



INTRA-TRADE POTENTIALS OF ASEAN:
EVIDENCE FROM GRAVITY MODEL

BY

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ABSTRACT

In international trade, economic theory has highlighted its composition but delves less into its volume and direction, which are of more political and economic importance to countries. Intra-ASEAN trade is found to be very small. This study endeavors to make a formal analysis of the main determinants of intra-ASEAN bilateral trade and the existence of trade creation or trade diversion. Based on cross-sectional data, the gravity model is estimated for three periods: 1985, 1995 and 2000. The results obtained do indicate that intra-ASEAN trade is consistent with the standard gravity model. The inclusion of the ASEAN and APEC dummy variables suggest that trade-creating benefits are emerging amongst ASEAN member countries though APEC is a wider economic grouping. ASEAN countries do have great potentials to enhancing intra-regional trade through further trade liberalization.

ملخص البحث

إن النظرية الاقتصادية في التجارة الدولية قد أشارت إلى مكوناتها، ولكن لم تتعمق الإشارة في مقدارها وتوجيهها اللذان يعتبران أمران مهمان للدولة سياسية واقتصادية. والتجارة بين دول (ASEAN) يعتبر قليل جدا. فهذه الدراسة تميل إلى تحليل منهجي لمحددات التجارة بين دول (ASEAN) من ناحية التجارة الثنائية ووجود إحداث التجارة أو التحويل التجاري. بناءً على معلومات المقطع المستعرض، المخطط الوقاري قدر لمدة ثلاث سنوات: 1985، 1995 و 2000. والنتائج أشارت إلى أن التجارة بين دول (ASEAN) متماسكة مع المخطط الوقاري القياسي. وتضمنين متغيرات (ASEAN) و (APEC) يقترح أن فوائد إحداث التجارة تظهر بين أعضاء دول (ASEAN) على الرغم من أن (APEC) أو سع جمعية تجارية (ASEAN). فلدول (ASEAN) إمكانيات كبيرة في إعزاز التجارة الإقليمية بواسطة تأييد التحرر التجاري.

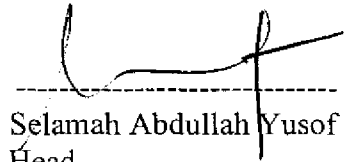
APPROVAL PAGE

I certify that I have supervised and read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a research paper for the degree of Master of Economics.



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DECLARATION

I hereby declare that this research paper is the result of my own investigations, except where otherwise stated. Other sources are acknowledged by footnotes giving explicit references and a bibliography is appended.

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MODEL**

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For his continued love, support and encouragement.

Praise be to Allah, the cherisher and Sustainer of the worlds. It is HE who has given me the knowledge, strength, patience and guidance to undertake and accomplish this study.

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CHAPTER ONE

INTRODUCTION

The three decades of ASEAN's life have coincided with powerful tendencies towards regionalism and globalization of economic activity (Garnaut, 1998). The pioneering states of ASEAN are Indonesia, Malaysia, The Philippines, Singapore and Thailand. At the time of its inception, there existed continuing military conflicts and tensions amongst several of the ASEAN's member countries. It was an era of political instability on the borders, in particular the Indochina war, and political uncertainty within several of the ASEAN members as they sought a firm basis for development.

In the arena of international economics and politics, regional trade bloc is like a "wild fire" quickly spreading around the world. The current wave of regionalization has three salient features (Frankel and Wei; 1998). Firstly, almost every country belongs to at least one trading bloc. Secondly most trading blocs have been formed among neighboring countries; that is many are on continental basis. Thirdly, regional trading arrangements are put forward or forged in various parts of the world simultaneously.

Researchers have posited that regional economic cooperation may take various forms, and are usually categorized into four. A free trade agreement (FTA) in which member countries remove all trade barriers among themselves but hold on to their respective commercial policies in dealing with the outside world; A customs union which is similar to an FTA except that member countries have common external commercial policies; a common market that is a customs union which also permits free factor mobility within the market; and an economic union that is a common market that seeks to achieve a total unification of monetary and fiscal policies. Huang and Tu (1994)

(1994) espoused an additional one, which is a monetary union, and it lies between a common market and an economic union.

