supporters of regional integration agreements that such agreements often are accompanied by general trade-policy changes which raise a country's trade-to-GDP ratio. Thus the establishment of regional integration agreements may result in so much net trade creation that, even though the index of intensity of i 's trade with other regions falls, there is a rise in its propensity to trade outside its own region because of an increase in the value of its trade with other regions as a proportion of i 's GDP. To capture the combined effect of these two changes - in 'openness' and in extra-regional trade intensity the index of the propensity to export extra-regionally is defined as:

$$P_{ij} = t_{ij} / m_j$$

$$= t_i * I_{ij}$$

where

* = multiplied by

t_{ij} = i 's exports to j divided by i 's GDP.

t_i = the ratio of i 's total exports to i 's GDP.

and similarly for i 's imports from j . The aggregate index of the propensity to trade extra-regionally can then be defined as the average of the export and import intensities indexes multiplied by the ratio of exports plus imports to GDP (and similarly for the aggregate index of the propensity to trade intra-regionally). (Drysdale and Garnaut, 1982).

With the dramatic growth in the share of their GDP that is traded, the index of the Asian economies propensity to trade extra-regionally has doubled in the post-war period in the case of North America, and has shown a modest rise for Asia, though still below the 1928 level.. (Table 4.3).

Table 4.3
Index of propensity to trade extra-regionally

	1928	1938	1948	1958	1968	1979	1990
Western Europe	0.30	0.21	0.31	0.26	0.21	0.28	0.23
North America	0.09	0.06	0.09	0.07	0.07	0.15	0.14
Asia	0.21	0.16	0.18	0.18	0.15	0.19	0.19
Japan	0.14	0.10	0.04	0.13	0.12	0.15	0.13
Australasia	0.37	0.31	0.45	0.29	0.23	0.27	0.28
Developing Asia	0.25	0.21	0.18	0.20	0.22	0.30	0.35
TOTAL WORLD	0.21	0.16	0.19	0.16	0.15	0.23	0.21

Table 4.4
Index of propensity to trade intra-regionally

	1928	1938	1948	1958	1968	1979	1990
Western Europe	0.38	0.27	0.90	0.46	0.50	0.75	0.73
North America	0.27	0.22	0.26	0.29	0.34	0.70	0.67
Asia	0.83	0.76	0.67	0.83	0.60	0.76	0.67
Japan	1.37	1.57	0.28	0.53	0.31	0.55	0.42
Australasia	0.39	0.21	0.43	0.57	0.71	1.03	0.89
Developing Asia	0.82	0.72	0.84	1.07	1.09	1.23	1.21
TOTAL WORLD	0.45	0.37	0.54	0.57	0.61	0.91	0.88

Western Europe includes Yugoslavia and Turkey
 North America refers to Canada and the United States
 Australasia refers to Australia and New Zealand
 Developing Asia excludes Japan - incorporates NICs and ASEAN countries.

Source : Calculated from data in:-
United Nations Yearbook of International Trade Statistics (various years).
The World Banks World Tables (various years).

The aggregate effect of these changes has been for Asia's indexes of propensity to trade intra-regionally and extra-regionally to both fluctuate around a flat trend since 1928, (Tables 4.3 and 4.4). But note that Asia's propensity to trade extra-regionally is significantly higher today than it was in the 1960s, and that this increase has occurred despite the deepening integration within Asia via market forces - a phenomenon that has been described as 'open regionalism' (Drysdale and Garnaut, 1993).

The trade intensity index, developed by Brown (1949) and Kojima (1964) and synthesized by Drysdale and Garnaut (1982), provides a useful analytical tool for gauging the relative importance of the bilateral trading relationship between countries. The index measures the share of one country's trade with another country (or region) as a proportion of the latter's share of world trade. The formula is given below, but also has a counterpart for import trade:-

$$I_{ij} = (x_{ij} / x_i) / [M_j / (M_w - M_i)]$$

where:-

x_{ij} = Singapore's exports to country j

x_i = Singapore's total exports to the world

M_j = Country j's total imports from the world

M_w = Total world imports

M_i = Singapore's total imports from the world.

Outside the ASEAN region it can be seen from Table 4.5 that Singapore trades most intensively with Hong Kong as far as its exports are concerned. Apart from Hong Kong the only other countries to exhibit high export trade intensities are other ASEAN members, which is explained in part by their small share in international trade. However, export trade intensity with respect to Singapore's trade within the ASEAN subregion has been declining.

Singapore's export trade intensity indices with respect to the Asia-Pacific region as a whole have been relatively stable, the only exception being for 1990 where figures increased rapidly for all countries bar Japan. The general trend with respect to the European countries has also been relatively stable although the figures have declined over the period.

Table 4.5

Intensity indices of Singaporean exports by destination

Country	1970	1974	1978	1982	1986	1990
Indonesia	-	-	-	-	-	-
Malaysia	49.60	33.06	21.04	26.41	28.19	22.39
Philippines	0.05	0.19	26.00	3.43	4.15	4.16
Thailand	9.33	6.05	6.30	8.86	7.72	7.77
Hong Kong	4.47	7.84	4.72	6.68	4.00	29.89
Korea	1.14	1.19	1.02	1.14	0.92	10.84
Japan	1.25	1.47	1.08	1.50	1.37	1.32
USA	0.86	1.11	0.76	0.90	1.25	14.88
UK	0.97	0.61	0.37	0.37	0.42	0.42
Germany	0.30	0.35	0.24	0.25	0.33	0.38
France	0.32	0.29	0.21	0.24	0.24	0.27
Netherlands	0.36	0.40	0.30	0.50	0.42	0.48
Belgium-	0.13	0.15	0.08	0.13	0.15	0.24
Luxembourg						

NB. Indonesia does not report its trade with Singapore.

Source : Calculated from data in IMF Direction of Trade Statistics (various years).

Singapore's import trade intensity indices also suggest that it trades intensively with other ASEAN countries, especially Malaysia as before (Table 4.6). However, import trade intensity with respect to Singapore's trade within the ASEAN subregion has been declining, with no significant increase in the indices for any of the other countries. It must be remembered that Singapore historically played the role of an 'entrepot' port, therefore not all of its imports from the region are retained for domestic consumption, since a significant proportion of its primary imports from its neighbours is re-exported.

Singapore's import trade intensity with other Asian-Pacific countries is not particularly great although the indices with regards to the East Asian NICs are significantly above unity, as is the case for Japan and Australia. None of the European countries appear to have any significance apart from the United Kingdom 1970, 1974, and it too has played a diminishing role over the period along with the other European countries. Thus it can be seen that the Asia-Pacific region as a whole appears to be a region from which Singapore imports intensively, although, in terms of both imports and exports Singapore does appear to switch its attentions away from the ASEAN region.

Table 4.6
Intensity indices of Singaporean imports by source

Country	1970	1974	1978	1982	1986	1990
Indonesia	-	-	-	-	-	-
Malaysia	33.37	25.25	15.80	19.72	19.27	19.05
Philippines	0.93	0.76	1.32	1.27	3.00	2.35
Thailand	10.10	8.55	6.00	5.16	6.15	4.64
Hong Kong	3.04	3.24	1.96	1.79	1.40	1.25
Korea	1.86	1.29	0.81	0.98	1.33	1.28
Japan	2.95	2.59	1.77	2.24	1.87	2.21
Australia	2.79	2.05	1.26	1.76	1.55	1.63
USA	0.75	1.16	0.80	1.06	1.30	1.30
UK	1.15	1.03	0.50	0.51	0.63	0.54
Germany	0.29	0.31	0.24	0.31	0.27	0.31
France	0.19	0.21	0.18	0.36	0.30	0.30
Netherlands	0.32	0.33	0.17	0.20	0.23	0.21
Belgium-Luxembourg	0.13	0.19	0.07	0.14	0.14	0.18

NB. Indonesia does not report its trade with Singapore.
Source : Calculated from data in IMF Direction of Trade Statistics (various years).

The high trade intensities observed in some cases may be explained by :- the 'match' between the export commodity composition and the corresponding commodity composition of the importing country, and; the 'special country bias', that is, the trade intensities for the particular commodities traded (Drysdale and Garnaut 1982). The so called 'bias' relates to such factors as relative proximity, the importance of historical trade linkages, and ease of communication and commercial contact. Thus, the high trade intensities of Singapore in terms of both exports and imports in its trade with other ASEAN countries, may be attributed largely to what has been termed 'special country bias'. The

complementarity of resources and factor endowments probably is less important than is often assumed, as the 'match' factor is tarnished by the effects of protectionism and other official resistance to trade (Anderson 1983).

Intra-Regional Trade

Analysts have repeatedly stressed that the reason why regional economic cooperation in ASEAN is so limited is because apart from Singapore, the ASEAN members export primary products to the developed world, and in many cases find that they are in competition with one another in the international marketplace. Singapore is the exception and, significantly accounted for 47% of all intra-ASEAN trade in 1990 (Table 4.7). Paradoxically, however, the differences between the economic structures and levels of development of the member states also restrict cooperation. For it has proved extremely difficult to design and implement schemes for regional economic cooperation that will benefit each country equally, and reaching a consensus has often been impossible.

Table 4.7
ASEAN trade flows 1990

EXPORTS (US\$ MILLIONS)

	From	Indonesia	Malaysia	Singapore	Thailand	Philippines
To						
Indonesia		-	280	?	86	25
Malaysia		184	-	5332	473	117
Singapore		1656	4081	-	1224	221
Thailand		151	417	2144	-	123
Philippines		87	315	519	59	-
Total ASEAN		2082	5149	8409	1863	486
Total Exports		19376	21125	39322	15992	7034

IMPORTS (US\$ MILLIONS)

	To	Indonesia	Malaysia	Singapore	Thailand	Philippines
From						
Indonesia		-	284	?	172	161
Malaysia		300	-	6431	413	247
Singapore		896	2186	-	1505	353
Thailand		96	504	1186	-	56
Philippines		36	135	263	190	-
Total ASEAN		1329	3110	7992	2448	852
Total Exports		13489	16567	43869	16292	8662

NB. Indonesia does not report its trade with Singapore.

Source : IMF Directorate of Trade Statistics, (Far East and Australasia).

Industrial specialisation and complementation in ASEAN must be according to comparative advantage. Factor endowments suggest that, 'a priori', Singapore's regional comparative advantage lies in relatively skill-intensive and higher technology industries, while the comparative advantage of the other ASEAN countries lie, in varying degrees, in resource-oriented basic industries and processing industries as well as labour-intensive industries. Differences in the level of industrial development and factor endowment between Singapore and the rest of ASEAN has facilitated the

regional division of labour. Singapore functions today as a regional pole for development, distributing to its neighbours low-priced equipment, products and services and, in addition, transfers of finance and know-how which thus multiply intra-regional and external interdependence. This division of labour, of which the industrialisation of Johore and Batam are good examples, is not unilateral. Owing to its size and limited resources, Singapore has neither the capacity nor the ambition to develop on its territory the complete network of modern industry. Its neighbours are not restricted to second-rate production. Reciprocally, these countries, which command only limited industrial and financial capital, cannot fail to benefit from the presence on their doorstep of a concentration of industrial and technical facilities to be used for their own efforts at economic diversification.

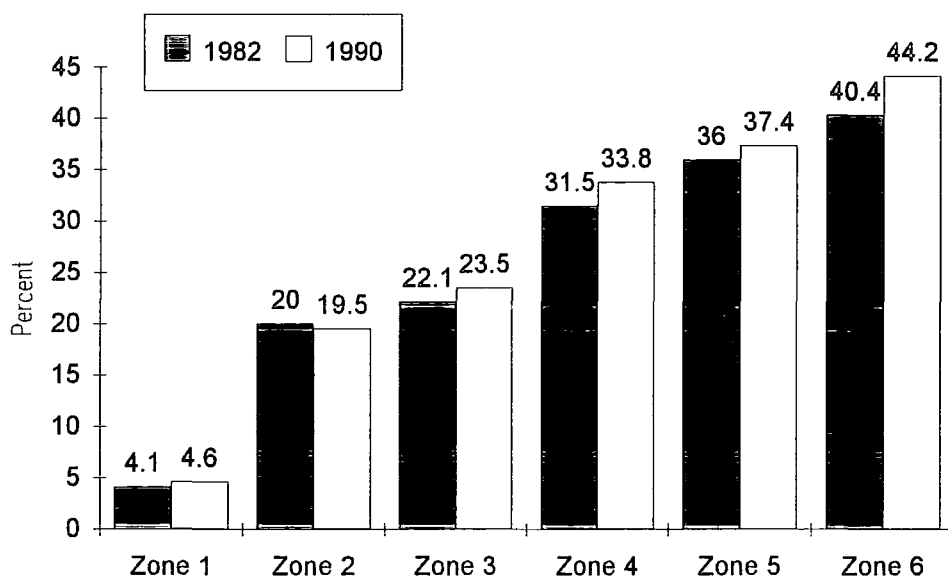
The commodity producers in ASEAN will be exporting increasingly resource-intensive manufactures rather than commodities in primary form. This scenario suggests that intra-regional trade in the Asia-Pacific will be increasingly characterised by intra-industry trade rather than inter-industry trade in the twenty first century.

The process of de-industrialisation in Japan and the other developed countries in the region, leading to a relative decline of manufacturing and an expansion of the services sector, would only serve to complement industrial deepening in the developing countries of the region. A major contributor to the dynamism of the region would be the youthfulness of the population in the western corridor of the Pacific Basin.

Chart 4.1, shows the intra regional trade in East Asia and Australasia. The ASEAN members do not, in fact, have a compelling reason to put internal trade links before their external interests. More than 80% of ASEAN exports went to non ASEAN countries in 1990, as the Chart shows. Moreover if Singapore, which re-exports many of its imports, is excluded, the share of intra-ASEAN exports in total exports falls to just 4.6%, against 61% for the intra-regional trade of EC members, highlighting Singapore's importance.

What is interesting is the small proportion of intra-ASEAN trade, since the ASEAN economies are the only ones in Asia which give each other trade preferences. The failure of the preferential trade arrangement to generate more intra-ASEAN trade is, however, probably a blessing in disguise. The largest of the ASEAN countries (Indonesia, the Philippines and Thailand) have built up sizeable industrial sectors much of which is sheltered from international competition and not particularly efficient.

Chart 4.1
Intra-regional trade in East Asia and Australasia



Zone 1 : ASEAN - Singapore

Zone 2 : ASEAN

Zone 3 : ASEAN + NICs

Zone 4 : ASEAN + NICs + Japan

Zone 5 : ASEAN + NICs + Japan + Australasia

Zone 6 : ASEAN + NICs + Japan + Australasia + Rest Of East Asia

KEY

ASEAN

Indonesia, Malaysia, Philippines, *Singapore and Thailand (Brunei included)

NICs

Hong Kong, *Singapore, South Korea and Taiwan

Australasia

Australia and New Zealand

Rest Of East Asia

China, Cambodia, Laos, Vietnam, North Korea, Burma, Papua New Guinea and Macao

(Source : IMF Direction Of Trade Statistics)

The traditional Heckscher-Ohlin model can be used to explain why certain countries, such as Singapore have a comparative advantage in the provision of services connected with entrepot and re-export trade. Singapore lies along major sea routes, near great populated areas and has natural harbour facilities with an abundant supply of labour required for the provision of these services.

The goods processed in entrepot and re-export trade are not transformed sufficiently to warrant statistical reclassification between importation and exportation. Thus intra-industry trade is observed. It might be noted though, that many countries present separate statistics on 'normal' trade and entrepot and re-export trade. In general, however, these two special trade categories are relatively small and collections of international trade statistics by supranational organisations such as the OECD or IMF present only consolidated overall trade data.

A large proportion of the intra-ASEAN trade (about two thirds) is simply bilateral, ie between Singapore and Malaysia. Such empirical evidence is often cited by critics to show that ASEAN economic cooperation lacks substance. It is very wrong to jump to such conclusions on the basis of the intra-regional trade figures for two entirely unrelated reasons. For one thing, the official trade statistics understate the actual intra-ASEAN trade flows, since they do not include the large volume of illegal trade transactions that take place within the region. It is an open secret that the illegal trade traffic is heavy, especially between Singapore and its neighbouring islands. Sumatra (Indonesia) and Mindanao (the Philippines), in particular, have strong and well organised bases for smuggling activities. For another, intra-regional trade, no matter how well documented, provides only a partial picture of a very complex phenomenon.

It is not difficult to explain why intra-regional trade within ASEAN has been relatively small. ASEAN countries' factor and resource endowments are somewhat similar and they have been producing goods, both primary commodities and manufactures, that are very similar, if not identical. Put another way, the ASEAN economies find that they are in competition with one another in the international market place as mentioned earlier. It is the economy of Singapore which seems to account for the new ties of complementarity. Thus the growth in intra-regional trade, at present, is largely down to Singapore as it functions as a regional pole for development, distributing to its neighbours low-priced equipment, products and services and, in addition, transfers of finance and know-how which thus multiply intra-regional and external interdependence. Under these circumstances, any attempt to increase intra-regional trade through discriminatory tariff reductions would probably result in substantial trade diversion, shifting the sources of imports from the low cost third countries to high cost partners. Trade creation effects are likely to be weak, since the cost differentials among members presumably are not large enough to cause a shift from a higher cost domestic source to a low cost partner source. ASEAN countries would have been worse off, had they

gone all out to increase their intra-regional trade through discriminatory trade measures. It can therefore be argued that the low volume of intra-ASEAN trade is not a bad thing after all.

The interdependencies among various ASEAN partners should be seen as mutually beneficial even though it is difficult in practice to ensure absolutely equitable welfare gains. Even if one ASEAN country does gain more relative to another, this should not be exploited as a nationalistic, emotive issue which may argue for less rather than more trade linkages. As interdependencies increase with time, greater coordination of policies will in fact be needed to ensure that the impulses transmitted through trade are fully exploited instead of weakened by jealousies and physical and mental blocks.

ASEAN Economic Cooperation

While the Association of South East Asian Nations (ASEAN) was founded in response to the threat of communist expansion in Indochina, accords on greater economic cooperation have often been spurred by political considerations. Advocates of greater economic cooperation stress the dynamic gains that would be achieved through greater economic cooperation, and they have criticised the relatively slow pace of intra-regional cooperation without fully understanding the political motivations and constraints. Pessimists argue that greater economic integration is either politically unrealistic or undesirable because of the discriminatory nature implied by an 'ASEAN trade bloc'. In any event, as the regional political situation stabilises, the policy agenda will increasingly focus on economic issues. In many ways, ASEAN is at a watershed. Indeed a common strategy on domestic economic policy may be a prerequisite to enhancing regional cooperation that will facilitate intra-ASEAN trade and investment liberalisation in the future.

The greater internationalisation of the ASEAN economies has rendered them more sensitive to changes in international economic policies and trends. Concerns about rising protectionism in developed countries, the increase in bilateral trading blocs and the GATT talks, have important implications for the economic growth prospects of ASEAN.

'International economic integration' describes both a state of affairs and a process. As a state, it refers to a fusion of formerly separate national economies. More usefully, as a process it signifies the gradual elimination of economic frontiers between countries, an 'economic frontier' being 'any demarcation over which mobilities of goods, services and factors of production are relatively low' (Pelkmans, 1984). In one sense integration is a global phenomenon, as the network of international trade and foreign direct investment intensifies, encouraged by the multilateral agencies like the GATT and spearheaded by the activities of multinational corporations (MNCs). In this chapter, however, international economic integration is more narrowly defined as the attempt by the ASEAN country governments to link together the economies of the five countries (Brunei has been excluded as already mentioned).

The theoretical rationale behind regional economic integration is the notion in trade theory that a partial move towards freer trade improves welfare among the member nations. The removal or reduction of tariffs among the member countries should improve resource allocation and expand markets. Dismantling economic frontiers like tariffs and immigration controls has the general economic aim of raising living standards in the participating countries, but a political purpose of fostering peaceful relations among the participants may also be important, especially as in the case of ASEAN. In addition, there is a greater scope for improved efficiency if the countries produce similar products. Thus, whether integration is only beginning, such as in the case of a free trade area, or will

move along higher forms, (for example, a customs union, a common market, or an economic union), freer trade will be beneficial.

However, the so called types of economic integration are appropriate only for the textbook exposition purposes since they do not represent any single actual scheme. Even at the simple 'sectoral' level a degree of coordination and a minimum provision of certain institutional arrangements are needed to ensure proper and smooth functioning. Also at the 'free trade area' level some administrative mechanism has to be incorporated to ensure the proper carrying out of 'rules of origin' in order to eliminate trade deflection. Hence cooperation in general and coordination of certain policies in particular are not matters strictly confined to 'economic unions' and higher levels of integration (El-Agraa, 1982).

Despite the inability of the theoretical literature to resolve fully whether or not regional integration arrangements can be welfare improving, it remains the case that such preferential arrangements have been present in the global trading system since GATT's formation in 1947. Indeed they have a long history, being part of the colonial trading systems and the large-power dominated trading systems of the late nineteenth century that continued through into the first part of the twentieth century.

The key regional integration arrangements that have entered the global trading system over the post-war years include the formation of the European Economic Community in 1957, the subsequent formation in 1960 of the European Free Trade Association (EFTA), bilateral arrangements between the United States and Canada under the Auto Pact of 1965 and the 1988 Canada-US Free Trade Agreement, and more recently other initiatives including EC enlargement, an EC/EFTA negotiation to form EEA, Canada-US-Mexico negotiations to form NAFTA, and others (Anderson and Blackhurst, 1993).

A large number of regional integration arrangements between other countries besides the US and the EC have also emerged. They include the Latin America Free Trade Association (LAFTA) of 1960, the Central American Common Market (CACM) of 1961, and the East African Common Market (EACM) of the same period. More recent examples are the Chile-Mexico Bilateral Trade Agreement concluded in 1991, and the 1992 Chile-Venezuela bilateral arrangement. In UNCTAD a negotiation on trade preferences among developing countries, the global system of trade preferences (GSTP), continues (UNCTAD, 1988; Hudec, 1989). These have attracted less attention than the large-power arrangements because the trade covered by them has been relatively small.

While many (or most) of these smaller-country agreements have subsequently broken down, they serve to emphasise the point that, despite the GATT, post-war regional integration arrangements have been a central feature in the development and evolution of the global trading system, rather than an

exception. Indeed, Japan remains the only major industrialised country that is not currently a participant in some form of explicit regional integration arrangement. And even Japan now has an informal investment and trade arrangement with the ASEAN countries, and may be poised to move further in a regional direction in the 1990s (Anderson and Blackhurst, 1993).

The global experience of economic integration has clearly demonstrated the case with which negative integration can be achieved and the difficulties involved in making progress, if at all, in terms of positive integration. This should not be surprising, however, since the dismantling of tariff barriers and import quota restrictions is easy, particularly in a world where these have been gradually reduced through multilateral negotiations (GATT and the GSP) whereby certain industrial exports by developing nations are granted preferential treatment in certain advanced countries. Positive integration, on the other hand, is mainly about non-tariff barriers and here harmonisation is of paramount importance. However, harmonisation is a positive act which requires not only concerted action but also, in a number of areas, a certain degree of political commitment with implications for the sensitive issue of sovereignty as, for example, is the case in fiscal harmonisation, monetary integration and the coordination of employment policies (El-Agraa, 1982).

Viner (1950) distinguishes between two effects, one in which trade between partner countries expands in accordance with international comparative advantage, and the other in which trade between countries expands as a result of the preferential treatment given to imports from within the region as compared to those from the rest of the world. The former effect he named 'trade creation', the substitution of imports of lower-cost goods produced by a country's partner for its own domestic products, and the latter he called 'trade diversion', the shift in imports from the least-cost exporter to the more expensive product from the nation's partners.

But while this categorisation is a useful description of the effects of customs-union formation, it is inappropriate as a basis for measuring the welfare effects of a regional integration agreement. From a global standpoint, trade diversion represents a shift in the trade pattern counter to comparative advantage; but the importing country may benefit from trade diversion as domestic prices of goods fall. This may offset any losses in tariff revenues from the switch in the trade pattern. Thus the induced changes in the pattern of trade are not reliable predictors of the welfare consequences of regional free trade from the point of view of individual countries participating in such schemes (Greenaway and Winters, 1994).

An analysis by Kemp and Wan (1976) shows that a new regional integration arrangement will not worsen welfare in the rest of the world's economies so long as the volume (not necessarily the share) of its trade with the regional integration arrangement countries does not fall, *ceteris paribus*. But, to be welfare improving for the economies within the regional integration arrangement, the volume of

intra-regional trade must increase following the formation of the regional integration arrangement. Thus it is quite conceivable for both trade volumes to rise, improving welfare for those inside and those outside the regional integration arrangement, but for the latter volume to rise faster than the former - in which case the intra-area trade rises and the extra-regional share falls. Despite this insight from received economic theory, levels of protection and extra-regional trade shares continue to be used to make claims about the welfare effects of regional integration arrangements, pending the development of alternative simple-to-calculate indicators.

It has been claimed that the body of economic integration theory as so far developed has no relevance for the Third World. This is due to the fact that the theory suggested that there would be more scope for trade creation if the countries concerned were initially very competitive in production but potentially very complementary and that a customs union would be more likely to be trade creating if the partners conducted most of their foreign trade amongst themselves (see Lipsey, 1960 and Meade, 1955). These conditions are unlikely to be satisfied in the majority of the developing nations. Moreover, most of the effects of integration are initially bound to be trade diverting, particularly since most of the Third World seeks to industrialise.

On the other hand, it was also realised that an important obstacle to the development of industry in these countries is the inadequate size of their individual markets (see Brown, 1961; Hazlewood, 1975 and Robson, 1980). It is therefore necessary to increase the market size so as to encourage optimum plant installations - hence the need for economic integration. This would, however, result in industries clustering together in the relatively more advanced of these nations - those that have already commenced the process of industrialisation.

El-Agraa (1979) demonstrated that there is essentially no theoretical difference between economic integration in the Advanced World and the Third World but that there is a major difference in terms of the type of economic integration that is politically feasible: the need for an equitable distribution of the gains from industrialisation and the location of industries is an important issue. This suggests that any type of economic integration that is being contemplated must incorporate as an essential element a common fiscal authority and some coordination of economic policies. But then one could equally well argue that some degree of these elements is necessary in any type of integration.

It must, however, be remembered that the term economic integration does not seem to mean the same thing for every type of scheme in existence. In advanced Western economies integration is about resource reallocation as determined by the law of comparative advantage defined basically in a static sense. For developing countries economic integration is about promoting or enhancing economic development and is advanced basically in terms of a dynamic infant-industry argument. In the former socialist countries of Eastern Europe, integration was about production planning and plant location

also defined in a context of dynamic development. It is probably somewhat unfair to suggest that advanced Western economies are preoccupied with the static resource reallocation effects of integration since they do in fact recognise the dynamic effects and hope to achieve them. However, their predominant behaviour seems to be in contradiction to this recognition. For instance, most of the publicised discussion regarding the EC is conducted in terms of possible trade creation which is basically about replacing a participating nation's own expensive production by cheaper imports from a partner (El-Agraa, 1982).

Theoretical literature on regional integration agreements has tended to focus on geographically discriminatory tariff-based arrangements of the customs union type, rather than the range of discriminatory arrangements actually used in regional integration agreements around the world. Discussion of the welfare and trade effects of customs unions has been one of the staples of trade theorists over the post-war years, from Viner (1950), through Meade (1955) and Lipsey (1957) to Wonnacott and Wonnacott (1981), and Wooton (1986).

In a competitive world, a global Pareto-optimal allocation is achieved when there is a free trade between countries. While a move away from a tariff-free world will reduce aggregate world product, country welfare will increase for a non-small open economy if it imposes a small tariff. But as Scitovsky (1941) and Johnson (1953) showed, such beggar-thy-neighbour policies may induce retaliation by the country's trading partners, resulting in a world economy characterised by distortions and inefficient production.

While a multilateral agreement achieving complete trade liberalisation in all countries would restore the world economy to a Pareto optimum, it may not be possible to achieve this for a number of reasons. The costs of negotiating with other countries may be too high, or an individual country may simply be better off in the tariff-ridden equilibrium compared to global free trade. While that country may be induced to join a multilateral agreement through transfers from other countries, it is typically difficult to reach agreement as to the appropriate level of compensation to be paid and which countries should pay it.

The question then arises as to whether a subset of countries would benefit from an alternative regional integration agreement. If there are relatively few countries involved, it may be easier to reach an agreement. Because comparisons between second-best situations are involved, in general it is not possible to make a policy-ranking across the various potential trade agreements available. Although a regional integration agreement is not the first-best for the world, as trade impediments between the region and the rest of the world remain, it may still be optimal policy for the countries in the region.

For a country to enter a regional integration agreement, it must be the case that the effects of its partners removing their trade barriers to its exports are sufficiently large to offset any loss from the concessions that it makes to them (Wonnacott and Wonnacott, 1981; Kowalczyk, 1992). As in multilateral trade liberalisation this cannot generally be guaranteed, but, as fewer countries are involved in the agreement, it may be easier for them to come to some agreement as to the international transfers that are made to ensure that all of the partners in the regional integration agreement do indeed benefit. With such a transfer mechanism in place, it is possible for any arbitrary grouping of countries to benefit from establishing a regional accord. Thus countries can gain from forming preferential trading agreements, and such benefits need not be at the expense of the rest of the world.

A regional integration agreement will benefit its members only if the volume of intra-regional trade increases. Thus, if trade with the rest of the world were held constant (as in the Kemp and Wan case), a Pareto-improving regional integration agreement area would involve an increase in intra-regional trade relative to inter-regional trade. Consequently, an observation that world trade was becoming relatively more 'regional' need not, in itself, indicate any harm (in a welfare sense) to the global economy.

Of more concern is the case when the level of trade between the region and the rest of the world falls. Consequently, gains for the region are at the expense of other regions. This may be purely the result of liberalisation of intra-regional trade, whereby trade is diverted by the discriminatory nature of tariffs. It may also be a reflection of the increased shared market power of the countries in the region. These terms-of-trade effects are stronger the larger the size and number of countries participating in the regional integration agreement. They may choose to exploit this monopoly power in trade by increasing their external trade barriers relative to those that they had imposed unilaterally.

Theory is unable to provide any simple rules as to the suitability on welfare grounds of particular countries as partners in a regional integration agreement, as several (sometimes conflicting) economic, as well as non-economic, forces apply. An argument can be made for a country joining its principal trading partner in a free trade agreement, as this reinforces the pattern of comparative advantage and provides a 'safe haven' in the face of a potential tide of protectionism. But countries with similar production and export characteristics might also choose a trading agreement in order to operate as an international cartel. Yet another possibility is that countries with similar import preferences might join forces in order to increase their joint monopsony power with respect to the rest of the world.

When the member countries of ASEAN are seen in this regard, it is immediately apparent that the countries are not homogeneous economies. Singapore has virtually no agriculture sector to speak of

and very limited amounts of natural resources. Indonesia is a fairly large country with a size-able domestic market which enables it to reap economies of scale. In terms of trade barriers, Singapore has lower tariff walls than the other four countries.

The differing levels and paces of development among the ASEAN countries and the disparities in their protective structures and geographic sizes indicate that integration benefits may not accrue uniformly across the countries. Differences in their production structures also suggest that the benefits and efficiencies that can be captured from greater integration will differ. These problems do not just apply to the ASEAN countries, for example the EC countries do not have the advantage of close geographical proximity and have also suffered from political problems as well as being of varying sizes and at different stages of development.

What this implies is that under an integration set-up, whereby the ASEAN countries reduce their protective walls against each other and at the same time retain their individual protection against the rest of the world, the benefits to each member country would not be the same geographically or temporally. In particular, countries that have a high level of protection in the first place may benefit more (or earlier) than those with a lower level of protection for example, Indonesia versus Singapore. Furthermore, liberalisation may not be deemed economically efficient in the longer term for infant industries that require protection in the initial stages until economies of scale are allowed to operate. That is, there is a trade off in the sense that protection can lead to improved efficiency in the long run owing to market size. Thus, integration left to itself may not yield a practical and acceptable result. However, this does not mean that ASEAN attaches no value to integration. Indeed, schemes were put in motion more than a decade ago precisely to begin reducing barriers to intra-ASEAN trade. The countries drew up schedules of products whose existing tariff structures would be gradually reduced. In addition to these measures, specific economic cooperation agreements were entered into to promote economic interaction in ASEAN.

Of the policies which have found to have a significant effect on economic performance, trade policies are among the more important. Unfortunately, there is no accurate measure of the restrictiveness of trade policies because of the prevalence of non-tariff trade barriers which defy measurement. Tariff rates, although an incomplete indicator, both because they constitute an important barrier to trade in their own right and because it is often the case that countries with higher than average tariff rates, also impose more quantitative restrictions on trade.

During the 1980s trade was liberalised in most of the Asian economies to some degree. Singapore was, of course, already virtually a free trade economy. Of the other ASEAN economies Malaysia has been the most open, with lower levels of protection and greater reliance on free-trade zones to promote manufactured exports and attract foreign direct investment. Thailand and the Philippines

have a strong legacy of import-substitution industrialisation, though in recent years both have undertaken to liberalise imports and to promote manufactured exports. In 1980 Thailand embarked on a course of structural adjustment, combining fiscal retrenchment with vigorous export promotion and achieved considerable success. The volume of Thai manufactured exports grew at 25% per annum from 1980 to 1988 and rose as a share of total merchandise exports, from 22% in 1980 to 55% in 1988. Import liberalisation, however, has progressed more slowly. The Philippines, on the other hand, launched a more ambitious program of trade liberalisation in the 1980s, with a tariff reform in the early 1980s and substantial reduction in quantitative restrictions in the mid 1980s.

Indonesia probably accomplished more trade liberalisation in the 1980s than any of the other ASEAN economies, both because its policy objectives were more ambitious and because its initial level of protection was higher than in the other economies. In 1985 the government announced across-the-board reductions in nominal tariffs and introduced a package of measures to provide inputs to exporters at international prices. A year later the government announced its intention to remove quantitative restrictions altogether. Under this policy the overall value of imports subject to controls fell from 43% in mid 1986 to 21% in December 1988.

The experience of ASEAN in economic integration and cooperation has been visible on at least two fronts: Firstly in the form of direct governmental arrangements to address specific economic problems, and secondly, through influencing trade direction by altering the tariff structures of privately traded goods. ASEAN provides a number of mechanisms for economic cooperation. Thus far, economic cooperation among the ASEAN governments include a food security reserve system that provides an emergency rice reserve, joint programs for eradication of foot and mouth disease, and a training institute in the area of agriculture. There is an ASEAN Swap Arrangement that provides for US\$299 million in standby credit for members with balance of payments problems. ASEAN also expresses a common stance on international economic issues with regards to the multilateral negotiations under the auspices of GATT, the European Community (EC), and other international commodity agreements.

In industrial cooperation, ASEAN governments are not short on mechanisms of resource pooling or market sharing. Several upstream projects have been agreed upon, and in some cases have already begun in the different countries. Examples include a fertiliser project in Indonesia, a rock salt-soda ash project in Thailand, and a superphosphate project in the Philippines. However, apart from the visible hand of the government in the implementation of these projects, several problems were encountered. For example, under the program on ASEAN Industrial Complementation (AIC), the development of an automotive industry in ASEAN encountered difficulty in product identification and country allocation since government participated in manufacturing location decisions. Consequently,

industrial cooperation under these programs were not generally successful in accomplishing the program's goals (Far Eastern Economic Review, 1982).

It is perhaps in the area of trade liberalisation, or in influencing trade direction, that the greatest achievements and potential of economic integration in ASEAN can be seen. The major mechanism in ASEAN for promoting economic integration is the Preferential Trading Arrangements (PTA). The Agreement on ASEAN Preferential Trading Arrangements was signed in Manila on Feb 24, 1977. The stated aim of the PTA was to encourage greater intra-regional trade through the use of long term quantity contracts, preferential terms for financing imports, preferential treatment of imports by government agencies, preferential tariff rates, and the liberalisation of non-tariff barriers to regional trade. The agreement also allowed for temporary suspension of tariff cuts where local industries or foreign exchange reserves were seriously affected, and made special supplementary arrangements for the inclusion of products arising from industrial complementation schemes (ASEAN Economic Bulletin, 1986).

The main instrument for trade liberalisation that has been applied to date is the granting of tariff preferences to ASEAN member countries. In the initial stages of the scheme, tariff preferences were granted on a product-by-product basis, with each member country committed to offer a set number of tariff preferences each year. Tariff preferences took the form either of not increasing tariff levels for a five year period (especially when the existing tariff rate was already zero), or an actual reduction in existing tariff rates. At first tariff cuts were of the order of 10% but later, tariff cuts of up to 25% were made (Singapore Department of Trade, 1981).

To ensure that intra-regional trade would benefit ASEAN countries, various rules of origin were implemented. These specified that products eligible for inclusion under the PTA have to be either products wholly produced or obtained in ASEAN countries; or products whose non-ASEAN content did not exceed 50% in value, and whose final stage of manufacture was performed in ASEAN countries. There was also a cumulative rule of origin which specified that products which used imported inputs which were themselves subject to preferential tariffs must have an aggregate ASEAN content of not less than 60% by value.

The product-by-product approach to tariff reduction was a time consuming exercise as each product had to be discussed and examined closely before tariff preferences could be agreed upon. Moreover, the commitment to offer a set number of new tariff preferences each year led to what only can be described as 'padding' of the number of items included in the lists of products in the scheme. The end result was a proliferation of the number of items which were granted tariff preferences, without much prospect of achieving a significant effect on the expansion of intra-regional trade. Many of the items included in the scheme were not traded by the member countries. For some product categories, up to

two thirds of the items granted preferential tariffs by some countries were not actually traded by them. Thus, the frequent announcements of an ever increasing list of items included under the PTA gave an illusion of progress in the liberalisation of intra-regional trade. What started out as a serious attempt to stimulate trade between the ASEAN countries soon began to look more and more like a public relations exercise.

At the same time as the product-by-product approach to tariff reductions was in progress, some ASEAN member countries were undertaking bilateral negotiations for across-the-board tariff reductions. Early in 1977, Singapore and the Philippines (Thailand was later included) agreed on a 10% reduction in tariffs on commodities traded. By 1980, all ASEAN countries had joined in across-the-board tariff reductions. Initially, a 20% tariff cut was agreed upon for all imports which had a value of less than US\$50,000 each in 1978. This ceiling was later raised to US\$500,000 and then to US\$1 million (Lutkenhorst, 1984).

The speed at which across-the-board tariff reductions were embraced by the ASEAN countries is a reflection of the less tiresome negotiations these involved, compared with the product-by-product approach. However, across-the-board tariff reduction had the danger of including items which were 'sensitive', in the sense that reduced tariffs on these items might adversely affect certain industries in member countries. In order to guard against this, the scheme allowed for the exclusion of certain sensitive items, and provided for the suspension of preferential tariffs where they threaten 'serious injury' to domestic industries, or adversely affect the balance of payments.

All empirical studies on the likely impact of the PTA scheme on intra-regional trade confirm that the effects of tariff cuts would be minimal. Armas (1978) concluded that a 10% across-the-board tariff cut on Philippine imports from ASEAN countries was likely to increase Filipino intra-ASEAN imports by only 2.5%. Arkasane and Koomsup (1979), in their estimate of the effects of tariff cuts on six Thai imports from ASEAN countries in the first batch of items agreed upon under the PTA, concluded that the effect was 'very small, ranging from 0.06% to 22.2%'.

In general, past ASEAN experience indicates that ASEAN has failed to capture completely what theory argues to be the potential benefits of integration. Several reasons can be offered to explain this. First, the institution of the PTA, while meaningful, was not systematic in nature. That is, the arrangement was set up so that each member government independently decided on the list of items to be included. Moreover, the extent of the preferences for each individual item was not drawn up jointly among all members. Second, there was no clear long term scenario envisioned for the ASEAN economic front. And third, the explicit economic cooperation efforts were dominated by government intervention and did not actively promote private sector contribution and cooperation. Nevertheless, this does not mean there were no real achievements to speak of. If anything, work among ASEAN

economic committees and discussions and exchange between bureaucrats did help to break down the barriers. Indeed, this experience paved the way for the introduction of bold initiatives and a more dynamic vision for ASEAN.

The economic proposals that were approved at the ASEAN Summit (Institute of Southeast Asian Studies, 1989) were formulated by the countries' economic officials. The proposals were drawn from an array of schemes that were suggested by the private sector, ASEAN business groups, and studies commissioned by the different ASEAN economic committees.

The proposals ranged from the formation of a customs union to across-the-board increases in the minimum margin of preference for non-agricultural traded products. In the Institute for Southeast Asian Studies Colloquium, a hybrid system that recognises the existence of varying tariff structures inherent in the ASEAN countries and the differing levels of development among the ASEAN members, has been proposed. Under this system, a customs union may be formed among the four countries of Indonesia, Malaysia, the Philippines and Thailand, and a free trade area would link the union with Singapore (and Brunei). By reducing tariffs among the four countries toward some average figure (eg Malaysia), intra-ASEAN trade would be promoted. Since the common tariffs would mean a general reduction for the high tariff countries (Indonesia, the Philippines and Thailand), trade diversion can be reduced. On the other hand, free trade arrangements with Singapore (and Brunei) would likewise reduce trade diversion in as much as both countries would maintain their respective tariff levels (Crouch, 1984).

Quantitative Estimation of Integration Effects

The theory of economic integration has two rather separate strands. On the one hand there is what can be described as customs union theory developing through the work of Viner (1950), Meade (1955), Lipsey (1957), Johnson (1965) and many others while on the other there are the works of Balassa (1963) and El-Agraa (1980), developing aspects of integration beyond those purely relating to trade. Quantitative studies of integration arrangements have been concerned with measuring the extent to which the constituent economies are integrated (eg by comparing the prices of goods or factors across countries) and, more extensively, with assessing the effect of integration on such variables as the trade patterns of member countries. The purpose of the latter kind of study is to gauge the impact of integration on the income and welfare of the member countries, a particularly important consideration given the inability of customs union theory to provide generalisations on the welfare consequences of union. Much effort has been expended on quantification studies, but it has to be admitted that they have thrown only a dim light on to the economic effects of integration.

Customs unions and free trade areas are usually conceived of as involving merely the progressive removal of tariffs between partner countries and, in the former case, the forming of a common external tariff with respect to the rest of the world. The removal of quotas and other barriers to trade are usually subsumed within the tariff changes for the purpose of estimation. These tariff changes are thought to result in a series of relative price changes. The price of imports from partner countries falls, for commodities where the tariff is cut, relative to the price of the same commodity produced in the domestic country. In third countries which are excluded from the union relative prices may change for more than one reason. They will change differently if the tariff with respect to third countries is shifted from its pre-integration level or it may change if producers in third countries have different pricing reactions to the change in price competition. Some third country producers may decide to absorb rather more of the potential change by reducing profits rather than by increasing prices relatively compared with domestic producers. Relative prices are also likely to change with respect to different commodities and hence there is a complex set of interrelated income and substitution effects to be explained.

The immediate difficulty is thus the translation of tariff changes and other agreed measures in the customs union treaty into changes in prices and other variables which are known to have an impact on economic behaviour. Such evidence as there is suggests that there are wide discrepancies among the reactions of importers benefiting from tariff cuts and also among competitors adversely affected by them (EFTA, 1968) and that reactions of trade to tariff changes are different from those to price changes (Kreinin, 1961). Two routes would appear to be open, one is to estimate the effect of tariff changes on prices and then estimate the effects of these derived price changes on trade patterns and the other is to operate directly with observed relative price movements. This latter course exemplifies

a problem which runs right through the estimation of the effects of economic integration and makes the obtaining of generally satisfactory results almost impossible. It is that to measure the effect of integration one must decide what would have happened if integration had not occurred. Thus, if in the present instance any observed change in relative prices were assumed to be the result of the adjustment to tariff changes, all other sources of variation in prices would be ignored, which is clearly an exaggeration and could be subject to important biases if other factors were affecting trade at the same time.

