ธนาคารแห่งประเทศไทย

SP/03/2003

สัมมนาวิชาการประจำปี 2546

BOT Symposium 2003

การค้าในเอเชียตะวันออก - แรงขับเคลื่อนใหม่ในการพัฒนาประเทศ?

Can We Count on Intra-regional Trade as a Source of Growth?

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สิงหาคม 2546

บทสรุป

ข้อคิดเห็นที่ปรากฏในบทความนี้เป็นความเห็นของผู้เขียน ซึ่งไม่จำเป็นต้องสอดคล้องกับความเห็นของธนาคารแห่งประเทศไทย

บทความนี้ต้องการตอบคำถามว่า การค้าภายในภูมิภาคเอเชียตะวันออกจะเป็นแรงขับเคลื่อนของการพัฒนาประเทศในระยะต่อไปได้หรือไม่ โดยแบ่งการศึกษาเป็น 3 ระดับ คือ (1) ศึกษากระแสการค้าและการเปลี่ยนแปลงของโครงสร้างการผลิตภายในเอเชียตะวันออก ตลอดจนวิเคราะห์เชิงลึกถึงความเชื่อมโยงทางการค้าภายในภูมิภาค (2) ประเมินแนวโน้มของปริมาณการค้าในเอเชียตะวันออกในอนาคต โดยเฉพาะศักยภาพทางการค้าของไทยกับประเทศต่างๆ ในภูมิภาค (3) วิเคราะห์ผลกระทบของแนวโน้มดังกล่าวต่อการดำเนินนโยบายทางการค้าของประเทศ เพื่อใช้ช่วยในการกำหนดนโยบายของประเทศต่อไปในอนาคต

จากการศึกษาพบว่า การเพิ่มขึ้นของการค้าภายในภูมิภาคเอเชียตะวันออกมาจากการปรับฐานการผลิตและการขยายตัวของอุปสงค์ในภูมิภาค โดยการคำนวณทางเศรษฐมิติชี้ว่าการขยายตัวของการส่งออกภายในภูมิภาคนั้นส่วนหนึ่งยังคงเป็นการตอบสนองต่อการขยายตัวของประเทศ G3 อยู่ นอกจากนี้ พบว่าปัจจุบันยังมีประเทศในภูมิภาคบางประเทศที่ไทยยังคงส่งออกได้ต่ำกว่าศักยภาพ ส่วนในระยะยาว ปริมาณการค้าในภูมิภาคมีแนวโน้มจะขยายตัวเพิ่มขึ้นอย่างต่อเนื่องและจะเป็นแรงขับเคลื่อนสำคัญในการพัฒนาประเทศได้ ในเชิงนโยบาย ไทยต้องหันมาพิจารณาอย่างจริงจังเพื่อวางยุทธศาสตร์สำหรับตลาดการค้าภายในภูมิภาค และสร้างประโยชน์สูงสุดจากแนวโน้มดังกล่าว

ผู้เขียนขอขอบคุณ ดร. บัณฑิต นิจถาวร และดร.อัจนา ไวความดี ที่ได้ให้คำแนะนำอันเป็นประโยชน์ยิ่งต่องานวิจัยนี้ และงานวิจัยนี้คงมิอาจสำเร็จได้หากปราศจากความช่วยเหลือรวมทั้งกำลังใจจากเพื่อนร่วมงานในสายนโยบายการเงิน

บทสรุปผู้บริหาร

ปัจจุบันเศรษฐกิจไทยและการส่งออกเริ่มฟื้นตัว กลับเข้าสู่ภาวะที่แข็งแกร่งขึ้นท่ามกลางเศรษฐกิจโลกซึ่งยังคงมีความไม่แน่นอนโดยเฉพาะในกลุ่มประเทศ G3 และขณะที่การค้าโลกมิได้ขยายตัวมากนัก การค้าในภูมิภาคกลับขยายตัวสูงมาก ด้วยเหตุนี้ คำถามที่สำคัญ คือ การค้าภายในภูมิภาคเอเชียตะวันออกจะกลายเป็นแรงขับเคลื่อนใหม่ที่จะเป็นพื้นฐานสำคัญของการพัฒนาประเทศในระยะต่อไปได้หรือไม่

ก่อนวิกฤต การส่งออกได้เป็นแรงขับเคลื่อนสำคัญในกระบวนการพัฒนาประเทศ โดยรัฐอาศัยตลาดการค้าโลกซึ่งมีขนาดใหญ่เป็นเครื่องมือผลักดันให้โครงสร้างการผลิตไทยต้องเร่งพัฒนายกระดับ มีการนำเทคโนโลยีใหม่ๆ เข้ามาใช้ เพื่อเพิ่มขีดความสามารถของตนในการออกไปสู้ในตลาดโลก และปรับตัวตามโครงสร้างใหม่ในกระบวนการผลิตโลกที่นับวันจะแข่งขันกันอย่างรุนแรงยิ่งขึ้น