The political objectives of ASEAN were met splendidly. In a gradual manner, objectives of economic co-operation became more prominent in ASEAN. Notably a programme of special measures to promote and enhance intra-trade expansion in 1976 and, the formation of the ASEAN free trade (AFTA) in 1992. Prior to the formation of AFTA, the programme to expand trade amongst ASEAN economies was viewed as unsuccessful. For instance, the complementation agreements and ASEAN industrial projects of the late 1970s did not achieved their desired objectives. The ASEAN trade preferences were overshadowed by multilateral trade liberalization, hence not producing positive signs

The question of the desirability of regional trading arrangements poses a trade off (Krugman 1991a, 1991b; Bhagwati 1993; and Frankel et. al.; 1993). Its favorable effect is the elimination of distortions in the relative prices between domestic goods and products of other members. Its unfavorable effect is the introduction of distortions in the relative price between the goods of members and non-members. In theory of international trade, the trade off is between trade creation (TC) and trade diversion (TD). Krugman (1991b) and Summers (1991) hinted that trading blocs formed along continental lines offer more latitude of hope to be welfare improving. These studies focus on total world welfare effect of regional blocs.

After the conclusion of NAFTA, the United States of America in 1994 proposed to deliberate on a possible bloc that will envelope most of the countries in the Americas. In the same vein, the European Union and the European free trade area (EFTA) in

1992 formed the European Economic Area. In Asia and the Pacific, an upgraded APEC that includes most of the East Asian countries, North America, Australia and New Zealand, has promulgated its intention to achieve free trade too.

Intra-ASEAN trade appears to be very small in magnitude. The ratio of intra-trade (export and import) to the regions total trade was 22% in 1985; it fell to 20% in 1995 and rose to 25% in 2000. Over the period 1985 to 2000, the average annual growth rate of intra-trade was 13.1%.¹ This is attributable to normal outcome or because of unexplored trade opportunity. If the later is the case, an increase in ASEAN trade might be welfare improving. With ASEAN and APEC both moving towards the formation of an FTA, observers found themselves at a crossroad whether ASEAN being a subset of APEC is going to be overshadowed by a larger economy in APEC (Tan et al., 1992 & Rudner, 1995). A formal analysis of these issues occupies the centre-stage of this study.

A gravity model of international trade will be used to examine whether intra-ASEAN trade is lower or higher than what is predicted by economic model.² This acts as a catalyst about the structure of comparative advantage in the ASEAN countries, which is geared towards explaining why Intra-ASEAN trade is low, and how can trade among them, be stimulated. It also acts as a “window of opportunity” to shedding light on the effect of trade creation and trade diversion arising from any preferential agreements amongst ASEAN member countries. In essence trading blocs lead to rapid expansion of trade and trade intensification. According to Garnaut (1998), trade

¹ See Table 1 on p. 22 and its discussion.

² The five original members are chosen (Indonesia, Malaysia, The Philippines, Singapore and Thailand plus their major trading partners; see appendix.

intensification occurs partly because reduced or slower growth in the discriminatory blocs lowers the supply prices of non-members' products in each other's market.

PROBLEM STATEMENT

As stated earlier, intra-ASEAN trade is very low. The inhibiting factors ranges from political, economic to structural factors. Also the low intra-trade ratio among ASEAN countries vividly highlights the low level of integration. The purpose of this study is explorative in nature. Is intra-ASEAN trade consistent with the standard gravity model determinants of trade? If not what are the salient factors underlying such inconsistency? To what extent can economic integration of ASEAN countries increase economic growth and development in the region?

The empirical results of this paper will address these questions. The implications of the results will be thoroughly scrutinized for effective utilization by policy-makers.