As the barriers to the movement of goods, services and factors between the members of an integration scheme are dismantled, theory suggests that there will be an intensification of trade between the economies, permitting greater specialisation. In the neo-classical model this should lead to an equalisation of prices net of transport costs and taxes, and a convergence of wage and interest rates. However, even in the EC, the most advanced example of regional integration, the evidence for this is weak.

"A study by Glejser (1972) found, for example, that for a sample of thirty six consumer goods, only twenty one showed a narrowing of price differences among the member countries of the original EEC between 1958 and 1970 when tariffs and other barriers were being removed. There are, of course, great difficulties in comparing prices across countries because of differences in consumption patterns, quality etc., and indeed considerable variations in prices occur within countries (Cecchini, 1988). Nevertheless, surveys by the European Commission show an impressively wide dispersion of prices among member countries, with or without indirect taxes." (Greenaway and Winters, 1994 - page 252).

Given that a country's trading performance depends upon a constellation of influences which are also interdependent, measuring the impact of integration on trade flows is a considerable task made more difficult by the substantial data requirements. Consequently, much of the earlier work on quantifying the trade effects of integration - particularly the impact of EC formation - has adopted the more limited approach of concentrating on the relationship between trade and one or a few key variables which are supposed to influence its development. As data for the ASEAN countries is limited for the period 1967-1985, or in most cases unreliable, a simplified approach of measuring the impact of integration has also been adopted in the present study. Residual models have the common characteristic that they seek to quantify the hypothetical situation (often referred to as the *anti-monde*) of what would have happened had the trading agreement not been implemented. As with any such hypothetical circumstance there is no means of testing its validity other than the plausibility of the results and the behaviour of the model in different observable situations. There is a danger that the so-called integration effect is also picking up the effect of other factors such as multilateral trade liberalisation or the removal of exchange controls (Greenaway and Winters, 1994).

There is a strong tendency to concentrate on explanatory variables drawn from the importing country alone as this considerably reduces the complexity of data collection. The concern here is to establish whether the gains from convenience are outweighed by the loss of accuracy. The form of argument which is used is that imports would have increased over time without the trading agreement at exactly the same rate as they did before the agreement came into effect. Clearly such trend extrapolation will have severe drawbacks for a cyclical activity like international trade, so authors such as Walter (1967) and Clavaux (1969) have assumed that imports will retain the same linear relation to total expenditure, GDP and GNP respectively in the anti-monde as they did in the pre-integration period. These studies, as pointed out by Williamson and Bottrill (1971), make the thoroughly unlikely assumption that the marginal propensity to import remains constant, whereas the evidence points to it rising with income. Further, any estimation of the actual marginal propensity to import over previous periods will always be clouded by the other changes in trading arrangements which took place then, and will not represent an anti-monde where no change takes place. While it is possible to make a critical examination of these hypotheses purely on the basis of economic theory and experience without any consideration of the numerical values of their results, the relative importance of changes in the assumptions can only be shown by looking at their quantitative effects.

The problem can also be approached by considering the relative shares of the various suppliers in total consumption, rather than the absolute value of imports. Truman (1969) takes the simplest solution and assumes that the shares of each supplier will remain constant over time, but it is clearly preferable to allow for some change in the ratio over time on the basis of historical change. The EFTA Secretariat Studies (1969, 1972) incorporate this by assuming that the linear trend in shares between 1954 and 1959 would have been maintained by the member countries in the anti-monde. The particular trend they estimate is open to objection on the grounds, first, that the two years chosen may not lie on the actual trend, and second that the form of the trend is too simple. Further estimation by say regression is not really profitable given the simplicity of the original assumption.

The projections of trade flows relating solely to the performance of import demand in previous periods make too strong assumptions for their validity to be very great. They assume that past trends will continue into the future without considering either the exact nature of the relationship or whether it is really likely that events such as multilateral tariff reductions can be expected to continue at the same rate in the anti-monde. Furthermore, they tend to assume that many of the determining variables, GNP, apparent consumption, etc., would be unchanged in the anti-monde from their actual observed values. Since we would expect these variables themselves to be affected by economic integration this assumption will not be valid. The use of shares rather than absolute values does not avoid the problem unless it can be assumed that income (and to some extent substitution) effects are zero. Yet EFTA (1969, 1972) explicitly include an income effect.

It is also possible to look at the problem of changes in shares from the opposite direction, and see what the actual changes imply for the elasticity of demand for various sorts of imports with respect to income. Balassa (1967, 1974) calculated the ex-post income elasticity of demand as the ratio of imports from a particular source to that of GNP, and constructed an anti-monde by assuming that the pre-integration elasticities would have continued into the post-integration period. By comparing these hypothetical elasticities with the observed elasticities he was able to identify an integration effect. Balassa interpreted his results as follows: a rise in the income elasticity of demand for intra-area imports is evidence of "gross trade creation" (that is, trade creation plus trade diversion); and increase in the elasticity of demand for imports from all sources of supply becomes evidence of trade creation proper; and a fall in income elasticity of demand for extra-area imports suggests the existence of trade diversion.

In the Balassa study (1967), trade creation and trade diversion effects yield an estimated impact on real GDP growth rates of 0.1% per year. The Aitken and Lowry study (1972), investigates the effects of two regional integration schemes in Latin America, neither of which is shown to have any significant trade diverting effects, although some trade creation effects follow from the lowering of barriers associated with the liberalised schemes.

Whether the problem of the anti-monde is approached by Balassa's method, it is clear that the period before the formation of the EEC was one of considerable trade liberalisation, and hence the estimation of trade relationships during that period will be affected by it. The implicit assumption of the anti-monde may in fact be that nothing new occurred, but that liberalisation continued at previous rates. Clavaux (1969) estimates that if the existence of liberalisation is taken into account in the estimation period and exclude it from the anti-monde then Balassa's estimates of trade creation by 1966 should be more than doubled. It is not clear that the bias that Clavaux claims is actually so important. In the light of the drawbacks it is clear that the elasticities suggest a degree of sophistication which is not really present in the model. As Orcutt (1950) points out, if there are no supply equations there is an identification problem which biases estimates of price elasticities towards zero. The neglect of supply conditions implicitly rests on the strong assumption of infinite supply elasticities. Balassa's estimation of ex-post income elasticities will take supply constraints into account implicitly, but so will it of course for the pre-integration period.

Balassa's approach is also questioned closely by Sellekaerts (1973) who suggests that the estimates will be biased unless 'the following *ceteris paribus* assumptions are realistic: no autonomous changes in relative prices, no changes in exchange rates, no changes in extra-area trade flows caused by the dynamic effects of a custom union'. Clearly any trends in relative prices either before or after the formation of the area will bias estimates based on income elasticities of demand alone. The third point about dynamic effects merely makes the point that since Balassa is using a 'residual imputation model'

all effects, not just the static ones will be included in the residual. Far more important is Sellekaerts' clear demonstration that income elasticities vary widely over the pre- and post-integration periods. Thus the choice of periods for comparison is crucial. Elasticities will vary with the pressure of demand and it is thus important either to compare time periods where activity was in the same sort of phase of the economic cycle, or to allow for changes in the economic cycle explicitly in the estimation.

The aim of the present study is to determine whether or not the formation of ASEAN has been a success. There are at least four reasons why neighbouring countries might wish to forge some kind of regional association. Each reason has been invoked to some extent in the ASEAN case. The first is the argument that it makes some sense to get on well with one's neighbours. This was an important consideration in the 1967 Bangkok Declaration in an attempt to rid the region of political turmoil by promoting regional peace and stability. The second is the argument that trade creation developing out of closer economic ties will confer substantial economic advantages, and that these benefits will outweigh the costs of trade diversion, which arise because importers may not be able to buy from the cheapest source and exporters to sell at the highest price. The third reason is based on the belief that regional liberalisation is politically easier than global liberalisation, and is therefore a necessary step towards the latter goal. Finally, there is the argument that, for a range of strategic and commercial issues, a regional association - in which member countries are able to subsume individual interests for a common good - will be more effective in international negotiations and forums than each country acting separately.

In order to investigate these arguments the Balassa method of estimation was chosen. A general deficiency of the methods considered is that they take little or no account of what is happening in the exporting countries, being focused largely on conditions in the importing country. As Mayes (1978) points out, the neglect of supply conditions implicitly rests on the implausibly strong assumption of infinite supply elasticities. A much more satisfactory means of determining variables from both the importing and the exporting countries is the so called 'gravitational' model pioneered by Tinbergen (1962) and developed by Pulliainen (1963), Poyhonen (1963) and Linnemann (1966) with a large number of applications to the present context. A major advantage is that the model is no longer 'mechanical' and incorporates explicit economic variables in both countries which makes its interpretation much easier.

The gravitational model suggests that the trade flow between any pair of countries is a multiplicative function of their respective national incomes, populations and the distance between them. The model is estimated using cross-section data and the effects of any trading arrangements are calculated by the unexplained residual in the regression, or, as suggested in Aitken (1973) and Aitken and Lowry (1973), by the inclusion of a dummy variable for trade between partner countries. Unfortunately, Aitken's (1973) work shows that these two methods can give widely differing results. Moreover, the

results vary substantially from year to year, suggesting a need to take account of business cycle fluctuations. Verdoorn and Schwartz (1972) have developed this approach further by incorporating relative prices into a gravity model. Building on earlier work by Waelbroeck (1964), Verdoorn and Schwartz (1972) have used a gravitational model to explain trade in manufactured goods among pairs of countries, with the growth rate of GNP in the importing country, the growth rate of manufacturing production in the exporting country, distance, changes in relative prices - including the effects of tariff changes - and tariff reductions in intra-area trade as the independent variables. Verdoorn and Schwartz rationalise the separate introduction of relative price and intra-area tariff variables on the grounds that the latter variable shows the effects of the abolition of prohibitive tariffs as well as the 'promotional' effect of integration (Greenaway and Winters, 1994).

The Balassa method was chosen over other possible methods of estimation as the aim of the present study is purely to determine what would have happened had the trading agreement for ASEAN economic cooperation not been implemented (the study only wants to take trade preferences into account and not geographical separation as in the gravity models). In other words, it is assumed that the establishment of ASEAN has been the single largest influence affecting trade flows, and long-run influences or special factors would not have appreciably altered the relationships between imports and GNP - expressed by the income elasticities of import demand for the period preceding integration - during the period that has elapsed up to 1984. At the same time, by comparing the relationship of internal and external trade to GNP between the pre-integration and the post-integration periods, the proposed method abstracts from changes in the growth rate of national income, and provides comparable estimates of trade creation and trade diversion.

The gravity model of trade seeks to explain trade flows between countries by their incomes, populations and other measures of their economic proximity, and can be used as a measure of the problem for conventional trade theory. One recent example is Hamilton and Winters (1992), who explain seventy percent of the variation in trade flows between seventy six countries in 1984-6 by such variables. As a measure of estimation for testing economic integration one may question the validity of a method that applies average income elasticities of export supply and import demand, calculated in a cross-section analysis of all trading countries, to the countries of ASEAN. In fact, these elasticities will be generally higher in the industrial economies, and lower in less developed areas, since increased specialisation within the manufacturing sector tends to raise the share of foreign trade in GNP in the former group of countries, while industrialisation cum protectionism have the opposite effect in the latter (Balassa, 1963, 1974).

Helpman and Krugman (1985) discuss the empirical implications of the general equilibrium model with imperfect competition. The main observation is that relative country size has an effect on the volume of trade, additional to any effects arising from relative factor endowment differences - see the

work in chapter three. Trade may seem intense between similar countries, but that can be explained by the fact that they are neighbours and/or members of free trade associations. It has been shown elsewhere in the thesis that the ASEAN countries do enjoy the advantage of close geographical proximity, which will in itself lead to increased trade flows of both the intra- and inter-industry type. However, the volume of intra-industry trade is greatest between countries of similar size. This observation provides a justification for explaining the volume of trade by a gravity model, and Bergstrand (1989) derives a gravity equation from a model that includes factor proportions trade as well as intra-industry trade. Balassa and Bauwens (1988) investigate, using European data, the explanation of both inter-industry and intra-industry trade and find support for the idea that the former is explained by factor endowment differences and the latter by characteristics consistent with product differentiation being the main explanation of such trade. Thus in the case of the present study it would appear that the gravitational model is more suited to testing trade theory rather than testing the success of ASEAN economic cooperation.

Prewo (1974) used a general equilibrium approach which linked national input-output models for five EC countries to each other and to the rest of the world via a gravity model. This modification is of particular importance as it responds to the criticism that earlier efforts at the estimation of trade creation and trade diversion have neglected trade in intermediate products (Askari 1974).

Prewo's calculations, like those of the Truman study (1969), are based on the assumption that in the absence of integration the import-consumption shares observed in the base year would have remained unchanged. In Prewo's case, this assumption had to be made since the only input-output tables available for the pre-Common Market period relate to 1959. There is evidence, however, of the existence of trends in import-consumption relationships in the EC.

In an article published in the *Economic Journal*, Kreinin (1969) argued that 'the widely employed projections of the 1953-59 trends in the 1960s are hardly warranted, because the intensified liberalisation of external imports in the second half of the 1950s would have the effect of increasing the projected external imports in the 1960s, and thereby exaggerating trade diversion'. Kreinin suggests using instead the US as 'normaliser' or 'control group' on the supposition that it 'can offer at least some guidance to what the changes in the EC import-consumption ratio would have in the absence of integration.

As Kreinin notes, various objections can be levied against the use of a foreign country as a normaliser. In the case of the US, cotton textiles and automobiles do not offer an appropriate basis of comparison; the imposition of quota restrictions has reduced textile imports while the US-Canada agreement has contributed to the expansion of automobile imports. As expected, the non-normalised estimates of

trade creation are higher than the normalised results as the former make no allowance for the underlying upward trends in trade flows.

Resnick and Truman (1972) have estimated trade creation and trade diversion for non-food products by utilising the price coefficients obtained in a regression model of European trade patterns. Estimates of trade creation have been derived from data on average changes in tariffs on intra-area and extra-area trade and the price elasticity of demand for total imports in the individual member countries. In turn, trade diversion has been estimated from data on changes in tariffs on intra-area and extra-area imports and the relevant price elasticities.

A further way of formulating an anti-monde is to analyse the export performance of the members of a regional group in markets where they receive no preference. Lamfalussy (1963), for example, assumed that exporting countries would have increased their share of the EC market in the same proportion that they have increased their shares in third markets. These findings were supported by Williamson and Bottrill (1971). The method does not, however, enable the effect to be broken down into trade creation and trade diversion, and the implicit assumption that third-country markets were sufficiently unaffected by EC formation to be used as controls is questionable.

Miller and Spencer (1977) provide the first full, numerical, general equilibrium analysis of regional integration arrangements. They use an Armington structure with four regions identified: the UK, the EC, Commonwealth countries (primarily Australia and New Zealand), and the United States and the rest of the world. They look at the effects of the UK entry into the EC, involving not only lower trade barriers with the EC-6 but also the elimination of Commonwealth trade preferences by the UK. Interestingly, their results show that the welfare effects associated with entry would be small, but from a UK point of view were dominated by UK contributions to the European budget.

Large price effects also show up in their model results, particularly a price rise in the UK in agricultural products, as might be expected. Associated with this were significant trade effects, particularly between the UK and EC, and the UK and the Commonwealth. For instance, in the case without transfers through the European budget, the UK increased its exports to, and imports from, the EC by 50% in manufactured goods. The UK increased its agricultural imports from the EC by 72% but, somewhat surprisingly, decreased its imports from the Commonwealth by only 0.8%.

A later competitive counterfactual study by Hamilton and Whalley (1985) uses a multi-country global general equilibrium model, somewhat similar to that of Miller and Spencer but with larger dimensionality, to look at a variety of potential pair-wise regional integration arrangements between the EC and Japan, the OECD countries and developing countries. Their results generally show that the welfare effects of regional integration arrangements are relatively small but, as in other studies,

trade effects are somewhat larger. Their results also show significant terms-of-trade effects associated with all these regional integration arrangements.

Harrison, Rutherford and Wooton (1989) use a somewhat similar structure to look at the effects that might be expected if member countries left the EC. The model covers six tradeable goods and eleven countries/regions, and uses the Armington assumption. They show that any country leaving the EC would suffer a welfare loss, with the highest loss being for Ireland (8% of GDP) and the lowest for France and Italy (0.9% of GDP).

More recent model-based counterfactual analyses of regional integration arrangements incorporate non-competitive market structure and scale economies. One of the earliest, the Harris and Cox study (1984), is an analysis of the effects of Canada-US trade integration, although in their trade scenarios they also look at multilateral and unilateral free trade, as well as bilateral and sectoral free trade. In their model there is an implicit assumption of collusive behaviour by producers around a focal point of the world price gross of the tariff in the Canadian market (Shoven and Whalley, 1984). Fixed costs at plant level are modelled for Canadian firms, but these fixed costs are not sunk costs, and hence a significant reduction in the number of domestic firms tends to produce large welfare gains as fixed costs are spread over a smaller number of firms (Harris, 1985). Some of the larger welfare and trade effects in results from the early versions of the Harris and Cox model were substantially reduced in later versions of the model used by the Canadian Department of Finance (1988) in generating their own economic assessment of the bilateral agreement between Canada and the US. This was due, in part, to a downward revision in the trade barrier estimates used earlier by Harris and Cox, and to revisions in other parameter values. In some cases, estimated welfare fell by as much as a factor of four. Also, because Canada is considerably smaller than the US, global welfare gains and welfare effects in the US are considerably smaller as a fraction of world and US GDP, as are the effects on corresponding trade flows.

A later attempt at imperfectly competitive counterfactual analysis is Smith and Venables (1988), one of a series of papers which look at various scenarios for European integration as part of the '1992' exercise undertaken to complete the EC's internal market (see also Haaland and Norman, 1992; Smith, Venables and Gasiorek, 1992; and Mercenier, 1992). The counterfactual analysis in Smith and Venables are largely done on partial equilibrium basis, and involve scenarios that do not necessarily fully correspond to changes in trade barriers. Their analyses involve an initial assumption of market segmentation, and the central counterfactual which they analyse is a full market-integration case, which does not necessarily correspond to cases where only trade barriers change. Indeed, in some of their model analyses where trade barrier changes alone are considered, some of the projected impacts are extremely small.

A recent paper by Baldwin (1992), using increasing returns also obtains strong effects of trade liberalisation. This piece does not explicitly consider regional arrangements, but instead uses the estimates of potential static welfare gains from the 1992 EC program due to Cecchini, Catinat and Jacquemin (1988), which he then dynamises using a simple inter-temporal model. He shows that if, due to scale economies, private and social rates of return on capital differ, then the exploitation of these scale economies can yield additional dynamic gains from trade liberalisation. Using estimates from Caballero and Lyons (1989), he demonstrates that these dynamic gains can be large. No trade or other impacts are reported; and if these gains are indeed achievable, they could also be generated by other policy interventions (such as tax policy).

It is difficult to generalise over the results of all the studies because their individual characteristics are so varied, as are the results. While some studies provide detailed analyses of the trade impacts, their analysis of welfare impacts may be more limited. Also, some of the model-based studies, while providing analyses of trade and welfare impacts, do not provide results in a form which makes it easy to disentangle the various influences on trade and welfare.

The central problem that emerges from the attempts to quantify the trade effects of regional integration schemes is thus computing a plausible anti-monde. A wide variety of methods have been employed to this end, but each has drawbacks that result from the incomplete nature of the models used. Measuring the effects of integration is a particularly complex undertaking. Not only must one attempt to separate the effects of integration from other intervening factors, which is difficult enough in itself, and requires a suitable time or country series, but one is inspired by the theory to attempt to measure trade creation and trade diversion separately.

If economic integration could be treated like any other change in exogenous or policy variables in a model the correct econometric procedure would be to estimate a model which was large enough to reflect all the influences in the economy which were thought to be important. Having estimated the model one would then fit it over the data of the period of integration and then rerun inserting the values of the appropriate variables as they would have been without integration. The difference between the two estimates is then the identifiable effects of integration according to the model of behaviour.

Unfortunately, this is no mean task and can only be approached by use of large models of the international economy such as those of the IMF (Deppler and Ripley, 1978) or the OECD (1979) or perhaps the COMET model of Barten (1976). The main problems are: the size of the model required; the constancy of parameters over time. The normal response in practice is to estimate a highly simplified model and make a further simple assumption about changes in parameters (Mayes, 1978). Furthermore, one of the stages in the argument is usually left out and instead of comparing what the

model predicts without integration authors tend to compare actual behaviour with what would have happened without integration attributing all the difference to the effects of integration. Given the simplicity of the models and the assumptions about changes in parameters this can result in substantial biases in the estimates.

There are two basic issues over the size of the model: the first is one of aggregation and the second of how many relations are necessary to capture the effects of integration throughout the economy and not just the initial impact on trade flows. The aggregation issue is well known and occurs, first because the direct price and substitution elasticities of demand for imports vary very considerably over different commodities, running from direct price elasticities near zero for essential commodities which cannot be produced locally to quite substantial values for finished manufactures such as consumer durables for which there are many close substitutes (Barker, 1970). It is secondly emphasised by the changing commodity composition of trade which tends to result in a downward bias in the estimates (Orcutt, 1950; Morgan, 1970).

If some of the expected effects of integration take place, such as the exploitation of economies of scale and the changes in economic efficiency, it will not be just the variables in the model which change with integration, but also the parameters. Thus it would not be possible to use a model estimated in a period with integration to suggest what would have happened without integration by changing the variables alone or vice-versa. Furthermore, if periods are taken such as the formation of EFTA and the EC during the 1960s, or the enlargement in the EC in 1973 there is a good argument that general economic conditions were not similar in the periods before and after integration. Certainly the years after the oil crisis of 1973/74 and the period of floating exchange rates are not readily comparable with preceding periods. Balassa (1967, 1974) actually uses changes in the income elasticity of demand for imports as a means of estimating the effects of the formation of the EC.

Balassa's quantitative approach in measuring integration is clearly simplistic and although it can be improved with the introduction of a number of modifications, still suffers from a variety of drawbacks when compared to other models. However, the advantages of simple models are clear as shown in Kreinin (1979). Whatever model is adopted it is necessary to be able to explain imports and exports disaggregated at the very least by trading area and usually by country as well if estimates of trade creation and trade diversion are to be obtained. Therefore, the Balassa model should prove to be effective in providing estimates for trade creation and trade diversion in ASEAN given the data constraints for the period (1967-75, 1976-84) of the study. Even with a more sophisticated model we can only get an idea of an order of magnitude not an accurate single number, hence it is possible to use only a relatively limited amount of readily available information to estimate that magnitude much more efficient use of the resources can be made by adopting the simple model. Mayes (1978) showed in a survey of the estimates of trade creation and trade diversion in the EC that the approximate

bounds for the likely size of the trade creation were, in the view of the authors surveyed, US\$ 8-15 billion, or to put it another way between approximately 9% and 17% of total EC trade in that year. If that degree of accuracy is acceptable then it might be possible, providing appropriate bounds are set by varying the assumptions behind the simple model, to adopt a rather simplistic model.

Trade Creation and Trade Diversion

The method and its limitations

The ex-ante and ex-post approach is one of the most popular approaches in measuring the effects of integration. It permits the evaluation of the integration framework by comparing an integration 'parameter' before and after integration. In order to ensure the comparability of estimates of trade creation and trade diversion and to abstract from the effects of economic growth on trade flows, Balassa suggested in 1963 the application of a method of estimation involving the comparison of *ex-post* income elasticities of import demand in intra-area and extra-area trade for periods preceding and following integration. Ex-post income elasticities of import demand were defined as the ratio of the average annual rate of change of imports to that of GNP, both expressed in constant prices (taken in the own currency of each of the ASEAN countries in question from the IMF Direction of Trade Statistics). Under the assumption that income elasticities of import demand would have remained unchanged in the absence of integration, a rise in income elasticity of demand for intra-area imports would indicate gross trade creation, defined as increases in intra-area trade irrespective of whether this results from substitution for domestic or for foreign sources of supply. In turn, a rise in the income elasticity of demand for imports from all sources taken together would give expression of trade creation proper, ie. a shift from foreign to partner-country producers, would be indicated by a decline in the income elasticity of demand for extra-area imports.

The basic equation of Balassa's model is given by:-

$$M_i = K \cdot Y_i^b \cdot e$$

M_i = imports of country i

Y_i = GNP of country i

K = constant

b = constant

e = error term

Linearising the model by using log functions gives:-

$$\ln (MT_i) = K + b_t \cdot \ln (Y_i) + e_t$$

$$\ln (MI_i) = K + b_i \cdot \ln (Y_i) + e_i$$

$$\ln (ME_i) = K + b_e \cdot \ln (Y_i) + e_e$$

MT_i = total imports of country i

MI_i = intra-ASEAN imports of country i

ME_i = extra-ASEAN imports of country i

The method discussed above can be utilised to estimate the income elasticities of import demand. This means that the values of b_t , b_i and b_e can be estimated (Balassa, 1975). The difference between the b measures for the two periods is a measure of a change of elasticity of import demand (introducing a dummy variable for the post integration period).

This method was applied to the five ASEAN countries (excluding Brunei, as it joined in 1984) to examine total trade effects, intra- and extra-area trade effects. A seven commodity breakdown was also taken. Before reporting on the results, however, the error possibilities inherent in the method of estimation need to be discussed.

To investigate the trade effects of ASEAN integration we assume the year 1976 as the demarcation period of integration. The year 1976 was chosen as the 'benchmark', because only in 1976, after the Bali Summit, did economic cooperation begin to take any shape in ASEAN. Thus, by considering the period 1967-75 as the pre-integration period and 1976-84 as the post-integration period, we are able to formulate the appropriate framework to quantify the necessary trade effects.

The method is based on the assumption that income elasticities of import demand would have remained unchanged in the absence of integration, ie. that the establishment of ASEAN was the only major influence on changes in the pattern of imports as between the pre-integration and the post-integration periods. This means, first of all, that the effects of price changes other than those brought about by integration are disregarded as are the effects of exchange rates changes. Apart from the problem of separating autonomous and induced price changes, efforts made to amend the method by introducing a price variable (adjusted for exchange rate change) in the calculations relating to total, intra-area, and extra-area imports of all commodities have had little success, probably reflecting the unreliability of the price data (Kreinin, 1969).

There is further the question if the relationship between imports and incomes in the pre-integration period can be considered as 'normal'. This assumption has been objected to on the grounds that the period in question does not provide an appropriate estimate of the long-term income elasticity of import demand (Clavaux, 1969). While rejecting Clavaux's arguments, Sellekaerts (1973) sees the main difficulty to lie in the selection of the base period. Sellekaerts himself suggests that one should chose years in the same stage of the business cycle as benchmarks. There are no business cycle-related distortions in the 1967-75 base period as it compares years of average expansion. The extent of trade creation will generally be underestimated because the expansion of trade during the base period is affected by measures of trade liberalisation. Tariff reductions took place with regard to both intra-area and extra-area trade. However, in the case of ASEAN most liberalisation did not take place until 1977.

Next, one should consider the empirical validity of the results derived from growth rates of incomes and imports between benchmark years. Following the work of Sellekaerts an attempt will be made to test the statistical significance of the results by regressing imports on GNP and introducing a dummy variable for the post integration period. However, one problem often encountered is the lack of statistical significance of the results. This is explained by the shortness of the time-series for the pre-integration period as well as by the substantial fluctuations in imports over the business cycle. The former problem is overcome by increasing the number of observations by using quarterly as opposed to annual data. The latter problem is avoided by taking data for years at a comparable stage of the business cycle, hence the reason why the years 1967-75 were selected for the pre-integration period, and 1976-84 for the post-integration period.

Analysis of results

In terms of time-series models, both ex-post and ex-ante forecasts predict values of a dependent variable beyond the time period in which the model is estimated. However in an ex-post forecast the forecast period is such that observations on both endogenous variables and the exogenous explanatory variables are known with certainty. Thus, ex-post forecasts can be checked against existing data and provide a means of evaluating a forecasting model.

The problem is how to evaluate or test the goodness of the model. There exists a set of statistical tests (R-squared, F-test, t-tests etc) that can be used to judge the significance (in a statistical sense) of the model and its individual estimated coefficients. Other statistics exist (eg the Durbin Watson statistic) to test the underlying assumptions of the model. A model can have significant t-statistics and a high R-squared and still forecast very badly after period. This may result from a structural change (in the economy) occurring during the forecast period and not explained by the model. Good forecasts, on the other hand, may come from regression models which have relatively low R-squareds and one or more insignificant regression coefficients. This may happen because there is very little variation in the dependent variable, so that although it is not being explained well by the model, it is easy to forecast. Even with these tests, however, the choice of whether to accept or reject the model is not a straightforward task. One must decide whether the structural specification of the model is reasonable and whether the estimated coefficients make sense. The model's evaluation must also depend on the purpose for which the model was built.

It must also be remembered that in an ex post simulation it is possible that some of the endogenous variables will track the original data series data closely while others will not. Therefore, a correction has to be made by reestimating using an autoregressive transformation to correct for this serial correlation, as more efficient measures would be obtained using the Cochrane-Orcutt method. Thus the evaluation of the model must depend on the purpose for which the model was built. Some models

are built primarily for forecasting, while others are built primarily for descriptive purposes and hypothesis testing.

Confidence intervals provide us with a simple means of testing the reliability of the regression model. When the actual value is obtained, it can be compared with the previously forecasted value. Since the error of forecast is normally distributed it is natural to consider the problem of statistical testing. Significance tests can be performed on the forecasted value by calculating the normalised error.

$$N = \frac{\text{Predicted Value} - \text{Actual Value}}{\text{Standard error of regression}}$$

Since N is normally distributed with mean 0 and standard deviation 1, a 95% confidence interval can be determined. If N is less than or equal to +1.96 or greater than or equal to -1.96. If the actual observed value lies within the 95% confidence interval (-1.96 to +1.96), it can be assumed that the model is performing satisfactorily, but if the value lies outside the confidence interval, it may be concluded that the model is not performing well.

From table 4.8 it can be seen that the normalised errors for all the ASEAN countries, and for ASEAN as a whole, all lie within the 95% confidence interval, except for Indonesia in the case of intra-area trade. This problem can be explained by the fact that the data is inaccurate in terms of intra-ASEAN trade for Indonesia as it does not report its trade with other countries. Therefore, as the values mostly lie within the 95% confidence interval it must be concluded that the model is performing satisfactorily.

Table 4.8
Normalised errors for the ASEAN countries

Country	Total imports	Intra-area imports	Extra-area imports
Singapore	1.15	1.07	0.08
Malaysia	-0.33	-0.33	0.04
Thailand	0.33	0.13	-0.20
Indonesia	0.13	2.17	0.10
Philippines	1.65	0.88	-0.15
ASEAN	-0.26	0.07	-0.19

From table 4.9, which shows the results from the regression analysis performed on all of the ASEAN countries, it can be seen that the R-squareds are all above 99% except for the Philippines with respect to intra-area imports which remains high at 70%. Correspondingly high t-statistics are also reported, all significant at the 10% level all except for Indonesia (total imports: pre-integration) are significant at the 5% level. It must also be noted that all values for the Durbin Watson statistic are all close to 2, the central value in the range of the statistic, indicative of no serial correlation, with the standard error are small due to the application of the Cochrane-Orcutt method. Before reporting on the results

of the ex-post income elasticities of demand for imports (in table 4.9), it is necessary to look at the statistical significance of the results in order to determine whether or not the integration of the ASEAN economies has had any real impact on the region.

Table 4.9

Regression analysis results for all the ASEAN economies

	Singapore				
	Total Period	Pre-integration	Post-integration	Difference	Dummy
Total Imports					
R-squared	0.9953	0.9849	0.9886		
Coefficient	2.11	2.58	3.64	+	
Standard error	0.23	0.34	3.38		
T-statistic	9.35	7.65	2.07		1.11
Durbin-Watson	2.13	2.12	2.48		
Intra Imports					
R-squared	0.9891	0.9930	0.9364		
Coefficient	2.03	1.55	1.71	+	
Standard error	0.14	0.21	0.39		
T-statistic	14.87	7.33	4.36		1.12
Durbin-Watson	2.05	2.16	1.99		
Extra Imports					
R-squared	0.9992	0.9959	0.9986		
Coefficient	0.24	2.01	1.09	-	
Standard error	0.35	0.16	0.71		
T-statistic	6.68	12.27	2.53		1.57
Durbin-Watson	1.88	1.84	2.06		

* indicates significance at the 5% level

	Malaysia				
	Total Period	Pre-integration	Post-integration	Difference	Dummy
Total Imports					
R-squared	0.9875	0.9779	0.9686		
Coefficient	0.11	3.33	2.29	-	
Standard error	0.36	0.35	0.30		
T-statistic	10.29	9.41	7.73		0.22
Durbin-Watson	1.85	1.71	2.35		
Intra Imports					
R-squared	0.9987	0.9966	0.9941		
Coefficient	0.02	3.72	2.99	-	
Standard error	0.16	0.83	0.23		
T-statistic	10.12	4.47	12.98		0.79
Durbin-Watson	1.97	2.02	1.29		
Extra Imports					
R-squared	0.9979	0.9853	0.9928		
Coefficient	0.18	2.67	2.09	-	
Standard error	0.19	0.45	0.14		
T-statistic	10.94	5.96	14.81		1.19
Durbin-Watson	1.99	1.98	1.45		

* indicates significance at the 5% level

Source : Calculated from data in IMF Direction of Trade Statistics (various years).

Table 4.9 (continued)

	Thailand				
	Total Period	Pre-integration	Post-integration	Difference	Dummy
Total Imports					
R-squared	0.9921	0.9735	0.9616		
Coefficient	2.65	4.00	1.63	-	
Standard error	0.33	0.63	0.55		
T-statistic	8.01	6.32	2.96		2.52 *
Durbin-Watson	1.95	1.89	1.88		
Intra Imports					
R-squared	0.9997	0.9963	0.9991		
Coefficient	0.08	2.36	0.34	-	
Standard error	0.71	0.23	0.87		
T-statistic	10.12	10.46	10.39		0.66
Durbin-Watson	1.87	1.82	1.92		
Extra Imports					
R-squared	0.9989	0.9973	0.9942		
Coefficient	2.18	2.95	0.16	-	
Standard error	0.29	0.56	0.80		
T-statistic	7.60	5.29	0.20		0.38
Durbin-Watson	2.01	2.00	1.97		

* indicates significance at the 5% level

	Indonesia				
	Total Period	Pre-integration	Post-integration	Difference	Dummy
Total Imports					
R-squared	0.9756	0.9663	0.8809		
Coefficient	1.01	1.46	0.94	-	
Standard error	0.30	0.95	0.19		
T-statistic	3.36	1.64	4.91		0.81
Durbin-Watson	1.91	1.99	1.83		
Intra Imports					
R-squared	0.9987	0.9988	0.9935		
Coefficient	1.52	1.54	1.30	-	
Standard error	0.10	0.31	0.15		
T-statistic	15.5	4.98	8.33		2.27 *
Durbin-Watson	1.88	1.98	1.87		
Extra Imports					
R-squared	0.9996	0.9993	0.9967		
Coefficient	0.61	1.59	0.45	-	
Standard error	0.16	0.06	0.25		
T-statistic	3.69	26.59	2.06		0.83
Durbin-Watson	1.98	2.25	2.01		

* indicates significance at the 5% level

Source : Calculated from data in IMF Direction of Trade Statistics (various years).

Table 4.9 (continued)

	Philippines				
	Total Period	Pre-integration	Post-integration	Difference	Dummy
Total Imports					
R-squared	0.9828	0.9475	0.9208		
Coefficient	2.88	4.14	3.25	-	
Standard error	0.33	0.86	1.47		
T-statistic	8.77	4.79	2.21		0.12
Durbin-Watson	2.09	2.06	1.97		
Intra Imports					
R-squared	0.7071	0.9594	0.0972		
Coefficient	2.36	0.46	2.67	+	
Standard error	0.89	0.85	1.23		
T-statistic	2.65	2.55	2.17		2.12 *
Durbin-Watson	1.99	2.21	2.00		
Extra Imports					
R-squared	0.9986	0.9932	0.9984		
Coefficient	2.86	3.47	1.78	-	
Standard error	0.16	1.00	0.41		
T-statistic	17.58	3.46	4.33		0.22
Durbin-Watson	1.99	2.00	1.98		

* indicates significance at the 5% level

	ASEAN				
	Total Period	Pre-integration	Post-integration	Difference	Dummy
Total Imports					
R-squared	0.9994	0.9977	0.9983		
Coefficient	2.22	0.81	2.31	+	
Standard error	0.27	1.52	0.27		
T-statistic	8.23	8.53	8.51		1.28
Durbin-Watson	1.94	1.97	2.01		
Intra Imports					
R-squared	0.9993	0.9950	0.9985		
Coefficient	1.26	4.11	6.72	+	
Standard error	1.74	0.51	1.60		
T-statistic	6.72	8.10	4.20		7.62 *
Durbin-Watson	1.97	1.94	1.63		
Extra Imports					
R-squared	0.9993	0.9976	0.9983		
Coefficient	2.18	0.89	2.14	+	
Standard error	0.21	1.59	0.31		
T-statistic	10.36	10.56	6.87		0.92
Durbin-Watson	1.94	1.96	2.05		

* indicates significance at the 5% level

Source : Calculated from data in IMF Direction of Trade Statistics (various years).

From the test of statistical significance, we are able to test the null hypothesis that there is no change in the income elasticities of import demand, between the two periods, against the alternative hypothesis that there is a change in the income elasticities of import demand (significant if $t > 2.00$ for 60 observations). The results were statistically significant at the 5% level for Thailand (total imports), and for Indonesia, the Philippines and ASEAN (intra imports). Therefore, as far as the results for Singapore and Malaysia are concerned, there is no reason to reject the null hypothesis that there is no significant change in the income elasticities of import demand before and after integration.

Thailand showed a change in income elasticity of import demand for total imports at the 5% level of significance. However, the results for intra and extra imports were insignificant. Indonesia, the Philippines and the ASEAN countries as a whole showed a significant change in their income elasticities of import demand for intra imports, over the two periods, at the 5% level of significance. No other statistically significant results were obtained. Therefore, owing to the lack of statistically significant results it can be concluded that over the period of investigation (1967-85), the integration of the ASEAN economies has had no real impact on the region.

Trade creation and trade diversion

A consideration of ex-post income elasticities of demand for imports of all commodities, taken together, provides evidence of trade creation in the ASEAN market. Table 4.10 presents the coefficients for the ex-post income elasticity of import demand (which were all found to be statistically significant at least at the 10% level).

Table 4.10
Ex-post income elasticity of import demand
in the ASEAN countries

	Singapore	Malaysia	Thailand	Indonesia	Philippines	ASEAN
Total Imports						
Pre-integration	2.58	3.33	4.00*	1.46	4.14	0.81
Post-integration	3.64	2.29	1.63	0.94	3.25	2.31
Difference	+	-	-	-	-	+
Intra-Imports						
Pre-integration	1.55	3.72	2.36	1.54*	0.46*	4.11*
Post-integration	1.71	2.99	0.34	1.30	2.67	6.72
Difference	+	-	-	-	+	+
Extra-Imports						
Pre-integration	2.01	2.67	2.95	1.59	3.47	0.89
Post-integration	1.09	2.09	0.16	0.45	1.78	2.14
Difference	-	-	-	-	-	+

* indicates significance at the 5% level

Source : Calculated from data in IMF Direction of Trade Statistics (various years).

Between the periods 1967-75 (pre-integration) and 1976-84 (post-integration) the income elasticity of demand increased from 4.11 to 6.72 with respect to intra-area imports, from 0.89 to 2.14 with respect to extra-area imports, and with respect to total (intra- and extra-area) imports rose from 0.81 to 2.31.

On examining the ASEAN countries individually it can be seen that, in terms of intra-area imports, Singapore and the Philippines provide evidence of trade creation, while Malaysia, Thailand and Indonesia provide evidence of trade diversion. The overall estimate for the ASEAN countries as a whole is that of trade creation. However, the income elasticity of demand for intra-ASEAN imports rose from 4.11 to 6.72 between the two reference periods (this is 'gross trade creation', composed of both trade creation plus trade diversion). In the meantime, ASEAN's elasticity of demand for imports from third countries (which ought to have shown trade diversion tendencies) actually rose from 0.89 to 2.14, instead of declining as one would have expected. Finally, ASEAN's elasticity of demand for imports from both intra- and extra-area sources rose from 0.81 to 2.31. The only ASEAN country to follow the predicted pattern is Singapore. This implies that there would be an increase in the welfare of the member nations because it leads to greater specialisation in production based on comparative

advantage. Total imports show an overall trade creation effect which could lead to increases in the welfare of non member countries because some of the increase in its real income (due to its greater specialisation in production) spills over into increased imports from the rest of the world.

In terms of extra-area imports the overall effect has been that of trade creation. This result is surprising, especially since all the countries show signs of trade diversion. Of all the ASEAN countries, one would expect Thailand to be the only country not to show signs of trade diversion. Thailand does not show trade diversion because as a country it was never colonised, thus its trade links were not influenced as much as the other countries by the colonial powers. At the initial stages of development, the member states looked to other countries in the West and Japan rather than their neighbours. This trend continued owing to the emphasis on industrialisation, and the need for foreign investment and technology from the industrialised countries. However, in the case of the Philippines, trade diversion can be explained by the fact that it was heavily influenced by the USA, but has sought to break this dominance by shifting its trade towards the other member countries.

Trade diversion, by itself, reduces welfare because it shifts production from more efficient producers outside the member countries to the less efficient producers of the member states. Thus, trade diversion worsens the international allocation of resources and shifts production away from comparative advantage.

Trade creation and trade diversion can therefore increase or reduce the welfare of the member states, depending on the relative strength of those two opposing forces. The welfare of non members can be expected to decline because their economic resources can only be utilised less efficiently than before trade was diverted away from them. Thus, while a trade creating 'union' leads only to trade creation and unequivocally increases the welfare of members and non members, a trade diverting 'union' leads to both trade creation and trade diversion, and can increase or reduce the welfare of members (and will reduce the welfare of the rest of the world).

The ASEAN countries have used trade diversion as a means of development. The extent of trade diversion undertaken by each of the ASEAN countries has varied as each of the countries has been careful in the calculation of national advantage. Nevertheless, as the overall effect is that of trade creation, it would appear that ASEAN has been successful to some extent in increasing welfare.

In order to offer further explanations for the changes in the income elasticity of import demand, we need to examine the results for the major commodity categories. Owing to the problems of the availability of data (UN data converted to country currency), and given the shortness of the time series, satisfactory results were not obtained with regression analysis. Therefore the results obtained in table 4.11 have been defined as the ratio of the average annual rate of change of imports to that of

GNP. Care of course must be taken, because in the absence of tests of statistical significance, the results should be interpreted with caution and taken to be indicative of general trends rather than exact magnitudes.