เป็นที่น่าสนใจว่า ในช่วง 15 ปีที่ผ่านมา การส่งออกของไทยโดยรวมเพิ่มเฉลี่ยปีละ 11% แต่การส่งออกไปยังประเทศในเอเชียตะวันออก ที่ประกอบด้วยเกาหลีใต้ จีน ไต้หวัน ฟิลิปปินส์ มาเลเซีย สิงคโปร์ อินโดนีเซีย และฮ่องกง ได้เพิ่มขึ้นรวดเร็วยิ่งกว่า เฉลี่ยถึงปีละ 14% ส่งผลให้การค้าระหว่างไทยกับเอเชียตะวันออกทวีความสำคัญยิ่งขึ้น จากเดิมที่คิดเป็นสัดส่วนร้อยละ 23 ของการส่งออกโดยรวม เป็นร้อยละ 32 และกลายเป็นตลาดการค้าสำคัญซึ่งแทนที่การส่งออกไปยังประเทศในกลุ่ม G3 (สหรัฐอเมริกา สหภาพยุโรป และญี่ปุ่น)

ประเด็นนี้เป็นเรื่องที่มีนัยสำคัญยิ่งในเชิงนโยบาย เนื่องจากเอเชียตะวันออกนับเป็นตลาดการค้าที่สำคัญของโลก มีประชากรรวมกันมากกว่า 1.7 พันล้านคน หรือหนึ่งในสี่ของโลก มี GDP รวมกันกว่า 2 ล้านล้านดอลลาร์ สรอ. มีปริมาณการค้าสูงถึงประมาณ 1.2 ล้านล้านดอลลาร์ สรอ. ดังนั้นหากการค้าในเอเชียตะวันออกมีความสำคัญเช่นนี้ ไทยจะ Position ตัวเองอย่างไรถึงจะได้รับประโยชน์สูงสุดจากการค้าขายกับประเทศเหล่านี้

เพื่อตอบคำถามดังกล่าว บทความนี้จึงได้ศึกษาวิเคราะห์ใน 3 ระดับ โดย (1) ศึกษาทำความเข้าใจกระแสการค้าและการเปลี่ยนแปลงของโครงสร้างการผลิตภายในเอเชียตะวันออก ตลอดจนวิเคราะห์เชิงลึกถึงโครงสร้างความเชื่อมโยงทางการค้าภายในภูมิภาค (2) ประเมินแนวโน้มของปริมาณการค้าในเอเชียตะวันออกในอนาคต โดยเฉพาะศักยภาพทางการค้าของไทยกับประเทศต่างๆในภูมิภาค (3) วิเคราะห์ผลกระทบของแนวโน้มดังกล่าวต่อการดำเนินนโยบายทางการค้าของประเทศ เพื่อใช้ช่วยในการกำหนดนโยบายของประเทศต่อไปในอนาคต

จากการศึกษาพบว่า การค้าภายในภูมิภาคเอเชียตะวันออกที่เพิ่มขึ้น มาจากกลุ่มประเทศเกาหลีใต้ จีน ไต้หวัน ฮ่องกง ประมาณสองในสาม และที่เหลือเป็นผลมาจากกลุ่มอาเซียน 5 ประเทศ โดยเป็นการปรับฐานการผลิตจากการผลิตสินค้าเกษตรและอุตสาหกรรมพื้นฐานไปสู่การผลิตสินค้าที่มีมูลค่าเพิ่มมากขึ้นและมีการผลิตที่ซับซ้อนขึ้น เช่น กลุ่มเครื่องจักรและเครื่องใช้ไฟฟ้า อีกส่วนหนึ่งเป็นผลจากการที่บริษัทในประเทศเกาหลี ไต้หวัน ญี่ปุ่น และประเทศอื่นๆ ย้ายฐานการผลิตบางส่วนไปยังประเทศต่างๆ เพื่อใช้วัตถุดิบและใช้เป็นฐานประกอบสินค้า ซึ่งการที่มี International Division of Labor เช่นนี้ นับว่าเป็นแนวโน้มใหม่ของการค้าระหว่างประเทศ