OBJECTIVES AND CONTRIBUTION OF THE PAPER

The problem statement of the research is an 'eye opener' to the objectives and potential contribution of this study. Not many studies have been done on bilateral trade among ASEAN member countries. Sharma and Chua (2000) emphasized that effective economic integration scheme is needed since the ASEAN integration program did not increase intra-ASEAN trade. In international trade, economic theory has highlighted its composition, but delves less into its volume and direction, which are of more political and economic importance to countries. The objective of our study is to examine the main determinants of intra-bilateral trade and the level of trade interdependence among the ASEAN member countries for the periods 1985, 1995 and

2000. The prospect for a higher level of ASEAN integration is of utmost importance to the members. This is because APEC, which constitutes ASEAN, NAFTA and ANZCER members, is progressing from a regional grouping to a global trading liberalization grouping (Tang, 2001).

The significance of the study abound. From an individual country point of view, it will help in mapping out a strategy to fostering a closer trade relation with other countries. Also it provides a window of opportunity for ASEAN member countries to align their policies to fully benefit from regional economic integration. With the current wave of economic regionalism, ASEAN is constantly under the verge of being 'stomached' in by a wider APEC grouping, and this raises eyebrows as to attaining the ASEAN economic integration goals. This paper would also try to provide suggestions of the future role of ASEAN. The analysis of this research paper can assist ASEAN member countries to either revert back to its political objectives upon inception, which must be aligned to meet the demands of today's political terrain. In other words, ASEAN might have to retransform itself into a regional body having similar objectives as those of NATO. The ASEAN members would thenceforth fully participate in APEC to derive the 'full blown' effects of open regionalism. As an alternative strategy, The ASEAN body would have to redesign and reformulate its economic objectives geared towards thwarting any force from APEC, which if left unchecked could lead to its

ORGANIZATION OF THE STUDY

The remainder of this research paper will be organized as follows: Chapter two presents the literature review, which provides a foundation for the study. Chapter three describes the methodology and data. Chapter four presents the empirical findings of

the study. Finally chapter five draws conclusions from the outcomes obtained and gives some policy recommendations.

CHAPTER TWO

LITERATURE REVIEW

Since the early 1940s, the gravity model has been applied to a variety of goods and factors of production across regional and national boundaries under differing circumstances. The model has been successfully used on flows of varying types, such as migration, flows of buyers to shopping complexes, recreational traffic, commuting, patient flows to hospitals, and interregional as well as international trade.

Notwithstanding its widespread empirical usage, the gravity equation has been a model in search of a theory. Theories developed in support of the model abound. The differences in these theories help enunciate the many different versions of the gravity equation and differences in the results obtained.

Oguledo and MacPhee (1994) scrutinized the various approaches of the gravity equations. In its specific application to international trade flows, the gravity model states that the size or magnitude of trade flows between two nations is determined by supply conditions at the origin, by demand conditions at the destination and by stimulating or restraining forces relating to the specific flows between the two nations.

The first approach is rooted in physics. This framework appealed to the physical laws of gravitation and electrical forces. As a result, it led to the conclusion that the flow of goods from country i to country j , equals the product of the potential trade capacities of the two countries divided by a resistance or distance factor (Oguledo and MacPhee; 1994). In applying this framework, Isard and Peck (1954) and Beckerman (1956), found that trade flows are greater between geographically closer areas.

The second approach is based on the Walrasian general equilibrium mechanism. The model rests on the backdrop of each country having its own supply and demand functions for all goods. Aggregate income is used as a proxy of the level of demand in the importing country and the level of supply in the exporting country. The gravity model is eyed as a reduced-form equation for trade volume in which trade prices do not appear because they are endogenous. Earlier studies based on the Walrasian general equilibrium approach (Tinbergen, 1962 & Poyhonen, 1963) arrived at the results that incomes of trading partners and the distances between them are statistically significant and of the expected positive and negative signs respectively. Other studies, which found significant effects of these variables, include Aitken (1973), Geraci and Prewo (1977), Brada and Mendez (1983), Bergstrand (1985, 1988). It is interesting to discover an exception to the above results. Glejser (1968) found the income of the exporting country to have a negative impact on trade flows. Furthermore, majority of the general equilibrium studies concluded that population size of trading countries has negative and statistically significant effect on trade flows (Aitkin, 1973 & Linneman, 1966).