Table 4.11
Ex-post income elasticity of import demand by commodity

	SITC 0+1 Food beverages tobacco	SITC 2+4 Raw materials	SITC 3 Mineral fuels	SITC 5 Chemicals	SITC 6+8 Basic manu- factures	SITC 7 Machinery	SITC 9 Other manu- factures
Singapore							
Pre-integration	0.76	1.75	1.02	1.67	1.27	2.17	1.25
Post-integration	1.04	1.20	1.48	1.38	1.15	1.43	1.33
Difference	+	-	+	-	-	-	+
Malaysia							
Pre-integration	0.99	0.82	1.19	1.33	1.54	2.67	0.82
Post-integration	0.84	0.86	1.77	0.94	1.18	1.63	1.38
Difference	-	+	+	-	-	-	+
Thailand							
Pre-integration	1.32	2.74	2.39	1.34	1.08	1.10	1.11
Post-integration	1.81	1.62	1.43	1.28	1.38	1.65	1.41
Difference	+	-	-	-	+	+	+
Indonesia							
Pre-integration	1.44	2.16	3.29	1.25	0.78	1.47	1.37
Post-integration	1.03	0.91	3.41	0.68	0.84	1.35	0.65
Difference	-	-	+	-	+	-	-
Philippines							
Pre-integration	0.91	0.95	1.61	1.20	0.75	1.12	0.79
Post-integration	0.99	0.67	1.50	0.75	1.24	0.88	1.04
Difference	+	-	-	-	+	-	+
ASEAN							
Pre-integration	1.08	1.68	1.90	1.35	1.08	1.70	1.06
Post-integration	1.14	1.05	1.92	1.01	1.15	1.38	1.16
Difference	+	-	+	-	+	-	+

Source : Calculated from data in United Nations Yearbook of International Trade Statistics (various years); IMF Financial Statistics (various years)

Trade creation can be seen in the following commodity categories:-

SITC 0+1 Food, beverages and tobacco

SITC 3 Mineral fuels

SITC 6+8 Basic manufactures

SITC 9 Other manufactures

Trade diversion can be seen in the following commodity categories:-

SITC 2+4 Raw materials

SITC 5 Chemicals

SITC 7 Machinery

Singapore shows some evidence of trade creation in terms of commodity groups. For instance, trade creation is exhibited in SITC 0+1, SITC 3 and SITC 9, ie. in fuels and other manufactures. This pattern emerges because Singapore has traditionally traded with the 'workshops' of ASEAN which are exporters of basic foodstuffs and mineral fuels. However, trade diversion can be seen in SITC 2 because previously Singapore relied on exports of raw materials from other Asian countries and the Middle East.

Trade diversion can also be identified in the remaining categories, SITC 5, SITC 6+8 and SITC 7. Singapore has always tended to be outward looking in its policies. The economy has always had a history of importing technology and machinery from the industrialised countries (the USA, Japan and Western Europe), therefore by diverting its trade towards the other member countries could have hindered the growth of the Singaporean economy.

Malaysia follows a similar pattern to that of Singapore. Trade creation takes place in SITC 2+4, SITC 3 and SITC 9, whilst trade diversion takes place in SITC 0+1, SITC 5, SITC 6+8 and SITC 7. It is not surprising that trade creation can be seen in SITC 2 and SITC 3 and trade diversion in SITC 0+1, especially since the ASEAN region became increasingly important in terms of Malaysia's imports of primary products, its share rising from 26.9% in 1970 to 38.4% in 1985. Developed countries have traditionally been relatively unimportant as sources of primary imports, with the notable exception of Australia whose share of Malaysia's primary imports increased from 8.5% in 1970 to 10.3% in 1985.

Trade between Singapore and Malaysia should be able to be measured with a reasonably reliable degree of accuracy, in so far as both states have inherited from the period of British colonisation a well structured customs administration, which for a long period they shared. The fact that statistics are available in these two countries should make it possible to compare and cross-check, but today the two states operate different systems of customs classification. Malaysia, whose exports to Japan are routed via Singapore, considers Japan as the final destination of the sales. On the other hand, Singapore counts them as imports from Malaysia and as exports (re exports since 1976) to Japan. In effect this questions the reliability of the income elasticity of demand for imports data in the case of Singapore, (as this problem occurs between a number of Singapore's trading partners) leaving us with misleading figures for both trade creation and trade diversion, as Singapore has always played a major role in terms of intermediation.

Indonesia shows a trade creation effect in SITC 3 and SITC 6+8. This can largely be explained by its trade links with Singapore. As Singapore progressed rapidly along its path of development it was able to export 'Basic Manufactures' (SITC 6+8) to Indonesia and other ASEAN countries such as Thailand and the Philippines. This is probably due to changing comparative advantage; as the resource rich

countries began to move on from import substitution industrialisation to export oriented industrialisation. This point will be examined later. In terms of SITC 3 the trade creation effect can be seen to take place because Indonesia, having sent crude petroleum and gas to the refineries in Singapore, Singapore in return sold refined petrol and special petroleum derivatives to the other ASEAN countries.

The Philippines shows a trade creation effect in SITC 0+1, SITC 6+8 and SITC 9. Thus food, beverages and tobacco, live animals, basic manufactured items and other manufactured goods play a dominant role in producing the relevant trade effects in the Philippines.

In Thailand, trade creation is shown in SITC 0+1, SITC 6+8, SITC 7 and SITC 9. Obviously commodities such as food items, live animals and manufacturing and related products are the main commodities which provide the significant influence on the trade effects in Thailand.

During the period up to 1980, it was quite clear that the structure of foreign trade of the ASEAN countries was determined mainly by the individual country economic structure. The resource rich countries of Malaysia and Indonesia exported mainly natural resources and imported manufactured goods. To a certain extent, the Philippines and Thailand also relied on natural resource exports, including agro-based products. Singapore exported manufactured goods and also served as a transit for exports of primary goods from other ASEAN countries. Thus, ASEAN foreign trade policy up to the 1970s was to promote exports of primary products at the best possible terms.

After 1980 several changes have taken place, which have affected the structure of foreign trade of the ASEAN countries. Firstly, the production structure has become more diversified towards manufacturing activities, the output of which were increasingly meant for export. Also it should be borne in mind that trade in manufactured goods is notably different from trading in primary goods. It involves many more rules and regulations which require trade policy measures.

After a period of decline, there is now a resurgence of interest in regional integration schemes, particularly in Europe. Over the last forty years, economic integration has spawned a substantial theoretical literature, particularly on customs unions, but much has been misdirected. The central finding of orthodox comparative static analysis remains that of Viner, namely that it is not possible to generalise about the economic desirability of customs union membership. Beyond this, analysis has demonstrated that customs union membership may be superior to non-preferential trade policies in some circumstances. The conventional static effects of customs unions appear, however, to be very small and it is clear that the most significant gains may be generated instead from greater competition and the fuller exploitation of economies of scale. Empirical work on modelling the effects on integration under these conditions has been developing very rapidly, particularly in the context of the

single European Market and NAFTA. Investigations covering the Asian countries and ASEAN include (Naya, 1980; Ooi, 1981; Tan, 1982; Devan, 1987; Imada, 1990, 1993). Over the next few years computable general equilibrium models promise greater insights into integration effects.

An aspect that has not been emphasised in this approach is why opening markets to the stimulus of greater competition should be pursued regionally rather than multilaterally. One possible explanation is that this allows partner countries to collaborate in strategic trade policy - a high technology project for example, will be more credible to rivals if backed by a regional group rather than a single country. Also, the adjustment costs associated with increased competition may be more acceptable to powerful producer interests if liberalisation is regional rather than global. Within a region, cost differences may be relatively small so that integration brings about intra-industry rather than inter-industry specialisation and consequently lower adjustment costs (Greenaway and Hine, 1991).

The removal of barriers to factor mobility in integration schemes is conventionally regarded as raising economic efficiency since factors can move to where their marginal productivity is higher. Krugman (1987), however, argues that the main benefits are likely to come not from net resource transfers between countries but from the efficiency advantages of more integrated capital and labour markets. This involves the two-way flow of resources comparable with intra-industry trade in goods. Advantages from this such as increased diversification in capital markets have to be offset against possible losses, for example from capital moving to avoid tax or to exploit loopholes in regulatory frameworks.

Integration increases the interdependence of economies so that without a corresponding increase in macroeconomic policy co-ordination, inappropriate policies may ensue. Interdependence may also have beneficial effects upon national policies (Krugman, 1987). For example, membership of a regional group may act as a buffer against destabilising shocks since the economy of the group is likely to be less volatile than is a single national economy. Similarly, integration can help countries to increase the credibility of their economic policies of other group members, and hence achieving their objectives at lower cost. Industrial and regional policies also have similar consequences for partner countries which are heightened by integration; correspondingly, there is an argument for co-ordination. This implies, however, some compromise of national interests which in turn depends on the decision-making system and how far it is influenced by pressure groups.

The removal of barriers to trade and factor mobility and the co-ordination of economic policies through regional integration schemes are likely to have substantial effects on the economies of the member countries during the 1990s; the consequences of regionalism for the world economy and its institutional framework may also be considerable.

Chapter 5

Foreign Direct Investment

The relationship between either foreign capital inflow in general or foreign direct investment in particular and economic growth is rarely established statistically (IMF 1985). There is a general belief, however, that they are important as part of - though not a prerequisite for - development. Foreign direct investment is seen as both a complement and a stimulus to domestic investment, and technology transfer embodied in foreign direct investment is perceived to be critical to development (Balasubramanyam, 1980).

There are several areas where the potential impact of foreign direct investment has been identified as important for the developing Asian economies (Ozawa 1980). In view of the increasing emphasis on export-based industrialisation, an important area involves the links between foreign direct investment and trade. The growth in East Asian exports, particularly manufactured exports, and its significance in the development process are well recognised. The role of foreign direct investment has been of considerable importance, though that role varies for different types of exports as well as in different markets. The importance of multinational corporations in the trade of developing nations should not be surprising in view of the intra-trade activities associated with multinational corporations and foreign direct investment generally, particularly US-based multinational corporations. Indeed, intra-firm trade has been identified as growing rapidly in the Asia-Pacific region, though much of this growth has been in areas other than manufacturing (Hill and Johns, 1985).

Singapore has always had a favourable disposition towards foreign investment. Indeed, an important feature of the open economy of Singapore has been the large extent of foreign involvement, especially in the modern sectors of the economy. The role of the Pacific countries in this respect has been particularly conspicuous.

There appears to exist a close link between trade in manufactures and foreign investment activities in the economy. This seems to be the case especially with regards to intra-industry trade flows, for intra-firm sales apparently constitute the bulk of such flows. Thus, an important explanation of Singapore's trade phenomenon lies in the pattern of foreign investment in the country (Balasubramanyam and Greenaway, 1992).

The theory and evidence of international trade have important implications for business. Economic agents - firms, labour, owners of capital and land, and consumers - all seek to maximise the returns to their scarce resources. Since trade increases overall welfare, unless it is restricted by non-market forces, such as government, it will expand as these agents pursue the opportunities that trade presents.

Government, in its role as protector of the public interest, also has an incentive to foster trade to increase national welfare. If an individual business aligns itself with the process of international trade, market forces will work for it and the firm will prosper. If it does not, those same forces will work against it; it will decline unless government intervenes.

Investment in 'sunrise' industries, in which the nation has a comparative advantage because of its factor supplies and costs, has a greater chance of success than investment in comparatively disadvantaged ('sunset') industries. Of course, firms and workers in these latter industries have every incentive to lobby government to restrict trade. If trade restrictions are imposed, the industries will survive for a time. They exist, however, only as long as the dam of government protection can withstand the flood of world trade and the national and international protests of those hurt by these trade restrictions.

Three trends in the international trade environment are important for international business: tariff barriers are continuing to be reduced (despite neoprotectionism); transportation and communication costs as a percent of shipping value are decreasing; and the speed of technological diffusion is increasing. All three trends facilitate trade by reducing natural and government imposed trade barriers. Industries and individual products that were once sheltered from competition from international trade are increasingly exposed. This evolving trade environment presents both threats and opportunities for managers in all countries. If they respond to threats by obstructing trade, not only will national and world welfare be reduced, but their firms will ultimately decline. Only if managers respond to the opportunities of trade by investing in plant equipment and research and development in industries in which the nation has a comparative advantage, will their businesses flourish (Porter, 1989).

More than far-sighted business decisions are necessary. The burden of adjustment to trade must be shared evenly. Such a conclusion is reached on practical grounds. If some groups lose from trade, they will lobby government for increased protection and trade will be impeded, to the detriment of potential winners and the nation as a whole. Capital and labour will remain tied up in inefficient uses and will not flow to more productive ones. The cost of capital and labour will rise in industries with a comparative advantage, and their competitiveness on international markets will decrease. Measures for retraining workers and employing capital can be expanded.

It makes no sense to advocate free trade unless funds are available to facilitate adjustment. Political pressure from labour and business in declining sectors will ultimately force trade restrictions, to the detriment of the nation as a whole, unless the principles of trade theory are fully understood and implemented. The manager of a firm involved in international business is, of course, not responsible for the implementation of these principles. This is the job of the government.

Singapore has no natural resources beyond its port, its location, and its people. Singapore's strategic location at the centre of the ASEAN region has contributed to its growth, but without the initiative of its government and its people this advantage would not have yielded the benefits it did.

The Singapore government actively encouraged foreign capital inflow by offering generous investment incentives to MNCs. The Singapore case illustrates a situation where the receptivity to foreign capital may have been due to the limited range of options open to a small country. Lack of local entrepreneurial skill and the limited size of the domestic market compelled the Singapore Government to adopt an export-oriented industrialisation strategy with heavy reliance on foreign capital and technology.

The part played by MNCs in the Singapore economy has become increasingly important since the 1970s. The activities of MNCs penetrate into all branches of manufacturing as well as the commercial and financial sectors. While it is generally believed that MNCs will raise the level of technology in the host countries by taking up more than proportionately the production and transfer of technology, it is also commonly argued that the technology introduced by MNCs is not 'appropriate' for developing countries. The most common argument is that MNC technology is capital-intensive and therefore tends to reduce the employment generation capacity of the host countries. On the other hand, MNCs are also expected to play an important role in employment generation through their participation in the manufactured exports from developing countries (Lim, 1988).

It is necessary to define what exactly MNCs are. Despite the fact that MNCs are said to exist everywhere, that their study has been taken up by researchers from various disciplines, and they are constantly referred to by the government, the mass media and the general public alike, there is still no general consensus on the exact definition of MNCs; nor is there a general consensus on the use of the term MNCs. The other popular names for MNCs are Multinational Enterprises (MNEs), Transnational Corporations (TNCs) and International Corporations. The United Nations organisation now prefers to use TNCs in lieu of MNCs and MNEs. The term TNC has the advantage that it has a more general connotation of referring to activities taking place across national boundaries.

In this study the term MNC will be used. MNCs being defined as those firms which have a parent firm in a home country and subsidiaries in one or more host countries. In the subsidiary, some production processes take place in the sense that it is not just a sales office or something similar (Caves, 1982).

Data constraints

There are no comprehensive data on FDI stocks and flows in each of the ASEAN countries. FDI data are generally from the balance of payments statistics and from the investment boards. The various national data differ with respect to definition, coverage and time period and cannot be aggregated to produce an accurate ASEAN total and have limitations when making intercountry comparisons. The published balance of payments data on FDI flows do not represent total FDI in each country or foreign ownership of productive assets and do not show sectoral breakdowns or country sources as these are usually available only from data compiled by national investment boards. However, such data usually refer to FDI approved rather than implemented.

Reliable and comprehensive data relating to foreign investments in Singapore are hard to come by. In Singapore, FDI statistics are derived from the EDB. They exclude investment outside the promoted sectors and ignore reinvestments by the existing units. The data is often too aggregated, as it is intended merely to show capital outflows as registered by the central banks. Data on capital exports, sufficiently disaggregated to shed light on the sectoral distribution of capital outflows, are not readily available. One other caveat is that capital exports are sometimes channelled through particular countries for certain tax reasons, thus camouflaging the actual destination of capital transfers (Wagner, 1989).

FDI data provided by multilateral organisations like the IMF are not helpful either, as such data are available only at a highly aggregated level. Moreover, international comparisons are hampered by dissimilar standards of compilation of data between countries and differences in accounting procedures and depreciation rules. Furthermore, there is no standard international classification for investment, unlike trade (SITC) and industry (ISIC).

These data problems have to be borne with when foreign investment stocks are analysed. Needless to say, the scope of the analysis in the following chapters is affected by data constraints of one kind or another. Accordingly, the conclusions based on the analysis will have to be treated with caution.

The theory of Foreign Direct Investment (FDI)

Foreign direct investment is a distinct form of capital movement because investors have direct control over management and production in their overseas operations. Early attempts to analyse foreign direct investment (FDI) as a form of international capital movement within the framework of the theory of international trade proved to be inadequate because they simply failed to match the empirical evidence.

Within modern writings on the theory of FDI, three prominent approaches are represented by: Western economists interested in the behaviour of large multinational firms, especially those of American origin; Japanese economists who are concerned to explain the motivation of Japanese direct investment during the mid-1960s and 1970s, and writers from host countries who are concerned about the benefits and costs of FDI to the host economy and society.

Western approaches

Traditional trade theory treated FDI as a form of international movement of capital (Ohlin 1933). Differences in the relative factor endowment ratios of capital and labour among countries caused differences in the rate of return to capital as represented in the level of interest rates. This led to flows of capital from capital-rich to capital-poor countries. This view of FDI as capital movement proved to be inadequate in explaining foreign investment by developed countries. Empirically it was found that the majority of FDI was not directed towards countries which were poorly endowed with financial capital, but rather towards developed countries, and a large percentage of the capital expenditure of foreign subsidiaries was financed from local sources.

Noting that the key agent of recent (post World War II) Western foreign investment was the multinational firm, a number of Western economists in the 1960s and 1970s analysed foreign investment by applying industrial organisation theory to the actions of the multinational firm. Their investigations began from the assumption that a multinational operating in a foreign country was faced with certain costs which local firms did not face. These costs arose from cultural differences, difficulties in understanding local language and markets, problems with bureaucracy and so on. To compensate for these disadvantages, multinational firms investing overseas had to have some countervailing advantages which enabled them to compete successfully against local rivals. The attention was thus turned on the specific advantages of the investing firms and the ways in which these advantages affected their strategy for corporate growth.

A pioneer among this group was Hymer, who was the first to demonstrate that the central motive for direct investment was the firm's desire to control foreign operations. This direct control was necessary in order to obtain the full returns on advantages of skills and abilities which that firm possessed over

local and foreign competitors (Hymer 1976). These advantages could be of various kinds: access to cheap capital or raw materials; access to larger markets which led to economies of scale; exclusive possession of intangible assets such as managerial skills and superior technology; or the information, Research and Development (R&D) and other infrastructure available in the multinational network. Of all these, Hymer concluded that knowledge or technological advantage over local firms was the most important.

However Hymer recognised that possession of technological advantage might not be a necessary condition for FDI, and other economists elaborated the argument further, arguing that imperfections in the markets were important additional factors which ensured that firms could exploit their specific advantages through discriminatory pricing (Kindleberger 1969; Caves 1971; Horst 1978). Caves and Horst argued that firms were induced to invest directly overseas when they possessed well established brand names and other forms of product differentiation which created monopolistic advantages over local and other foreign firms. The marketing advantages of oligopolistic firms with differentiated products offset disadvantages inherent in investing and operating overseas, and could explain why these firms invested abroad. Caves also argued that large firms were in a better position to fund the large initial outlays involved in overseas operations, and thus he associated FDI with large oligopolistic firms.

The product cycle theory proposed by Raymond Vernon was a variant of the industrial organisation approach to foreign investment (Vernon 1966, 1981; Wells 1972). It attempted to integrate the firm-specific advantages theory with the theory of international trade. It regarded technological innovation as the main determinant of the structure of world trade and of the distribution of production among different countries. Technological innovations were firm-specific advantages and the differentials in these assets gave rise to comparative advantage among firms in different locations. These comparative advantages explained patterns of trade and investment.

The product cycle model comprised three stages. In the first stage a firm in an advanced country innovated a new product. As long as the technology for producing the product was not yet standardised, the production was located in the country of origin where there was a good supply of suitably skilled labour and easy access to the major market, and the originating firm enjoyed a monopolistic position in the market. In the second stage the production technology became more standardised, more firms entered the market, demand became more price elastic, and the firms competed with one another to improve productivity and gain economies of scale. With standardised technology, firms could mass-produce for export, or even relocate the production to countries with lower unskilled labour costs. In the final stage, firms were virtually obliged to relocate production to low cost countries and import finished products back to the originating country, or face the prospect that competitors would relocate and steal the market. Thus according to the product cycle theory the

move overseas was prompted initially by a desire to pre-empt other competitors from sharing the markets.

For the industrial organisation theorists, the key determinants of foreign investment were thus firm-specific advantages and the imperfections in the markets. More recent works attempted to give a more precise definition of these firm-specific advantages. Hennart argued that the key advantages arose from innovations in legal forms, organisational structure, management techniques and international communications. Firms which possessed these advantages found they could obtain better profits by direct investment rather than by licensing ventures (Hennart 1982). Buckley and Casson (1976) added that there were certain advantages inherent in the multinationalism of the multinational firm. Through transfer pricing, vertical integration of production, and similar techniques, multinational firms could generate economies of scale which raised the profitability of direct investment versus licensing or similar arrangements.

Subsequently Casson identified the key advantage of the multinational firm as its ability to internalise the transaction costs associated with the development of R&D and the accumulation of knowledge and R&D at low transaction costs, the greater would be the benefit it could gain from directly marketing the resulting products rather than simply selling technology. In these circumstances, firms would choose to license technology only if host governments refused to allow direct investment (Casson 1987).

More recently, economists became interested in new forms of overseas involvement which differed from the conventional style of direct investment (Oman 1984). These forms included technology contracts, management contracts, franchise arrangements, turnkey projects and production sharing. These have been labelled as 'new forms of investment'. Oman categorised these new forms of operation into two main types. In the first, the foreign-held equity was usually less than 50%. In the second, the foreign firm contributed no equity at all, but provided technology, expertise or brand name franchise in return for some management control and some long-term arrangement for compensation. This arrangement could be a long-term contract or grant of a minority equity share.

The new forms of investment involved some unbundling of the 'package' of traditional FDI, which usually included equity or financial capital along with embodied or disembodied technology, management and even access to world markets. According to the industrial organisation approach to overseas investment, these new forms appeared because multinational firms found them a profitable way to optimise the return from their innovations and from their accumulated skills and knowledge in management and marketing compared to traditional equity participation (Chee 1989). Small and medium sized firms which accumulated firm-specific advantages in small-scale production, unique technology or organisation know-how might prefer the new form of investment as a means to get an

optimal return to their specific advantages because they had limited financial and managerial resources (Chee 1989).

The 'eclectic paradigm theory' of foreign direct investment (J. D. Dunning), though itself not another theory, is intended to provide an overall analytical framework for empirical investigations, by establishing the common ground between theories. According to this theory, there are three sets of determinants of FDI, each relating to an advantage of direct investment over alternative modes of serving the firm's customers at home and abroad. The first necessary condition for FDI is that foreign firms have an ownership advantage over their rivals or potential rivals in the host country. The ownership advantage is necessary to outweigh the disadvantage of being foreign. It may take the form of either a monopoly over a product or brand name, a patent on a production process or technology, or a superior knowledge of the market and of marketing techniques.

The second requirement for FDI is that the host country must have some locational advantage in terms of serving the market of the host country or as an export base. The locational advantage may derive from a fundamental comparative advantage, such as an abundance of high quality, low wage labour, from relatively low transportation costs, or from policy-determined costs arising from trade restrictions, labour legislation, pollution controls and direct incentives to or restrictions on direct investment. In the absence of a locational advantage, the firm would choose exporting over direct investment as the way to exploit its ownership advantage in foreign markets.

Finally, even when there is an ownership advantage and a locational advantage there must be an internalisation advantage that induces the firm to choose direct investment over other arms-length arrangements, such as production licensing. In many developing countries there is an expressed desire to unbundle FDI so as to obtain the technology that comes with foreign investment without yielding control over production to foreigners. However, except in the natural resource field where service contracts, production-sharing agreements and technical assistance agreements are not uncommon, foreign investors have generally resisted unbundling the direct investment package. Often it has proved difficult to define the component to be sold, such as technology and to agree upon a price.

It is useful to consider how this theory applies to the three broad forms of FDI in developing countries: i) natural resource investment; ii) investment to serve the host country market; iii) export-oriented investment. In the case of natural resource investment, the locational advantage is obvious. The ownership advantage of firms from developed countries derives from the high capital intensity and technology intensity of natural resource extraction. This advantage has not, however, always proved enduring, as evidenced by the nationalisation of foreign firms in the natural resource sector of developing countries. The internalisation advantage for natural resource investment is also not as strong as in other sectors.

The first wave of post-war direct investment in developing countries aimed at serving the host-country market occurred in the 1950s and 1960s in response to the adoption of the import substitution industrialisation strategy by many developing countries. That producers in developed countries possessed some ownership advantage over domestic firms in developing countries was apparent from the fact that they dominated the market for manufactured goods in developing countries. The premise of the infant industry argument on which the import substitution strategy was founded was that manufacturers in developing countries could acquire the ownership advantage if only given time. However, import barriers themselves provided the missing locational advantage to direct investment in developing countries, and thus direct investment became a means of circumventing trade restrictions. In recent years foreign investment aimed at the domestic market has been concentrated in the service sector, in such branches as banking, insurance and tourism. In this sector the locational advantage derives not so much from government policies as from the nature of the services themselves, which often require a local presence in order to provide the service.

The third form of FDI is the export-oriented investment, which acquired special importance in East Asia in the 1970s and 1980s. The locational advantage of export oriented investment derives primarily from comparative advantage, in particular from a relative abundance of low wage labour and foreign policy-induced advantages, such as the establishment of export processing zones within which foreign firms could operate under essentially free trade conditions. The ownership advantages consisted of foreign firms' inside knowledge of the market for labour intensive products in developed countries, and in the case of manufactured components, from the foreign investors' ability to identify labour-intensive processes within the vertically integrated production structure of the multinational firm which could be relocated to developing countries. One important consequence of export-oriented direct investment was in inducing local firms to emulate the export-oriented foreign firms, with the result that indigenous firms have acquired an ownership advantage that allowed them to become foreign investors themselves.

The theory of FDI pertains to intra-regional investment flows in the same way that trade theory pertains to intra-regional trade. Where there are ownership, locational and inter-nationalisation advantages to FDI among the Asian countries, investment should follow, provided barriers are not placed in its way. Furthermore, to the extent that direct investment flows are motivated by comparative advantage considerations, as in the case of natural resource investment and export-oriented investment, a complementary relationship should be observed between direct investment flows and trade flows. Even import substituting direct investment may complement trade, since foreign firms operating in sheltered markets often make heavy use of imported capital goods and intermediates from the home country. The expectation is, therefore, that where conditions favour intra-Asian trade they will also favour complementary flows of FDI between the Asian economies.

Japanese approaches

The 'organisation', 'transaction' and 'product cycle' approaches to the analysis of foreign investment were all developed to help explain the behaviour of MNCs, and in particular American MNCs. In the 1960s, these MNCs were the major agents for overseas investment. From 1969 onwards, foreign investment began to flow out of Japan at an ever increasing rate until by 1980 Japan overtook the United States in terms of net annual outflow of investment. By the late 1970s, the analysis of foreign investment had become a topic of major importance for Japanese economists.

Their approaches to the theory of foreign investment diverged sharply from the micro-economic concerns of Western theory. Among the Japanese approaches, the most remarkable was that of Kojima, not least because of his aggressive departure from Western theory.

Kojima argued that the product cycle theory and other approaches from micro-economic theory tended to explain the motivation to invest overseas in terms of the defence of monopolistic or oligopolistic advantages (Kojima 1973, 1978). He was concerned that this approach encouraged host countries to view foreign investment as exploitive and often directly antagonistic to the better interests of host country firms and the host economy as a whole. To counter this tendency, Kojima did not argue that the theory of monopolistic advantage was wrong, but rather that it was only one of a range of motivations for foreign investment. He went on to draw a contrast between American investment overseas, which often could be explained in terms of the defence of monopolistic or oligopolistic advantage, and Japanese investments which he claimed were differently motivated and more benignly complementary to the host economy. To achieve this contrast, Kojima switched the approach away from the micro-economic perspective of organisation theory, and back to the macro-economic framework of comparative advantage and the international division of labour.

Kojima (1978) elaborated his theoretical exposition, based on the well known Heckscher-Ohlin theorem, in his book 'The Theories of Foreign Investment'. He divided direct investment into four major types: resource-oriented, labour-oriented, market-oriented, and oligopolistic, and argued that each type had a different motivation, and a different impact on trade and on the host country economy.

Resource-oriented investment was undertaken to increase the production of natural resource products which the home country lacked. This type of investment generated trade, because it resulted from the home country's lack of comparative advantage and its desire to secure a supply of natural resource products from the host country. The investment thus increased exports of primary products from the host country to home and third countries. But where production and marketing were integrated within

the same foreign multinational firm, host countries might receive small benefits in terms of returns because of the monopolistic position of the foreign multinational firm.

Labour-oriented investment was undertaken in labour-intensive industries (such as textiles, shoes, toys) for which home countries had lost comparative advantage, usually because of rising labour costs. Such investment complemented less developed countries which have scarcity of capital but abundant labour. It assisted in the reorganisation of the international division of labour and promoted trade between labour-scarce and labour-abundant countries. It increased the import of capital goods from developed to developing countries. And, as this type of investment aimed to establish an export base rather than import substitution, it increased export of labour-intensive products from developing countries back to the home country or to third countries.

Market-oriented investment in Kojima's scheme was direct investment induced by trade barriers in the host country. Often developing countries imposed differential tariffs, heavier on final consumer goods but lower on intermediate and capital goods. This cascading tariff structure induced foreign firms to import components and parts and assemble them into consumer goods for sale in the domestic market of the host country. This type of investment was trade-creating, but often one sided. It increased export of components, parts and capital goods from the home to the host country. But since the original purpose of protection was to encourage import substitution industries, foreign investment induced by this kind of protection enabled the firm to produce and sell above the world market price. In the short term the lop-sided trade impact was likely to weigh the host country's balance of trade. But, if the import substitution industry grew successfully towards export orientation, then direct foreign investment of this type could turn out to be labour-oriented investment and could generate trade from the host country.

Kojima's fourth type of direct investment was labelled 'oligopolistic direct foreign investment'. It was a variant of the market-oriented type, essentially similar to the direct investment described by Hymer and Vernon with respect to the United States, namely direct investment in products which commanded oligopolistic positions in the market because of product differentiation and other firm specific advantages. This type of investment, according to Kojima, was anti trade creating in two different ways. First, from the point of view of the home country, the transfer of production to a foreign location reduced exports and might eventually increase imports as products were imported back from the overseas subsidiary to the home country. In his words, "Both the loss of foreign markets and increase in imports then result in balance of payments difficulties and the export of 'job opportunities'" (Kojima 1978 page 89). Second, from the point of view of the host country, the demand for inputs (foreign exchange, labour, skill) in the newly located industries tended to restrict the availability of such inputs for traditional industries in which the host country had a comparative advantage in world trade. As such it diminished the host country's capacity for export growth.

Kojima argued that American foreign investment was mainly of the fourth type. It had occurred mostly in products which involved high expenditure in R&D and advertising by large firms, and which as a result commanded highly oligopolistic positions in the market. By contrast, Kojima contended, Japanese foreign investment consisted mainly of the first three types. He argued that Japanese investment in Southeast Asia in the 1960s and 1970s was concentrated in product areas such as textiles, iron and steel and agriculture. And he pointed out that these were traditional, price competitive goods in which Japan and other developed countries had been losing their comparative advantage, largely on account of rising labour costs. Japanese investments were thus complementary to the factor endowments of developing countries, and tended to encourage trade, promote the international division of labour, and aid the industrialisation of the host countries.

In Kojima's analysis, foreign investment was usually induced by changes in comparative advantage within the framework of a competitive market. Yet he admitted that there would be specific situations in which foreign investment was induced by imperfections in the market. These imperfections might be created by the oligopolistic advantages of firms, or by the price distortions of tariff policies. Yet Kojima placed more emphasis on the framework of comparative advantage because of its relevance to the bulk of Japanese overseas investment in the late 1960s and 1970s. His main contribution to the theory of FDI was to focus attention on the international division of labour resulting from changes in comparative advantage.

Several writers argued that Kojima's sharp distinction between the motivations of Japanese and American investment was misleading. Sekiguchi and Krause pointed out that the Japanese pattern of FDI in the 1960s and 1970s reflected merely the stages of economic development of Japan and Asian countries at that particular period (Sekiguchi and Krause 1980). As Japan moves up the technological scale and becomes more like the United States, they suggested, Japan would invest more in innovative products, and the pattern of Japanese direct investment would become more like that of the United States. In other words, the distinction which Kojima drew between 'Japanese' and 'American' motivations for overseas investment was really a distinction between countries in the early and later phases of industrial maturity. And as a result, it was likely to change over time.

In a study comparing Japanese and American direct investment in South Korea, Lee (1984) confirmed this analysis. In the period 1962 to 1972, Japanese investment did tend to be a little more labour-intensive than American. But there was a change in pattern over the next six years, when both American and Japanese direct investment in South Korea became concentrated in skill-intensive, high-technology industries.

Building on this analysis, Lee argued that Kojima had underestimated the importance of micro-economic factors in his theory of foreign investment. Lee accepted that foreign investment took place within an overall framework of comparative advantage in which resource constraints and government policies (both home and host) played an important role. But Lee added that decisions to invest were taken at the individual firm level. Even when confronted by resource constraints and changes in comparative advantage, Japanese firms faced a range of options. They could switch product lines, concentrate on the home market, or even stop production and convert their capital to stocks. An adequate theory needed to explain why firms would choose to invest overseas. In Lee's opinion, this theory would need to return to the organisation approach of Caves and Vernon.

Several writers suggested that Japanese investment in ASEAN in the 1980s had many similarities to the American style described by the organisation theorists, and which Kojima had disavowed. As Japanese firms faced strong competition from the Asian NICs particularly in markets such as consumer electronics, Japanese investment in ASEAN displayed many of the oligopolistic characteristics of American firms. And Japanese firms became as adept as any American multinational at developing brand names and other forms of product differentiation in order to reap oligopolistic advantages.

Host country approaches

Economists from ASEAN host countries tended to see no substantial difference between the motivations of American and Japanese firms. In their view, both were monopolistic. Both were concerned to conserve and exploit their specific advantages, hence the low level of technological transfer. Several studies from host countries showed that Japanese firms were more restrictive than American or European firms in transferring technology and skills.

All of these approaches concentrated on the supply side. They analysed the motivations of the investing firms or the comparative advantages of the investing countries. They considered the host countries in terms of the investment climate, the state of political stability, and certain specific policies such as tariffs and investment promotion.

Foreign Direct Investment - The World Economy

The term "Globalisation" can happily accommodate all manner of things: expanding international trade, the growth of multinational businesses, the rise in international joint ventures and increasing interdependence through capital flows - to name but a few. Trade related aspects of globalisation raise controversial questions of policy: witness the stalemate in the Uruguay round of trade talks. But in one respect this sort of globalisation is easy enough to grasp: anybody who is either a consumer or a producer knows what trade in goods and services means. On closer examination, part of the mystery can be explained, some of the threat dispelled. In broad terms, the evolution of global finance in the past decade is readily understood. Banks and other financial firms saw new opportunities, responded to competition, tried to increase their shares of markets to raise their profits just as companies in other industries do. It was the pace of change that took everybody by surprise (The Economist, 19th-25th September 1992).

Acting separately, innovation, technology and deregulation would each have spurred rapid financial change during the 1980s. But they came together, interconnected, each multiplying the effects of the others. As a result, there has been little time for the capital market, or the governments that regulate it, to learn. Both have made big mistakes and will continue to do so. If for no other reason, the transition to the new world of finance is likely to be hazardous. So for some time yet, the mystery and the threat will remain.

In all sorts of ways, foreign direct investment (FDI) is a special case, in terms of global finance and global business. FDI increased sharply during the 1980s. Almost all of this increase, until recently, has been in flows of FDI among rich, industrial countries (see tables 5.1 and 5.2). A look at the geographical pattern of industrial-country flows makes it clear that macroeconomic policies - especially as they affect exchange rates - had a decisive influence.

Table 5.1
Foreign direct investment inflows
into the larger industrial countries (annual averages)

	1975-79	1980-84	1985-89	1990	1991
Total inflows, \$bn					
% distribution	18	34	96	156	84
United States	33	53	51	29	14
Larger EC countries	57	38	37	57	66
- of which					
Belgium	6	3	3	6	na
France	10	7	6	8	18
Germany	7	2	2	2	3
Italy	3	3	3	4	3
Holland	4	3	4	7	5
Spain	4	5	5	9	12
Britain	23	15	14	21	25
Australia	6	6	5	4	5
Canada	2	-1	1	5	5
Japan	0.5	0.8	0.4	1	2
Sweden	0.3	0.5	1	1	8
Switzerland	0	0.8	2	3	na

Table 5.2
Foreign direct investment outflows
from the larger industrial countries (annual averages)

	1975-79	1980-84	1985-89	1990	1991
Total outflows, \$bn					
% distribution	34	40	126	214	157
United States	47	24	19	15	17
Larger EC countries	40	53	48	50	55
- of which					
Belgium	1	0.3	2	3	na
France	5	8	7	16	15
Germany	9	9	8	11	14
Italy	1	4	3	4	5
Holland	6	7	6	7	7
Spain	0.4	0.8	0.6	1	2
Britain	18	24	21	8	12
Australia	0.8	2	3	0.9	0.2
Canada	4	7	4	0.2	3
Japan	6	11	17	22	20
Sweden	2	2	4	7	5
Switzerland	0	0.8	4	3	na

Totals may not add up to 100 due to rounding

Source : IMF International Financial Statistics Yearbook (various years).

For 30 years, to the end of the 1970s, American outflows of FDI to other rich countries amounted to roughly half the global total. In 1980-84, as recession and high interest rates reduced the financing capacity of American companies, the share fell to 24%. However, American multinationals began

raising capital from off-shore affiliates, which in turn could borrow from foreigners without exposing them to America's withholding tax on interest. Balance of payments figures record such borrowing from foreign affiliates as a fall in outflows of FDI.

In 1985-89, as the dollar fell in value, flows of FDI from America were reduced to just 19% of worldwide flows. Suddenly control of American companies was available to foreigners at bargain basement prices. Hence, investors piled in. In 1989 Britain's FDI outflows were 17% of global flows (about the same as America's). Most of that capital flowed into America. Japan's share of the worldwide total increased to 24% - much of it, again, to America.

Though most of the increase in FDI during the 1980s was investment to and from industrial countries, this may be about to change. Between 1989 and 1990, the most recent year for which figures are available, inflows of FDI to industrial countries fell from \$165 billion to \$152 billion - mainly because of slowing economic growth in America. But inflows to developing countries went up slightly, from \$30 billion to \$32 billion (The Economist, 19th-25th September 1992).

FDI in developing countries is unevenly distributed. The economics of East Asia take the major share. Between 1986 and 1990 the developing countries altogether received, on average, \$26 billion of FDI a year. Of that, East and South-East Asia's share was \$14 billion, Latin America's \$9 billion and Africa's \$3 billion. Relative economic performance, it might seem, would account for that distribution. But again, causality can run both ways. Many of Asia's economies have long sought FDI, not so much for the capital as for the contacts, knowledge and technology that come with it. Many developing countries in other regions have traditionally been hostile to it - not because they did not need the cash, but because they did not want foreigners owning and running their businesses.

This is changing fast. Government policies towards FDI are being liberalised worldwide. According to the United Nations' World Investment Report 1992 on transnational corporations, this trend accelerated in 1990 and 1991. In a tally for 1991, the report counts 34 countries, rich and poor alike, that made, in all, 82 big changes to their FDI laws. Eighty of those changes made the rules less restrictive. This matters because the market for corporate control is much easier to damage with regulation than the market for footloose capital. Unlike in the market for pure capital, deregulation of the market for FDI was probably a necessary condition for faster growth of flows to poor countries.

Another powerful spur to FDI in poor countries has been privatisation. As many developing countries have recently turned to what the World Bank calls "market-friendly" policies, privatisation and a more welcoming attitude to inward FDI have often gone hand in hand. In this way another trend in domestic policy during the 1980s - or is it merely 'deregulation' in another guise? - has contributed to the growth of global finance. More than 70 countries are reckoned to have embarked on major

privatisation programmes during the past ten years. In 1985-90 roughly 130 state-owned enterprises were sold every year. And by the end of the 1980s, on one estimate, global privatisation proceeds added up to nearly \$200 billion (United Nations - World Investment Report, 1992).

Over the coming years, this new acceptance of FDI in developing countries is likely to make a big difference to their growth prospects. There is no question that barriers to the international flow of capital are coming down - either because governments saw them crumbling and had no choice but to dismantle them, or else because (as in the case of FDI) they chose to demolish the barriers regardless.

Foreign Direct Investment in ASEAN

In the 1980s the ASEAN region has become one of the most attractive investment locations in the developing world and attracted a disproportionately large amount of FDI, particularly in the 1987-91 period. Its success stands in sharp contrast to that of other developing countries, which have experienced a falling share of global FDI flows. However, in the coming years, ASEAN may expect keener competition for FDI (United Nations - World Investment Report, 1991).

Until the 1980s most developing countries were reluctant to depend much on FDI as an instrument of economic development and industrialisation because of perceptions of high costs and uncertain benefits. Dependence on FDI is seen to increase a country's economic, political and social vulnerability, undermine its national sovereignty, and expose its society to undesirable foreign influences. Where the development emphasis is on social justice and the eradication of poverty, agricultural and rural development, and import-substituting industrialisation, FDI is perceived to have a limited role. However, with the need to accelerate economic growth and to achieve a more dynamic and internationally competitive industrial sector, FDI is increasingly perceived to be useful. FDI makes possible not only access to larger volumes of capital resources and foreign exchange but also access to technology, managerial expertise, marketing skills, and sourcing and marketing networks which facilitate the entry into export markets and upgrade local enterprise.

The experiences of ASEAN economies, particularly Singapore, with FDI are largely positive. Differences in FDI experience among host developing countries may be partly owing to industry-specific and firm-specific factors, but the benefits from FDI also depend largely on the institutional and policy environment of the host countries.

First, where trade, industrial and competition policy regimes result in a distorted incentive structure, as is usually the case with import substitution, and where government bureaucracies are incompetent and corrupt, foreign MNCs are more prone to inefficiency and rent-seeking activities. In general, countries which pursue market-oriented and export-oriented policies have better experiences with FDI. Second, countries which impose highly restrictive performance requirements on equity ownership, localisation of personnel, local sourcing of inputs, and transfer of technology without parallel measures to improve domestic supplies and human resource development will be unable to maximise the benefits from FDI.

Traditionally, FDI in the region has been mainly from non-regional developed countries. Later on, Japanese investment became important. In the period from the 1950s to the early 1980s, most ASEAN governments, with the notable exception of Singapore, had been lukewarm towards foreign investment for two main reasons. First, they expanded state capital significantly in the 1950s and

1960s and tended to view foreign capital as a potential competitor of state capital. Second, they feared that foreign capital would strengthen sections of domestic capital which the government did not favour. However, by the early 1980s, the importance of these two factors had generally diminished. State capital had failed to have a dynamic effect on economic development and was in retreat in most states. And ASEAN governments felt more confident of their abilities to manage the politico-economic impact of foreign capital inflow. At the same time, the recession of the early 1980s made foreign capital an attractive option for alleviating the debt burden and regenerating economic growth. As a result of these forces, after 1985 the ASEAN governments were prepared to revise rules and promotional incentives to encourage investment inflow (Robison, 1986; Krause, Koh and Lee 1988).