The third benchmark used in explaining the gravity model is premised on a probability model. Demanders supposedly are assigned to suppliers in a random fashion. Studies based on this framework tried to predict trade flows between countries in which trade flows are regarded as stochastic events (Savage & Duetsch, 1960 & Sattinger, 1978). The most recent micro-foundation approach to the gravity model claims that other approaches (e.g. the conventional gravity model) lack strong theoretical foundations. The micro-foundation framework claims that the assumption of perfect product substitutability of the conventional gravity model is unrealistic. Its claim is founded on recent studies, which have shown that trade flows are differentiated by place of

origin. The exclusion of price variables leads to misspecification of the model. Those who share this view include Anderson (1979) and Bergstrand (1985, 1988). They expound that adding price variable to the conventional gravity model has proven to be statistically significant in explaining trade flows between countries.

Bikker (1987) unearthed the importance of the extended gravity model over the traditional gravity model. His study unveiled that merely testing figures of international trade flows quite convincingly rejects the conventional gravity model. As a result the substitution framework of the extended gravity model (EGM), which does not impair a relatively simple estimation procedure, is much more a realistic model for international trade. The substitution framework gives leeway for an analysis of economic integration in terms of trade diversion and trade creation, in principle. A comparative study showed that the effect of the determinants of trade flows of the EGM clearly diverged from those arrived at by using the traditional one. As Bikker (1987) outlined, the EGM encompasses several models originating in regional economics, for example production constraint models, analysis of variance models etc.³

The gravity model is widely used in the literature to assess the feasibility and benefits of economic regionalism. Thornton and Goglio (2002) found that Southeast Asia has exhibited a bias towards intra-regional trade. However, this is little more than would be expected from the economic size, growth rates and geographical proximity of these nations in the world economy. Furthermore, they discovered that the degree of trade biasness is somewhat greater than that shown by the EU but lower than that of

³ See Cesario, F.J. (1973). A generalized Trip Distribution Model, *Journal of Regional Science*, Vol 13, pp 223-247

NAFTA. Moreover, the degree of biasness shown by the EU and NAFTA had increased substantially but that of Southeast Asia has not increased overtime. Membership in ASEAN played a less important role in determining bilateral trade in the region over the full sample period. These results are in sharp contrast to those of Frankel (1997) and Winters and Wang (1994), who found the ASEAN dummy variable to be statistically significant in the past.

Amelung (1992) identified two economic blocs in the Pacific region namely Northeast and Southeast. According to him, the trade links within the Southeast Asian group point to the fact that trade integration within that group is not as a result of institutional schemes such as the formation of ASEAN, but due to Singapore's role as a leading trade and service centre in the region. This argument is somewhat later supported by the research findings of Sharma and Chua (2000). They found that trade amongst ASEAN members, increases with the size of their economies. The ASEAN integration program did not increase intra-ASEAN trade, but an increase in trade took place with members of a wider APEC group. That is ASEAN does not seem to be a significant factor in promoting trade and economic integration between ASEAN member countries.

Choudhry et al. (2000) also undertook a study on the feasibility of an East Asian bloc that would be centred on Japan. Recent evidence indicates that Japan is at the peril of losing its place at the centre of these potentially self-sustaining economic systems. In words, there is an increasing integration among East Asian economies. These economies are experiencing dynamic processes of changing comparative advantage and thus, maintaining their competitiveness against one another, as well as developed economies including Japan. The existing literature on the possible 'birth' of an East