The attitude of domestic capital towards foreign investment was also favourably affected by the recession of the early 1980s. Many of the avenues of opportunity open to domestic capital in the 1970s appeared to be closing off. First, as state capital retreated, so too did the opportunities for government contracts and joint public-private ventures. Second, the recession in Western markets blunted export possibilities. And third, opportunities for import substitution investment seemed to be exhausted. In many countries major business interests, particularly those with experience of cooperation with foreign capital in earlier distribution and import substitution ventures, were keen to expand into more complex manufacturing ventures, often with an export orientation, in conjunction with foreign technology and perhaps also equity participation.

Four main factors lay behind the increase of Japanese investment into ASEAN in the late 1980s. First, structural changes in the Japanese economy dramatically altered the pattern of comparative advantage and forced many production processes to relocate outside Japan. Second, Japanese firms increasingly commanded specific advantages in terms of technology, management skills, organisational assets and marketing properties, that enabled them to realise profits through investment in a variety of overseas markets. Third, against a background of recession and exhaustion of import-substitution growth, large scale domestic capital in ASEAN perceived that Japanese capital and technology would deliver advantages both directly through joint-venture operations and indirectly through a general stimulus to the domestic economy. Fourth, ASEAN governments perceived that Japanese capital inflow would help relieve the debt burden and regenerate economic growth without seriously disturbing delicate politico-economic balances which sustained these governments in power.

The ASEAN member countries differ markedly from each other in their economic philosophy and policies. These differences are also reflected in their policy orientation towards FDI. At one extreme is Singapore, which has pursued a virtually open-door policy toward FDI, often discriminating against local industries in its investment incentives in the interests of growth efficiency (UN 1982). At the other extreme is Indonesia, which has pursued an inward-looking strategy of development and has experienced substantial amounts of protection induced FDI. Malaysia and the Philippines fall in the

intermediate category of countries which have attempted to attract FDI towards export-oriented industries. Both countries have established export processing zones in their bid to attract export-oriented FDI. Thailand, which has a low level of FDI relative to the other countries, appears to have followed a laissez-faire policy towards FDI, allowing market forces to dictate the distribution of investments between locally owned and foreign owned firms. This largely non-interventionist policy appears to have applied to Japan, the principal investor in the country. With the exception of Singapore, all of the member countries stipulate local content requirements and require MNCs to promote exports. In doing so the MNCs appear to have reacted to individual country policies towards FDI rather than adopt investments among the five countries. Thus, in the absence of a unified policy towards FDI on the part of ASEAN, no other outcome could be expected.

The importance of foreign direct investment in the export of manufactured products varies between the different countries of the region. In Singapore, foreign firms, both Japanese and United States based MNCs in particular, are dominant in exporting manufactured products, including those 'traditional' products that are still being manufactured. In the case of Malaysia, one of the key contributions of FDI has been associated with the growth of exports generally, including manufactured exports, in which the marketing role of MNCs has been particularly dominant (Hoffman and Tan, 1980).

Although economic fundamentals are crucial, a favourable foreign investment policy improves the overall investment climate for FDI. Variations in policy stances among countries, as well as within a country over time, reflect different and changing perceptions of the benefits and costs of FDI, the development alternatives and options available, and the constraints and pressures. Compared with other developing regions, the ASEAN countries have always maintained a favourable stance towards FDI. However, until recent years, there were wide diversities in policies and attitudes among them.

Singapore has always maintained a highly open economy and a friendly foreign investment regime, and FDI has always played a crucial role in the economy. Singapore welcomed FDI without reservation at a time when the FDI role was hotly debated in developing countries, including some in ASEAN, and the arguments of the 'dependency school' had found many adherents. Factors which have shaped Singapore's pro-FDI stance include its long history of openness to foreign trade and immigration, a not unhappy colonial experience and smooth transfer of political power and the economic philosophy of the political leadership which has been in power since 1959. Furthermore, its small physical and economic size necessitated dependence on multinational corporations, with their production know-how and established quality standards and marketing networks. The government rationalised that MNCs would enable Singapore to industrialise quickly and efficiently without the necessity of protecting the small domestic market, and it would be too slow and uncertain to depend on traditional local capital to attract export-oriented MNCs (Lim 1988).

Unlike other ASEAN countries, no foreign investment laws were enacted in Singapore. In the 1960s FDI inflows helped to close the saving-investment gap, financed net imports and created employment. Additionally, when the city-state's viability as a nation state was in doubt in the immediate post-independence years, the foreign investor presence helped to establish Singapore's economic security and gave confidence to local private capital. By the 1980s the economic situation in Singapore had changed markedly, with high rates of savings, balance of payments surpluses and full employment. Yet the dependence on FDI did not diminish. Singapore continues to rely on FDI for entrepreneurship, technology and markets. The promotion of inward FDI increasingly focuses on high technology and high value-added industries and services. At the same time, worsening land and labour constraints and the growing financial resources of public and domestic enterprises have led to a new emphasis on outward investments. Outward direct investments are particularly encouraged in the ASEAN region and China (Yue, 1983).

The past decade has seen a growing perception in the other four ASEAN countries that FDI benefits far outweigh costs as FDI can contribute significantly to economic dynamism and restructuring and export performance. Particularly in the post-1985 period, the ASEAN-4 have revamped and modified their foreign investment policies. As a result, there has been a convergence of FDI policies, with respect to both the level and range of investment incentives offered and the relaxation of performance requirements and other restrictive regulations. Foreign investment inflows have surged.

Indonesia enacted the Foreign Investment Law in 1967 to promote and regulate FDI inflows. Its approach towards FDI remained cautious until recent years. The commodities and oil boom has encouraged a strategy of self-sufficiency, including import substitution in manufacturing and a restrictive FDI policy. Falling oil and commodity prices in the mid-1980s, the heavy fiscal burden of non-performing state owned enterprises, and possibly the demonstration effect of the successful export-oriented Asian NICs caused a shift in development strategy towards a more open economy, emphasis on developing non-oil sectors, especially manufacturing, and bigger roles for the private sector and for FDI. The new FDI policy has more incentives and less restrictive rules for projects which are export-oriented, upgrade the technology and marketing know-how of existing firms, improve international competitiveness of manufactured exports, encourage joint ventures, and promote the development of less developed areas (United Nations - World Investment Report, 1992).

Malaysia first introduced tax incentives to attract FDI into the manufacturing sector in the late 1950s. Foreign investments in manufacturing were increasingly channelled into export processing zones. As in Indonesia, the decline of oil and commodity prices in the first half of the 1980s, a rising fiscal burden, and slower economic growth led to a change in policy stance, with an enhanced role for FDI. The New Economic Policy for the 1990s emphasises the role of private enterprise rather than government intervention to narrow the ethnic economic and social gaps. The new investment

incentives are aimed at broadening and upgrading Malaysia's industrial structure and giving greater emphasis to high-technology industries and to the linkage between small and medium industries and the larger industries (Yue, 1983).

The Philippines' Basic Investment Law of 1960 provided tax incentives for the importation of machinery and spare parts for basic industries, followed by incentives for textiles, mining etc. The 1967 Investment Incentives Act established the Board of Investment and granted a range of incentives for investments in priority industries. In 1970 the Export Incentive Act granted incentives to investments in export-oriented industries. The Board of Investment published annual Investment Priorities and Export Priorities plans, listing industries given special incentives. More laws proliferated in the 1970s including those establishing industrial estates and export processing zones. In 1981 the various pieces of legislation were consolidated under the Omnibus Investment Act. The political crisis in 1983 and the subsequent political instability had a negative impact on economic performance and on FDI inflows. FDI declined precipitously from \$344 million in 1982 to only \$72 million in 1988. In an attempt to reverse the downtrend, the 1987 Omnibus Investment Code consolidated various investment laws and incentive schemes. This was followed by the 1991 Foreign Investment Act which liberalised the rules regulations on foreign ownership (United Nations - World Investment Report, 1992).

Thailand's basic legislative framework for foreign investment dates back to the 1950s and has remained virtually unchanged. However, there have been substantive changes in the perceived role of the private sector and of FDI, and this is reflected in the more flexible implementation of policy, particularly after 1984 (Yue, 1983).

In Indonesia both US and Japanese FDI are domestic-market oriented, especially so in the manufacturing sector. It is also arguable whether Japanese investments in comparable industries are any more labour-intensive than US investments. Both countries appear to have reacted to the protectionist trade policies of Indonesia in the market orientation of their investments. Again, in recent years Singapore's exports are increasingly veering towards human and physical capital-intensive exports. In Malaysia and the Philippines, both US and Japanese investments are oriented towards labour-intensive exports, especially so in the export processing zones. Arguably, a uniform policy towards FDI on the part of ASEAN may have promoted export oriented FDI based on labour-intensive manufactures in all five countries. However, it is the policy orientation of the countries and not the source of FDI that appears to have influenced the market orientation of investments.

Singapore has recently emerged as a significant investor in other developing countries in the region, including the ASEAN countries; such investments are in relatively labour-intensive industries. One

major reason for such FDI intensive in the use of cheap labour is the rising costs of labour in Singapore.

Notwithstanding the problems of data comparability, the general picture that emerges from the different data sources is that the ASEAN countries have received a sizable share of the FDI that flowed to the developing world. The ASEAN countries accounted for 63.4% of the FDI flows to developing countries in the Asian and Pacific region in 1977-83, (UN Economic and Social Commission for Asia and the Pacific, 1986). Three ASEAN countries were among the ten largest recipient developing countries in the 1980s. Singapore was the leading host country, with \$19.5 billion of FDI inflows, accounting for 11.2% of the developing countries' total. Malaysia ranked sixth, with \$9.8 billion and 5.6% share, while Thailand ranked ninth, with \$5.1 billion and a 2.9% share.

Table 5.3 shows ASEAN - net FDI inflows, (1961-90). Statistics for 1961-90 show that among the ASEAN countries, the largest private FDI flows have gone to Singapore, with 42.7% of the ASEAN total, followed by Malaysia with 27.6%, Thailand 13.7%. Indonesia 10.5% and the Philippines 5.5%. The level of FDI inflows in ASEAN in the 1980s was 4.3 times that received in the 1970s. For the industrial countries, the growth has been fastest for Thailand (7.9 times), followed by Singapore, Philippines, Malaysia and Indonesia (2.0 times). The growth of FDI has been especially marked during the 1988-90 period.

Table 5.3
ASEAN - net foreign direct investment inflows, 1961-1991

	Singapore	Thailand	Malaysia	Philippines	Indonesia	ASEAN
			\$ Million			
1961-80	3,728	1,186	4,453	452	2,163	11,982
1981-90	21,468	6,875	11,850	2,777	4,047	47,017
1988-90	11,162	5,045	5,523	2,029	2,222	25,981
1961-90	25,196	8,061	16,303	3,229	6,210	58,999
			% Distribution			
1961-80	31.3	9.9	37.2	3.8	18.1	100.0
1981-90	45.7	14.6	25.2	5.9	8.6	100.0
1988-90	43.0	19.4	21.3	7.8	8.6	100.0
1961-90	42.7	13.7	27.6	5.5	10.5	100.0

Source : IMF - International Financial Statistics Yearbook, 1991.

Foreign Investment in Singapore

While Singapore has pursued, since the 1970s, a policy of mobilising foreign and local investment in the sector of advanced technology and services, it has become a magnet for investment to the region as a whole, being in the leading ranks of 'developing countries'. This situation can be explained in Southeast Asia by a 'chain' process of industrialisation, with Singapore as an intermediate link for MNCs eager to move into the markets of the neighbouring countries. The emergence of a manufacturing sector in the region coincided with a wish on the part of Singapore to transfer certain classes of production outside the island and so circumvent local protectionism by means of direct investment. Preoccupied with the effects of the international recession on the island's economy, the government sought new guarantees for the viability of the emporium: in 1981 it set up the Government of Singapore Investment Corporation (GIC), and used part of the surpluses of public enterprises and of the state's foreign currency reserves to invest in the ASEAN countries and increase its financial assets and deposits overseas (Wells, 1983).

Before looking at the sectors which Singapore developed, we should investigate the character of the investment from outside which has enabled it to meet the challenges resulting from 1965, and to pull itself up to its present position of economic influence. Foreign investment has moved into Singapore on a massive scale because of its especially favourable socio-economic system. In fact, the success of Singapore in drawing in this investment appears to be not only vital to itself in terms of economic growth, but also for the development of the region as a whole.

The manufacturing sector has grown 21 times in real terms since 1960, increasing from a 17.6% share of the economy to 26.9% in 1990. In the 1960s the emphasis was on labour-intensive industries such as textiles and consumer electronics to employ the thousands of workers who had been left redundant by the withdrawal of the British. But as skills levels and infrastructure improved in the 1970s and 1980s, higher value-added industries such as petroleum refining and precision engineering were attracted to Singapore. Now that Singapore has virtually full employment, it has begun to move beyond production stage manufacturing and attract foreign investment in research and development and high technology industries such as aircraft assembly, material sciences, bio-technology and information technology (Accountancy, February 1983).

With its 'growth triangle' project the government is actively encouraging the more labour-intensive industries to move their production facilities into Malaysia or Thailand, where labour is cheaper and more abundant, but maintain head office functions in Singapore, where communication and distributive networks are more efficient and treasury/fund management facilities more sophisticated. "Singapore is not competing with these countries but promoting all ASEAN countries so that the

region as a whole can offer the full range of resources and become a global economic power", (Lee Kuan Yew, quoted in - Accountancy, February 1993, page 47).

Statistical data on foreign investment

Table 5.4 shows the percentage of foreign owned gross fixed assets by country of origin. Table 5.5 shows the investment commitments in manufacturing by country of origin.

Table 5.4
Percentage of foreign owned gross fixed assets
by country of origin

Country	1970	1975	1980	1985	1990
USA	34%	33%	35%	38%	42%
Japan	7%	13%	10%	22%	28%
Europe	45%	37%	26%	17%	18%
EC	42%	34%	20%	15%	16%
UK	20%	14%	9%	6%	4%
Netherlands	18%	14%	1%	6%	3%
Germany	1%	3%	5%	2%	6%
France	1%	1%	1%	1%	2%
Italy	1%	1%	3%	-	-
Other EC	1%	1%	1%	-	1%
Switzerland	1%	1%	2%	1%	1%
Sweden	1%	1%	4%	1%	1%
Other Europe	1%	1%	-	-	-
Others	14%	17%	29%	23%	12%

Source : Economic Development Board Yearbook (various years), Singapore.

Since 1970 the US has remained the dominant investor except during the period 1986-1989 (as seen from Table 5.5) when Japan was dominant. Both of these economies account for the greatest share of investment, and this share has gradually risen over time. By 1990 the USA accounted for 42% of foreign owned gross fixed assets, with Japan accounting for 28%, a considerable increase from only 7% in 1970.

Although FDI from the UK continued to rise in real terms, its share of FDI declined continuously from 20% of foreign owned gross fixed assets in 1970 to 4% in 1990. This trend has also been followed by other EC members and European countries, except for Germany which showed an increase from 1% in 1970 to 6% in 1990. The share of FDI from the Netherlands was high prior to 1980, being largely represented by one large petroleum refinery. Some of the figures are distorted, because of the recession which affected the economy in 1985.

The figures for regional investment in Singapore are divided into several separate portions. At the beginning of the 1980s, seventy-two major investments in manufacturing were listed as originating from the ASEAN countries (Malaysia: 61, Thailand: 6, Indonesia: 5), eighty from Hong Kong and

seventeen from Taiwan. Totalling on average less than US\$ 1.5 million and creating at most 50-100 jobs, these inflows went to several specific sectors - textiles, clothing, woodwork and furniture, paper and printing. But the sources of official statistics remain silent on the subject of the multiple minority shareholdings from ASEAN countries in foreign companies and above all companies owned by Singapore's Chinese diaspora: these are in the form of long-term investment in services, real estate and the hotel industry, and include inflows which have been channelled via Hong Kong or Taiwan with the sole object of changing their identity before they come to be invested in Singapore (Ng, 1986).

The initiative for these investments springs from several quite distinct motives. First, the climate for doing business in the country of origin may be unfavourable for socio-political as much as for economic reasons: limited banking facilities, the exclusion of private capital from certain sectors, the ever present state bureaucracy and interventionism, inadequate infrastructures and low productivity. The endemic fear of political instability and of communalist movements forces overseas Chinese business circles throughout the region to regard Singapore as a refuge for their assets.

Secondly, the expansion - both economically and in quality - of the services Singapore offers is attractive to investors from the neighbouring countries, who are fascinated by this beacon of material success. Thirdly, along with Hong Kong and Taiwan, the city state is one of the main pillars of the Chinese diaspora with links of kinship, business and clientelism extending throughout and even beyond the region. Fourthly, the internal markets of the ASEAN countries - including that of Indonesia, which is by far the biggest but also the least developed - offer only limited outlets for sophisticated products, and present some difficult problems, such as high production costs, lack of skilled labour and customs dues that penalise exports. Finally, obtaining an interest in the industrial and tertiary fabric of Singapore has allowed the neighbouring countries to have access to efficient services, various modern techniques and a more direct acquaintance with the demands of international markets (Ng, 1986).

The question that needs to be asked is whether or not the tendency will be for ASEAN investment in Singapore to diminish? There is no sure answer, but Singapore's policy of discouraging local concentrations of labour-intensive industries and of encouraging investment in the ASEAN countries suggests that the answer may turn out to be positive. The high cost of setting-up in Singapore and the loss of income to the countries of the region from sales of energy and raw materials show a similar tendency. On the other hand, the uncertain economic and/or political outlook for its regional neighbours gives Singapore a privileged status in the eyes of the business circles in those countries, as a safe haven for capital and a hub of services and technologies capable of responding appropriately to their ambitions as they themselves are seeking to diversify the bases of their economies (Lim, 1988).

Table 5.5
Investment commitments in manufacturing
by country of origin

Gross fixed assets (nearest S\$ million)											
Country	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
	(1)			(2)							
USA	505	674	533	571	805	427	443	543	586	520	1054
Japan	135	212	73	166	166	244	493	601	691	541	708
Europe	360	228	421	394	325	201	218	285	358	544	435
EC	269	166	386	338	318	180	204	241	345	525	395
- of which											
UK	129	83	283	207	186	69	93	42	56	174	89
Netherlands	1	1	62	99	70	75	57	70	82	174	72
Germany	69	11	31	12	14	20	16	90	46	26	165
France	18	1	1	6	-	15	27	15	86	106	60
Italy	45	62	2	5	44	-	5	22	68	32	-
Other EC	6	6	5	7	2	1	4	0.2	4	11	6
Switzerland	35	17	22	15	2	4	7	27	10	1	32
Sweden	53	38	11	12	0.3	14	5	8	-	-	7
Other	1	7	1	27	3	0.5	1	8	2	18	-
European Others	187	106	133	137	37	15	34	17	21	19	19
FOREIGN	1189	1221	1162	1269	1334	888	1190	1448	1657	1625	2127
LOCAL	224	641	542	506	493	232	259	295	349	333	266
TOTAL	1413	1862	1704	1775	1828	1120	1450	1743	2007	1958	2484

NB. Data Excludes

1) \$800 million investment commitments in the Petrochemical Complex

2) \$790 million investment commitments in the Petrochemical Complex

Source : Economic Development Board Yearbook, 1990/1991, Singapore.

Investment commitments in the manufacturing sector hit a record high of \$2.4 billion in terms of fixed asset investment. When fully operational, these investments would generate a gross value added of over \$3 billion. Of the total commitments, 85% came from abroad with the US contributing over \$1 billion while Japan and Europe accounted for \$708 million and \$435 million respectively. Local investment commitments amounted to \$266 million.

Investment commitments from the US were for both expansion and new projects. Expansion projects were mainly in the electronics industry while new projects were in the chemicals industry. In the case of Japan commitments were concentrated in the electronics and machinery industries for new and expansion projects.

European investment commitments for 1990 came mainly from the Netherlands, UK, France, Italy and Germany. They were mostly in expansion projects in the electronics industry to produce audio-video consumer products. The pharmaceutical industry attracted the bulk of new investment commitments for the production of active ingredients for medical products.

Local investment commitments were concentrated mostly in expansion projects in the electronics, machinery and printing industries. New projects were recorded in the plastics, machinery and the electronics industries. The Local Enterprise Finance Scheme and Small Industry Technical Assistance Scheme provided financial assistance to local companies to invest in automation equipment and engage consultancy services to improve operational efficiency.

Although Japanese FDI in the manufacturing sector increased rapidly in the 1970s, it did not play as dominant a role in Singapore as it did in the ASEAN countries, despite the Japanese view that Singapore has been the most attractive country for Japan as an investment market among the five ASEAN nations; and the 'exceptionally magnanimous' attitude towards Japanese FDI by the government. One possible explanation for this seeming paradox lies in the differences in the motivation for FDI between Japanese and American MNCs in the ASEAN region. During the 1960s and early 1970s, Singapore's relatively cheap, unskilled, and disciplined labour force and low import tariffs were very attractive to export-oriented US-based MNCs. Conversely, Singapore's small internal market and general absence of tariff barriers made Singapore relatively less attractive to Japanese MNCs since they could supply the market by exports. Prior to 1970, the largest Japanese investments in Singapore were in the assembly of motor vehicles, printing, tyres, and cement, all industries that had some protection by tariff and non-tariff barriers to trade. In 1980, when the government reduced the level of protection, some Japanese MNCs withdrew their investments. Japanese MNCs, however, have also invested heavily in export-oriented industries such as textiles and electronics (Allen, 1973; Nakakita, 1988).

Singapore has one of the most liberal policies towards FDI of any country in the world. Essentially the government makes no distinction between foreign-owned and locally-owned firms. Controls are minimal or non-existent on foreign exchange and licensing, the extent of foreign equity positions, industry (except for public utilities and telecommunications services that are reserved for the government), imports of machinery and raw materials, local content requirements, employment of foreign personnel, ownership of real estate, and acquisitions or takeovers. The government, however, has encouraged (but has not required) local equity participation and the use of locally-produced inputs. There are no anti-trust or other laws regulating competition and no laws on monopolies or market dominance. The government believes that free trade and the market system minimise possible anti-competitive practices by MNCs and their harmful effects. If anything, Singapore's policies towards FDI have become more liberal over time as it has implemented the second phase of its industrialisation strategy.

The policy of encouraging FDI has caused mild protests from some local businessmen who have claimed that the government has discriminated against them in its incentive programmes. The programmes as such essentially did not discriminate between foreign- and locally-owned firms, but

often only foreign-owned firms have had the necessary capital, technology, and access to export markets necessary to qualify for the incentives (Bruch, 1980; Tambunlertchai and Loohawenchit, 1981). This situation offered scant consolation to local entrepreneurs. MNCs have also sometimes been charged with being isolated with few linkages to the economy (importing most of their raw material and component inputs, machinery and equipment and exporting their output), pre-empting local entrepreneurs and stunting their growth, absorbing the highest skilled workers and managers, employing foreign managers (over 20% of all managers, engineers and technicians in Singapore are foreign), and increasing Singapore's reliance on unstable export markets and on decisions made at corporate headquarters abroad.

In light of these problems, in the late 1970s, the government began to encourage foreign investors, especially those from high income countries, to form joint ventures with local entrepreneurs, increase the ratio of local value added to output, and de-package their investments. Table 5.6 shows the principal statistics of manufacturing by capital structure for 1990. Singaporean businessmen who entered joint ventures with foreign partners had a lower failure rate (6% over the last 25 years) than those who had no foreign partners (38%). The prime minister of Singapore, Mr Lee Kuan Yew, stated: 'The bigger and more established an MNC is in his field, the higher his success rate and the bigger his contribution to jobs and GNP.....The less experienced the industrialist and the less advanced his technology, the higher the failure rate.' Not surprisingly, government policy in the early 1980s was to attract large, experienced, technology-intensive MNCs as Singapore moved from labour-intensive to capital- and technology-intensive manufacturing. This policy was successful in attracting major MNCs from the USA, Europe, and Japan in such industries as microchips, disc drives, software cartridges, electronics, compressors, engineering services, and instruments (Asia Research Bulletin, January 1980).

Foreign firms, usually operating via joint ventures, have been identified as playing an important role in the exports of petrochemicals, electric and electronic machinery and textiles industries (Westphal, 1981; Bohn-Young Koo, 1982). Japanese based firms have been dominated in foreign investment in exporting appears to be proportionately more important than its role in the economy overall: the proportion of total commodity exports directly accounted for by foreign firms increased from 6.2% in 1971 to 17.6% in 1975 (Westpahl, 1981).

Table 5.6 shows the increasing dominance of foreign enterprises in the manufacturing sector, and their large size relative to local enterprises.

Table 5.6
Principal statistics of manufacturing by capital
structure in Singapore dollars (millions), 1980-90

1980

Legal status of establishment	Number of establishments	Number of workers	Output	Value-added	Capital expenditure
Total	3,355	285,250	31,657.9	8,521.9	1,861.9
Wholly local	2,153	80,262	4,943.6	1,624.2	264.3
Majority local	368	38,329	3,385.1	1,154.1	208.9
Minority local	318	52,861	4,736.8	1,133.2	246.8
Wholly foreign	516	13,798	18,592.8	4,610.3	1,141.8

1990

Legal status of establishment	Number of establishments	Number of workers	Output	Value-added	Capital expenditure
Total	3,703	351,674	71,333.2	21,606.8	4,184.3
Wholly local	2,508	102,084	10,769.0	3,535.1	744.9
Majority local	329	42,310	6,446.5	2,361.3	481.6
Minority local	245	35,433	9,853.8	2,010.7	450.6
Wholly foreign	621	171,847	44,263.8	13,699.5	2,507.0

Source : Department of Statistics : Report on the Census of Industrial Production, Singapore 1990.

Singapore's economy is built by private enterprise, both indigenous and foreign. Since the colonial era there has been a dualistic industrial structure, comprising large foreign corporate enterprises on the one hand, and a large number of small, highly competitive local enterprises on the other. Both were involved largely in commercial and service activities, with manufacturing becoming important only from the late 1960s (Lim, 1988).

The foreign business community, originally dominated by British commercial enterprises, has since independence become increasingly diversified by nationality and by business activity. It now includes significant numbers of other Europeans, citizens of the United States and Japan, and other Asians, the latter mainly Chinese from countries such as Hong Kong, Malaysia and Indonesia. While the Europeans, Americans and Japanese are concentrated largely but not exclusively in large enterprises, especially subsidiaries of MNCs, the other Asians operate on a smaller scale, frequently in joint ventures with indigenous entrepreneurs, who are also mainly ethnic Chinese (Lim and Fong, 1986).

Local entrepreneurship is abundantly available from diverse sources. Some local entrepreneurs have branched into manufacturing from traditional family businesses in the commercial sector, often in response to the profit opportunities provided by a tariff-protected domestic market. Others have set up

their own businesses after acquiring some technical or marketing experience as employees, often in large foreign firms.

In his speech at the Singapore Business Awards dinner on January 8th 1993, Lee Kuan Yew enunciated the need for Singapore to develop an external wing to its economy:

" In the last four-five years, Korean, Taiwanese and Hong Kong entrepreneurs have moved abroad in a big way mainly because of pressure from their own high labour costs and attraction of new high growth markets abroad. They have invested in Thailand, Malaysia, Indonesia, Vietnam and more massively in China. In 10-20 years these investments will give their GNP a tremendous boost. Unless we do the same, Singapore will not have this external boost.

All successful mature economies have this external dimension which broadens their domestic operations and helps to upgrade their economy

Our track record makes me confident that we have the men and the resources to meet this challenge. We can change our orientation. We can alter our social climate to become more encouraging and supportive of enterprise and innovation. We can enthuse a younger generation with the thrill and the rewards of building an external dimension to Singapore. We can and we will spread our wings into the region and then to the wider world." (Lee, 1994).

It is perhaps because of this growing overseas investment that the Singapore firms account for the largest number of establishments, workers and capital expenditure, and rank second in terms of output and value-added. The majority of these firms, though they are small and tend to be labour intensive and oriented towards the domestic market are able to surpass, the larger, export oriented firms from Japan, Hong Kong and West Germany in terms of value-added. Firms from the United States rank first in terms of output and value-added as they play a dominant role in the electronics field, the largest contributor within the manufacturing sector in terms of output, value-added and employment.

Table 5.7
Principal statistics of manufacturing by major source of capital, in Singapore dollars (millions), 1990

Major source of capital	Number of establishments	Number of workers	Output	Value-added	Capital expenditure
Total	3,703	351,674	71,333.2	21,606.8	4,184.3
Singapore	2,846	145,034	17,303.7	5,929.9	1,233.6
Australia	37	2,349	463.5	170.4	24.7
Hong Kong	50	6,979	450.9	174.9	26.8
Japan	294	68,956	14,454.3	4,191.1	1,046.0
Malaysia	55	2,568	601.2	123.6	22.2
Switzerland	20	2,844	334.9	145.9	22.2
Taiwan	20	1,858	276.4	87.0	30.9
United Kingdom	75	8,145	2,679.5	1,416.2	97.5
United States	170	81,131	24,192.3	7,116.3	1,126.6
West Germany	28	7,768	1,122.9	400.7	70.9
Other European	72	21,233	9,139.7	1,761.3	428.9
Others	36	2,809	313.3	88.9	53.5

Source : Department of Statistics : Report on the Census of Industrial Production, Singapore 1990.

Table 5.7 shows the relative weight of investors of different nationalities in the manufacturing sector. Japanese firms follow in importance after the firms from Singapore and the United States. Among firms of other nationalities, those from West Germany and the United Kingdom rank next in importance. The considerably lower levels of output and value-added are simply a reflection of their concentration in the labour intensive electronics and instrument manufacturing industries. Other European countries also offer some significant results. This, however, probably reflects the heavy investment by the other European nationalities, especially the Dutch, in the large scale, capital intensive, high value-added petroleum refining and electronics industries.

The manufacturing sector in Singapore is clearly dualistic. It is dominated by large, highly export-oriented, more capital-intensive foreign enterprises, particularly from the United States and Western Europe, and in the petroleum and electronics industries. But there are also many small, more labour-intensive local enterprises that support these large firms. They complement rather than compete with the larger foreign owned enterprises. Whereas the foreign firms, with the exception of the Malaysians, are largely export-oriented, the local firms produce mainly for the domestic market. Their output includes not only consumer goods but also intermediate inputs and subcontracted items for foreign owned firms (Lim and Fong, 1986).

Sectors of development in Singapore

Government policies towards domestic savings and investment and foreign direct investment have played a crucial role in Singapore's development. Following the advice of a UN mission, the promotion of foreign direct investment was initially undertaken to increase employment. With unemployment of 46,000 in 1958 and expected increases in the working age population of 53,000 over a five year period, the 1961-63 Development Plan concluded that eliminating unemployment necessitated attracting FDI.

Until the Second World War, Singapore's economic destiny depended largely on entrepot trade. As entrepot trade and the related service sectors did not provide sufficient employment opportunities, unemployment rose to a considerable extent. By 1958, 13.5% of the working age population was unemployed. New avenues of economic expansion had to be found to provide employment and to ensure increases in living standards.

Goh Keng Swee, the mastermind of economic policy at the time, described the situation:

" Taking an overall view of Singapore's economic policy, we can see how radically it differed from the laissez-faire policies of the colonial era. These had led Singapore to a dead end, with little economic growth, massive unemployment, wretched housing, and inadequate education. We had to try a more activist and interventionist approach. Democratic socialist economic policies ranged from direct participation in industry to the supply of infrastructure facilities by statutory authorities, and to laying down clear guide-lines to the private sector as to what they could and should do." (Goh, 1976).

The solution was industrialisation. This meant transforming Singapore's small manufacturing sector which had provided employment for only 29,000 people in 1959. Manufacturing had been concentrated in the processing of primary commodities for export and the production of food, beverages, clothing and some other consumer goods for the small domestic market.

Industrialisation was the central issue in the 1959 electoral manifesto of the People's Action Party (PAP), which has held power ever since. The manifesto listed four advantages and four weaknesses for industrialisation in Singapore. The advantages were said to be a hard-working, resourceful and enterprising people; a favourable geographical position and good sea communications; a large amount of capital accumulated by local enterprise and public authorities; and markets available in the region. The weaknesses were listed as free-port status, which was considered to be disadvantageous to industrialisation; lack of free access to the market of Malaya; relatively small numbers of managers, technicians and skilled workers; and the predilection of entrepreneurs for trading rather than for manufacturing.

To bring about industrialisation, the manifesto emphasised the desirability of establishing a common market with Malaya, upgrading the technological level of industry, encouraging foreign business, and protecting selected industries by tariffs and quotas. Upon coming to power, the PAP-dominated parliament enacted the Pioneer Industries Ordinance, the Industrial Expansion Ordinance and the Control of Manufacturing Ordinance, followed by the establishment of the Economic Development Board (EDB) to promote industrial development. Table 5.8 outlines the tax incentives available to foreign investors in Singapore.

Table 5.8
Tax incentives available to foreign investors in Singapore

1. Pioneer status for approved manufacturing and service activities - exemption of tax on profits; tax relief period of five to ten years.
2. Expansion incentive for approved manufacturing and service activities - exemption of tax on profits in excess of preexpansion level; tax relief period of up to five years.
3. Approved foreign loan scheme for manufacturing and service activities - exemption of withholding tax on interest.
4. Tax concessions for approved manufacturing and service activities - half or full exemption of withholding tax on royalties
5. Export incentive for approved export activities - 90% tax concession on approved export profits.
6. Double tax deduction for expenses on export promotion and development.
7. Double tax deduction for expenses on research and development.
8. Accelerated depreciation allowance.
9. Investment allowance for approved manufacturing and service activities, approved research and development activities, approved construction operations, and approved projects for reducing consumption of potable water.
10. Post pioneer incentive for approved companies enjoying pioneer status or export incentive as a follow up to pioneer incentive - corporate tax rate of not less than 10% for up to five years upon expiry of pioneer or export incentive.
11. 10% concessionary tax on income of Asian Currency Units, off-shore income of insurance companies and income from off-shore gold transactions.
12. Tax exemption on income from approved syndicated loans and syndicated credit facilities.
13. Tax exemption on income of Singapore-registered ships.
14. 50% tax concession on export income of approved warehousing, technical, or engineering services.
15. 50% tax concession on export income of approved consultancy services.
16. 50% tax concession on export income of approved international trading companies.
17. Concessionary 10% tax on income from approved headquarter operations.
18. Venture capital incentive for investment by eligible companies and individuals in approved new technology projects - losses incurred from the sale of shares, up to 100% of equity invested, can be set off against in the investors' other taxable income.

Source : Lim Chong-Yah (1988), Policy Options for the Singapore Economy, McGraw Hill, 1988.

The Industrial Expansion Ordinance of 1959 granted tax relief to existing enterprises that were increasing the production of approved products. Tax relief was provided for a period of five years on a sliding scale, depending on the amount of new capital invested. It ranged from 11% to 15% of profits. The Control of Manufacturing Ordinance of 1959 tried to prevent excessive competition in domestic markets. This was to be done by limiting the number of firms that manufactured certain products

designated by the Ministry of Finance. In 1961, the government established the EDB. The EDB provided factory sites to investors for rental or purchase within industrial estates established for this purpose, of which Jurong Industrial Estates was the largest. EDB also extended medium- and long-term loans as well as equity financing to industrial enterprises, gave technical assistance to industry, and set up industrial training schemes.

Technical assistance included feasibility and market studies, industrial research, the setting of standards and some help with product development and industrial design. EDB also provided technical and managerial training and established training schemes in collaboration with industry. Government departments were instructed to buy from domestic producers whenever their prices did not exceed the prices of comparable imports by more than 10% (Wawn, 1982).

It was soon understood that import substitution in Singapore's small domestic market held little promise. Correspondingly, the number of products subject to import quotas was reduced to 26 in 1968 and to 3 in 1973. In turn, after increases in 1968 and 1969, the number of items subject to tariffs was reduced again, reaching 91 in 1973. Protection rates were never high in Singapore, however. Thus in 1967 the average rate of nominal protection (indicating the joint effects of tariff and quota protection) on domestic sales was 5% and the average rate of effective protection 9%. And, in the same year, export subsidies were introduced that provided incentives to export industries similar to those granted to import-substituting industries, on the average.

Export incentives were granted under the Economic Expansion Incentives Act of 1967 which reduced the company tax rates on profits earned from exports by approved manufacturing enterprises from 40% to 4% for a period of 15 years. The same act lowered the tax on royalties, licenses, technical assistance fees, and contributions to R&D costs payable to overseas enterprises to 20%. The resulting export expansion contributed to rapid increases in employment. As a result, by 1973 the unemployment rate declined to 4.5%, representing largely frictional unemployment. With the easing of unemployment, the policy changed from the attraction of labour-intensive industries to that of high-technology industries. Also, the educational system was reformed and technical training schemes were instituted (SICC, 1981).

In 1972, the government established three training schemes. Under the Joint Industry-Government Training Scheme, the government contributes 50% to the cost of training provided by MNCs and local firms; under the Overseas Training Scheme, firms are supported in sending trainees to industrial countries; under the Industrial Training Grant Scheme, firms with approved in-house training facilities are given subsidies.

By 1986 there was a total of 608 government-linked companies ranging from department stores to shipping yards. In some areas, such as airlines and shipping, government remained the sole owner until recently. In others, government is a major shareholder. The Development Bank of Singapore, for instance, is 48% government owned. In joint-venture businesses the government has been active in steel, sugar, and department stores and has taken an equity share in a wide variety of other enterprises. The government also invests overseas through the Government of Singapore Investment Corporation (Rodan, 1986).

In 1978 the government launched a program, termed a 'Second Industrial Revolution', to change the economic, social, and political face of Singapore (Rodan, 1987). The economic experiment involved restructuring and upgrading into higher-value activities, particularly in the manufacturing sector. There was for three years a corrective wage policy to spur labour productivity. This purpose was to be served by the expansion of educational and training facilities through a corrective wage policy to spur labour productivity, by incentives for investment in R&D, and by the policy of raising wages. The rationale for this strategy is detailed in Singapore's indicative development plan for the 1980s, which set a GDP growth target of 8-10% a year, and identifies manufacturing, trade, tourism, transport and communication, and 'brain' services (including financial, medical and architectural services) as the five pillars of growth.

Both internal and external factors prompted the restructuring strategy. The government planned that incentives for these industries would not only increase GDP per capita, but would also allow Singapore to decrease its reliance on exports of products such as textiles and consumer electronics that faced increased protection in the long run in many of Singapore's export markets and increased competition from countries with lower wages. Internally, the economy was experiencing widespread labour shortages which were likely to become more severe because of the absolutely diminishing pool of new labour entrants. Politically, a strategy of relying on labour intensive activities could not satisfy the rising expectations of workers for better pay which was only possible with the creation of more skilled jobs. Externally, Singapore was beginning to lose its competitive advantage in producing labour-intensive manufactures to other developing countries, and faced the ever-present threat of protectionism in developed country markets. Singapore has combated increased trade barriers for some of its products in high-income countries by diversifying its exports of manufactured products to non-traditional markets in both high and middle income countries and by increasing the range of the products it produces and exports. Moreover the industrial countries continued to grow slowly in the 1980s and Singapore had to find new markets for its exports.

To encourage firms to upgrade and mechanise, the government adopted three sets of policies, of which only one is really new in the history of industrial development in Singapore. These policies were a wage correction policy designed to raise labour costs to promote efficient use of scarce labour,

additional investment incentives for desired industries, and expansion of training and educational facilities for new labour force entrants and workers in industry.

Wage correction policy

Prior to 1972 market forces determined wages in Singapore. To ensure orderly wage changes the government set up in 1972 a tripartite National Wages Council. Since then, wage guide-lines, though voluntary, have strongly influenced wage increases in both the private and public sectors. During and in the few years immediately after the world recession of the mid 1970s, the Council recommended modest wage increases to ensure the competitiveness of the labour intensive export industries. These guide-lines, while helping to keep exports competitive, did not encourage firms to use labour efficiently or to upgrade their operations quickly. As a result, labour shortages intensified and manufacturing productivity suffered, growing by an average of only 2% to 3 % a year until 1979. In 1979 the Council began a three year wage correction policy; i.e recommended high wage bill increases averaging nearly 20% a year, to restore wages to market levels. Workers, however, enjoyed average wage increases of about 14% a year because part of the increase in employer wage bills was channelled into increased Central Provident Fund contributions and into a Skills Development Fund to train and upgrade workers affected by the restructuring strategy. Thus the inflationary consequences of the wage correction policy were minimised. In 1980 the Council introduced the idea of a second-tier payment to reward above-average workers. Because of implementation problems, this idea did not find much favour with employers who dropped it the following year. The government indicated that in future wage increases will be closely tied to productivity gains. The Council's guide-lines will be more flexible to reflect, more fully than in the past, the diversity of productivity gains among firms (Lim, 1982).

The Council's success in minimising industrial conflicts and ensuring wage changes has ironically also produced conditions that might undermine its influence in the future. By strongly guiding wage developments the Council has inhibited the growth of close ties between workers and employers at the company level. Workers increasingly think the NWC, whose policies reflect government priorities, is the body that gives them wage increases. The government's primary role in the NWC also made employers dependent on the Council to assure industrial peace. In consequence, they did not pay enough attention to ways to gain worker loyalty.

Equally important, the NWC eroded flexibility in wage negotiations. Both unions and employers became essentially implementers of NWC decisions. Differences in productivity and profitability among employers were not fully reflected in wage changes, resulting in labour misallocation.

The government recognises that a bigger role for market forces in wage developments is necessary to strengthen worker-employer relations and to improve labour market efficiency. It also recognises that

the NWC still has a role to play in helping the economy to make the transition from a guided wage system to a freer labour market (Lim, 1984).

The wage correction policy has apparently met some success. Employment creation in the economy, especially in the manufacturing sector, has slowed down. National productivity gains doubled to about 5% a year in 1980-81 before slipping to 2% in 1982 largely because of weakening external demand for Singapore's manufacturing exports. In the late 1970s and early 1980s, unemployment continued to fall, wages rose, there was increased competition from other industrialising countries with far lower wage rates, and protectionism increased against some labour-intensive products in Singapore's markets abroad. In response to these trends, the government instituted policies to accelerate the shift of the manufacturing sector away from labour-intensive industries with low value added per worker towards capital- and skill-intensive industries with higher value added per worker. Labour was shifted out of textiles, sawn timber, and food processing into electronics, professional and scientific instruments, and into service industries such as ship and aircraft repair, and services for the off-shore oil industry.

The government encouraged these shifts by investment and tax incentives, training programmes, tariff reductions, government investment and, from 1979 to 1981, mandatory rapid increases in wages and increased payments by firms and workers into the government run pension plan, the Central Provident Fund. The emphasis changed from increasing output and employment to increasing value added per worker and value added per unit of output in Singapore. In its efforts to increase the value added per unit of output of goods produced in Singapore, the government also encouraged forward and backward integration by producers and increased use of locally-produced inputs and capital equipment. In 1983, in line with improved economic performance, productivity growth again rose to nearly 4% and has since maintained an average growth rate of 4.8%

Industrial investment incentives

Despite the extensive network of stable capital in the economic life of Singapore, the government adopted a most positive policy stand towards foreign capital. From the beginning the government welcomed foreign capital almost unconditionally. The government actively identified foreign firms which were likely to find Singapore attractive, and invited their executives to Singapore to display the facilities available and to indicate the government's willingness to receive their investment. It imposed no restrictions on foreign equity participation except in certain industries like banking, newspapers and residential properties; no restrictions on remittances of earnings, or repatriation of capital; and relatively minor restrictions on the employment of suitably qualified foreign professionals and skilled workers.

The reasons behind the adoption of such a policy lay in the relative weakness of Singapore's domestic capital. As an entrepot centre, Singapore possessed a business community more oriented towards trade and service activities rather than manufacturing. As a creation of colonial rule, Singapore had few sizeable businesses which were domestically owned. To promote industrialisation the government reasoned it would be quicker and more efficient to invite foreign participation, rather than nurture local capital out of its underdeveloped situation.

Singapore was in a great hurry to industrialise, to restructure the economy away from the stagnating entrepot trade and to combat large scale unemployment. But it did not have the wherewithal to unbundle the FDI package and to obtain the capital, technology and managerial and marketing expertise independently and efficiently. For such an infant industrial economy anxious to leap into international markets, a heavy dependence on MNCs with their well established marketing network was unavoidable (Lim, 1988).

Singapore's economic growth had depended very much on the prosperity of Malaysia and Indonesia, for which it acted as a service centre. By inviting MNCs to use Singapore as an off-shore production platform, Singapore lessened its dependence on its two neighbours. Besides, the economic ties with powerful nations gave Singapore a greater sense of security (Yoshihara, 1976).

To stimulate investment in desired high-value activities, the government has modified old fiscal incentives and introduced new ones. The basic tax incentive was, and still is, pioneer status which exempts from tax company profits for a period of five to ten years, depending on such factors as the level of investment, its capital and skill intensity, research and development spending, and so on. Pioneer status can be granted to deserving projects even if the investment is less than S\$ 1 million. The period of exemption from company tax can be longer than ten years for projects involving advanced technology and long gestation periods (SICC, 1981).

A second important incentive, first introduced in 1967 and liberalised since then, encourages exports by taxing approved export profits at 4% rather than at the usual rate of 40%. The normal incentive period is five years, but it can be as long as fifteen years for projects with fixed capital expenditure of over S\$150 million, provided Singapore permanent residents own at least 50% of the paid up capital.

Firms that do not qualify for pioneer status or export incentives can obtain an investment allowance which allows an approved manufacturing or technical servicing project a tax credit of up to 50% of new fixed investment in plant, machinery, and factory buildings. The credit can be set off against profits of the company for the year in which the capital spending takes place.

In addition to pioneer status, export incentive and investment allowance schemes, the government has a variety of other incentives to encourage plant expansion, automation, computerisation and research and development spending. Capital equipment can be completely written off in five to ten years, plant and machinery for research and development can be completely depreciated in three years, and the purchase of computers in one year. Double deduction of Research and Development spending is permitted, lump-sum payments for manufacturing licenses can be capitalised and written off in five years, and an investment allowance of up to 50% of the capital investment in research and development is available (Wawn, 1982).

A capital assistance scheme was set up in 1975 with a budget of S\$100 million to provide equity and/or loan capital to industrial investors with specialised projects that will benefit Singapore economically and technologically. The Economic Development Board (EDB), which administers the scheme, also has a small industries finance scheme to help small firms to upgrade their operations and diversify their product lines. Local firms are also eligible for small development grants under a product development scheme administered by the Board.

In legislation, all the incentive schemes except those aimed specifically at small or local firms are available to both local and foreign enterprises. In practice, however, foreign enterprises which dominate the manufacturing sector in terms of value-added and exports have benefited more than local firms because of their larger investments and higher technology levels (Lim and Fong, 1986).

Compared with the 1960s and 1970s investment incentives are now more selectively awarded. Favoured projects are those that are technologically sophisticated and also capital and skill intensive. The EDB has drawn up a list of industries for priority development. The list included industries making such products as computers, instrumentation and industrial controls, telecommunication equipment, advanced electronic components, solar cells and optical fibres, precision machine tools, photographic and optical instruments, medical instruments and devices, office equipment, industrial machinery including robotics, oil-field equipment, aircraft components, ship machinery, diesel engines, mining equipment, speciality industrial chemicals, pharmaceuticals and engineering plastics.

Besides planning to attract investment in priority industries to broaden Singapore's industrial base, the government is encouraging local manufacturers who cannot pay market wages to relocate to other countries. The relocation of such firms, it believes, will not only help neighbouring economies but also give industries in Singapore ready access to key inputs. It will also encourage with loans and incentives the expansion of supporting industries to link-up with high value-added industries. In short, the Singapore government is clear about the industries it wants and the adjustment that both local and foreign firms must make to remain viable in Singapore in the future.

Expansion of training and educational facilities

A third vital component of the restructuring strategy is the accelerated expansion of educational and training opportunities not only for new labour force entrants but also for workers already in industry. With the emphasis on skill and technology upgrading, post-secondary technical and professional training has become a high priority of government policy.

Singapore's educational transformation has been extremely impressive. During the mid 1950s only one in two children had even primary education. Despite the fact that today nearly 90% of children have to start their school careers by learning English, the English-based O-Level success rate is claimed to be a quarter higher than Britain's. Dr Tay Eng Soon, minister of state for education, admits that the education system is highly competitive and meritocratic - 'but no more so than the UK' (Wawn, 1982).

The demand for graduates still exceeds the expanding supply - particularly in computer science - and the fastest growing investment in further education is in sub-graduate technical training. There are three youth training centres in computerised manufacturing technology, with courses ranging from design to robotics, plus technical institutes sponsored by French, German and Japanese firms. Although Britain is now only second to America in its investment in Singapore, the only formal British involvement in that training is a computer institute established in 1983 through collaboration between the British Council and the British computer company ICL.

Apart from expanding training institutions that prepare new entrants for the job market, the government is actively encouraging the expansion of training opportunities for workers already in industry, especially the half million workers with little or no education. It has developed a Basic Education for Skills Training (BEST), which was introduced to raise the literacy and numeracy levels of unskilled and semi-skilled workers, so that they could then be retrained to operate computer-related equipment. That produced a 92% success rate from the first year's 22,600 students. Companies that run retraining programmes of their own are encouraged by both grants and tax relief. Equally, firms that do no training are penalised (Lim and Fong, 1986).

Government training and educational programmes are not restricted to Singaporeans only. Because of the declining number of qualified Singaporeans the government has increased the intake of foreign students into post-secondary and tertiary institutions. At the same time, it is encouraging foreign skilled and professional workers to settle in Singapore, and encouraging highly educated women to marry and have more than two children. It has also instituted policies such as flexible working hours, part-day work etc to induce more women to join the work force. The long-term aim is to expand the locally available supply of skills needed for a modern industrial economy, and not to become dependant on unskilled foreign labour. High dependence on unskilled foreign workers, the

government believes, not only retards industrial restructuring but also creates problems of integration, especially if the foreign labour is imported from countries whose populations have different social and cultural characteristics from that of Singapore.

Summary

The balanced nature of Singapore's economy and its past development allowed the government to take what it realised was a calculated risk of decreased growth in the manufacturing sector in the short run in order to shift the economy onto a path it hoped would lead to sustained long-term growth. The sectoral balance and stability that have accompanied Singapore's rapid growth augur well for its growth prospects in the future since Singapore is not dependent on only one sector to drive its growth. As a consequence, Singapore was able to be more daring and innovative in its sectoral development strategies since problems in one sector could (potentially) be offset by successes in others. Moreover, since development will largely come in the future, as it has in the past, from intra- rather than inter-sectoral reallocation of resources, growth can be accomplished with less disruption, fewer adjustment costs, and a lower risk of misallocation of resources.

In general, the government of Singapore implemented its overall development strategy through the private-enterprise market system and devoted its efforts to influencing the macro-economic environment - tariffs and non-tariff barriers to trade, the exchange rate, taxation, savings, the investment climate, finance, labour relations and wages, human resources and infrastructure development - so that private enterprises would be attracted to investment in industries in which Singapore had a comparative advantage and the private sector could successfully fulfil the central role it had been given. The government, however, has also invested as a sole owner and joint-venture partner in areas in which private investment was not forthcoming to the desired extent - steel, petrochemicals, shipyards - in industries that were natural monopolies - utilities, water, transportation and port services - and in infrastructure development - the port, roads, and industrial and housing estates.

Some of these enterprises competed directly with privately owned firms, but in general they were not seen as a threat to the private sector, although occasionally there were complaints of unfair competition. Once a government owned enterprise has become economically viable, often part of its equity has been sold to the public. Despite this direct involvement at the micro-economic level, the government has remained firmly committed to fostering private enterprise and to the competitive market system as the means to achieve economic growth and resource allocation.

Chapter 6

Multinational Corporations in Singapore

The effects of MNCs on host countries have been widely studied in recent years. It is often believed that MNCs tend to produce and transfer more technologies than local firms, and in consequence play a more important role in the process of technological change and development. At the same time, it is also argued that MNCs tend to produce and transfer inappropriate technologies to the host developing countries and thus hinder development. Therefore, the relationships between MNCs in the manufacturing sector and domestic enterprises should be examined as well as industrial structures in host developing countries. There are two broad sets of relationships involved, both of which are of significance for understanding the effects of MNCs on host economies and to the formulation of policy. The 'direct' relationships that MNCs strike up with local suppliers or purchases (backward and forward linkages in the Hirschman sense) can constitute powerful mechanisms for stimulating, or retarding, economic, and particularly industrial, growth in developing countries. The 'indirect' effects that the entry and operations of MNCs may have on local industrial structure, conduct and performance may be equally important: MNCs may change the nature and evolution of concentration; they may affect the profitability and growth of indigenous firms; they may alter financing, marketing, technological, or managerial practices of the sectors that they enter; they may, by predatory conduct, drive domestic firms out of business; and so on (Dunning, 1985).

The continuing debate on the costs and benefits of MNCs for host countries has touched upon several of these issues, but the outcome has, in the absence of sufficient empirical work of real value or relevance, remained unclear. Policy making has continued to rely on generalisations drawn from scanty evidence, or, more commonly, on a priori beliefs about the behaviour and impact of the MNCs. This section examines the role of MNCs in Singapore and the extent to which they have contributed to the economic development.

Industrial structure, conduct and performance

Before considering the empirical evidence of the impact of MNCs on the economy of Singapore a brief examination should be given of the approaches to study the effects of foreign investment on host countries. Economic theory provides us with two approaches to study the effects of foreign investment on host countries. One is rooted in the standard theory of international trade and dates back to MacDougall (1960). This is a partial equilibrium, comparative-static approach to show how the gain from marginal increments in foreign investment would be distributed. MacDougall's main findings can be summarised as follows: an inflow of foreign capital increases total real wages of labour. Most of the labour's gain, however, is merely a redistribution from domestic owners of capital, since the profit on total capital falls as a result of the capital inflow. In relation to the profits accruing to the foreign capital the host country's gain from the capital inflow is relatively small. According to MacDougall, however, there are other, possibly important benefits that may be obtained by the host country. "The most important direct gains from more rather than less private investment from abroad seem likely to come through higher tax revenue from foreign profits (at least if the higher investment is not induced by lower tax rates), through economies of scale and through external economies generally, especially where domestic firms acquire 'know-how' or are forced by foreign competition to adopt more efficient methods" (MacDougall 1960, p 33).

The other approach departs from the theory of industrial organisation. This approach was pioneered by Hymer (1960) and has since been developed by Caves, Dunning, Kindleberger and Vernon among others. The starting point here is the question why firms, on the whole, undertake investment abroad to produce the same goods as they produce at home. The answer has been formulated as follows: "For direct investment to thrive there must be some imperfection in markets for goods or factors, including among the latter technology, or some interference in competition by government or by firms, which separates markets" (Kindleberger 1969, p13). To be able to invest in production in foreign markets a firm must thus possess some asset in the form of knowledge of a public-goods character - product and process technology or management.

A firm investing abroad therefore represents a distinctive kind of enterprise and, according to the industrial organisation approach, these distinctive characteristics are pivotal when analysing the foreign investment's impact on host countries. MNC entry represents something more than a simple export of capital into a host country, which is generally the case in models rooted in trade theory. Particularly for underdeveloped economies this consideration is of importance, since such economies have a very different structure from the capital exporting ones. In many underdeveloped economies the domestic enterprises are relatively small, weak and technologically backward. These countries also differ from the developed ones in such aspects as market size, degree of protection and availability of

skills. The entry of MNC subsidiaries into underdeveloped countries may therefore have effects, both positive and negative, which are substantially different from the effects that entry into a developed country gives rise to, since the latter is assumed to be more similar to the capital exporting country.

Although the trade theory approach and the industrial organisation approach are not mutually exclusive, they emphasise different effects. Trade theorists are mainly interested in direct effects of foreign investment while scholars following the industrial organisation approach put more emphasis on the indirect effects or externalities. The latter's analyses of costs and benefits from foreign investment generally deal with issues which can only be resolved on empirical grounds. Some are interested in what technological benefits the host country might gain from foreign investment while others emphasise export markets.

The trade theory approach does not take into account significantly enough the differences between foreign direct investment and other types of capital inflows from abroad. Foreign investment, rather than provide the recipient country with a capital inflow only, "represents entry into a national industry by a firm established in a foreign market" (Caves 1971, page 1). Foreign entry may therefore influence both the structure of the host economy, as well as the conduct and performance of host country firms. Furthermore, international investment is dominated by large MNCs that, in many respects, are distinguished from the 'ordinary' firms used in pure competitive trade models. These models therefore sometimes miss the core of the problem. Work has been done combining the analytical tools of trade theory and industrial organisation (Helpman 1983 and Markusen 1982). Finally, the comparative static approach, as such, has limited value for studies of the externalities that are relevant in a development process.

The industrial organisation approach is also unsatisfactory in many respects. The most important shortcoming arises from the lack of theoretical analysis. The empirical school has predominated in the studies of costs and benefits from foreign investment. In many areas there is, in fact, no a priori way of knowing whether MNCs contribution will be positive or negative.

The authorities in Singapore took advantage of foreign investment in restructuring Singapore's manufacturing sector and overall development from a low wage and low productivity economy to a relatively high wage and high added value economy. The authorities did not hesitate to abandon whole low wage sectors of the economy to outward FDI of their own, in order to allow for higher added value productions at home. Thereby the government made use of certain political authoritarianism and of wage controls. But it did not regulate specifically inward or outward FDI, but rather the macroeconomic environment. This is a rather unique precedent in the developing world (Financial Times, 29th March 1993).

The indirect effects of MNCs on host countries can be conveniently reviewed under the standard industrial economics format of structure, conduct and performance. While there exists a multitude of issues of interest here, only those which have aroused concern in the literature will be mentioned here. The objective of this study is to analyse various aspects of foreign investment by examining the statistical relationship between a number of structural variables and the sectoral distribution within the manufacturing industry. Using Dunning's adaption of the 'industrial organisation approach' (1973), it will be possible to show that the ownership advantages of multinational corporations have assisted Singapore's economic restructuring towards higher allocative and technical efficiency; and that multinational corporations have adjusted to changing locational advantages of Singapore's resource endowments rather more positively than national firms.

Structure

There have been few systematic studies comparing the industrial structures of developing countries or analysing the structures of particular developing countries. This is because it is notoriously difficult to trace the exact causal relationships between industrial structure, the conduct of firms, and their performance, all of which seem to interact in complex ways. Given the nature of data in developing countries, moreover, it may be expected that studies of the impact of MNCs on the structures of host countries would face severe informational and methodological problems. The literature on MNCs in developed countries is not clear on the nature of their effect on industrial structures: initially the entry of foreign competition may reduce the existing level of concentration, but in the longer run the oligopolistic nature and larger size of the MNCs may well increase it. The facts are that industrial concentration has tended to increase in developed countries, and that the growth of MNCs has taken place mainly in sectors in which they are active. However, it is not clear to what extent MNCs have contributed independently to concentration (by, say, unwarranted takeovers or predatory behaviour based on advantages conferred by size or financial power), as distinct from simply embodying or transmitting changes caused by technological, marketing, financial, or organisational developments. Thus, efficient production and trade may, in some industries, require larger firms and increased competition over time; financial or economic factors may cause takeovers or mergers independently of the nationality of firms; marketing and R&D economies may compel larger size; and so on - these factors must be disentangled from MNC presence before their separate effect is apparent.

Newfarmer and Mueller (1975) used data from a sample of 197 US MNCs to analyse the degree of denationalisation in 1972 in Mexico. They found that of the 100 largest firms, 61 were foreign (of which 39 were US); of the 300 largest firms, 150 were foreign (97 US). Newfarmer and Mueller also provide data on Brasil, where the US accounts for 36% of foreign capital stock, and where of the 500 largest non-financial corporations in 1972 MNCs number 158 (US firms 59). Some data on Argentina was given by Sourrouille (1976), who found that foreign firms contributed some 30% of total manufacturing output in 1970, far more than 20 years previously. The data for Singapore in 1990, on the 1000 largest corporations, shows that 618 were foreign owned, 244 of which were Japanese owned, 116 were US owned, with 31 joint ventures.

The general upshot of the work done seems to confirm a priori expectations, that MNCs are a significant and growing force in the manufacturing sectors of most developing countries, that they are present in industries with degrees of concentration, and that they are generally larger than domestic private firms. MNCs flourish in sectors that are marked by high levels of oligopoly, but the causes of oligopolisation may well lie elsewhere, in scale economies of production, R&D, marketing, finance, or some such factor: to the extent that several modern industries are inherently oligopolistic, the presence of MNCs may not as such cause higher concentration. However, it is quite plausible that in

developing countries their entry does speed up the natural process of concentration, and that the weakness of local competitors, with the exception of enterprises fostered by the state, enables them to achieve a much higher degree of market dominance, in sectors in which they are active, than would be the case in developed economies.

Allocative impact

Under the assumptions of neo-classical trade theory, a country's economic welfare will be optimal when it allocates its resources in a way which best exploits its comparative advantage; that is where its international competitiveness - as revealed, for example, by its share of world exports or export-import balance - is most favourable. In exchange for the exports so generated, the resources of other countries are used to provide the importing country with the goods it is relatively least suited to produce. The examination of comparative advantage as 'revealed' by international trade data, even from a dynamic viewpoint, is not in itself sufficient to suggest the appropriate economic structure for a given country. The availability of factor endowments and their possible upgrading also needs to be taken into account.

From the viewpoint of MNCs foreign production is likely to be favoured (i) the greater the ownership advantages such firms perceive they possess over their competitors, (ii) the greater the incentive to use these advantages with immobile resources located in a foreign country, and (iii) the more imperfect the markets for channelling intermediate products generated or used by MNCs across national boundaries.

From the perspective of countries wishing to maximise the benefits of international economic involvement, inward direct investment should be directed to those sectors which use the kind of mobile specific advantages with which non-resident firms are favoured, but which need to be used in conjunction with immobile resources with which the recipient country, is comparatively well endowed.

The first hypothesis states that foreign owned MNCs will set up production in those sectors of the economy which are the most internationally competitive. Several authors try to relate the impact of MNCs to various measures of competitiveness. The most widespread used, in one form or another, is Bela Balassa's revealed comparative advantage, (RCA). All country studies agree that foreign affiliates, relative to indigenous firms, tend to concentrate their activities in sectors in which the RCA ratio is greater than one and increasing over time. Some studies, notably those of Belgium (Van Den Bulcke, 1985), the UK (Dunning, 1985) and Japan (Ozawa, 1979), examine the extent to which MNC activity concentrates in high value sectors. Although the evidence is by no means conclusive, it is highly suggestive, and especially so in the three countries mentioned as well as in the results of the

present study. Therefore, it is expected that foreign affiliates tend to concentrate their activities in sectors in which the RCA ratio is greater than one and is increasing over time.

The second hypothesis relates to the extent to which MNCs are, in some sense, better allocators of resources between sectors than national firms. Here, much depends in which sectors the MNCs perceive they have an ownership advantage over their foreign competitors and whether the productivity advantages originate from the possession or use of mobile or immobile resource endowments. Two measures of allocative efficiency are taken, productivity and profitability. The index of productivity used is gross value added, though ideally one would have preferred a total productivity index. Profitability was defined as a profit/gross sales ratio. Thus it is hypothesised that foreign owned MNCs will produce in those sectors which are of above average productivity or profitability.

Problems in evaluating or predicting the impact of MNCs on economic structure arise due to market failure in the product market which may be government or market induced. MNCs respond both to government signals and to market structures, and influence resource allocation accordingly. These may not always operate as neo-classical theory would suggest. It is possible that import controls may lead to investment being inefficiently directed, while MNCs operating in an oligopolistic market framework may operate less than optimal strategies.

Technical impact

The second way in which MNCs may impinge upon economic structure is by affecting the efficiency of sectors in which they participate. MNCs will invest in those sectors in which they perceive they have the most technological and other advantages. It may therefore be reasonable to hypothesize that these advantages may result in higher productivity ratios - particularly labour productivity ratios - as many of the advantages are capital or technology intensive and labour saving. Value added per worker was used as the measure of productivity.

Adjustment impact

Finally, MNCs may impinge on economic structure according to whether they assist or inhibit the reallocation of resources in response to changes in demand or supply conditions. Inward FDI, for example, might aid structural adjustment if it was directed to those sectors producing goods for which the domestic market and international demand was growing the fastest. Structural adjustment in most developed industrial economies has taken the form of reallocation of resources towards technology and/or human capital and information intensive sectors, that is, higher value-added activities; such a reallocation has occurred both within manufacturing and service sectors and between these sectors. Four contributing factors can be pin-pointed to such changes - three on the supply side and one on the demand side. The first is the emergence of the NICs. Here, theory would suggest a resource

reallocation away from labour intensive and low skill sectors into technology intensive and high skill sectors, and/or to promote labour saving innovations in the former sectors. The second change is technological advance, particularly in the area of information technology and changing factor cost ratios which is prompting a similar pattern of resource reallocation. The third change, allied to the previous two, has been the pressure to reduce inefficiency and to encourage rationalisation of sectors. The fourth factor has been the shifts in consumer demand towards higher income goods, in so far as the direction of MNC investment is often from higher to lower income countries.

The hypothesis to be tested is that the ownership advantages of MNCs enable them to be better choosers of growth sectors or to create growth, and/or allow them to redirect their attention to those sectors which are becoming more productive and or internationally competitive.

The next hypothesis examines the extent to which MNCs adapt to changes in economic structure. MNCs will produce in sectors in which the RCA ratio has most improved, and productivity has most increased. Value added per worker was used as the measure of productivity. Total factor productivity is the correct measure, but it cannot be calculated as the data is not available to estimate the production functions of each industry.

There is one other structural aspect of MNCs which requires consideration. This concerns the role of MNCs as coordinators of separate economic activities across national boundaries, and the effect this has on economic structure. While it is an inherent feature of MNCs that they internalise international intermediate product markets, they may also impinge on such markets within a country and on final goods traded between countries. This market replacing effect is inadequately captured in the statistics but may have far reaching implications both on the type of economic activity carried out and on its determinants. Theory would suggest that MNCs will tend to concentrate in sectors in which there are most opportunities for minimising transaction costs. Data on such market replacing activities are extremely limited. However, it might be reasonably argued that the greater the degree of product or process diversification within MNCs, and the more they practise product or process specialisation between countries, the more likely the structural impact of MNCs will be of concern to those countries that do not wish to identify themselves with the resulting international division of labour. This may be illustrated from just two aspects of internalisation: (i) vertical integration in Singapore, and (ii) international product or process specialisation between different parts of the same MNC in different countries. Therefore, it is hypothesised that MNCs will tend to concentrate in sectors in which they are vertically integrated, or which offer opportunities for intra-industry trade.

Analysis of results

Data availability

The empirical investigations to be conducted in this section are based on data from the Singapore manufacturing industry. Singapore is both fairly industrialised and influenced by MNCs. In this industrialisation process, foreign capital has played an important role. The foreign influence on the Singapore economy is considerable, and more than half of the industrial output is produced by MNCs. It was hoped that a direct comparison between locally owned industries and foreign owned MNCs operating in Singapore could have been made, but proved impossible due to a lack of available data. An attempt to gather the information from a questionnaire survey sent out to a number of Singaporean firms was undertaken, however the response was inadequate for the investigation in question. The Economic Development Board was able to provide the comprehensive statistics on the activities of the MNCs for this study. The data used covered the entire manufacturing industry divided into twenty broad industry groups, at the three-digit ISIC level.

The commodity classifications used were:-

311	Food
313	Beverage
321	Textiles & Textile Manufactures
322	Wearing Apparel Except Footwear
323	Leather & Leather Products
331	Sawn Timber & Other Wood Products
341	Paper & Paper Products
342	Printing & Publishing
351	Industrial Chemicals & Gases
352	Paints, Pharmaceutical & Other Chemical Products
353	Petroleum Refineries & Petroleum Products
357	Plastic Products
369	Non-Metallic Mineral Products
381	Fabricated Metal Products, Except Machinery & Equipment
382	Machinery Except Electrical & Electronic
383	Electrical Machinery, Apparatus, Appliances & Supplies
384	Electronic Products & Components
385	Transport Equipment
386	Instrumentation Equipment, Photographic & Optical Goods
390	Other Manufacturing Industries

The empirical investigations conducted were based on data from the manufacturing industry of Singapore for the year 1990, and the period 1970 to 1990. Table 6.1 presents the results of the statistical relationship between FDI and a number of structural variables. The structural variables were selected in order to show that the foreign owned MNCs are a significant and growing force in the manufacturing sectors of Singapore and that they are present in industries with degrees of concentration. Data for this study, at the three-digit ISIC level, was obtained from the Research and Statistics Unit of the Economic Development Board in order to test the hypotheses by applying a correlation technique - bivariate normal distribution. A correlation technique was adopted as there is a

problem of causality with a number of the variables. The R-squared is usually of value in analysing a regression model in which a causal relationship between the dependent variable Y and the independent variable X has been specified. Thus, R-squared is interpreted as more than a measure of correlation. Regression and correlation techniques differ in that correlation techniques do not involve an implicit assumption of causality, while regression techniques do. The dependent variable is the variable to be explained or predicted, while the independent variable is the moving force or causal variable. The least squares method would have been a more appropriate technique, but in this case can not be used as it is impossible to determine the causal structure of the model before examining the data.

The notion of causality (and also of causal relations and causal ordering) is essentially a philosophical rather than an empirical matter. Philosophers do not agree on their understanding and definition of a cause and outcome. Theories vary from an extreme 'everything causes everything' (Democrit) to denying the existence of any causation whatsoever (Hume, Berkley) (Charemza and Deadman, 1992).

At first sight it appears that the simple question 'does X cause Y or does Y cause X?' should have a simple answer; in fact questions of causality are very difficult and no universally acceptable definition of causality has yet been developed. Mere correlations between variables are insufficient to establish causation since correlation isn't a symmetric measure, and unidirectional causality is a symmetric concept.

Furthermore, a more temporal ordering is not sufficient either to establish or dismiss causality: that A occurred before B is insufficient to establish that A caused B, and is insufficient to dismiss the possibility that B caused A. The latter possibility could be rationalised as follows: if B is predicted to occur, so that B is expected with a high probability, this may induce the event A now.

It may be argued that concerning temporal causality, a cause cannot occur after the effect; indeed, it is frequently assumed that causes predate effects, but these views are not uncontentious. Moreover, causal variables are not synonymous with controlled variables: it might be argued that a controlled variable can only be a cause, not an effect, but in the case of policy instruments the policy makers may use feedback rules so that the instruments react both to the present economic environment and currently held expectations of the future environment. This is closely related to the concepts of exogeneity and endogeneity: a classical exogeneous variable may be both a cause and an effect. Causality questions are not confined to time-series data and also arise in cross-section analyses, but formal tests of causality have received little attention and thus are unable to shed light on the present cross-sectional study (Darnell, 1994).

Table 6.1
Analysis of results:
the foreign influence on the Singapore economy

Dependent Variable	Independent Variable	Correlation	T-statistic	Level of significance
Foreign direct investment	Revealed comparative advantage	0.63	3.42	1%
Foreign direct investment	Export/import ratio	0.55	2.76	5%
Foreign direct investment	Gross Value Added	0.96	14.66	1%
Foreign direct investment	Sales	0.55	17.02	1%
Foreign direct investment	Productivity	0.92	3.77	1%
Foreign direct investment	Industry Growth	0.87	7.38	1%
Change in foreign direct investment	Change in export/import ratio	0.54	2.70	5%
Increase in foreign direct investment	Increase in industry growth	0.63	3.38	1%
Change in foreign direct investment	Change in revealed comparative advantage	0.69	2.62	5%
Increase in foreign direct investment	Increase in productivity	0.20	0.84	-
Foreign direct investment	Value added ratio	0.34	1.51	-
Foreign direct investment	Intra-industry trade	0.34	1.21	-
Change in foreign direct investment	Change in intra-industry trade	0.58	1.89	10%

Allocative impact

The correlation between the level of FDI and RCA was 0.63, significant at the 1% level, and the correlation between the level of FDI and the export/import ratio was 0.55, significant at the 5% level. This supports the hypothesis that foreign owned MNCs will produce in those sectors of the economy which are the most internationally competitive.

The Singapore government believes that the causality works in both directions. We accept, of course, that the causal relationship between both variables is difficult to establish; in fact if FDI was primarily oriented towards industries with growing RCAs, it should be underlined that, in several cases, such a trend was itself fostered by the inflow of FDI.

Singapore's small physical and economic size necessitated dependence on MNCs, with their production know-how and established quality standards and marketing networks. The government rationalised that MNCs would enable Singapore to industrialise quickly and efficiently without the necessity of protecting the small domestic market, and it would be too slow and uncertain to depend on traditional local capital (Lim, 1988).

In the mid-1960s the government instituted a strategy of growth through labour-intensive industrialisation. In order to reduce the high unemployment rate the government reduced tariffs and

non-tariff barriers to trade and encouraged labour-intensive manufacturing industries: textiles and garments, and later electrical assembly and parts and shipbuilding (Lee, 1973). This policy faced several problems. Although wages in Singapore were far below those in high-income countries, they were significantly above those in the NICs, which had larger internal markets, yet were engaged in a strategy of export led growth. In order to attract the substantial FDI that this economic strategy required, Singapore offered generous investment incentives to MNCs (Lee, 1977). The government also recognised that stability, especially political stability and a motivated yet passive labour force, would increase the attractiveness of Singapore as a site for FDI. To achieve this situation, the government severely limited the rights of workers to strike and bargain for wage increases and the rights of citizens to engage in radical political dissent (Lim, 1975).

Table 6.2
Foreign Direct Investment inflows into Singapore and
ASEAN, (US\$ millions)

Year	Singapore	ASEAN	% FDI inflow into Singapore
1970	93	352	26.4
1971	116	400	29.0
1972	141	509	27.7
1973	327	645	50.7
1974	230	945	24.3
1975	254	1,199	21.2
1976	186	1,116	16.6
1977	206	1,164	17.7
1978	186	1,116	16.6
1979	669	1,526	43.8
1980	1,138	2,333	48.7
1981	1,645	3,503	46.9
1982	1,298	3,125	41.5
1983	1,085	3,091	35.1
1984	1,210	2,638	45.8
1985	809	1,988	40.6
1986	1,529	2,664	57.4
1987	2,630	3,927	66.9
1988	3,493	6,805	51.3
1989	3,915	8,555	45.7
1990	4,489	11,121	40.3

Source : World Bank, World Tables 1992-1994.

Initially it was the generous investment incentives which led to an inflow of FDI into Singapore. Table 6.2 shows that FDI inflows into Singapore increased from US\$ 93 million in 1970 to US\$ 329 in 1973. The world recession in 1974/75 led to a dramatic fall in FDI into Singapore which continued until 1979. Singapore was no longer receiving the largest inflow of FDI throughout this period. By 1978 Singapore only accounted for 16% of all investment inflows into the region. In 1979 the Singapore Government set about attracting investment into the economy through 'the second industrial revolution'. This strategy of export-led growth headed by exports of MNCs and sectoral

change led by FDI in the manufacturing sector was highly successful in terms of economic growth, if at some cost in terms of worker's rights and civil liberties. The economy boomed, and as it developed a comparative advantage in a number of products, this in turn led to the further increase in FDI both through the expansion of existing MNC activities as well as investment from new sources.

As the economy developed a comparative advantage in a number of commodities this attracted further investment from the MNCs, implying the and increase in the RCA led to an increase in FDI. However, the investment incentives still played a major role in attracting FDI inflows into Singapore, which accounted for over 40% of total ASEAN inflows from 1979 onwards. The only major decline in FDI inflows into Singapore since 1979 was in 1985 - a period of recession when FDI generally declined - falling to US\$ 809 million, with Singapore still accounting for 40% of all investment inflows into the ASEAN region. Since 1987 the ASEAN region has become one of the most attractive investment locations in the developing world and has attracted a disproportionately large amount of FDI US\$ 11,621 million in 1990, 40% of which went to Singapore declining from 66% in 1987 as the other ASEAN countries implemented policies to attract FDI.

The correlation between the level of FDI and gross value added was 0.96, significant at the 1% level, and the correlation between the level of FDI and sales was 0.55, also significant at the 1% level. The extent to which MNC activity concentrates in high-value sectors is highly suggestive, but is by no means conclusive. Much seems to depend on the type of FDI undertaken. Where MNCs allocate their investment to high-value sectors the host community does not always benefit as much as it might, since the rent earned on these activities is appropriated by the parent company.

Technical impact

The correlation between the level of FDI and productivity was 0.92, significant at the 1% level. MNCs may help to raise technical or sectoral efficiency in two ways: by themselves being more efficient than their indigenous competitors, and through linkages, example, and competitive stimulus, upgrading the productivity of their suppliers, customers, and competitors. Foreign affiliates generally record higher productivity ratios than their indigenous competitors. The spillover effects, through example and competition, partly depend on the existing market structure; in the economies and sectors where there has been a strong indigenous presence it has generally been beneficial. In Singapore the local markets are often too small to allow economies of plant size to be fully exploited and for there to be other than a monopolistic or oligopolistic market situation; indeed in some sectors, such as pharmaceutical chemicals, there is evidence that MNCs have squeezed out local firms.

Adjustment impact

The correlation between the level of FDI and industry growth was 0.87, significant at the 1% level. The industries in which FDI increased fastest had a higher increase of export/import ratio than did industries in which the FDI did not increase as quickly. The correlation between change in FDI and change in the export/import ratio was 0.54, significant at the 5% level. There is of course a problem of causality here. Does the observed relationship run from the export/import ratio of an industry in Singapore to FDI, or vice versa: that is, did foreign firms invest in naturally export-oriented industries or did the foreign investment cause these industries to be export oriented? As described in the previous section, the Singapore government has believed that the causality works in both directions. It has formulated policies to attract FDI to industries in which it has identified an export potential. The FDI was positively related to industry growth within the manufacturing sector. The correlation was 0.87. Moreover increases in the FDI stake were positively correlated (0.63, and significant at the 1% level) with industry growth. As with exports, however, there is a causality problem here since FDI comprised such a large percentage of total manufacturing investment.

The correlation between the change in the level of FDI and the change in RCA was 0.69, significant at the 5% level, and the correlation between the increase in the level of FDI and the increase in productivity was 0.20, which was not significant even at the 10% level. There is also a problem of causality here between change in FDI and change in RCA. As previously stated the Singapore government has believed that the causality works in both directions. It has formulated policies to attract FDI to industries in which it has identified a potential comparative advantage.

This supports the hypothesis that MNCs will produce in sectors in which the RCA ratio has most improved, but fails to support the hypothesis that MNCs will produce in sectors in which productivity has most increased. The Singapore government constantly aims to stimulate inward direct investment into the more technology-intensive sectors. It must be remembered that if MNCs are to play a positive and helpful role, the government must create the right economic climate - including the removal of obstacles to redeployment.

Market structure

There is no evidence to support the fact that the affiliates of foreign based MNCs are more likely to concentrate in sectors which are vertically integrated. The correlation between FDI and the value added ratio (VAR - defined as gross value added divided by gross output) was 0.34 and insignificant. Similarly the FDI v IIT hypothesis suggests that there is a positive but insignificant association between intra-industry trade and the foreign participation ratio, with a coefficient of 0.34.

Regrettably, intra-industry data are rarely presented in sufficient detail to allow the separation of vertical and horizontal transactions. However it can be seen that foreign affiliates of MNCs are

strongly concentrated in sectors in which the intra-industry trade ratio rose the sharpest. Examples of categories highlighting this trend include:- paper products and printing, industrial chemicals, machinery except electrical, electrical machinery, and electronic products. These sectors happen to be those in which MNCs are more likely to adopt a global strategy. The correlation between the change in FDI and the change in IIT was 0.58, significant at the 10% level.

Conduct

While there is a vast literature on the theory and experience of firms' conduct in expanding or entering new markets, especially on takeover and merger behaviour, relatively little work in this area has been done on developing countries. Several host governments in developing countries have, however, expressed concern about takeovers of local firms by MNCs; it has been generally felt that MNCs have, in their immense financial and other resources, and unfair advantage over local competitors, and can, therefore, buy them out at a price which understates their true value. Furthermore, MNCs may, by predatory market conduct, stifle local competition, or so emasculate it that local firms are forced to sell out to them, thus speeding up the process of 'denationalisation' and increasing dependence on foreigners. Such fears are not just confined to developing countries; they have been voiced in European countries, and the control of acquisitions by large firms, mostly multinational, remains the major concern of anti-monopoly policy.

The US Tariff Commission's (1973) study of US MNCs noted their preference for entering new markets by mergers or takeovers, and gave various reasons for this preference: immediate access to markets and brand names; control over proprietary technology; access to operating plant and personnel; and valuation at less than true worth. In developing countries the second and third reasons may not be important, but the others may be significant enough to explain Vernon's product life cycle (1979). It was found that by the end of the 1960s almost 65% of 2,904 subsidiaries of 396 US and other MNCs in developing countries had been set up by acquisitions rather than by new investments.

Similar data is not available for Singapore, but it does seem likely that where takeovers by MNCs are permitted, they have been actively used as a method of entry into sectors where successful local firms offered distinct benefits to new entrants, like the established market networks, efficient plant, or a skilled labour force. These factors apply with much less force to high-technology industries, where MNCs would gain little from acquiring local enterprises. If this is indeed true, it would appear that MNC takeovers, generally adding little by the way of technology, may not have been beneficial to host developing countries.

A great deal of the literature on MNCs suggests that they use their strong financial position to gear themselves exceptionally highly in developing countries, thus raising the profitability of their equity investment, and depriving local enterprises of domestic savings, and reducing their exposure to exchange risk. While general presumptions of this sort are too numerous to list, empirical support for them has usually been provided by showing figures on the sources of financing (parent firm, retained profits, local equity, and local/foreign debt) of MNC subsidiaries: in the absence of comparisons with

patterns of financing of the MNCs in their home countries, and of local firms in the host country, however, such figures may be quite misleading.

An aspect of MNC behaviour which has received a great deal of attention is transfer pricing. Transfer prices are the prices that are charged on the transactions that take place within the MNC. The prices that are charged on these intra-corporate transfers can clearly deviate from market prices because trade within the MNC may be transacted outside the sphere of market forces.

For a variety of reasons the host country government may wish to control the external transfer of funds by MNC subsidiaries located within its borders. The MNC, on the other hand, may wish to evade or avoid such restrictions and the parent can ensure the transfer of funds out of a country by raising the price of the inputs that it sells to its subsidiary in that country and lowering price of what it buys from its subsidiary. Such manipulation of transfer prices - that is, the deviation of transfer prices from arms-length prices - may have a number of objectives, (Lall 1973), including reduction of corporate tax liability.

The scope and effectiveness of transfer price manipulation by MNCs vary widely from industry to industry and from one firm to another. Three sets of factors account for this uneven incidence. (Lall 1979). 1) inter-industry variations in the trade component of MNC production; 2) variations in the extent of intra-firm trade as a proportion of total trade by MNCs; 3) variations in the possibilities for manipulating transfer prices.

Point one is self explanatory. With respect to point two, Lall (1979) argued that intra-firm trade was likely to be larger in those industries that are of a 'high' technology (including large R&D requirements, high level of skills, and firm-specific products, designs, etc), have specific marketing requirements and where there is risk and uncertainty attached to open market transactions. Examples of such industries include office machines, plastics, computers, instruments and transport equipment. With respect to point three, Lall argued that the more advanced the firm-specific was the level of technology embodied in a product, and the more discontinuous its supply, the greater was the scope for transfer pricing. Pharmaceuticals provide a major example of transfer price manipulation.

The manipulation of transfer prices in a manner detrimental to the interests of host countries may be extremely difficult to identify and control. It is safe to assume that MNCs will not willingly cooperate in supplying information to the host country governments investigating their affairs. Developing countries will probably not have the personnel with the abilities to deal with these problems, although this will change over time, given the possibility of increased international cooperation in these matters.

Clearly transfer pricing is a problem for all host nations, both developed and developing. Its magnitude should not be underestimated but, on the other hand, it is something that host economies, both individually and in cooperation with one another, can attempt to do something about, and in the longer run it may well be a problem of declining importance.

Performance

There are several issues which may be considered under 'performance', but only the ones which have attracted attention in the context of MNCs will be examined, and which fall within the general scope of industrial economics: profitability, productivity, and the choice of technology. Other issues such as employment creation, part of which comes under the choice of technology, exports or management efficiency are deliberately excluded from this survey.

Size

In terms of size, MNC subsidiaries seem to be much larger than domestic firms. 'Multinational corporations are among the most powerful economic institutions yet produced by the capitalist system', (Dunning 1981, page 3), and this power is partly a consequence of size. Although size is an important criterion for distinguishing multinationals from other enterprises, one should differentiate between absolute and relative size. Certainly the largest firms account for a very significant proportion of the world's stock of foreign investment and they wield substantial economic and political power, with the total sales of many corporations singly exceeding the Gross National Products of many nation states (Linge and Hamilton, 1981). Yet a far wider range of enterprises have become significant as MNCs because of their relative size, in their dominance of particular segments of international markets for specialised products or services.

The USA and the UK have traditionally enjoyed a dominating position as far as FDI and international production are concerned. However, by the late 1970s that position had been eroded by the increased share in the stock of global FDI accounted for by Germany and Japan, and to a lesser extent Switzerland and Holland.

A unique feature of MNCs is their ability to view the world as a single economic unit and consequently to plan, manage and organise their activities on a global scale. MNCs are both products of and contributors to technological developments that have reduced the problems posed by geographical distance. It is the parent company that determines global strategy, decides on the location of new investment, allocates export markets and research and development (R&D) programmes to various parts of the corporation and determines the prices that are charged on intra-corporate transactions.

There are various measures - sales, value-added, capital, employment - which could be used to compare size. Each of them suffers from limitations when used on its own, and ideally a combination of several measures should be used. For reasons of convenience sales and assets have also been chosen as two measures to indicate comparative sizes in this study. The figures must be used with a great deal

of caution as declared company accounts are never a completely reliable guide to the real 'performance' of firms, and much less so when, as with MNCs, some of the important costs are determined directly by the firms concerned. Such uncertainty is not solely owing to financial manipulations on the part of the MNCs. Items such as the amount of depreciation each year, are inherently subject to arbitrary valuation within a fairly wide range, while inflation, which normally is not taken into account, further distorts the value of fixed assets. Other items are liable to 'doctoring' by local, just as much as by foreign, enterprises. These are basic conceptual problems about how such items as 'capital employed' should be defined, to which convention provides a workable but not completely satisfactory answer, (Sen, 1975). And finally, there are the difficulties of comparison and interpretation entailed in using data from a short period. There is little that can be done to resolve such problems, which pervade all studies of this type, and should be clearly borne in mind.