Asian trading bloc is premised mostly on simple measures of trade intensity and ratios of intra-regional trade flows, leading to conflicting views about such a bloc-in-formation. Despite the increasing interdependence of East Asian economies, Frankel (1993), Petri (1993) and Saxonhouse (1993) concurred that existing data do not provide a crystal clear intensification of any intraregional bias in East Asia. On a Japan centred-bloc, they espoused the existence of little evidence that Japan is fast forming itself into a metropole in the regional pattern of trade. According to Panagariya (1994), the formation of a discriminatory bloc in East Asia is inhibited by both economic and political factors. He posited that two-thirds of the region's exports are shipped to non-Asian markets and historically the key players in East Asia are political archrivals. It is hard to envisage desperate countries such as China, Japan, Korea and ASEAN members forming such a regional bloc. In a similar study, Meltzer (1991) said that in comparison to Europe, East Asia hovers around a significantly lower capacity for independence from the world economy. Meanwhile, Yamazawa et al. (1991), Drysdale and Garnaut (1992), Young (1993) and Goto and Hamada (1994) used trade intensity index to assess the degree of interconnectedness in trading among Asian countries. They noted that contrary to earlier studies, the degree of interdependence is quite strong among Asian countries. Singapore and Japan show a high value of trade intensity with other countries in Asia, for example. This argument is supported by Summers (1991), who found that despite their diversity, the ever-intertwining linkages between the regional economies attest to the gradual emergence of a 'natural' trading bloc in Pacific Asia.

Recent times have witnessed a huge flow of foreign direct investment (FDI) between these nations. It is believed that FDI is equally a 'propeller' to hastening economic

integration by exploiting complementarities between economies and fostering further interdependence. Bowles and Maclean (1996) lent support to this argument. If FDIs are accounted for, the advent of an East Asian bloc is considerably higher than that suggested by earlier studies.

According to Choudhry et al. (2000), recent evidence put in limbo the possible emergence of a 'Japan centred Asian bloc despite growing evidence of these economies rapidly and spontaneously integrating with one another. They opined that as the other regional economies prosper and grow, their business firms mature and opt out for global strategies. Under this situation, the other highly performing Asian economies (HPAEs) are reluctant to move collectively to establishing a yen-centred bloc as done in Western Europe and the Americas. More so, they maybe fearful that in a yen-centred bloc, the much stronger Japanese firms will engage in cutthroat competition to barrage the entry of firms of other economies.

Economic blocs may bring about benefits for one time and produce weakening results for the other time. In other words, institutional arrangements should be adjusted and readjusted from time to time. The basic economic theory of preferential trading agreements (PTA) pinpoints the existence of trade creation (TC) and trade diversion (TD). In trade creation, a preferential tariff cut makes a partner nation to start importing from its other partners rather than producing the goods itself. This is due to a fall in relative price of the imported goods through tariff removal irrespective of its preferential nature. Trade diversion occurs when a partner country starts importing goods from its other partners rather from non-partner countries as a result of a fall in price of the partner-sourced import relative to the non-partner-sourced imported goods, which is caused by the preferential nature of the tariff cut. Since PTA

enshrines some trade liberation and a new distortion in the market caused by preferential or discriminatory nature of a tariff, there emerges both a potential welfare gain due to trade creation, and potential welfare loss due to trade diversion. In effect, the potential overall welfare effect remains ambiguous.

This tends to be the issue raised by the findings of Endoh (1999). He analyzed the effects of both trade creation and trade diversion of three economic organizations; the European Economic Community (EEC), the Latin American Free Trade Association (LAFTA) and the Council of Mutual Economic Assistance (CMEA). He found that the aforementioned organizations did promote trade creation and trade diversion during the period 1960-1994, although their effects seemed to be weakening in the early 1990s.

According to Hassan (2001), regional economic integration is punctuated with both static and dynamic effects. Static effects entail:

- TC effects arising from both production and consumption gains
- TD effects coming from the replacement of cheaper imports with those of the member countries, due to discrimination
- Stronger bargaining power as a result of larger economic size
- Administrative expenditures are lowered among member countries and
- Less smuggling among member countries