Sales figures have been taken for the year 1990-91. The main drawback of using sales for a comparison of size is that sales in any particular year may be misleading, because of differing rates of capital utilisation. Unfortunately, sufficiently detailed knowledge of rates of capacity utilisation are unavailable for individual firms in a year to supplement the comparisons of sales data, so it must be assumed, perhaps unjustifiably, that these were similar for different industries.

We have already indicated some of the problems inherent in comparing figures for assets. The value of net fixed assets as stated in the balance sheets is not a very good indicator of their real value, because the depreciation methods used by accountants are based on arbitrary conventions and are dictated by the tax system, and because inflation is not fully (if at all) taken into account. The value of current assets may vary from firm to firm according to peculiar and changing market conditions, which could affect the value and quantity of stocks and the volume of trade credit receivable. It may, on the other hand, be argued that such distortions do not greatly affect a comparison of firms in roughly similar conditions, and that an averaging process may cancel out most individual aberrations.

In terms of the sales by Singapore companies, Singapore Airlines, the national carrier, dropped from its dominating role in the number one spot to number three. The blame for this rests squarely on the Gulf crisis and subsequent war wreaking havoc on turnover and profit figures in various industries. Abnormally high and volatile crude oil and product prices following the Iraqi invasion of Kuwait in August 1990 helped revenues at many oil trading houses to soar, with seven petroleum based companies occupying places in the top ten, compared with six in 1991. The others are Singapore Airlines and electronics groups Sony and Matsushita. Singapore Airlines, however, is the only company in the top ten which suffered a drop in both sales and net profits. Singapore's top company in terms of sales in 1992 was Caltex Trading, which was third in 1991. Sales jumped more than five times to S\$13.69 billion. One of the two newcomers to the top ten list was Nissho Iwai Petroleum, a subsidiary of the giant Japanese trading house, which was the second largest company with revenues

of S\$7.7 billion. The other is Nippon Oil which entered at tenth position, having dropped out of the top ten in 1991. In all, ten of the first fourteen companies ranked are either oil companies or oil trading houses, underlying the importance of this industry, the second largest industry after electronics, to the Singapore economy. The top eight in 1991's list have retained their places, while oil trader Idemitsu fell from ninth to fourteenth place and Thomson Consumer Electronics slipped from tenth to twelfth place. Table 6.3 shows the top companies and their rankings for the years 1991 and 1992.

Table 6.3
Top companies : ranked by sales

Rank 1991	Rank 1992	Company name	90/91 S\$'000	89/90 S\$'000
3	1	Caltex Trading	13,688,024	2,540,165
-	2	Nissho Iwai Petroleum Company	7,698,855	4,438,773
1	3	Singapore Airlines	4,948,100	5,093,100
7	4	Cosmo Oil International	3,946,938	1,727,317
5	5	Sony International (S)	3,493,607	1,807,520
2	6	Asia Matsushita Electric (S)	3,353,766	1,807,520
6	7	C Itoh International Petroleum Co	2,605,429	1,730,782
4	8	Mobil Oil Singapore	2,348,190	1,877,783
8	9	Marubeni International Petroleum (S)	2,194,567	1,475,879
13	10	Nippon Oil Asia	1,982,120	1,374,010

Source : Registry of Companies, Singapore 1992.

Seven of the top ten companies were Japanese owned, up from six in 1991, while Caltex and Mobil are American. BP is the highest ranked British company in eleventh position. Total sales by the top ten companies more than doubled between 1991 and 1992, mainly because of a strong performance by the oil based firms, to S\$46.2 billion in 1992 from S\$21.9 billion the year before. However, net profits of the top ten shrank slightly by 3% to S\$1.36 billion, due to Singapore Airlines' 24% plunge from S\$1.2 billion to S\$0.91 billion.

Table 6.4 shows the top companies with the largest asset base, with Singapore Airlines convincingly managing to retain its number one spot in this category. Keppel and Glaxochem are again second and third respectively while United Industrial Corporation in fourth place is the only newcomer to the list, with its subsidiary Singapore Land in fifth place.

Table 6.4
Top companies : ranked by total assets

Rank 1991	Rank 1992	Company name	90/91 S\$'000	89/90 S\$'000
1	1	Singapore Airlines	9,058,500	8,235,800
3	2	Keppel Corporation	4,877,554	3,432,316
2	3	Glaxochem	4,211,849	1,306,359
14	4	United Industrial Corporation	4,211,849	1,306,359
4	5	Singapore Land	3,237,407	2,561,793
8	6	DBS Land	2,919,574	1,684,531
6	7	Neptune Orient Lines	2,916,082	2,494,837
5	8	City Developments	2,855,531	2,536,013
9	9	Glaxo Far East	2,383,321	1,655,258
10	10	Fraser & Neave	2,160,639	1,549,626

Source : Registry of Companies, Singapore 1992.

Table 6.5
Top twenty public listed companies

Rank 1991	Rank 1992	Public Listed Companies	Sales 90/91 S\$'000
1	1	Singapore Airlines Ltd	4,948,100
-	2	Singapore Petroleum Co Ltd	1,571,379
4	3	Keppel Corporation Ltd	1,400,306
2	4	Neptune Orient Lines Ltd	1,333,157
3	5	Fraser & Neave Ltd	1,327,687
9	6	Wearne Brothers Ltd	835,538
5	7	Inchcape Berhad	829,462
17	8	Cycle & Carriage Ltd	827,663
6	9	Intraco Ltd	776,180
7	10	Asia-Pacific Breweries Ltd	766,293
13	11	Natsteel Ltd	748,310
8	12	Amcol Holdings Ltd	718,503
10	13	Times Publishing Ltd	618,762
11	14	Haw Par Brothers International Ltd	582,229
14	15	Singapore Press Holdings Ltd	531,609
16	16	Sime Singapore Ltd	483,739
19	17	Sembawang Shipyard Ltd	435,767
-	18	City Developments Ltd	431,626
15	18	Cold Storage Holdings Ltd	424,619
20	20	Singapore Bus Service (1978) Ltd	397,449

Source : Registry of Companies, Singapore 1992.

Table 6.5 shows the top twenty leading public listed companies. Only five of the public listed companies, all local, made it to the top twenty sales rankings. This is one more than in 1991. The only newcomer was the homegrown Singapore Petroleum Company, the second highest ranked listed corporation, occupying thirteenth place. The others were Keppel (16th), Neptune Orient Lines (18th), and Fraser & Neave (19th).

The general picture conveyed by the asset figures strongly confirms that conveyed by the sales figures: on average, the foreign multinational corporations are substantially larger than the locally owned corporations.

Profitability

While some scattered data are available on the profitability of MNCs in developing countries, (Lall and Streeten, 1977), there are relatively few studies which try to statistically analyse and explain the relative profitability of MNCs and other firms. The aggregate data indicate that MNCs are fairly profitable in developing countries, and on average perform better than local firms. While this accords with the general theoretical consideration that MNCs possess certain oligopolistic advantages that give them an element of market power - and thus superior profitability - not possessed by other firms, it may be misleading if the average profitability of MNCs reflects, not their superior performance, but the fact that they happen to be concentrated in industries with higher profits due to higher risk, greater barriers to entry, better capacity utilisation or higher rates of growth, or that they are larger if size is associated with profitability. If the explanation lies in industrial composition or size, local firms of comparable size and specialisation may show equally high profitability - the fact that they are multinational may not add to earning capacity.

The main problem in studying the profitability of MNCs is the potential for undeclared profits remitted abroad by transfer pricing, which by its nature is practically impossible to detect and allow for. All studies for developing countries mention this, and must be borne in mind when interpreting the results.

As in 1991, Singapore Airlines and Mobil were the only two companies in the top ten on both the sales and profitability lists. Table 6.6 shows the leading profit makers. Singapore Airlines' profit dropped due to the high oil prices during the Gulf crisis, and industry competition has pushed it down to second place in terms of net profits. Switching places with it is the previous runner-up British pharmaceutical group Glaxochem, which is followed by its sister company in third place, with the unique distinction of having profits twice as large as sales in 1991. Singapore Press Holdings and Keppel Corporation in seventh and eighth places respectively are the two newcomers to the list, replacing Hewlett-Packard and Sundstrand Pacific.

Table 6.6
Top companies : in terms of profits

Rank 1991	Rank 1992	Company name	90/91 S\$'000	89/90 S\$'000
2	1	Glaxochem	980,061	1,059,740
1	2	Singapore Airlines	912,800	1,200,600
3	3	Glaxo Far East	495,671	545,204
7	4	Compaq Asia	221,096	136,967
4	5	Petrochemical Corporation of (S)	171,243	278,675
9	6	Mobil Oil Singapore	153,899	115,627
11	7	Singapore Press Holdings	133,374	95,282
15	8	Keppel Corporation	118,202	82,761
8	9	Apple Computer Singapore	114,930	119,171
6	10	GM Singapore	109,948	171,404

Source : Registry of Companies, Singapore 1992.

MNCs will also, as far as possible, attempt to minimise the amount of tax that they pay and will also wish to minimise the risks that they face, although clearly such objectives may be mutually exclusive in many instances. It is not always possible, however, to explain or predict the behaviour of individual affiliates along these lines. Given that the interests of any one part of the MNC are subordinate to the interests of the MNC as a whole, different affiliates may pursue various objectives, all of which may well be consistent, in the long run, with global profit maximisation.

To achieve the objective of global profit maximisation, MNCs have devised a variety of financial strategies and policies. Examples include a heavy reliance on local borrowing and the reinvestment of profits to finance affiliate operations; the takeover of existing operations in the developing countries, rather than the establishment of new ones; and the manipulation of transfer prices. Transfer prices are the prices that are charged on transactions that take place within the corporation (intra-corporate transactions); given that such prices are determined by the MNC itself and not by market forces, they can deviate to a considerable extent from so called 'arms-length' market prices.

Productivity

In the field of development economics there is an extensive literature comparing different performance measures of foreign and domestic firms in underdeveloped countries. In his survey of this literature, Lall (1978) finds that generally these studies tell us that firms operating under domestic ownership are unable to compete with MNCs. It is also frequently contended that foreign firms display greater efficiency because they enjoy better management and possess a technological advantage in superior technique of production.

There is little doubt that foreign and domestic firms in general do perform differently, but it may be questioned whether this is due to ownership advantages as such. All the studies referred to by Lall

show, for instance, that the MNCs are more efficient in their use of capital and labour than domestic firms. However, none of these studies are able to ascertain whether this is owing to ownership or to other factors such as industrial distribution, size, technology and market conditions.

The measurement and comparison of inter-firm productivity is fraught with difficulties. It is not clear how inputs, especially different kinds of labour and capital, and outputs should be measured nor how their relationships should be interpreted. Productivity varies widely with the nature of the industry, the technique of production used, scale economies, managerial efficiency, capacity utilisation, labour-force skills, market power, and so on. (see Bhalla, 1975 and Lim, 1976). Since the purpose of such productivity comparisons, in this case of MNCs with local firms, is presumably to gain an insight into how efficiently firms use labour and capital, ideally one should separate out extraneous factors not related to individual firms' efficiency. There are problems of methodology which need careful handling: simply to compare local and foreign firms, of different sizes, in different industries, facing different market conditions, or using vastly different technologies in the same industry, may be misleading if these factors are not explicitly accounted for.

In recent years, a great deal has been written about the choice of technology in developing countries. In the particular context of the study of MNCs, the debate has, revolved around the introduction of 'inappropriate' - excessively capital-intensive - techniques by foreign firms and the way in which this distorts the choice of technology in the developing economies. The data in the current study cannot even begin to deal with the fundamental problem of whether technologies used by the firms in the study have been 'inappropriate' with reference to social optimum, since it is impossible to postulate what such an optimum would be in concrete terms or whether suitable alternative technologies are actually available in the conditions being dealt with. Nor is it possible to investigate the extent to which MNCs have adapted techniques developed in rich countries to conditions in poor ones. However, it is possible to throw some light on the relative use of capital by the various firms in the survey.

The empirical investigation to be conducted is based on the manufacturing industry of Singapore for the year 1990, using data obtained from the Registry of Companies in Singapore (1992). Capital employed in relation to net sales (the capital-output ratio), has been chosen as an indicator of capital use. Table 6.7 shows the ratios of assets to sales, which have been calculated by applying a correlation technique- bivariate normal distribution - in order to determine the significance of the results by use of a t-test.

Table 6.7
Capital-output ratio

Category	Ratio	Rank
Food & beverage	91.3	4
Textiles	38.8	8
Paper products & printing	97.4	3
Chemicals/petroleum	45.4	7
Metal products	68.7	6
Machinery	82.2	5
Electrical/electronics	157.9	2
Transport equipment	176.3	1
FOREIGN	54.3	
LOCAL	97.8	

Source : Data from the Registry of Companies, Singapore 1992.

From table 6.7 it can be seen that the ratio of total assets to sales is highest for transport equipment and electrical/electronics. The commodity categories with the lowest ratios are textiles and chemicals/petroleum. Thus of the two largest industrial sectors in Singapore - chemicals/petroleum and electrical/electronics it would appear that the former uses relatively less capital in relation to output. In the case of a country like Singapore which encourages inward FDI, capital does not appear to be a scarce resource. Therefore, there is no problem in having industries which require a large amount of capital. However, as Singapore is such an open economy, it is almost impossible in some cases to determine the origins of the capital. The capital required for industry may be raised locally, but it could equally be raised externally.

In terms of country of capital ownership, when looking at the difference between the total asset to sales ratio for foreign versus local industries, it can be seen that the foreign owned corporations have a much lower ratio than their local counterparts. The data was found to be significant at the 5% level. This may have one or both of two explanations: first, that foreign MNCs are as efficient as other firms in terms of utilising their capital for production, but are using techniques which need less capital per unit of output; and, second, that they use the same techniques but are more efficient in achieving higher turnovers on capital employed ('efficiency' in this sense may also be taken to include economies of scale). The kind of information necessary to test the first hypothesis is not available, though it is possible to examine the choice of technique in the context of capital-labour ratios.

To some extent, the possibility that foreign corporations use less capital per unit of output than other firms is contrary to expectations. Foreign corporations do undoubtedly lead in the use of new technology, which usually, but not always, tends to increase the use of capital per unit of output; they are relatively predominant in capital-intensive industries; and there is little evidence that they adapt

their 'core' technologies to different environments. The possibility that they are more efficient seems more plausible: they are clearly larger than the locally owned corporations, and so may reap economies of scale, and their management techniques may be superior to those of other firms.

Table 6.8
Capital-labour ratio

Category	Ratio	Rank
Food & beverage	88.4	2
Textiles	22.1	8
Paper products & printing	54.5	4
Chemicals/petroleum	133.1	1
Metal products	47.0	5
Machinery	46.8	6
Electrical/electronics	63.6	3
Transport equipment	45.3	7
FOREIGN	54.3	
LOCAL	97.7	

Source : Data from the Registry of Companies, Singapore 1992.

The relationship between capital and labour is shown in table 6.8, defined as total assets (book value) to total number of employees. The comparison of foreign corporations and locally owned corporations is more interesting: as with the capital-output measures, the ratios seem to indicate that capital intensity is lower for foreign corporations than for other firms. In other words, foreign corporations appear to be generally less capital-intensive, in both meanings of the term (capital-output and capital-labour ratios), than locally owned corporations. As with the capital-output ratios, the statistical tests for the various ratios of capital-labour show that they are significant, but this time at the 1% level (using the same correlation technique as before). This assumes that wage rates for given kinds of labour in the two groups are similar. Little information is available on this, but impressionistic evidence suggests that foreign corporations may pay somewhat higher rates; whether or not this is sufficient to account for the overall difference, it is impossible to say.

The nature of the data precludes a much more refined analysis, but it would appear justifiable to conclude that, once industrial influences are accounted for, there is no decisive difference in technology arising from the origin of investment. This is hardly surprising, as local firms are almost entirely dependent on foreign technology; furthermore, this general statement is not incompatible with the possibility that foreign MNCs have more modern technology, or influence local firms' choice of technology, neither of which propositions can be tested by the data at hand.

The data does, however, show that foreign MNCs do tend to be more efficient than their local counterparts. Industrial factors seem to be quite important, but several others which have not been tested may equally well be significant in determining these patterns. If better data were available and

greater resources, it might be possible to uncover some interesting tendencies; but as matters are, we must remain agnostic.

Choice of technology

One of the areas of great interest and controversy in the study of MNCs in developing countries has been that of the 'appropriateness' of technology. There are several works reviewing the general literature on the choice of technology and employment creation in developing countries, (Bhalla, 1975; Gaude, 1975; Morawetz, 1974; Stewart, 1974; White 1976).

The transfer of technology is usually seen as a major factor in development. Yet it is generally accepted that, first and foremost, MNCs, at least in manufacturing, transfer older technologies to host countries. Not only does this maximise their profits from R&D but it also ensures greater 'in house' control of the process of technology diffusion. Too much competition might result and too quickly, limiting profits to sustain R&D, if up-to-date technology were transferred and copied. Many US corporations now regret having sold technology licences to Japanese firms in the 1950s and 1960s. Second, frequently MNCs prohibit exports by NICs or developing countries, and even some advanced countries, using the technology transferred: there is much UN documentation on such 'restrictive practices'. While third, a large proportion of equipment transferred to the NICs and developing countries is often considered to be inappropriate on the grounds that it is capital-intensive, causing insufficient job creation in countries mostly with a labour surplus, and usually produces goods suitable for, or capable of, consumption only by the elite classes. This is hardly relevant for Singapore, however, as labour is in short supply, and overall rates of remuneration are high by Asian standards.

Balance of payments

The initial act of direct investment will usually, but not always, involve a capital inflow, which will appear as a credit item in the capital account of the balance of payments. Exports by the MNC will appear as a credit item in the current account. Offsetting these credit items will be a number of items. The activities that the MNC engages in may be import intensive, that is, require the import of capital goods, and raw materials and intermediate goods. The MNC subsidiary is also likely to make a variety of payments to the parent company, including payments for technology, royalties, technical and managerial fees, and contributions to headquarters' overhead expenditure and research and development expenditure. In addition, if it is profitable, the MNC subsidiary, will of course, wish to remit all or part of its after tax profits to the parent or some other part of the corporation.

It is also relevant to note that much MNC FDI involves the takeover of already existing, domestically owned enterprises. MNC FDI is likely to be import intensive, although the extent of import intensity depends, in part at least, on the degree of linkage creation in the host country. In some cases the local economy may not be capable of supplying the required inputs, in that it may not have the technical

resources to produce the input at all or it may be unable to reach the technical or quality standards demanded by the MNC subsidiary. In other cases, tie-in clauses impose a legal obligation on the subsidiary to buy from the parent or some other part of the corporation (Vaitsos, 1974).

Overall, therefore, it is impossible to quantify with any degree of accuracy or reliability the direct and indirect effects of the operations of MNCs on the balance of payments of host economies. Even if there is a large positive effect, as in the case of mineral extraction and export, other aspects of the MNCs' operations may be undesirable - for example, the rate of exploitation of a non-renewable resource may be too high, tax payments to the developing country too low, insufficient employment may be created and so on, although it must be remembered that all these various aspects of the operation of MNCs are open to negotiation. Tie-in clauses increase the import sensitivity of the economy already exacerbated by the process of import substitution industrialisation, and export restrictions prevent the development of new overseas markets and the earning of additional foreign exchange (Hood and Young, 1974).

The developing country government may attempt to alleviate the burden imposed on the balance of payments by profit repatriation encouraging MNCs to reinvest a greater proportion of their profits locally. But if the rate of return on foreign capital, after tax depreciation, is greater than the rate of growth of national income and assuming that these profits are reinvested locally, then foreign capital ownership grows at a faster rate than national income. Assuming a constant capital-output ratio, foreign capital grows at a faster rate than domestic capital, an ever increasing proportion of the domestic capital stock will be owned by foreigners. This process is not likely to be politically acceptable and must in any case end when all capital is foreign owned (Streeten, 1972).

Direct linkages

MNCs can exert a significant influence on both the rate and characteristics of the process of growth and development through the creation of forward and backward linkages with the host economy. Forward linkages refer to the scale of the output of the MNC to domestic firms for use as inputs into their productive process, and backward linkages refer to purchases by MNCs from domestic supplier firms.

It is usually argued that MNCs will establish few linkages with domestic firms. The highly centralised global structure of the MNC and the integrated nature of its global operations, its use of capital-intensive technologies and the nature of the final product, taken together lead many economists to argue that MNCs create a virtual 'enclave' in the host economy, integrating the 'modern', MNC dominated sectors of the host economy with the international economy (Colman and Nixon, 1986).

It is not only ownership as such that determines linkage possibilities in developing countries, but also, and perhaps more importantly, the nature of the technology utilised and the characteristics of the final product. The extent of linkages created in particular countries depends upon the stage of development of indigenous industry, the availability of local skills and technology, institutions and government policies, changes in demand and technology in world markets and their political attractiveness to MNCs. The main benefits of such investment are generally supposed to be employment creation, export promotion, skill and technology transfer, and the stimulation of local linkages. The main costs are the generous fiscal and infrastructural incentives that developing countries have to offer, the socio-political constraints of having to ensure a docile and low-cost labour force, the danger of losing 'footloose' behaviour does not seem to have been realised; fiscal concessions certainly have been generous; MNCs have clearly shown a marked preference for stable regimes with little or no problems; the incidence of 'squeezing' local firms needs further investigation; and export market instability is not a particular feature of MNC exports. On the whole, the benefits seem to have outweighed the costs with developing countries, and many of them are now seeking to attract MNCs or foreign buying groups (Lall, 1978).

Besides the general studies, a number of country studies have discussed export-orientated foreign investment (and subcontracting) for Mexico, Hong Kong, Singapore, the Caribbean, and Taiwan. Nearly all of them have come to favourable conclusions about the net benefits of such activity to host developing countries, but their discussion of linkages as such has remained desultory and unsatisfactory (see Lall, 1978).

Lim and Pang (1976), who surveyed the electronic industry in Singapore, noted that European firms buy a fair amount of their inputs (40% to 50%) locally, while US (under 10%), and Japanese (about 20%) buy much less. This is owing to the fact that US firms were specialised in the semiconductor sector and Japanese firms in high-technology components, beyond the technological capabilities of domestic firms at the time, while European firms manufactured mainly consumer electronics where the scope for local purchase was much higher. However, local products tended to be rather costly, and were purchased chiefly in order to qualify for GSP privileges in selling to Europe. Local firms faced the usual problems of quality, technology, high costs, and so on, and are sometimes assisted by the local MNCs from whom they subcontracted by free technology transfers. Firms which subcontracted to foreign buying groups seemed to face greater problems; their wage costs were higher than Hong Kong or Taiwan so that they were constantly threatened with losing their markets; they complained of little assistance from the government; and they were short of finance and new technology.

UNCTAD (1975) reviewed the electronics industry in developing countries generally, and reached optimistic conclusions about the effects and prospects for subcontracting. It found that several finished electronic products could be successfully manufactured by local enterprises in South East Asia, and subcontracting has led to 'a whole network of small manufacturers that were set up as a result of the backward linkages created'.

Clearly much more evidence is needed on the experience of different industries in different developing countries before it would be possible to generalise about the impact of MNC linkages in export-based industries. It is obvious that substantial linkages have been created, and that in some sectors such as electronics, they have been beneficial to host countries; however, it is possible that in some other industries, like textiles, linkages have been weakening and have had undesirable effects on distribution and welfare.

MNCs are extraordinarily responsive to competitive pressures on product price and quality. Product market and industry factors, and not host country policies, are the major determinants of the production technology they use. The production technology in turn determines the level and pattern of direct and indirect employment created by MNCs. A host country can only influence MNC production technology by providing incentives and the infrastructure support to attract the MNCs it wants. But once the MNCs establish themselves, they will respond primarily to market and industry factors.

The host country should concentrate on developing infrastructure support and finding ways to improve the efficiency of its institutions. Institutional efficiency and good infrastructure reduce costs and uncertainty and encourage MNCs to take a long-term perspective. Because of market and industry factors, MNCs may initially adopt technologies inappropriate to a country's resource endowments. But as they grow, their employment impact will increase too, even though they may become more capital-

intensive, because the increase in production and scale of operation will likely overwhelm the employment effect of rising capital intensity. This suggests that a host country should take a fairly long-term view of the contribution that MNCs can make to its development. Attempts to maximise the short-run contribution of MNCs by requiring them, for example, to buy locally from protected suppliers, can be counter productive. They would possibly encourage MNCs to take a short-term view and reduce their commitment to the country.

Though local suppliers are initially inefficient compared with foreign producers, MNCs must try to assist them in various ways. Their commitment to local purchases is important for the development of an adequate supporting industry, and to the creation of indirect employment. The Singapore experience suggests that a well-developed local supporting industry can help diversify supply sources for MNCs.

Labour market impacts

Singapore's wage costs are many times those of its neighbours, but they are still much lower than those in Europe, the USA and Japan. Despite rapidly rising wages, MNCs continue to set themselves up in Singapore while others already in Singapore continue to upgrade their operations. This is because Singapore's competitive advantage - the product of its many attractions including excellent infrastructure, social and political stability, institutional efficiency - has increased rather than decreased with development. A host country need not fear that rising wages alone will retard employment growth or erode its competitive position. However, it must ensure that the general environment supports MNC expectations that profit opportunities will continue to be available (Financial Times, 29th March 1993).

Even in labour-intensive industries, labour costs form but a small proportion (10%-20%) of total costs. Other costs - materials costs, freight and fuel costs, utilities, housing for expatriates - are much greater. A country's exchange rate also heavily influences both the prices of imported inputs and exports of its MNCs. The host country must pay attention to factors that influence non-wage costs of production if it wants to maintain a competitive advantage in attracting MNCs

The strategy of industrialisation selected may affect the extent of MNC employment creation. Export-led industrialisation may well utilise relatively labour-intensive techniques and thus create more jobs than 'inward-looking' import substituting industrialisation. However, it is also likely to be the case that export oriented MNCs create fewer linkages with the host economy and thus indirect employment creation is likely to be limited (Colman and Nixon, 1986).

Locally Owned Firms

Although data on Singapore's outward FDI do not lend themselves to statistical analysis, they can give impressionistic support to several of Dunning's propositions. Outward FDI by Singapore-owned firms in the manufacturing sector has largely concentrated in industries in which the FDI share in Singapore was relatively low: textiles and garments, food and beverages, leather products, wood products, rubber products, bricks and tiles and clay products. This is hardly surprising. If virtually no locally-owned firms operate in an industry, the amount of outward FDI by these locally-owned firms would not be expected to be significant. Quite the opposite: given the very high FDI share in the manufacturing sector, it is surprising that Singapore's recorded outward FDI was so large relative to that from other low- and middle-income countries. These outward investors have developed firm-specific advantages in product and process technology, management, and access inputs and output markets that have allowed them to invest abroad in competition with other MNCs and locally-owned firms in the host country.

Locally owned firms in Singapore have developed ownership-specific advantages in several areas. Their production has been more oriented towards the domestic market than has that of foreign firms in their industries. Locally owned firms (and to a lesser extent joint ventures) have developed products which are appropriate both to the income level and to the consumer demand segments in Singapore. These product characteristics have often been overlooked by MNCs producing in Singapore for both the local and international market. Such products from Singapore's firms have often been exported to neighbouring countries whose demand patterns are more similar to those in Singapore than to those in the home countries of other MNCs. Rising wages in Singapore and trade protection and other government industrial policies in neighbouring countries have given these locally-owned firms in Singapore the incentive to invest abroad. Singapore's relatively well-developed capital market has facilitated raising capital for the investments. The labour-intensive technology used by the locally owned firms is often more appropriate for the wage levels and capital costs of neighbouring countries than was the production technology of other MNCs. As rising wages and rising foreign investment put pressure on locally owned firms, they were unable to use their advantage in product and process technology to produce abroad in such industries as textiles and garments, machinery, fabricated metal products, earthenware, glass and non-metallic mineral products, plastics, and paper and printing.

Locally owned firms in Singapore have also acquired ownership-specific advantages in upgrading, processing and packaging agricultural and forest and natural resource products as traders and processors of the raw material, both from neighbouring countries for sale in high-income markets and from the USA, Canada, and Australia for sale in neighbouring countries. Government policies in neighbouring countries to upgrade natural resources prior to export and to process imported natural

resources prior to sale have pushed firms in Singapore to invest abroad in these countries. These firms have been able to utilise their firm-specific advantages in product and process technology and their sourcing and marketing systems to compete in these markets.

There has also been considerable disinvestment by some foreign-owned firms in Singapore, especially since the late 1970s. Two factors can be identified to account for this outflow. Firstly, in the early stages of Singapore's industrialisation some firms were attracted to Singapore by its relatively low wages compared to industrialised countries. Rising wages in Singapore and the formation of export processing zones in neighbouring countries with lower wages have led some of these firms to pull up stakes and move to countries with lower wages. These forces have also led some locally-owned, export-oriented firms to invest abroad. Secondly, Singapore went through a mild import-substitution phase in the 1960s during which time some FDI was attracted to Singapore to serve its domestic market. Tariff reductions in the late 1970s and early 1980s largely removed this tariff protection and some of these import-substituters have withdrawn their investments.

One of the most common problems faced in investing overseas was the quality and availability of production and management staff. At the production level, many were of the view that worker productivity was a problem as workers possessed little industrial experience. Training had therefore to be provided as a means to increase labour productivity. Typically, Singapore-based managers and engineers would be sent to oversee the startup operations in the overseas plant. Local managers would then be hired at a subsequent stage. Depending on location and the existence of trained managers, an overseas plant, for example, in Johor, could be entirely managed by local staff. The problem encountered was the difficulty of sending Singapore-based key managerial staff to oversee the overseas plant, particularly at the initial stages. This included the difficulty involved in persuading Singaporeans to be located abroad, as well as the problems of sparing them in the already tightly stretched Singapore operations (Lee, 1994).

A second set of problems was dealing with the bureaucracy, documentation, building selection and construction. For companies used to moving into factories ready-built by Jurong Town Corporation in Singapore, this laborious and time-consuming process was costly, especially if the company had to start from scratch. The seriousness of these problems depended on the host country. Those who had investments in China invariably cited this as a problem, whereas those who invested in Perai, Penang, were able to commence operations within six months, and for Johor, three months. These points may be best illustrated by use of an example of a locally-owned firm: 'Amtek Engineering Ltd.'

Amtek Engineering Ltd is one of the leading local companies in Singapore manufacturing precision metal parts. Principal clients include MNCs such as Philips, Hitachi, IVP Thomson, Compaq and

General Motors. Its overseas investments, mainly in the same industry, also derive their business mainly from MNCs.

Amtek's subsidiary in Malaysia, KRIS Components Sdn Bhd, was established rather early, in 1975. Another subsidiary, AE Technology, was set up in March 1989. It is only in the last three years that these companies have seen rapid growth. This has been attributed to the influx of MNCs into Malaysia, partly because of the change in government policy resulting in the relaxation of foreign investment regulations. The Malaysian subsidiaries achieved a 40% increase in turnover in 1991/92 to reach S\$30 million and now have a total of 460 employees. The majority of the clients are Japanese MNCs as there are proportionately more Japanese MNCs in Selangor than in Singapore. There is also a branch office and manufacturing facilities located in Parit Buntar in northern Perak to cater to the MNCs located in northwest Malaysia. The factory was located in Perak rather than Penang as the latter was considered to be too expensive and crowded. A second branch will be set up in Johor to cater to the MNCs in southern Malaysia. All three factories produce entirely for the Malaysian market. Metal parts are bulky, as a result of which transportation and handling costs form a substantial component of total cost. That is one main reason why, although wages are lower in Malaysia, it is not cost effective to export the products to Singapore (Lee, 1994).

There was a large inflow of foreign investment into Thailand about two to three years before Malaysia liberalised its foreign investment policy. At that time, there were very few quality suppliers of metal stamping parts in Thailand, apart from one or two Japanese, as the Thais had not yet acquired the technology to do so. The company, incorporated in March 1987, is 40% owned by Amtek (S\$1 million investment), 40% by the Thai partner and 20% by a venture capital company. It employs about 150 workers and has a turnover of S\$4-5 million.

Amtek has faced a number of difficulties with the workforce in Malaysia at both the production and management levels. There is currently a labour shortage in Malaysia; many of the most able workers are overseas; and what is left are people with little industrial experience. There are also limited opportunities for training in Malaysia, and the quality of supervisors is also not as good as that found in Singapore. Similar labour problems are faced in Thailand. Consequently a number of measures have been adopted, in both countries, to cope with these problems (Lee, 1994).

Overseas direct investments by Singapore manufacturing companies is not a new phenomenon. It dates back to the 1980s, particularly in the second half, when labour cost and availability, land costs, and the real appreciation of the Singapore dollar caused domestic business costs to rise to a relatively higher level than that in other countries in the region. At the same time, this increase in costs coincided with the foreign investment liberalisation policies of Malaysia, Thailand and Indonesia, and the consequent inflow of foreign investment to these countries.

The second wave of overseas investments by Singapore companies, superimposed on the first wave, is now occurring. While the same cost push factors apply, the opening up of the transitional economies - China, Vietnam, Laos and Cambodia - is attracting investors to these new markets which also offer low-cost and plentiful supply of labour. It is anticipated that this outflow of investments will increase in the future, in both absolute terms and relative to GDP, both because of the constraints to expansion in Singapore as well as the business opportunities available in other rapidly growing Asian economies.

The macro statistics indicate that private overseas direct investments from Singapore have risen in magnitude. The stock of direct investments abroad increased from S\$ 1.6 billion in 1980 to S\$ 7.5 billion in 1990 alone (Table 6.9). Wholly- and majority-owned local companies accounted for over 40% of direct investments abroad in both 1989 and 1990, with a slight increase in the percentage share from 42.4% in 1989 to 45.8% in 1990 (Table 6.10). Manufacturing companies were the second largest direct investors, accounting for about 19% of direct investments abroad at the end of 1989 and 1990, compared with 50% at the end of 1990 for companies in the financial sector.

Table 6.9
Singapore's investment abroad (1976-90)

Year	Direct investment S\$ million
1976	1051.1
1977	1120.0
1978	1291.0
1979	1506.8
1980	1615.9
1981	1677.7
1982	2986.9
1983	2233.1
1984	2399.3
1985	2257.2
1986	2597.6
1987	2961.5
1988	2993.9
1989	5288.7
1990	7473.8

Source : Department of Statistics, Singapore Investment Board, Singapore National Printers Ltd 1990.

Table 6.10
Investment abroad by type of investment and type of
companies 1989 and 1990

1989

S\$ million

Total direct investment	Wholly-local owned	Majority-local owned	Wholly-foreign owned	Majority-foreign owned
5288.7 (100%)	666.7 (12.6%)	1575.1 (29.8%)	2395.4 (45.3%)	651.5 (12.3%)

1990

S\$ million

Total direct investment	Wholly-local owned	Majority-local owned	Wholly-foreign owned	Majority-foreign owned
7473.8 (100%)	1545.8 (20.7%)	1968.4 (26.3%)	3126.7 (41.8%)	923.9 (12.4%)

Source : Department of Statistics, Singapore Investment Board, Singapore National Printers Ltd 1990.

However, although direct investments have been increasing in magnitude particularly in recent years, they are still not large enough to have a significant impact on the Singapore economy. Direct investments comprised only 26.9% of total investments abroad at the end of 1990, with portfolio investment, transactions with overseas companies and other foreign assets constituting the lion's share of total investments abroad (Table 6.11). Similarly, income from direct investments comprised 21.7% of income from total investments in 1990, and 5% of factor receipts of Singaporeans from the rest of the world in the balance of payments (Table 6.12).

Table 6.11
Singapore's investment abroad,
1989 and 1990 (as at year end)

	1989 S\$ million	Share %	1990 S\$ million	Share %
Direct investment	5288.7	23.3	7473.8	26.9
Portfolio investment	5535.9	24.4	7639.3	27.4
Transactions with overseas companies	3790.9	16.7	5391.2	19.4
Other foreign assets	8098.5	35.7	7330.1	26.3
TOTAL	22714.0	100.0	27834.3	100.0

Source : Department of Statistics, Singapore Investment Board, Singapore National Printers Ltd 1990.

Table 6.12
Income from Singapore's investment abroad, 1989 and 1990

	1989 S\$ million	Share %	1990 S\$ million	Share %
Direct investment	393.8	25.9	467.7	21.7
Portfolio investment	405.1	26.9	578.3	26.8
Transactions with overseas companies	118.5	7.8	165.8	7.7
Other foreign assets	629.9	41.4	677.6	31.4
Gain/loss from sales of assets	-24.6	-1.6	270.6	12.5
TOTAL	1522.7	100.0	2159.9	100.0
Factor receipts of Singaporeans from rest of the world	7190.0	100.0	9381.0	100.0
Total income from Singaporean's investment abroad	393.8	5.5	467.7	5.0

Source : Department of Statistics, Singapore Investment Board, Singapore National Printers Ltd 1990.

Similarly, there is hardly any noticeable effect of overseas direct investments on the manufacturing sector. One would expect that the relocation of manufacturing activities overseas would result in a reduction in the manufacturing workforce in Singapore, and a shift in the sectoral composition of GDP away from manufacturing towards services. However, the manufacturing sector's share of GDP has remained relatively constant at 26%-28% of GDP since 1987, as has its share of employment, at 27%-29% (Lee, 1994).

It could be that overseas investments from Singapore have still not reached a sufficient magnitude for its impact on the economy to be noticeable at the macro level. If in the 1990s there is an acceleration of such overseas investments, then this could be translated into a noticeable macro level effect on the Singapore economy.

When companies establish overseas manufacturing plants, a restructuring of company activities occurs. In particular, the Singapore operations become the corporate headquarters for the group. Typical headquarter activities for manufacturing companies comprise: management and control; finance and legal administration; logistics, procurement of supplies and marketing; engineering and technical support; and research and development. A typical pattern of restructuring is that the more manual lines are shifted out, while the more technically sophisticated, newer product lines are retained. The Singapore plant would also carry out the prototyping, process design and R&D, but once the project is secured, mass production is carried out off-shore.

For the company, the benefits of overseas investments are obvious. It enables company expansion to occur, with consequent increases in turnover and profits. It enables them to overcome the constraints of Singapore's smallness, and yet to leverage Singapore's skill, finance and infrastructure capabilities

to advantage. There does not appear to be any downside element in this from the company's point of view, except that managerial resources are tightly stretched.

The benefits from overseas investments are most likely to be gained from the location of corporate headquarter activities in Singapore. First, corporate headquarter activity will generate demand for professional, administrative, marketing and procurement, engineering and R&D staff. This is a high value-added activity, and desirable from the national perspective. In macro terms, it is likely to lead to a reduction in the absolute employment in manufacturing, but an increase in the average skill level of the manufacturing workforce. The manufacturing sector will, over time, tend to become more producer service oriented, and the distinction between manufacturing and services is likely to become more blurred.

Second, the location of management control matters. If decisions are made in Singapore, then it is more likely that there would be business spin-offs for other Singapore companies because of the network and local knowledge. Business opportunities would therefore be more likely to be channelled to Singapore companies. What matters is the benefits of employment and value added to a country regardless of whether the company is Japanese or American. However, it could be that ownership does matter in Asia because of cultural differences between the East and the West. In Asia, personal relationships based on trust and knowledge appear to be relatively more important than in the West. When these are factored into profit calculations, then the location of management and ownership would determine the likely network of business contacts, and hence the possible spin-offs from business relationships. This argument strengthens the importance of developing strong local enterprises which can compete overseas, as these are more likely to retain their corporate headquarters in Singapore than the MNCs (Reich, 1980; 1991).

The broader issue is that, when private local companies regionalise, a possible loss of control results. First, it is politically and economically dangerous to have a concentration of overseas investments in any one country. An economic downturn, or worse, political turmoil, and in the extreme case, expropriation, could mean significant losses and would have adverse repercussions for the Singapore economy. It is for this reason that there is a deliberate strategy to balance the home country composition of foreign investment inflows into Singapore. But it would be difficult to implement a balanced country portfolio for outward investments because of its decentralised nature. Second, any strong sense of dissatisfaction with living conditions in Singapore could tip the scales and cause emigration and relocation of corporate headquarters to what are perceived of as more friendly environments. Pessimism regarding Singapore's future could also have the same effect, especially in the context of a vibrant regional economy. Third, it could be that investing overseas carries with it a higher risk than investing in Singapore. Fourth, overseas investments cause greater economic interdependency between Singapore and other countries in the region. While this is inevitable, it may

have social and political consequences which need to be carefully managed. All said and done there is no alternative for Singapore but to expand overseas. In other words, the issue is not so much whether they should invest, but how it should be done so as to derive the maximum net benefits for Singapore (Lee, 1994).

As in the manufacturing sectors, FDI in the service sector was concentrated in those sectors in which MNCs had firm-specific advantages and Singapore had location-specific advantages. The relative growth rates of Singapore's broad economic sectors do not seem to have been related to FDI share. FDI share was high in the manufacturing sector and its growth was high; FDI share was low in transportation and communications and financial services, but their growth was high. FDI share was low in trade and commerce utilities and their growth rates were relatively low. Within these broad sectors, however, FDI share and inflows of FDI tended to be concentrated in fast growing industries or industry segments.

Policy Implications

The analysis of the determinants and effects of FDI in Singapore shows a clear pattern. Inward FDI has been in response to the location-specific advantages arising from Singapore's wage levels (and capital costs), location, government incentives and infrastructure development, and the firm-specific advantages of MNCs in capital, management, technology, and access to export markets. Outward FDI has responded to similar factors as Singapore's location-specific advantages (often in industries in which Singapore was losing its comparative advantage) declined relative to those in neighbouring countries and locally-owned firms developed firm-specific advantages of their own which they could utilise through production abroad in countries which had developed location-specific advantages for Singapore based MNCs.

FDI has played a major role in restructuring Singapore's manufacturing sector and its overall rapid development. The high stake of FDI in Singapore's economy and its importance in future development, however, have imposed certain costs. "Reliance on foreign investment has not been without cost, although often the price which has been paid goes unnoticed in the euphoria of success, the profits of a foreign subsidiary ultimately belong to foreigners, and not to the domestic population. The foreign share of Singapore's GDP must be one of the highest in the world, rising from 10% in 1966-67 to a high of 28% in 1979-80. In other words, only about three quarters of Singapore's GDP is what the official publications call 'indigenous GDP'. Unlike the other Asian NICs, this is a major price to pay for development". (Lim, 1988).

Singapore has been highly dependent on continuing inflows of FDI for its growth in the past and this dependence will continue in the future. One of Singapore's most attractive locational advantages is the stability of its government and its labour force. This stability has come at a cost of a certain degree of political authoritarianism and government control over wages, working conditions, and labour-management relations. Singapore is no longer a low income, low wage country; its GNP per capita exceeds that of Hong Kong, Israel, Ireland, Greece, Portugal and Spain. Other countries with far lower wages have embarked on export-led industrial policies so that Singapore's labour-intensive exports have come under increasing competitive pressure. In order to compete with exports from these countries Singapore can either restrain wages or increase the human and physical capital intensity of its manufacturing sector. Yet its past reliance on MNCs to provide a package of technology, capital, management and access to markets may have stunted the development of both its own R&D capabilities and its ability to acquire technology at arm's length.

The government of Singapore has recognised that FDI by MNCs has had an important and distinctive role to play in Singapore's economic development. Singapore's industrial policy has been to attract

investment by MNCs on the one hand and to influence their behaviour so that Singapore receives the greatest possible benefits from their investment on the other. Singapore has implemented this policy not by overt regulation of the operations of MNCs, but rather by regulating the macro-economic environment in which they operated: exchange rates, savings rates, wage rates, and infrastructure development. This policy and the way it was implemented has been successful up to a point. Singapore's economy has grown and restructured rapidly and it is well placed to achieve rapid growth and further structural change in the future. However, the costs in establishing this haven for MNCs must also be examined.

In their plan to upgrade Singapore from a centre of entrepot trade to an industrial metropolis, Prime Minister Lee Kuan Yew and the leadership of the People's Action Party (PAP) had envisioned the Federation with Malaysia as the protected market for Singapore's industrial goods. With the loss of this market, PAP technocrats dumped the accompanying strategy of import-substitution industrialisation and in desperation adopted the new approach of export-oriented industrialisation. The world became a substitute market for Malaysia, and the motor of the new strategy became not local entrepreneurs but an alliance between the PAP state elite and foreign capital. When it opted for a strategy of making multinationals the engine of growth, the PAP technocratic elite envisioned a situation in which the foreign corporations would stimulate the growth of the local industries that would service them. This has clearly not been the case. At least of the mid-1980s, subcontracting was not substantial, with foreign firms sourcing no more than 25% of their input from local establishments. When multinationals did establish complementary relations with local entrepreneurs, it often ended up with the former dominating and eventually buying up the latter (Lim, 1988).

Indeed, the MNCs not only failed to serve as a locomotive for growth of local businesses but they competed with domestic entrepreneurs for the small Singapore market, being able to enjoy advantages of brand name and access to the parent companies' resources in the areas of technology, finance, management and marketing expertise. Koh and Lee put it "the successful local entrepreneur is a scarce and precious resource in Singapore today." The blame was laid squarely at the doorstep of government policy (Ministry of Trade and Industry, p129. Singapore 1986). "Singaporeans have been traditionally entrepreneurial. But an economic policy which stresses the role of foreign investment in manufacturing inevitably forces the local entrepreneur into a lesser role." Local businesses resent not only the lack of protection in their home market but also the fact that government incentives have actively discriminated in favour of the MNCs. For instance, the requirement that pioneer enterprises have investments of over US\$1 million to be entitled to tax breaks automatically cuts out most local firms since only a handful can reach that level of capitalisation. More broadly, policies supportive of foreign investors were enacted well before policies supportive of small businesses: foreign investment policy was enacted in the early 1960s, while measures directed at assisting small local firms, like the Small Industries Finance Plan, were adopted ten to fifteen years later (Krause, Koh and Lee, 1988).

In explaining the marginal character of the local business community, the PAP elite has resorted to all explanations except the obvious. One government favourite has been the alleged 'absence of the entrepreneurial spirit' among Singaporeans. As local entrepreneurs note, this is a strange charge since the Singaporean Chinese helped build Singapore as a trading entrepot. The PAP's riposte is that 'the entrepreneurship required in an entrepot economy is not the same required in modern, industrialised, and diversified economy'. But this is a difficult proposition to defend since Chinese merchants made the transition from commerce to industry in places like the Philippines, Thailand, Taiwan and Hong Kong. Clearly, the crowding out of the domestic entrepreneurs by the MNCs is the main reason for the lack of dynamism of local business.

For a long time, the PAP state-multinational capital relationship was viewed as a partnership of equals. Yet in reality foreign capital was the undisputed senior partner in the alliance, as underlined by the dismal results of the PAP state's ambitious effort to upgrade Singapore's industrial structure from labour-intensive to high technology manufacturing in the 1980-85 period.

This Second Industrial Revolution was intended as a optimal response to the same forces that pushed the Taiwanese and Koreans to emphasise technological upgrading of their production processes: the loss of cheap-labour advantage. Beginning in 1979 the PAP government adopted a series of policies designed to transform the island into a base of higher value-added, high technology industries. Central to the strategy was a wage correction policy, consisting of raising wages for local workers while at the same time phasing out cheap foreign labour. This strategy, which raised unit labour costs by 40% over six years, was designed to move Singapore out of direct competition with other countries that could offer lower wage rates in labour-intensive industries and enhance the productivity of higher paid labour through capital and skill-intensive production processes (Lim, 1988).

The Second Industrial Revolution was the supreme attempt at technocratic manipulation. But the MNCs did not follow the script laid out by PAP economists. The technological upgrading of production processes hardly took place, as indicated by the fact that wages accounted for 50% of value-added in manufacturing by 1984. Instead of upgrading their investments, the Japanese, for instance, substantially reduced their investment commitments, with the 1980 figure falling by 56% of the previous year's. For a time Japan redirected much of its low value-added investment to Hong Kong without significant increases in higher value-added production in Singapore (Ministry of Trade and Industry, Singapore 1986).

The crisis that followed the wage correction policy forced government technocrats to confront the fact that because cheap labour continued to be Singapore's main asset in the eyes of the MNCs, it could be altered only at great risk. The EDB planners explained that they had misunderstood why companies

had come to Singapore. Good infrastructure was important, but it was not the main driver. Cheap wages were. MNCs faced with the decree, did not see the point in giving US\$2 an hour wages to unskilled Singaporeans when Malaysian, Thai or even Mexican workers could do the same jobs for under US\$1. On top of that, all those countries had begun offering their own incentives to lure industry. So the Singapore shortcut was backfiring as companies began going elsewhere. Some stopped investing, whilst a few got ready to pull out. The combination of a 40% decline in investment and weakening international demand for key manufactures brought about Singapore's most serious recession in twenty years in 1985, as GDP declined (Lim, 1984).

The downturn underlined, among other things, the unfortunate consequences of a policy of not extending preferential treatment to local entrepreneurs and not protecting the domestic market. Had a differential wage correction policy been applied, local entrepreneurs could have moved into labour-intensive areas being vacated by the MNCs. And had they enjoyed a protected domestic market, local producers could have prospered by responding to the increased demand brought about by higher wages in the MNC sector. In other words, the international recession and decline in foreign investments in the export sector could have been counteracted by a booming domestic economy.

Instead of creative Keynesian policies, the government instituted a series of draconian measures to get the economy out of the recession, including a freeze on wages in 1986 and 1987, a 15% reduction in the employers' contribution to the Central Provident Fund (a system of forced savings), and lowering of corporate taxes from 40% to 30%. By February 1986 the government appeared to have reversed the earlier policy of stressing high-technology investment in favour of 'all forms of investment which can make profits'. Hard labour instead of high productivity became, for a time, the government's rhetorical response to the crisis. As Minister of Trade and Industry Lee Hsien Loong asserted in 1986 that Singapore could become competitive by getting workers to work 44 hours a week, where others will only work 38....to do third shifts and keep plants open 24 hours a day. Instead of being phased out, as originally intended, cheap foreign workers were brought in at a record rate of 2,000 to 3,000 a month, raising the foreign labour force from 100,000 in 1985 to 150,000 in 1988 (Ministry of Trade and Industry, p51-53. Singapore 1986).

Among those attracted again to Singapore by the prospects of cheap labour were Japanese companies, who were being pushed out of Japan by the higher production costs brought about by the rapid appreciation of the yen. It was Japanese investment, totalling close to \$1 billion between 1986 and 1988, that enabled Singapore to come out of the recession. Clearly cheap labour for low value-added, labour-intensive production was the magnet that attracted capital back. Despite the wave of investments from Japan, Singapore's technocrats realised that its MNC dependent export-oriented economy was more than ever in a precarious position (Straits Times, 3rd December 1988).

With the failure of the Second Industrial Revolution to attract R&D facilities and other high technology investments, the PAP technocrats worried that the window of opportunity for high-tech migration might be closing. Like the other NICs, Singapore was undergoing a structural squeeze, threatened at one end by lower cost labour in other third world countries but unable to make the transition to high-tech production. Facing this dilemma, Singapore's technocrats began to talk less about making the island a centre of high-tech manufacturing and more about plans to develop it as Southeast Asia's financial and service centre. This meant displacing Hong Kong as the regional banking centre and stock market, and doubling efforts to get corporations to make Singapore their regional headquarters, or the staging area for their manufacturing and marketing forays into the other countries of ASEAN (Ministry of Trade and Industry, p61. Singapore 1986).

Chapter 7

Regional Integration Agreements: An East Asian Trading Bloc

There are few who would quarrel with the proposition that more rapid growth of an open, international economy will lead to more rapid growth for the developing countries, given their trade and payments regimes. Moreover, for developing countries as a group, an open multilateral system is essential if those countries basing their growth strategies on an outward-oriented set of trade policies are to be able to achieve anything like the same degree of success attained by the outward-oriented countries in the 1960s and 1970s. An even stronger statement can be made: in the unlikely event that the industrial countries were to restrict the rate of growth of real exports from the developing countries to, say, the rate of growth of real GNP in the industrial countries, that would severely dampen the growth prospects of the developing countries as a group (Pearson and Riedel, 1990).

To be sure, developing countries with outward-oriented trade policies will generally have better economic performance than those with highly restrictive import-substitution regimes. (Krueger, 1984). There can be little doubt that the developing countries now have a strong stake in the GATT system. And, as indicated by their increasing share in world trade, they would have an increasingly strong voice and should participate more fully in GATT activities. Historically, however, the developing countries insisted upon 'special and differential' treatment within the GATT (Wolf, 1987). This insistence was based upon the ideology of export pessimism, and the belief that manufacturing industries of developing countries could not compete with established industries in developed countries. In the 1950s and 1960s, the stance of the developing countries was consistent with their policies toward trade and payments regimes.

A few of the advanced NICs, especially Singapore, have indicated a greater interest in the Uruguay Round of trade negotiations, and have recognised the importance of a successful outcome to them. GATT negotiations result in reciprocal reductions of trade barriers. These reciprocal reductions are then mutually 'bound', to assure trading partners of the permanence of the cuts. Developing countries, by staying aloof from the major GATT negotiations and by retaining special and differential treatment and simultaneously citing the balance of payments exception to justify their continued protection, have been unable to negotiate for reciprocal benefits. Their trend toward increasing liberalisation has been unilateral (Wolf, 1987).

Thus, despite the very significant trend toward increased liberalisation of trading regimes by developing countries, little has been gained by way of negotiated liberalisation on the part of the developed countries. During the 1960s and 1970s, failure to negotiate reciprocal concessions was probably not important, due both to the small amount of trade carried on by the developing countries and the fact that the industrial countries were in any event undertaking major liberalisation of their

trade and payments regimes. In the 1980s and 1990s, however, the failure of developing countries actively to negotiate could be far more costly: protectionist pressures in the developed countries are probably stronger than they were in earlier decades, and the larger share of the developing countries makes them vulnerable to protectionist pressure.

The debate on the merits of regionalism is not new. More than forty years ago, Jacob Viner (1950) showed that extending a preferential concession to a partner may well involve replacing imports purchased from the cheapest source with imports from the partner country, in which case trade diversion, rather than trade creation occurs, resulting in a loss of welfare.

But one issue that was never debated during the 1950s and 1960s was the possibility of the world dividing up into a few trading blocs. This simply was not a realistic prospect, given the long history of the United States as a staunch supporter of the General Agreement on Tariffs and Trade (GATT) and of the multilateral approach. In recent years, however, the United States has also supported a regional approach - in part, out of frustration with the delays in completing the GATT talks. And although Japan has resisted leading the way toward a defensive bloc in East Asia because of its large stake in the US market, it could well change its stance.

Four decades ago, boosted by the creation of the European Community (EC), - now the European Union (EU) - a wave of regionalism spread across the world. Then after laying dormant for most of the 1970s, it took off again in the mid-1980s. All the major players in the world are involved. Canada, Mexico, and the United States have initiated the North American Free Trade Agreement (NAFTA). In Europe, the EC has set about to create a single internal market, while the queue of countries desiring to join the EC countries continues to lengthen. There is a growing concern that a trading bloc is forming in East Asia under the leadership of Japan. And since 1985, six substantive regional agreements and innumerable proclamations of intent to integrate have been signed (Melo and Panagariya, 1992).

The East Asian markets have accelerated their growth, and promise to maintain that momentum in the future, thereby raising the expected return to the pursuit of 'open' regional integration. For example, Southeast Asia and China have emerged with new industrial dynamism as a second tier of Asian NICs. China's new dynamism became evident soon after the country's adoption of its open-door policy in 1978. The Southeast Asian economies also began to grow and industrialise rapidly from the mid-1980s. An important measure which helped these economies to take off was their opening up to foreign direct investment. The subsequent inflow of investment, especially from Japan and the Asian NICs, has expanded substantially the stocks of capital and technology with which to industrialise.

Having identified the two challenges of the new regionalism, competitiveness and protectionism, the question needs to be asked concerning what the East Asian economies can do to respond to these challenges? In order to cope with the former, it would be helpful for the East Asian economies to promote regional integration. To cope with the latter, the East Asian economies should strengthen their efforts to defend and improve the multilateral trading system. The East Asian economies should pursue these two objectives at the same time. It is important to note that the two need not conflict with each other, for there can be two types of regionalism - closed and open - and the conflict with the multilateral system does not arise in the second case.

Regional integration can be promoted in a number of ways, such as preferential trade liberalisation, harmonisation of policies, and infrastructural investments. ASEAN must proceed cautiously with the idea of regional trade liberalisation. It cannot afford to become part of a confrontational bloc. ASEAN officials have made it clear that they do not want the gradual movement toward closer Pacific Basin cooperation to result in a closed bloc or regional institution that could undermine ASEAN strength and unity. These officials are also concerned that a regional bloc could involve serious welfare reducing trade diversion and more critically, it works against the multilateral trading system (ASEAN Economic Bulletin, 1991).

In 1967, five East Asian countries made the first (and only) attempt at regional integration, (Brunei joined in 1984) forming ASEAN. The goal of the six countries was to promote intra-regional trade through preferential trading arrangements among member countries. But the results have been less than spectacular: intra-regional trade as a proportion of total trade among the ASEAN-4 (Singapore excluded) grew from 3.2% in 1980 to just 4% in 1990. Of this small amount of intra-regional trade, not even 5% was covered by preferential trading agreements (Panagariya, 1994).

Recently NAFTA, the continuous widening and deepening of the European Union and the protracted negotiations at the Uruguay Round have rekindled interest in regional groupings in East Asia. On January 28th 1992, the ASEAN countries signed a framework agreement to create the ASEAN Free Trade Area (AFTA) by 2006. The endorsement of the AFTA vision is a very positive development. Large benefits can accrue to member nations from the pooling of resources and sharing of markets, with dynamic effects reinforcing such benefits (Naya, 1992).

Both internal and external factors have led to the creation of AFTA. First, internal economic conditions are more appropriate now for the implementation of a free trade area than they were previously. In the past, the economic structures of the ASEAN countries were weak with most countries following inward looking economic policies. Tariff levels were relatively high in Indonesia, the Philippines and Thailand and ranged widely within each country. Malaysia, on the other hand, had relatively low levels of protection and Singapore has been virtually a free port since the 1960s.

The recent unilateral liberalisation that has been occurring has harmonised tariff structures to a considerable degree. Consequently, the disparities of tariff structures have been reduced, facilitating further regional integration efforts. Manufactures comprised only a small share of total intra-ASEAN exports until recently, with Singapore playing a dominant role in the largely primary product and entrepot trade of the region. The rapid industrialisation, which took place in the 1980s and 1990s in all of the countries, has caused the percentage of manufactured exports to rise dramatically. This rapid industrialisation has given rise to a large increase in intra-industry trade in manufactured products in the region, making trade more complementary than competitive between the ASEAN nations. To realise the potential for intra-regional trade creation, it is essential to develop trade patterns based on intra-industry specialisation, similar to trade between developed countries such as within the EC (Naya, Imada and Montes, 1991).

There is also increasing external pressure on ASEAN to come together economically. Developing countries in other regions are undertaking economic reforms and opening their economies to trade and investment with great success. For example, Latin American countries have recovered from the so called "lost decade" of the 1980s; economic reforms have spurred economic growth and these countries are now beginning to attract export-oriented investment. Similar developments in Eastern Europe and South Asia accentuate the trend. Competition from these other developing areas make it critical that ASEAN's attractiveness to investors be enhanced. One way of doing so is to create a large single regional market through AFTA (Naya, 1992).

Both economics and politics are against a discriminatory trading bloc in East Asia. Historically, East Asia has benefited greatly from an open world trading system. Despite a redirection of trade toward itself in recent years, the region still ships two thirds of its exports to the rest of the world.

Given the importance of open markets to the region's economic growth, the case for an East Asian bloc should be evaluated primarily in terms of the impact such a bloc would have on the world trading system. The region's future interests will be best served by a strategy that promotes an open world trading system. A discriminatory trading bloc does not fit that bill.

An approach that encourages regionwide trade liberalisation on a nondiscriminatory basis may still hold some promise. In the long run, this approach could serve as a stepping stone for Japan and China to assume a leadership role in promoting global free trade similar to that played by England in the 19th century and the United States in the post-war era. Unfortunately, such liberalisation is unlikely, because of short-term adverse effects on the region's terms of trade.

The economic desirability of an East Asian trading bloc depends on two factors. First, an East Asian bloc may serve as a deterrent to the formation of closed trading blocs around the world. According to

this argument, the world is already dividing into blocs. To ensure that they do not become overly protective of and limit access to their own markets, East Asia should be united and in a position to retaliate. Unilateral actions such as those taken by the United States under its super 301 provisions, for instance, would be harder to implement with a united East Asia. Second, the formation of regional blocs could facilitate future rounds of the GATT. The Uruguay Round was protracted in part because of the large number of participants and the 'free rider' problem such a number generates. One reason for the success of past GATT rounds was that the United States could deal with the EC as a single unit. This fact has led many to conclude that a small number of blocs could make future GATT negotiations more manageable. Such blocs would also assume responsibility for many intra-regional trade issues, so that the GATT process could be used primarily to resolve problems between regional trade areas, and to bring down barriers, swiftly and efficiently (Panagariya, 1994).

Both of these arguments have merit but are highly contentious. Critics note that blocs enjoy more market power than individual countries, so that, in principle, nothing prevents blocs from raising rather than lowering trade barriers. As a deterrent, then, blocs function only as long as they do not carry out the threat to raise barriers. Once the threat is carried through and a trade war breaks out, retaliatory actions are likely to be more severe than they would be without blocs. In addition, critics note that small numbers do not necessarily mean faster progress in trade talks. The EC process that began in 1957 is still working toward a single market. In the meantime, the region's nontariff barriers have proliferated, with the coverage of these trade restrictions expanding fivefold between 1966 and 1986 (Panagariya, 1994).

Internally, there are at least three interrelated factors working against a regionwide free trade area. First, the major players in the region have historically been political rivals. Through time, trade and intra-regional investments have gone a long way toward bringing these former enemies closer. Second, the East Asian countries have very different levels of protection and are at very different stages of development, suggesting that the distribution gains from a free trade area would be uneven. Third, East Asia comprises a large number of countries, making negotiations for a free trade area a daunting task. It has been difficult for the ASEAN countries to make progress with just six members. For twenty five years, despite many efforts, success in promoting trading was minimal (Naya, 1989).

In the early years of ASEAN's existence, there was virtually no progress towards any form of substantive cooperation. There was nothing more than the laying of the foundation stone for the member countries to conduct periodic consultations and to nurture consensus. It has been successful in promoting peace and stability in the region, cultural development and better personal interrelations, and, to a more limited extent, economic growth of its member states. Although the peace and stability that ASEAN cooperation brought about have had an important influence on the rapid economic

growth of individual countries, ASEAN member states have not been able to internalise as a group ASEAN economic cooperation for growth (Broinowski, 1982).

To outside observers, the idea of close economic cooperation, let alone integration, among five countries as disparate in size, industrial development and political and cultural orientation as the five ASEAN countries has seemed incongruous, until they remembered that there were not insignificant differences in size between Germany and Luxembourg, in industrial development between Britain and Denmark and in cultural and political orientation between Italy and the Netherlands. The case for regional economic cooperation, specialisation and trade liberalisation is in no way weakened by these differences, though they inevitably make for slow progress.

Indeed, it can be argued that these causes of slow progress are an advantage rather than a disadvantage for ASEAN. The economic costs of over-enthusiastic promotion of regional trade, through the diversion of trade to high cost sources, are well known. The cautious eye to national advantage that has been evident in each member country's approach to ASEAN cooperation is an important constraint on tendencies towards trade diverting approaches to regional cooperation. Similarly, the greater ease with which the five countries have agreed on approaches to external economic partners has helped to preserve a healthy, outward-looking orientation.

It is some achievement that ASEAN over the years has been able to demonstrate regional political solidarity, has to its credit a few small economic gains, and has avoided the mistakes of trade diversion that have marred some attempts to accelerate economic development through regional integration elsewhere in the world. Given the importance of the maintenance of the post-war liberal international economic order to the long term growth prospects of the ASEAN countries, the emphasis so far on access to OECD markets is well placed.

If we focus our attention to the period of 1967 to 1976, generally there was no real progress for ASEAN. There was only some form of political harmonisation, particularly within the framework of foreign policy. Attempts in the integration efforts of ASEAN were geared more towards peace and stability. Admittedly, the strength of its solidarity in this sense, derives from the fall of Saigon. It was undoubtedly a right track for the protection of the region's security. Following this argument, ASEAN is indeed quite a successful form of political organisation (Broinowski, 1982).

On the other hand, if we look from the angle of economic integration, during this period, ASEAN's integration is a complete failure. Though the main aim of the ASEAN establishment (as can be found in the Bangkok Declaration) is to promote 'active collaboration' and mutual assistance on matters of common interest in the economic, social, cultural, technical, scientific and administrative fields, there was not much collaboration in economic or other fields during that period.

Obviously the slowness in pace towards economic integration in ASEAN, makes it a unique cooperation scheme in developing countries. Unlike other integration schemes where ambitious programmes were launched shortly within the first year of their existence, the ASEAN process of integration was entirely open minded and highly unstructured. In fact, the word integration itself has all along been avoided. Thus, even if we evaluate ASEAN integration by comparing it to other integration schemes and find out that its beginning was a complete failure, we realise that the first nine years of ASEAN was actually spent in building their 'sense of community' among the members. Although the early existence of ASEAN may not bring meaningful benefits to the integrating countries, the trust that the countries have gathered in creating the 'sense of community' and solidarity should be considered as praiseworthy.

From the experiences that have been reviewed, the only factor that slows the momentum of the integration of ASEAN from 1976 to the present is in fact the 'integration machinery' itself. The top hierarchy in the organisation structure of ASEAN is composed of ministers who are, of course, politicians. The process of integration gives rise to lengthy negotiations and repeated consultations which result in the low implementation rates of most of the ASEAN projects. When integration programmes are brought to the drawing board, they are often turned into a political exercise involving political juggling so that the end result can be far removed from the concept of equitable distribution of cost and benefits of the integration. This is quite different to that of EFTA where the Council of Ministers makes swift decisions on matters concerning economic integration ie they are strictly following 'business means business' approach. It is therefore not surprising that there is a shortfall between objectives and results in the case of ASEAN (Jorgensen-Dahl, 1982; Crouch, 1984).

It seems that the methods by which old projects are supplanted by new ones, reflect the learning through mistakes approach. However there is a lesson to be learned by the proponents of the ASEAN integration. We view that the success of the integration efforts in ASEAN lies only in 'lubricating' the machinery of the organisation. This means that all future projects or programmes should have been carefully assessed (through poor feasibility studies) before they are implemented. It is also felt that the Advisory Committee should play a more vital role in the decision making process of ASEAN.

ASEAN offers some worthwhile opportunities for the acceleration of economic growth in its member countries. It also offers some seductive paths into dead-end, inward-looking patterns of development. ASEAN over the years has made some limited use of the former, while, for the present at least, resisting the temptations of the latter.

ASEAN and the Regional Environment

As Heinz Arndt and Ross Garnaut succinctly put it :- "ASEAN has looked inward to the promotion of intra-regional trade, and outward to the improvements of the terms of trade upon which its members relate to third countries." (Arndt and Garnaut 1979). Promotion of intra-regional trade is essential both to capture the advantages of specialisation based on comparative advantage and also the benefits of economies of scale. Indeed, this was the rationale for ASEAN enunciated by the UN team of experts in 1969.

The objectives were to be attained through regional cooperation in matters relating to trade and allocation of manufacturing industries between the member countries. The mode of regional cooperation or 'integration' was through regulation. The 1976 declaration of ASEAN concord provided instruments designed to promote integration.

Inadequacies of PTA

An agreement was finally signed in 1977 and named the 'Preferential Trading Agreement' (PTA) (Tan, 1982). At first, seventy one concessions were covered, but by 1987 negotiations held at regular intervals had raised this number to 20,000 and were leading to a limited multilateralisation. In April 1980, a general reduction of 20% was adopted for any national import flow of any one product of ASEAN origin not exceeding a total annual value of US\$ 50,000; in 1984 this ceiling was raised to US\$ 10 million, and virtually automatic concessions were applied to certain categories of products. As regards the origin of goods, there were rules defining the applicability of the PTA: these distinguished goods produced and exported directly by ASEAN from those in which the element of foreign processing did not exceed 40-50% of the final value (Jackson, 1986).

The agreement on the PTA did not compensate for the stalling of the project for a free trade zone, and Singapore did regret that regional cooperation had to evolve at the pace of minimum concessions from the least developed member states. The Singaporean director-general for ASEAN affairs declared in August 1977: "Although we would be prepared to accept any compromise, we also have the feeling that because of the pace at which ASEAN is disposed to evolve, we would rather rely on our own arrangement." (Yue, 1978). For Singapore the theory of the beneficial effects of the PTA - that it will create new flows of trade between member states and provide substitutes for some imports from outside - has hardly been proved in view of the extremely modest scale of the arrangement.

The concessions exchanged remain insignificant despite their large number. For political more often than economic reasons, the obligation on the governments to present several hundred concession

offers each year leads them to choose tariff reductions on products which are of only very minor importance in their foreign trade, or which have never been traded before with their ASEAN partners.

- Except for the respective national lists of unilateral concessions of Malaysia and the Philippines, and of Malaysia and Singapore, there are too few similarities between the national lists generally, thus making it impossible to promote intra-regional trade more effectively.

- A reduction of 10-20% in import taxes turned out to be of only limited effect, because the tariffs in question were prohibitive. In the hypothetical case of existing tariffs being dropped altogether by the Philippines on all imports with an annual value below US\$ 500,000, it was calculated in 1984 that the total increase in import purchases would have increased by only 2% (Lutkenhorst, 1984).

- In Singapore and even in Malaysia, numerous concessions have included goods which were already free of duty; of 147 offers made voluntarily by Singapore in 1981, fifty three were already in this situation. Inversely, some other ASEAN countries have presented goods also bearing low tariffs but they have excluded 'sensitive' products which could foster import creation to their disadvantage (Singapore Department of Trade, 1981).

- Negotiations on the basis of unilateral concessions, product by product, are long and subject to lobbying from pressure groups, especially those very closely linked to the governments of the three most protectionist ASEAN countries. Manufactured goods, which are precisely the major productions of Singapore and Malaysia, are also a constant source of conflict and disagreement among member states.

- Various products exported by Singapore are not eligible according to the PTA rules of origin, concerning re-exports and manufactured goods containing too large a proportion of foreign components.

No one should expect from the PTA a substantial increase in intra-ASEAN trade. Even if PTA marks a first step, it plays down the comparative advantage of some member states for manufactured exports, and of others for exports of raw materials or semi-processed goods. Facing considerable political resistance within ASEAN, PTA gives little benefit to either Singapore or Malaysia. Singapore is afraid that the PTA will favour and protect ASEAN's least efficient entrepreneurs but also contribute to the decline in competitiveness of certain branches of regional or national economic activity because of excessive isolation from world markets.

The establishment of a free trade area is what the city state aspires to. A customs union would oblige a free trading economy such as Singapore to raise its customs protection in conformity with a common ASEAN external tariff. It would not only stimulate the growth of its industry and services, but it would also enable products from the outside world to enter the ASEAN market via Singapore on a massive scale, at the risk of obstructing or delaying the industrial take-off of ASEAN's most backward countries. This solution is not viable politically: Indonesia and indeed other countries are not willing

to sacrifice their own development for the benefit of Singapore and Malaysia, or to enable a process of regional industrialisation with little benefit or spillover effect for themselves (Rieger, 1988).

Statistical analysis of the impact of PTA on regional trade suggests that it is the narrow range of products included in the PTA and the relatively low tariff cuts it affords that are responsible for the slow growth in intra-regional trade. Inorganic and organic chemicals and machinery constitute the major groups in which PTA preferences are concentrated. In terms of production capabilities of the ASEAN countries, the machinery group is relatively more important. Much of the existing trade of ASEAN in this group, however, is with the developed countries. A deeper cut in tariffs is likely to divert some of this trade towards the ASEAN member countries. The potential for such trade is likely to be much more important for Indonesia, Thailand and the Philippines because the share of the ASEAN countries in the total imports of machinery into these countries is low. Their imports of machinery products from Singapore and Malaysia, the two countries which possess production capabilities, is likely to grow. It is unlikely, though, that Indonesia, Thailand and the Philippines would concede further reductions in tariffs not only because of their strong protectionist sentiments but also because such reductions would result in a loss of tariff revenues (Axline, 1977).

Thus, the slow growth in intra-ASEAN trade is to be attributed not so much to the similarity of industrial structures of the members as to their reluctance to engage in a broadly based tariff reduction exercise. Indeed, the lack of cooperation and not the similarity of industrial structures can be emphasised as the reasons for slow growth in intra-ASEAN trade. Cooperation has been slow to materialise because the member countries with similar industrial structures appear to be reluctant to expose their industries to competition.

It can be seen that the economies of the five countries are structurally linked to those of the developed countries in the sense that they export raw materials and primary products and labour intensive manufactures to these countries and import capital intensive manufactures and machinery and transport equipment. Since four of the five member countries are heavily dependent on primary products for their exports, it is unlikely that an elimination or drastic reduction of tariffs on intra-regional trade would promote such trade. In any case, the trade that is likely to occur as a result of such an across-the-board drastic cut in tariff levels would be more in the nature of trade diversion rather than trade creation. It is debatable if such trade diversion would be in the interests of the member countries.

It could, however, be argued that the integration would promote increased specialisation and trade between the member countries in manufactures. Over the years the composition of exports of the NICs has changed from labour intensive goods to human and physical capital intensive goods. This development is largely owing to the continued process of capital accumulation, increased foreign

investment in the production of these goods, and a favourable policy environment prevailing in these countries. Mirroring this development is the gradual increase in exports of labour intensive goods and human and physical capital intensive goods from the other Asian countries, including Malaysia, the Philippines, Thailand and to a lesser extent Indonesia. Apparently these countries are occupying the niche in exports of goods vacated by the NICs. As seen in chapter two, the RCA analysis suggests that, broadly speaking, export growth has been in accord with the regions changing factor endowments as stipulated in the conventional trade theory. At the present time much of the trade of the NICs and that of the ASEAN countries (excluding Singapore) is with the developed countries. The formation of a free trade area or a customs union may promote increased intra-regional trade. The experience of the NICs in the importation, adaptation and spread of new technology will be invaluable to the ASEAN economies as they strive to capture export markets vacated by the NICs. Undoubtedly, the NICs have played a major role in placing Asia at the forefront of the development process. However, the prospects for sustaining this position and for providing the growth momentum within Asia will require increasing economic cooperation between the Asian economies.

The increased intra-ASEAN intra-industry trade flows may partly be because of official interventions such as the Preferential Trading Arrangements (PTA). Their intra-industry trade with each other is higher than with the rest of the world, and the trade diversion in the integration schemes probably accounts for this. But given the costs of trade diversion, the higher intra-industry trade in ASEAN may not be beneficial. Certainly the fact that intra-ASEAN intra-industry trade indices have increased significantly since the 1970s is indicative of growing intra-industry specialisation in the region, as highlighted by the evidence provided in chapter three which complements the relevant theoretical literature.

The dynamic benefits from integration that result in rising per capita incomes will then lead to an increased demand for variety, which in turn implies that the scope for intra-industry trade can be expected to rise. This expected positive association between economic integration and intra-industry trade may be reinforced by any liberalisation of capital flows concomitant on integration, which encourages vertical specialisation by, for instance, multinational corporations.

Though the method of estimation for trade creation and trade diversion proved to be of limited use in determining the effects of ASEAN cooperation, it can be seen that generally, there were increasing trade interdependencies among the ASEAN economies. The work in chapter four showed that the economy of Singapore offers a number of positive spillover effects for the other ASEAN countries. From this it would appear that the economic destiny of the ASEAN countries is increasingly tied to their relations with one another. It does appear that if regionalism were to become fashionable, ASEAN would, as a group, become more cohesive and united for trade negotiation purposes, and rely more on the internal ASEAN dynamo to promote growth for all.

Opening up of ASEAN to foreign investors

Foreign direct investment (FDI) drives international trade flows. Trade in goods from one part of a company to another accounts for perhaps 40% of all merchandise trade, totalling US\$ 3.7 trillion in 1992. Slow economic growth has curtailed the boom in FDI in rich countries, but, investment is still rising in the developed world (The Economist 18th-24th 1993, p95). The recent GATT talks laid down general principles for MNCs who wanted a way of locking in improvements in investment rules to prevent backsliding. These require national treatment and forbid certain restrictions on subsidiaries' operations, such as local-content requirements. But developing countries managed to thwart ambitious plans put forward by richer ones compelling governments to allow in foreign capital. They may be more amenable now. Since 1986, when the Uruguay Round was launched, third world governments have liberalised trade and invited in foreign investors to boost their economies.

Each national policy regulating foreign investment has developed a kind of competitive convergence among ASEAN member states, with each country seeking to obtain the maximum of foreign investment flows into the region. In the case of Singapore, foreign investment has been closely associated with the concept of economic viability of the island, and to the priority guarantee of its permanent existence as a political entity and sovereign state. In the other ASEAN countries the annual amount of foreign investment is also very important but not so closely related to national survival: these states are cushioned by large rural societies and by a diversity of natural resources; the role of foreign investment in these economies is mainly to bring about the speedy realisation of certain development projects in the fields of infrastructure or industry. ASEAN has never been hostile to MNCs, unlike some other regional groupings such as the Andean Pact; it has adopted, and only in the form of a resolution, a code of conduct for MNCs (Yue, 1983). The welcome given to foreign investment is more or less determined by the degree of economic and cultural nationalism and the level of development of each member state. Since the 1987 summit in Manila, the member states have been engaged in promoting intra-ASEAN investment and the harmonisation of their national systems of guarantees offered to foreign investors.

Singapore constantly works its hardest to damp down the potential jealousy of its neighbours looking at the considerable flow of foreign investments that pour in every year. This area of potential tension has eased somewhat over recent years with increasing investment flows into the other ASEAN countries. Singapore is able to emphasise the diversity of services it can offer for the benefit of its neighbouring economies, and its investment in Indonesia and Malaysia, including the relocation of industries in accordance with changing comparative advantage, which has become highly significant since the 1980s.

Developing countries are becoming big foreign investors in their own right. Figures issued for 1992 by the United Nations Conference on Trade and Development show Hong Kong, Taiwan, Singapore and Thailand among the top ten investors in China, where FDI in 1992 totalled US\$ 11 billion. Total FDI from developing countries more than quadrupled to US\$ 9 billion a year between 1986 and 1990. That gives both rich and not-so-rich nations cause to write some rules for fair play (The Economist 18th-24th 1993 p95).

A customs union between the ASEAN countries, although attractive in theory, poses immense practical problems. Singapore, a free market oriented economy, is unlikely to agree to the erection of a common tariff on third countries at a level acceptable to the other countries, especially one that would be acceptable to Indonesia. Moreover, a genuine customs union would also require coordination of domestic policies with regard to the intra-regional movement of labour and capital and in the area of domestic tax policies. It is unlikely that the five countries subscribing to different economic philosophies would consent to such a radical change in economic policy. Therefore, although a customs union between the ASEAN members is possible in theory, it is improbable in practice.

Singapore's view of economic integration

Singapore's position within ASEAN reflects its national economic and political structures; the city-state mainly pleads for the adoption of the same kind of instruments as those that have governed the efficient development of its own society and its remarkable economic success (Crouch, 1984). This is highlighted in Singapore's particular position with regard to intra-ASEAN trade in the industrial sphere. As the only economy showing a true complementarity with its partners, it instinctively distrusts regional industrial cooperation attempts that result from pure inter-governmental negotiations. Based, most often, on superficial economic analyses, such initiatives result from political motives without enough prior consideration for the rigid economic interests of each ASEAN country involved. As the promoter of a fabric of effective intra-regional ties which derive from the play of market forces and the direct involvement of local and international business circles, Singapore sees no valid argument that could support an administrative and institutional approach to cooperation between ASEAN industries. For these industrial branches which can only attain viability through vast economies of scale, a highly unified ASEAN market would not even bring enough economic incentive: the regional market would remain too small considering the current level of development of the ASEAN economies.

Initiated in haste because of the climate of political revival prevailing at the Bali Summit of 1976, the six ASEAN industrial projects (AIP) did not owe their inspiration to any coherent feasibility study and were immediately criticised by Singapore for their gigantic scale. Each project was estimated to cost around US\$ 250 million, and a 40% financial participation by the member states was programmed without knowing the possible source of the remaining 60%, which in principle was to be the

responsibility of the country receiving the project; nobody could tell either if the regional market could absorb the future production. Nonetheless, Japan offered a US\$ 1 billion line of credit.

The planning of two industrial complexes for production of urea-based fertilisers (each with a capacity of 500,000 tonnes), to be built in Indonesia and Malaysia, envisaged output in excess of the most optimistic forecasts of regional demand. Only one of the two was finally completed, in northern Sumatra: officially inaugurated in 1984, it is mainly an Indonesian plant serving national interests. Thailand was also to build a soda ash factory, but its competitiveness by world price standards was nullified by the fact that unrefined salt had to be transported over a distance of 430km from the north of the country to the coast. The Philippines presented a project for exploiting copper, then phosphate-based fertilisers, and then timber, without ever choosing one project which was economically feasible (Broinowski, 1982).

The objective of these ASEAN agreements was to implement a division of labour among member states for some sophisticated manufacturing productions which were well beyond the individual capacity of any one of the countries on its own. Singapore immediately expressed its opposition to any attempt at regional industrial planning imposed by ASEAN governments and to any exclusivity clause binding member states to buy the final products resulting from such agreements. In 1979, however, certain national chambers of commerce launched the idea of a first complementarity agreement in the automobile industry, with each country specialising in the supply of particular components and agreeing to sell the ASEAN cars on its domestic market with a 50% tariff exemption. Jakarta and Kuala Lumpur also proposed that any production resulting from a complementarity agreement should be at least 51% controlled by ASEAN investors (Far Eastern Economic Review, 27th July 1979). The principle of a general agreement on intra-ASEAN industrial complementarity was signed much later in October 1986.

Singapore disapproved of the possible development of protected industrial monopolies, which would kill free competition in the region and favour many inefficient firms. Therefore, it further reduced its import taxes, increased those on components and parts, and declared that it would not implement the proposed complementarity arrangements. Finally, no ASEAN government wished to see Singapore isolate itself as it did from the ASEAN industrial projects of 1977. A compromise was found, which almost entirely eliminated the initial plans for state intervention: no ASEAN production of a similar nature would be discriminated against by another member state specialising in any type of component; the commercial preferences granted to the goods as the result of complementarity agreements would be left to the discretion of each country; and they would not be allowed to exceed the concession rate granted in the framework of the ASEAN PTA.

Conceived as a more flexible instrument, better adapted to the demands and needs of the private sector, the basic agreement on ASEAN industrial joint ventures (AIJV), signed in December 1982, stipulated that if two or more ASEAN entrepreneurs of different nationalities decide to collaborate, their financial production would benefit from a reciprocal tariff concession of 50% in their respective countries. In addition, eighteen sectors were initially identified - like ferrous alloys, mini-tractors, special paper, textile machinery and chemicals (Far Eastern Economic Review, 8th December 1983). Singapore reacted positively as the one member state which has already invested most through joint ventures in the region, and well before any regional agreement of that kind existed. The city-state judged the basic agreement to be incomplete, and made it clear that it would not participate if it did not obtain satisfaction. Clarification was forthcoming in 1984 on the two following points (Indorf, 1984). First, the preferential treatment applied between the countries of the participating entrepreneurs was to be extended, after a lapse of four years, to other ASEAN member states according to the trade agreements already in force (and not by the application of a 50% tariff exemption as stipulated by the 1982 agreement). Secondly, a foreign company established in one of the member countries could control up to 49% of the joint venture or of some of the companies involved in the deal - a principle which certain ASEAN delegates had rejected in 1982. The first of these two points was adopted at the Manila Summit in December 1987, and indeed without such a provision the actual impact of the ASEAN industrial joint venture could not be gauged.

During the recession of the mid-1980s, contrasting with the rapid growth of the previous decade, the member states all denounced, to varying degrees, the failure or lack of adaptability of the existing instruments of regional cooperation and the absence of any firm commitment to genuine economic cooperation. Meanwhile, the report of the 'twelve', published after the fifteenth meeting of ASEAN foreign ministers in order to diagnose ASEAN's inadequacies and what reforms should be introduced, produced no significant reaction.

Criticisms and new proposals, like a multi-tier ASEAN grouping have proliferated, especially from Singapore since the beginning of the 1980s, a situation directly related to the economic recession of 1984-86 which prompted the island's authorities to give renewed attention to making the most of the regional market. Certainly, Singapore does not have the power to initiate political moves in the region, but the neighbouring capitals have encouraged step-by-step, economic liberalisation measures at home, and a regional cooperation that is more business and market oriented than before. This was probably owing to the international economic recession of the mid-1980s and its aftermath. The example of Singapore, where the business community circles and the governmental administration are two separate entities even if working in close collaboration, has an influence on other ASEAN states whose domestic economies were often suffocated by bureaucratic and/or very corrupt public interventionism (Behrman, 1980). For the first time since 1967, the private sector in ASEAN is exerting increasing pressure on the six governments to make appreciable progress in mobilising the

real forces of the regional market. Singapore is much less isolated than before, and probably even better integrated in the ASEAN forum.

ASEAN unity and cooperation have already moderated some intra-ASEAN conflicts. The ASEAN spirit of cooperation has been expressed in the dialogue with other countries and regions outside the Pacific, such as the European Community. ASEAN has also been supportive of the GATT rounds. This not only indicates a preference for settling disputes but also a basic understanding of the wisdom of openness and dialogue with all parties. This attitude would militate against ASEAN support for an exclusive Pacific Basin organisation to confront Europe. This wisdom also recognises the benefits of diversifying markets in an interdependent world, where political or protectionist shocks could be damaging if ASEAN depended too much on any one market (ASEAN Economic Bulletin, 1991).

ASEAN representatives have also made clear that ASEAN recognises that it is also engaged in fierce economic competition. It clearly sees that ASEAN has a greater say in the world economy when it speaks with one voice. Therefore, it will not enter into any agreements or cooperative ventures that could weaken or divide ASEAN. This fundamental tension - between regional Pacific goals and ASEAN domestic goals - is likely to endure. It is exacerbated by conflicts between the goals of individual member states of ASEAN and larger Pacific regional goals. ASEAN works by consensus, and if one member state has strong objections to Pacific Basin regional cooperation, the other member states will not break ASEAN unity and proceed without it. This makes for a slow process toward new initiatives, but is balanced by ASEAN's basic policy of openness and consultation in its relations with other countries (Hardt and Kim, 1990).

ASEAN and Pacific Economic Cooperation

Conditions for economic growth

The ASEAN economies meet the conditions for continued strong economic growth - with one key exception. They have the raw materials, the educated workforce, and the economic leadership, but they do not have the markets. ASEAN is not only vulnerable to blatant protectionism or economic recession in developed countries but could also experience problems if it fails to attract investment and technology transfer or if the heavy hand of government continues to restrain the full energies of the private sector. In other words, ASEAN is in as much danger from its own protectionists and defenders of the status quo as is the United States or the European Community (EC). If ASEAN is to continue its successful economic performance, it must continue to increase its involvement in the world economy by opening its markets to new technology and business services that will increase its competitiveness. It must also recognise its environmental problems and be willing to take greater leadership in international forums. Economic issues should be given equal priority with political issues at the annual ministerial meetings. While ASEAN may not be able to participate directly in the seven-nation Economic Summit, it should make its views known to all the participants in advance rather than relying on Japan to represent its interests, as seems to have been the case in the past.

Given the many important factors that contribute to economic growth, ASEAN cannot go it alone. Because of the deep and pervasive interdependence of the world economy and ASEAN's need for markets, ASEAN cannot not afford to turn over its destiny to a Pacific economic bloc competing with other economic blocs. Competing in an open world economy is one thing; competing with Japan, Korea, and Taiwan in a closed bloc would be quite another. One ASEAN leader, the Malaysian Prime Minister, Dr Mahathir put it this way: "Recent experience thus teaches us that national policies alone are incapable of solving our domestic economic problems. The reality has changed: the world economy drives us, not the other way round." (Hardt and Kim, 1990).

The need for regional economic cooperation

For ASEAN, with its commitments to world markets and an open international economic system in which it can prosper, regional macroeconomic cooperation must be approached cautiously. Macro policy is dominated by Japan on the financial side and by the United States in trade. ASEAN needs the EC and other markets too much to adopt a narrow or confrontational regional position. In the past, Japan has consulted with ASEAN and then suggested that it was representing ASEAN interests at the Summit (Hardt and Kim, 1990). It would be prudent for ASEAN to communicate its views directly to the other players, especially the United States. The critical issue in any regional discussion of macroeconomic policy issues is whether they can be dealt with effectively without the participation of the Europeans. The ASEAN countries have long-standing ties with Europe and active trade and investment relations. As the world economy becomes more and more competitive and interdependent, ASEAN must seek new market niches (Seah, 1975).

Asia Pacific Economic Cooperation (APEC)

APEC was initially conceived as an informal forum of officials from Asia-Pacific countries in response to the rise in economic regionalism, notably the EC and NAFTA. Largely because of this, Australia the plans initiator, excluded the US and Canada in early 1989 when it first proposed the grouping that became APEC. The US reacted angrily to its exclusion from an economic group they felt would be dominated by Japan.

When APEC ministers first met in Canberra in 1989, the grouping had 12 members: the ASEAN six and ASEAN's six dialogue partners in the Pacific, the United States, Canada, Australia, New Zealand, Japan and South Korea. The EC, also a dialogue partner, was not included. APEC was then intended to be an informal consultative forum. But two years later in Seoul, APEC began to spell out the members' commitment to free trade and economic collaboration through 'open regionalism'. After initially objecting to Taiwan and Hong Kong's participation, China agreed to their joining as 'economies' rather than countries. APEC's fifteen member countries now account for about 50% of the world's production and 40% of global trade and will account for more by the year 2000. Furthermore, intra-regional trade among APEC economies in 1992 reached an amazing 65%, (see table 7.1) surpassing that within the EC and despite the absence of measures that discriminate against outsiders. (Far Eastern Economic Review, 18th November 1993).

Table 7.1
APEC's exports and imports (US\$ billion, 1988-1992)

APEC's exports	1988	1989	1990	1991	1992
To member countries	712.1	784.3	839.9	914.6	1,002.6
To outside APEC	367.3	395.7	436.8	480.6	515.4
Total exports	1,079.4	1,180.0	1,276.7	1,395.2	1,518.0
% of intra-APEC exports	66.0	66.5	65.8	65.6	66.0
APEC's imports	1988	1989	1990	1991	1992
From member countries	737.5	814.9	862.3	934.8	1,020.9
From outside APEC	384.6	425.7	480.0	468.9	498.5
Total imports	1,221.1	1,240.6	1,342.3	1,403.7	1,519.4
% of intra-APEC imports	65.7	65.7	64.2	66.6	67.2

Source: Australian Government, figures cited in (Far Eastern Economic Review, 18th November 1993).

At the outset, ASEAN has understandably been cautious about APEC. In view of the vast disparities in income, technology and skill levels among the APEC economies, there was genuine concern that discrepancies in national capacities to benefit from joint regional development and cooperation could lead to asymmetrical dependence, heightened tension and North-South polarisation within APEC. However, the reality of rising economic interdependence between ASEAN and the other Asia-Pacific economies, particularly after the active pursuit of an outward oriented strategy by ASEAN since the

mid 1980s, have persuaded ASEAN to recognise the need to participate in a wider forum to enhance economic cooperation among the Asia-Pacific economies.

Consequently, despite earlier ASEAN fears of dilution in a wider regional organisation, the concern of being dominated and overshadowed by the much larger economies in APEC and the insistence on the informal arrangement and non-institutionalisation of APEC, ASEAN had expressed the view that it was prepared to participate in APEC and to contribute constructively to the consultative process. This is a pragmatic posture as, with less than two percent of the world GDP, it is unrealistic for ASEAN to hold back APEC. Propelled by powerful market forces and under the onslaught of direct foreign investment from the larger Asia-Pacific economies in linking their industrial structure, ASEAN economies will continue to be drawn deeper and deeper into the complex web of division of labour fast emerging in the Asia-Pacific region. A hesitant rather than an active approach towards APEC would still lead to ASEAN being subsumed as part of the global production and sourcing network of Japanese firms and the firms of the NICs, without any channel or forum for effective representation of collective ASEAN interests (ASEAN Economic Bulletin, 1992).

The eventual active participation of ASEAN in APEC represented a fundamental rise in confidence as a result of the success of their outward oriented development strategy since the mid 1980s. It is noteworthy that ASEAN could collectively use APEC for greater influence, somewhat analogous to the occasional disproportionate impact of smaller states within the EC. More significantly, ASEAN is at the stage of pending take-off in their industrialisation process and the next ten to fifteen years of a conducive free trading multilateral system would be crucial. To achieve this, ASEAN needs to ensure a stable, free and open trading and investment system, preferably globally and if not, at least in the Asia-Pacific region. APEC could be an effective forum for promoting this critical ASEAN interest. In particular, APEC could be an effective counter-balance to the potential inward looking tendency of the EC. In addition, ASEAN could use APEC to channel Japan and the NICs' capital flows to develop the region rather than allow them to be diverted to Eastern Europe.

In 1990, the Malaysian Prime Minister, Dr Mahathir, charged that the forum was a grouping designed to ensure US domination, and proposed the creation of the exclusively Asian EAEG (East Asian Economic Group). Mahathir maintained then that Asian nations needed a collective voice in the face of a unified Europe and the prospect of NAFTA. The US strongly opposed the idea and the proposal was later altered to make the group into the East Asian Economic Caucus within APEC (Far Eastern Economic Review, 18th November 1993).

East Asian Economic Group (EAEG)

The EAEG concept was to embrace ASEAN, Hong Kong, China, South Korea, Taiwan, Japan and other countries in the Indochina region though there was no firm list of countries made out. The rationale is that cooperation and speaking with one voice was necessary among the Asia-Pacific countries. While it was appreciated that some countries, particularly Japan, would come under pressure to reject Malaysia's proposal, the membership of Japan is considered crucial to the success of the EAEG. Malaysia may particularly want to anchor Japan to East Asia, arguing that East Asia should be Japan's natural constituency rather than have it uproot industries away to Europe or the United States. The steps toward such a group, which would a priori exclude no country in East Asia, would take two stages. First, a formation of like-minded countries which have or share common interests in specific areas of trade vis-a-vis GATT and the new international trade organisation. The second stage envisages a formalisation of trade and economic links which would spur trade and investment in the East Asian region. Any formal arrangements, however, would be based on GATT principles, not creating unnecessary barriers to third countries' imports, not diverting trade but trade and investment enhancing (ASEAN Economic Bulletin, 1992).

When ASEAN trade ministers met in Kuala Lumpur in October 1991, the EAEG was supported as an ASEAN initiative after Indonesia was successful in getting the name changed to East Asian Economic Caucus (EAEC). This was to defuse allegations that it was intended as a trading bloc. It is somewhat unfortunate that the EAEG concept, in excluding key Asia-Pacific players like the United States, Canada and Australia at its inception, has faced significant opposition from them. Their opposition further resulted in the cautious attitude of Japan and some ASEAN countries towards the idea (ASEAN Economic Bulletin, 1992).

The share of intra-regional trade within the total EAEG trade was, in fact, a relatively low 38.8% in 1990. But growing economic ties within East Asia and the emergence of fledgling market economies, are increasing the proportion of intra-Asian trade. Foreign investment and market structures in Guangdong and Fujian in southern China have caused China's exports to more than double since 1982, of which 60% go to other East Asian countries. China, Taiwan and Hong Kong have all recently joined APEC, while Vietnam and Laos are queuing to join ASEAN. Adding in Australasia, China and the remaining East Asian countries to the EAEG increases the proportion of intra-regional trade to 44.2%, higher than the 41.5% of total US, Canadian and Mexican exports that were traded within the proposed NAFTA in 1990 (Financial Times, 3rd February 1992).

That both NAFTA and the largest possible East Asian free-trade zone still rely on external trade for more than half their total trade suggests that neither has an interest in undermining the multilateral trading system. But APEC could offer an alternative route to trade dynamism if Europe becomes

overtly protectionist or simply loses interest in global free trade. Combining the 23 NAFTA, East Asian and Australasian countries into one Asia-Pacific bloc boosts their intra-regional trade ratio to 69.4 % in 1990, exceeding that of the EC and EFTA combined (Financial Times, 3rd February 1992).

Numerous factors are behind the rapid growth in intra-Asian trade since 1986, though it is impossible to determine their relative importance. Certainly, the currency realignments which took place in 1985 and 1986 were of prime importance. From 1980 to 1985 the US dollar appreciated in real terms by some 40%, making the United States a relatively attractive market to Asian exporters. However, after the Plaza Accord the US dollar fell steadily, thereby reducing the relative profitability of exporting to the United States in favour of Japan, Germany and other members of the European Monetary System. In addition, the increasing threat of protectionism in the United States and Europe, occurring at the same time most Asian countries were unilaterally liberalising trade, no doubt gave impetus to intra-Asian trade. And, of course, with income growing more rapidly in Asia than elsewhere, one would expect intra-regional trade to be relatively strong.

It is clear that in the coming decade, ASEAN needs to work within a larger context or group in order to realise the benefits of economies of scale and division of labour as well as collectively helping to promote the free multilateral trading system. In such a context, it is better for ASEAN to take an active rather than a passive role in the evolving groupings such as APEC. It would be better for ASEAN to be prepared with the right institutions and policies to interact with other groupings in the manner that it has selected, and better if by its own terms as a group.

Chapter 8

Conclusion

There are some fundamental changes in the determinants of economic strength. In the 19th and early 20th century, comparative advantage in land, people and natural resources plus technology, were the key factors in determining the economic power and success of nations. Mining technology was new. There was limited production of coal and steel. Those nations with the technology to extract coal and produce steel were the first to be industrialised. They had a tremendous advantage over other nations. The poorer backward countries were easily defeated and conquered because of the technical inferiority of their armaments and economy.

Countries achieved greater economic power by conquering more territories and people to get more raw materials and larger markets. Great Britain became the most powerful country in the world. Through its technological advantage it gained control over more territories adding to resources and markets.

Today, people can gain access to most technology and resources. So the ownership of natural resources or commodities is of no great economic advantage. Nor is the possession of technology, unless it is very advanced and reverse engineering is not easy. In this age, technology is widely and rapidly available to those with the capacity to absorb the knowledge. And if they have this capacity, they can take the advances further on their own. Of course not all sophisticated technology is easily and widely accessible.

The open trading system under the General Agreement on Tariffs and Trade (GATT) has provided an alternative route to wealth creation based on trade, investments and transfer of technology and know-how. Those countries that have plugged themselves into this system have prospered. Outward orientation has paid off very handsomely for Singapore. Trade policies have not, of course, been the only or perhaps even the primary reason for the success of the ASEAN countries. Appropriate trade policies require suitable domestic economic policies. The economic 'openness' of the five countries varies considerably, both in terms of the share of the international trade sector in GDP and in terms of the general policy orientation. But by international standards the five economies are relatively open and the fact that they are able to respond to changing international circumstances, is undoubtedly one explanation of their generally good economic performance.

Just as countries may distort the allocation of resources through import substitution, so it is possible to 'overdo' export promotion policies, although the effects of these policies are likely to be more visible than in the former case. Nor is 'export-led' growth a term which appropriately characterises the

ASEAN industrialisation experience since the 1960s, notwithstanding its relevance to one or two of the countries. Export-oriented industrialisation would seem to be a more suitable description of the recent record: it reflects the greatly increased importance of manufactured exports to the region, and it is indicative of major policy changes in the last three decades. Moreover, it is indicative of changing trade and industrialisation strategies, and particularly of the fact that developing countries no longer necessarily experience an import substitution phase before embarking on the export drive.

The Asian NICs embarked on their export-oriented drive at a particularly favourable period. This was during the sustained post-war economic boom when developed country markets grew rapidly, and protectionism generally declined. Such fortuitous circumstances are unlikely to be repeated in the immediate future. Nevertheless, even during an era of slow growth, the international economy is still expanding. The economies of the developed countries have more than doubled in size since the mid 1960s. However, all evidence suggests that ASEAN manufactured exports and import penetration have grown since the 1970s, including during periods when economic growth rates declined. Thus, the international economy, and the ability of the world market to absorb increased ASEAN exports, is the critical external factor.

Japan began to vacate the more labour-intensive activities in the late 1960s. This provided an important stimulus for Singapore's exports, initially as a major competitor began to withdraw from the market, and subsequently as a new export market emerged. Singapore was ideally placed to take advantage of the transformation of the Japanese economy, with some spill-over to the other ASEAN countries. Just as Singapore benefited from the changes in the Japanese economy, the ASEAN economies have benefited from the continuing transformation, expanding their manufactured exports, including those to the NICs and Japan. There are of course, many other 'near NICs' outside ASEAN, but they do not enjoy the advantage of geographical proximity and close commercial contact. Foreign investment by the NICs in ASEAN has been an additional means of relocating industrial activity rendered uncompetitive in the former.

Singapore remains important as a demonstration effect for the rest of ASEAN. Just as Singapore's initial export drive in the 1960s prompted a re-think and eventual policy reorientation among the ASEAN governments, so the maintenance of continued outward-looking policies in Singapore, even in the face of an international recession, provides a powerful antidote to those advocating a return to more inward-looking policies.

Classical economic theory emphasises the importance of natural resources and cost factors in determining comparative advantage. Singapore is an example of a country where this theory does not hold. It does not have any natural resources or raw materials. Singapore has always been different from the rest. Since it has no natural resources of its own, the rest of ASEAN had served as its

hinterland long before ASEAN was formed. Singapore is also more industrialised than any other ASEAN country. Thus, the Singapore economy has always played a complementary role in the South East Asia region, which also explains why Singapore has had stronger intra-regional trade linkages than any other ASEAN country.

Important structural changes are taking place in the ASEAN economies. These changes may effect the production and trade matrices of ASEAN significantly in the foreseeable future. Malaysia and Thailand are quickly climbing the ladder in terms of manufacturing, as highlighted by Akamatsu (1962) in what is characterised as the 'flying geese pattern'. Indonesia is successfully reorienting its manufacturing sector towards the global market through bold liberalisation measures. The Philippine economy has bounced back to growth. Singapore is moving away from manufacturing into technology and skill-intensive services, while Malaysia is losing its comparative advantage in labour-intensive manufacturing operations.

The Singapore experience accords well with the theory. Indeed, because of its more advanced industrial structure and poorer resource endowment, it has progressed further along the 'stages' approach forwarded by Balassa. The share (RCA) of unskilled labour intensive manufactures began to decrease about the mid 1970s, when rising real wages and human capital intensive manufactures began to erode the economy's comparative advantage in these products. Correspondingly, the share of technology and human capital intensive manufactures began to increase gradually. As would be expected, the share of these two groups in Singapore's manufactured exports is by far the highest in ASEAN, even allowing for the absence of resource based exports. The importance of 'policy' can also be seen to have played a role, both facilitating the industrial transformation and in determining the extent to which Singapore is able to reap the benefits of changing comparative advantage.

The RCA analysis in chapter two suggests that, broadly speaking, export growth has been in accord with the region's changing factor endowments. Singapore is a rapidly growing and industrially advanced country with a very poor resource endowment. The last few years have witnessed a major transformation in the structure of industrial production and exports. It has shed its labour intensive industries as its comparative disadvantage in these activities has developed. Increasingly its industrial structure has evolved towards more skill and capital intensive activities. Its extremely open economy and the nature of the government intervention has facilitated the industrial upgrading process.

All these factors will no doubt alter the character of ASEAN economic cooperation in the 1990s and beyond. There is a trend towards increased complementarity with ASEAN, which will have a favourable impact on intra-ASEAN trade flows, especially in terms of intra-industry trade, in the years ahead.

Every competitive strength Singapore has today has been consciously created and developed through deliberate policies. They have always realised that the only way to make a decent living for their people was to make themselves relevant to the needs of the region and the world. So, as the region needed a place to buy and sell, Singapore became an entrepot. As multinational corporations, first American, then Japanese and European, needed a low-cost production site to maintain competitiveness, they provided the infrastructure, the tax incentives and the trained workforce to encourage them to set up in Singapore.

Nothing remains the same, therefore as things change so must Singapore in order to remain relevant to the people with whom they do business with. In terms of global developments, there are two trends that are of particular importance and relevance to Singapore. The first is the globalisation of businesses. Multinational companies today have become truly global in their business perspective. They spread out their business activities across the world according to the competitive advantage of each country. Their markets are becoming increasingly integrated.

The second significant trend is the growth potential in the Asia region. Asia is expected to be the growth dynamo in the world economy in the 1990s. Its economic performance is dominated by Japan and the four NICs - Singapore, Hong Kong, South Korea and Taiwan. Their share of world GNP has more than doubled over the last twenty years. Their share of world exports has more than trebled. If they maintain these growth rates, their combined GNP would exceed that of the European Community by early next century and the United States by the year 2015. Parallel to this growth, intra-Asian trade has been expanding at a rapid rate. In the past, Asia was viewed primarily as a low cost supplier. It is now emerging as a major market in its own right. (EDB, 1990, Dept of Trade and Industry.)

Michael Porter of Harvard undertook a four year study on the competitive advantage of nations. (Porter, 1990). He concluded that national prosperity is created, not inherited. It does not grow out of a country's national endowments such as resources and raw materials as claimed in classical economics. Rather, competitive advantage has been created by several nations to overcome disadvantages in natural resources. Resource-poor countries such as Japan, South Korea, Hong Kong and Singapore bear testimony to this thesis. These countries have generated their own competitive advantage by creating new strengths such as highly skilled and dedicated workers or top class infrastructure. Porter concluded that ultimately nations gained competitive advantage in particular industries because their environment was the most forward looking, dynamic and challenging.

Growth in Asia over the last twenty years has been led by Japan and the Asian NICs. Their histories have given them cultural ballast to adjust and adapt themselves to the needs of a modern industrial society. Their governments have invested heavily in human resource development. Their ambition and drive will carry them at high rates of growth into the next century.

They have compensated for their lack of natural resources by creating their own advantages. For example, the shortage of labour in Japan spurred innovations by Japanese companies in automation technology. Another example is Singapore's trauma when she was abruptly separated from Malaysia in 1965. Markets, raw materials and resources available in Malaysia, long taken for granted, were suddenly lost. Singapore has become what it is today, because the people and the government set out to make up for their deficiencies. Circumstances forced Singaporeans to compensate by building up superior infrastructure, and creating the most favourable conditions including good labour-management relations so that international business can flourish, and through them, Singaporeans can plug into the global economy.

One of the main policy objectives of the developing countries is the expansion and diversification of their exports of manufactures and semi-manufactures. Success in achieving this objective in Singapore has been associated with the attainment of a higher proportion of intra-industry trade. The evidence suggests that the trend towards greater intra-industry trade may contribute to the attainment of the trading objectives of the developing countries of the region, since the higher rate of trade expansion with which it is associated is mostly attributable to trade creation, not to trade diversion.

The results presented in the present study are not directly comparable to those obtained by other authors who also analysed the determinants of intra-industry trade among developed and developing countries. However, the work undertaken in chapter three has set out to explain intercountry differences in the extent of intra-industry trade in manufactured goods by reference to hypotheses derived from contributions to the theory of intra-industry trade. The results proved to be significant as all the hypotheses put forward have been confirmed by the results and the explanatory power of the regressions was high, that is apart from the effects of economic integration on intra-industry specialisation. The extent of intra-industry specialisation increases with the level of economic development, geographical proximity and Singapore's role as an entrepot. The size of domestic markets and the existence of trading partners with common borders also contribute to intra-industry trade, and it increases the extent of such trade in Singapore.

In providing evidence on the determinants of intra-industry trade the findings in chapter three support the work carried out by Balassa and complement the relevant theoretical literature. As noted by Balassa nearly thirty years ago, the existence of intra-industry trade has important policy implications (Balassa 1966). Given that intra-industry specialisation is likely to generate just as large a welfare gain to countries as inter-industry specialisation - given also that the income distribution effect is likely to be less serious and the adjustment problem more manageable - it may seem preferable for countries to encourage more intra-industry specialisation. Certainly intra-industry specialisation will meet with less domestic resistance than inter-industry specialisation. This was the experience of the

western industrialised countries over much of the post-war period. It was for this reason that GATT was relatively successful in lowering trade barriers on manufactures in the first twenty five years after the war. Most trade took the form of trade in manufactures and this took place between mature industrialised economies possessing similar factor endowments. Intra-industry specialisation was the predominant type of international specialisation. It was only in later decades that frictions began to develop, first with the admission of Japan to GATT and, later, with the growth of developing country exports of manufactures. The NICs possessed relatively different factor endowments to the advanced industrialised countries and so their trade with the latter tended to take the form of inter-industry specialisation. The result has been considerable friction between the NICs and the advanced industrialised countries.

As the economies of the NICs and the ASEAN countries mature, more of their trade will take the form of intra-industry specialisation. Rising wage costs have already begun to reduce the traditional comparative cost advantage in labour-intensive manufactures in the ASEAN countries. However, this will benefit the western industrialised economies, and Japan, if they adopt policies that encourage more intra-industry specialisation.

Of the trade that the ASEAN countries do with each other a sizeable part (about 40% in the second period, 1976-84) is in the form of intra-industry trade or 'competitive' trade. This is lower than for trade among industrial countries, as it has been shown elsewhere that intra-industry trade varies with the degree of development. These findings are broadly in conformity with theory: unlike inter-industry trade which depends basically on the pattern of factor endowments, as stipulated by the Heckscher-Ohlin model. This is not surprising as Singapore, the most advanced of all the ASEAN countries, accounts for the bulk of ASEAN's intra-industry trade with the developed countries. Nor is it surprising to find that the intra-industry trade indices among the ASEAN countries are higher than those with third countries, but for a few exceptions. The increased intra-ASEAN intra-industry flows may partly be due to official interventions such as the Preferential Trading Arrangements (PTA). Their intra-industry trade with each other is higher than with the rest of the world, and the trade diversion in the integration schemes probably accounts for this. But given the costs of trade diversion, the higher intra-industry trade in ASEAN may not be beneficial. Certainly the fact that intra-ASEAN intra-industry trade indices have increased significantly since the 1970s is indicative of growing intra-industry specialisation in the region.

While the level of industrialisation has been mentioned as being associated with the level of intra-industry trade, it seems likely that the nature of the foreign trade regimes may also be important. Indeed, overall trade policies or strategies may be more important than specific devices for stimulating intra-industry specialisation and trade. Superficially, it would appear from the case of ASEAN that the more open economies and export-oriented countries such as Singapore have higher intra-industry

trade ratios. If research can establish the importance of the nature of the regime relative to other factors and if it can be shown that there are net long-term gains, then such findings would lend support to the choice of export orientation as a superior industrialisation strategy, although this is a very complex question. Certainly, it would seem desirable that any conscious move towards the promotion of intra-industry specialisation should be part of a consistent and comprehensive trade and industrialisation strategy. On the other hand, the direction of a country's policies and its priorities may change. In this context, specific devices such as export subsidies or export processing zones may be useful in encouraging the transition to a more open trading regime, in promoting certain social objectives or decentralisation, or even in offsetting external diseconomies or initial costs. As a general guide, the costs of such schemes, whether used in isolation or as part of a more general strategy, should not exceed the expected flow of future benefits, including any externalities. Evidence shows that positive action by governments can promote intra-industry trade, but, before a comprehensive and internally consistent policy package can be put together, further information is needed about the experience of individual countries and regions and about the economies of production at the process level in specific industries.

A finding of considerable importance, as seen in chapter three, is that intra-industry trade is on the increase. This is particularly pronounced in the case of Singapore's trade with industrialised and newly industrialising economies. And there are reasons to believe that the bulk of the intra-industry trade consists of intra-firm sales. The latter is intimately related to foreign investments in Singapore's manufacturing sector in general and export-oriented industries in particular. More specifically, the role of multinationals and the presence of transfer pricing in intra-firm sales have rendered the structure of trade in manufactures so complex that it cannot be analysed within the simple framework of traditional theory. In other words, comparative advantage cannot be adequately explained in terms of factor and resource endowments. Therefore, it appears that Singapore has little choice in the direction of its external trade in manufactures, given the structure of foreign direct investments in the country. It would then follow that Singapore's trade policy is heavily influenced by, or dependent on, its foreign investment policy and not the other way around. In other words, Singapore can bring about changes in its trade structure only via changes in the structure of foreign investments in the country.

The application of Balassa's method of estimation, for trade creation and trade diversion, involving the comparison of ex-post income elasticities of import demand in intra-area and extra-area trade for periods preceding and following integration in chapter four, proved to be of limited use in determining the effects of ASEAN economic cooperation. The indices imply that the ASEAN countries have used trade diversion as a means of development, although the extent of trade diversion undertaken by each of the ASEAN countries has varied as each country has been careful in the calculation of national advantage. Nevertheless, as the overall effect, in the study, is that of trade creation, it would appear that ASEAN has been successful to some extent in increasing welfare.

However care must be taken, because in the absence of statistically significant results, the observations should be interpreted with caution and taken to be indicative of general trends rather than exact magnitudes. From the test of statistical significance there was no reason to reject the null hypothesis that there was no significant change in the income elasticities of import demand before and after integration. Therefore, owing to the lack of statistically significant results, it must be concluded that over the period of investigation (1967-85), the integration of the ASEAN economies has had no real impact on the region.

In the endless debate on competition versus complementarity between the countries of the region and Singapore, complementarities clearly outweigh competition flows if one looks closely at the external trade and industrial fabric of the city-state in a regional perspective.

The competitiveness of Singapore's manufacturing industry working to the detriment of the other ASEAN countries can only be seen in a few rare instances (oil refining, plywood, textiles) which have been flourishing at the very time when they are being delocalised or converted to more modern techniques. In Indonesia and Malaysia, the lack of industrial competitiveness in these countries (especially Indonesia) during the 1960s and 1970s had its origin more in their unadapted socio-economic structures than in competition from Singapore. International circumstances make it highly unlikely for the time being that the ASEAN countries would succeed in launching themselves into advanced manufacturing on a serious scale, which would face Singapore and other newly industrialised countries either with bitter competition or a structural recession.

However, potential NICs like Malaysia and Thailand and even relative newcomers like Indonesia, have benefited from the new international division of labour since the second oil crisis of 1979. Large amounts of foreign investment have been poured into ASEAN labour-intensive manufacturing, especially from 1986 to 90, pushing these economies upwards, even in highly specialised production like automobiles (Malaysia) or aeronautics (Indonesia). Such changes in the region have reinforced Singapore's strategy of rapid industrial delocalisation to its neighbours, and the future niches of the city-state will be concentrated more and more in services rather than pure manufacturing.

New ties of complementarity are to be found everywhere in the primary and secondary sectors, as in the service sector. Singapore functions today as a regional pole for development, distributing to its neighbours low-priced equipment, products and services and, in addition, transfers of finance and know-how which thus multiply intra-regional and external interdependence. This division of labour, of which the industrialisation of Johore and Batam are good examples, is not unilateral. Owing to its size and limited resources, Singapore has neither the capacity nor the ambition to develop on its territory the complete network of modern industry. Its neighbours are not restricted to second-rate production. Reciprocally, these countries, which command only limited industrial and financial

capital, cannot fail to benefit from the presence on their doorstep of a concentration of industrial and technical facilities to be used for their own efforts at economic diversification.

The interdependencies among various ASEAN partners should be seen as mutually beneficial even though it is difficult in practice to ensure absolutely equitable welfare gains. Even if one ASEAN country does gain more relative to another, this should not be exploited as a nationalistic, emotive issue which may argue for less rather than more trade linkages. As interdependencies increase with time, greater coordination of policies will in fact be needed to ensure that the impulses transmitted through trade are fully exploited instead of weakened by jealousies and physical and mental blocks.

ASEAN has had little success in promoting its stated objectives. The type of regional cooperation in trade and industrialisation that it has attempted to promote can be best described as integration through regulation. Such a scheme necessarily involves conscious policy coordination and an effort of will to succeed on the part of the member countries. It requires individual member countries to sacrifice short-term national objectives in the interests of long-term objectives for the group. The member countries of ASEAN, though aware of these prerequisites for success, appear to have been reluctant to abide by them. The main stumbling block in the way of progress appears to be the marked differences in the development strategy and economic philosophy of the principal member countries. The Association, though, appears to have had some success in negotiations with the developed countries on trade-related issues of significance to individual member countries. ASEAN has had little impact on either the magnitude or the pattern of FDI in the region. The impressive growth performance of the member countries in recent years is to be attributed to their resource endowments, fiscal discipline and the outward-looking strategy of development pursued by two of the five member countries.

It is likely that the classical mode of integration would have served the member countries better than the mode of integration through regulation which they have attempted. But given the differences in economic philosophy among the member countries, the likelihood of the five countries embarking on a customs union appears to be remote. Indeed, given the strong trade and investment links they have forged with the developed countries and the prevailing pattern of their resource endowments, it is arguable whether a customs union would fare any better than the loosely knit organisation in place. It is worth noting that the record of ASEAN is none too encouraging for those championing the so-called 'Pacific Concept' - a wider grouping of both the developed and developing countries in the region. The concept is likely to remain a theoretical possibility, much talked about, but with little in the way of concrete measures to promote it. The concept is faced not only with the problems associated with economic nationalism on the part of the developing countries, but also with deep-seated suspicions concerning the political motives of the developed countries in mooted the idea of a Pacific community.

The high economic growth of Japan and the Asian NICs has now spread to the ASEAN countries. Over the last few years all these countries have deregulated and liberalised their economies. They now set out to get foreign investments and participation in their economic development. Fundamental changes are also taking place in the pattern and structure of FDI in Singapore. The bulk of FDI has flowed into the manufacturing sector with a noticeable shift in the origins of foreign capital. As in the case of trade there has been a shift from the Atlantic to the Pacific, with the EC becoming progressively less important than Japan and the East Asian NICs emerging as significant sources for capital.

It is important to note that the changes in the direction of trade and investment flows are by no means peculiar to Singapore, as such trends are readily observable in other ASEAN countries as well. What Singapore has been experiencing in its trade and investment relations with the outside world is simply a reflection of the fundamental shifts taking place at the global level. There is no doubt that Singapore is benefiting from all this, as the country's recent impressive performance, in terms of GDP growth, export growth and other economic indicators can be largely attributed to the Pacific phenomenon.

The work in chapters five and six has shown that the MNCs operating in Singapore have had a significant effect on the structure of the economy. It is abundantly clear that MNCs or their affiliates, possess a number of distinctive features. Their range and structure of output is different, they generally record a higher productivity and/or profitability, they are prone to engage in more international transactions and they are likely to be more vertically or horizontally integrated. The case of Singapore emphasises that, in the absence of MNCs, the structure of domestic activity would be very different from what it is. In Singapore where economic signals are especially favourable to foreign MNCs, inward investment has helped upgrade the quality of indigenous resources. But since most of these subsidiaries are export-oriented and closely integrated into the global or regional strategy of their parent companies, their impact is likely to be very different from that of their indigenous competitors.

MNCs have a number of distinguishing features. The first is that MNCs possess certain so called ownership advantages over their non-MNC competitors. While some of these advantages are country of origin specific, others arise from their ability to capture the economies of integration of producing or marketing activities, undertaken in more than one, and usually several, countries.

The second reason is that MNCs judge resource usage and allocation in any one of their affiliates from what is good for the enterprise as a whole rather than from the viewpoint of an individual production unit. It follows that whenever there are benefits or costs resulting from operation of the affiliate which are external to it, but internal to the MNC of which it is part, then the interests of the two will diverge.

In such cases, their conduct and behaviour will be different from what would happen if the separate affiliates were under independent ownership, as will their response to changes in exogenous variables.

The size of the recipient economy may also be an important environmental variable. In Singapore MNCs dominate many industrial sectors; hence their distinguishing features stand out. It is also clear that the fastest growth in MNC activity - at least within the manufacturing sector - is occurring in sectors in which rationalised investment is taking place where MNCs seek to take advantage of the different characteristics of the countries in which they produce. There is also evidence of a growing amount of intra-industry trade between the affiliates. This form of dependence on the division of labour fashioned by MNCs has a number of special characteristics which are particularly felt by small economies, such as Singapore, which are part of customs unions or free trade areas.

MNCs impinge on the economic structure of countries both by their choice of economic activity, and by their conduct and performance in the sectors in which they produce. While the former impact may be related to OLI characteristics of the sectors and the existing market structure, once established, the conduct and performance of MNC affiliates affects their share of industry output, and with it, of market structure; in turn changes in the market structure may cause MNCs to reappraise strategy and hence lead to further reallocation of resources.

There is a widespread belief that the high-value activities of MNCs tend to be concentrated in the home countries while their overseas satellites engage in low-value activities. It would seem that as firms become more multinational and less ethnocentric in their outlook they direct a higher proportion of their R&D to their affiliates; but, except in a very few cases, the great bulk of fundamental research continues to be undertaken in the home country, while the control of what type of R&D is done and where it is located is still very much a centralised decision and viewed from the perspective of the long-term goals of the MNCs as a whole, rather than those of its individual affiliates. Again, a conflict of interest may arise between the international division of labour of R&D activities from a corporate objective compared with that of a particular home or host country.

In other areas, being part of an international network of activities might enable the foreign firm to create more linkages with local firms than an indigenous competitor would. However, where the R&D is done by the parent company, the host economy may be deprived of an important part of its opportunities for 'growing up'; this is particularly likely to be the case where the market structure and technology of the industry cannot economically support more than two domestic products. Yet even where some local R&D is undertaken by the foreign affiliate, its parent company still retains control over its type and usage, and there is no guarantee that it will be profitable to use such technological capacity in a way consistent with the long term industrial or development goals of host countries.

Just as trade links an economy to an international division of labour, so does international production. MNCs promote different patterns of the international allocation of economic activity than would otherwise exist. The question of interest and concern to both host and home countries is the extent to which the resulting disposition of output accords with their own interests. Partly, of course, this relates to political values and goals though these are not independent of likely economic outcomes. These outcomes relate to the extent the which there is an adequate control mechanism (including that imposed on the market) on the actions of MNCs, ensuring that they have to be efficient and that the economic rent they earn is minimised. In industries dominated by MNCs this is not easy to see. Not only may oligopolistic behaviour result in sub-optimal efficiency, excessive discretionary expenditure, wasteful advertising, and so on; policies towards the redeployment of their activities to help sponsor changes in international resource allocation are likely to be cautionary. In countries in which they are faced with no effective competition, this may slow down or stifle the development of an indigenous technological capacity.

Of the fact that MNCs do introduce an element of openness, and hence vulnerability, into economies such as Singapore and its ASEAN partners, there can be little question. Their activities in any one country reflect response to changes in the world economic environment in the other countries in which they operate. For good or bad, they are conduits of change, and countries which wish to insulate themselves against such change may well be concerned about their structural impact. At the same time, there is little evidence that the adverse consequences of change can be laid at their door. Their recent record on employment in both developed and developing countries, compared with that of national firms, is a creditable one, even though their reactions to economic signals may be rather speedier and more evenly distributed than host countries would like.

MNCs are also an integrating force in the world economy. Again, whether the kind of integration they promote, the way they bring it about, and the distribution of the resulting benefits is acceptable to participating nations is another matter. But inevitably, increasing corporate internalisation and the growth of cross-border, intra-industry, intra-firm trade leads to a change in the structure and location of economic activity. But how far corporate integration is consistent with regional integration again rests on the policies of governments, the international market structure in which MNCs operate, and their individual strategies.

Up till 1980, Singapore's attraction for business was mainly due to a low-cost business environment. This is no longer the case. Other countries, both in the region and elsewhere, can offer lower costs than Singapore. To sustain the growth, Singapore has to move into higher value activities, which require higher skills and technology, and which can justify Singapore's higher cost structure. Today, Singapore faces increasingly stiff competition from countries up and down the development ladder - the already developed countries, the NICs, as well as the developing countries. Singapore is no longer

competing on the basis of low cost. It must look for new factors for success. It is for this reason that a Strategic Economic Plan has been developed in order to identify what specific strategies are needed to be implemented to meet the needs of the developed country activities which they are trying to attract.

Economic positioning goes beyond competitive positioning. It involves the role Singapore can play in the international economy and in the global strategies of companies. In the 1960s Singapore was a low-cost supplier of products and resources. In the 1970s and 1980s, as its capabilities developed, Singapore became involved in higher-value activities such as product development, industrial design and fund management. For the 1990s, as the Asia-Pacific region grows in strategic importance to companies and as Singapore builds on its capabilities, the aim is to play the role of a strategic partner in companies' global operations.

The growth potential of the Asia region provides new opportunities for strategic partnership between Singapore and international companies. In the early stages of economic development, Singapore had concentrated on 'outer-globalisation' - establishing linkages with the rest of the world as they had the markets and technology. In the 1990s, the aim is 'inner globalisation', as Asia itself offers new opportunities for growth (Economic Development Board, 1990 - Global strategies conference).

Singapore is well positioned at the hub of this fast growing region. Companies can use Singapore as a springboard into the region. One of the strategic strengths that Singapore offers companies is its linkages and ties to the region. As a nation of migrants from the region, Singapore has an understanding of the cultures and business traditions of the region. This, coupled with their cosmopolitan environment and infrastructural strengths, makes Singapore an effective interface for MNCs expanding into the region.

The survival and viability of the emporium can only be guaranteed by means of a judicious choice between several areas of specialisation which - as has often been said - do not imply superiority, a leading position or even segregation from the neighbouring countries. It is a question of defining those areas in the necessary process of constant adaptation to international market conditions, and to the foreseeable evolution of the regional environment in the next two to three decades. Constant adaptation has to be the major preoccupation of Singapore.

Without the cooperation of the other member states of ASEAN, it is doubtful whether the growth of the Singapore economy would have been as rapid. The fact that Singapore was at a higher level of development in the integrated region implies that with a head start in industrialisation it was able to strengthen its position and increase its lead as a result of integration. It will not necessarily be in Singapore's interest to forge a closely knit subregional integration through discriminatory arrangements, as the trade diversion effects arising from it are likely to far exceed the trade creation

effects, given the resource and factor endowments of the ASEAN region. Much of the increase in intra-ASEAN trade in recent years is attributable to the bold liberalisation measures taken by individual countries in unilateral fashion outside the ASEAN framework. To say the least, the ASEAN market is no substitute for the global market. Nevertheless, ASEAN can play a supplementary role that is mutually beneficial to all its members.

It is also important for the city-state never to forget that every break in relations with the regional environment, whether brought about by its own action or by one of its neighbours, could spoil the geopolitical conditions which have governed its brilliant development, based at one and the same time on regional and worldwide links. The damage, however, would probably not be fatal because of the close ties it has established with the industrial countries.

In short, looking at Singapore's difficulties with a rising tide of protectionism penalising its exports, and at the sometimes uncertain mobilisation of the foreign investments which are indispensable for the successful realisation of its technological ambitions, the industrial and financial expansion of Singapore outside its frontiers (in ASEAN and its periphery, South Asia, China, Australia and the West coast of the US) represents a third possible way forward, giving offence to none and allowing it to transcend the narrowness of its geographical and human limitations.

The ASEAN region in particular is positioned to benefit from the business opportunities arising from the dynamism of the Asia region. The 1980s saw a change in the economic strategy of most of the ASEAN governments, from import substitution and self sufficiency to market oriented economic development. Interest from foreign investors has been rekindled. This provides a unique opportunity for business development and collaboration specifically between three ASEAN countries - Singapore, Malaysia (especially the state of Johor), and Indonesia (in particular, the Riau Islands).

International companies today distribute their business activities to take advantages of the competitive strengths of each country. R&D, industrial design, engineering and software development are undertaken in countries where such skills are available. Marketing and corporate support services are undertaken in countries where infrastructure is well developed. Labour-intensive activities are undertaken where inexpensive labour is readily available.

Companies from the OECD countries have had to distribute their activities to far flung corners of the world. Modern telecommunications technology has reduced the problems of coordinating these activities. Nevertheless, significant economies of scale can be achieved if these activities can be located near one another. In practise this is hard to achieve as no one country can offer both a plentiful supply of labour and land at competitive prices, as well as a sophisticated level of infrastructure and other support facilities.

In Asia, Singapore, Johor and the Riau Islands provide this unique combination. The Riau islands have ample land, and workers are freely available from other parts of Indonesia. Johor has a more developed infrastructure and higher skilled workers. Singapore, with a long history of industrialisation, has the sophisticated infrastructure and the specialised skills and support facilities. Because of the different stages of development the three countries complement one another nicely.

In recent years an increasing degree of horizontal industrial cooperation has been witnessed in the Asia-Pacific region, particularly through the shifting of industries among Asian NICs, ASEAN countries and Japan. For further economic development and peace in Asia, it is important for Japan to continue to improve its market access, to promote its direct investment and technical transfer in this region, and to reinforce its industrial cooperation with ASEAN countries in a mutually complementary manner.

As the industries develop in the Asian countries, it will become vital for Singapore to continue to enhance its industrial structure, and to contribute to further economic growth of its neighbouring countries, as they proceed. To this end, Singapore and Japan should expand the dimension and depth of cooperative relationship between them not only in terms of trade but also in investment and technical exchange. In particular, the utilisation of the vitality of the private sector is essential.

ASEAN nations are expected to continue their vigorous economic growth, by building up their export capability, while increasing their interdependency among them and in the region of Asia-Pacific regions. This will drive Singapore, as the centre of the ASEAN economy, to advance its industrial and servicing structure to a higher level.

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