ในด้านตลาดการค้า การส่งออกในภูมิภาคบางส่วนเป็นการส่งออกไปยังอีกประเทศหนึ่งเพื่อผลิตเพิ่มเติมและนำไปขายให้กลุ่มประเทศ G3 ชี้ถึงการพึ่งพาตลาดนอกภูมิภาคที่ยังคงมีอยู่ อย่างไรก็ตาม สัดส่วนของการพึ่งพานี้ได้ลดลงเทียบกับการผลิตและการค้าเพื่อใช้ในภูมิภาค โดยการคำนวณทางเศรษฐมิติชี้ว่าการขยายตัวของการส่งออกภายในภูมิภาคนั้น ส่วนหนึ่งเชื่อมโยงกับการขยายตัวของประเทศ G3 แต่อีกส่วนหนึ่งตอบสนองต่อการขยายตัวของตลาดในภูมิภาคเอง โดยความเชื่อมโยงของวัฏจักรการค้าในภูมิภาคได้เพิ่มขึ้นเป็นลำดับระหว่าง 20 ปีที่ผ่านมา

สำหรับความสามารถในการส่งออกของประเทศไทยไปยังประเทศต่างๆ นั้น ได้ทำการศึกษาศักยภาพของปริมาณการค้าในระดับทวิภาคีของประเทศในภูมิภาคโดยใช้ Gravity Equation ซึ่งเมื่อพิจารณาจากขนาดของเศรษฐกิจและระยะทางระหว่างไทยกับประเทศคู่ค้า พบว่าปัจจุบันยังมีประเทศในภูมิภาคบางประเทศ เช่น จีน อินเดีย และญี่ปุ่น ที่ไทยยังคงส่งออกได้ต่ำกว่าศักยภาพซึ่งคำนวณได้จากสมการดังกล่าว

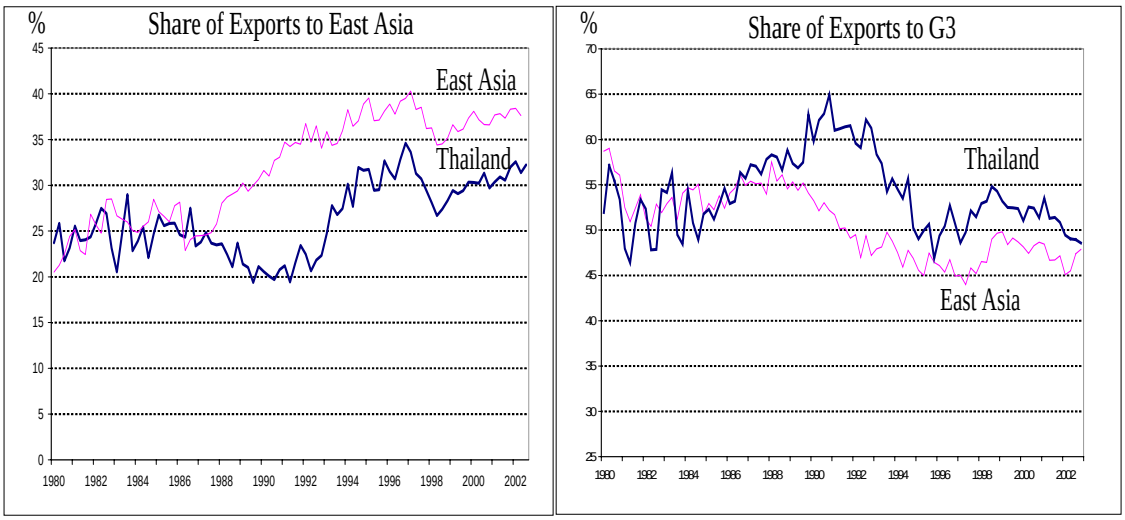
ในระยะยาว การที่เอเชียตะวันออกเป็นภูมิภาคที่มีพลวัต มีศักยภาพและขยายตัวในระดับสูงเทียบกับกลุ่มประเทศอื่นๆ ปริมาณการค้าในภูมิภาค จึงมีแนวโน้มว่าจะขยายตัวเพิ่มขึ้นอย่างต่อเนื่อง โดยในอนาคตอาจสำคัญยิ่งไปกว่าการส่งออกไปยังกลุ่มประเทศ G3 และจะเป็นแรงขับเคลื่อนสำคัญในการพัฒนาประเทศต่อไป

ในเชิงนโยบาย การที่การค้าภายในภูมิภาคจะสำคัญมากขึ้น และเอเชียตะวันออกจะเป็นตลาดการค้าที่สำคัญที่สุดแห่งหนึ่งของโลกในอนาคต ทำให้ไทยต้องหันมาพิจารณาอย่างจริงจังเพื่อวางยุทธศาสตร์สำหรับตลาดการค้าภายในภูมิภาค และสร้างประโยชน์สูงสุดจากแนวโน้มดังกล่าว โดยเร่งเจรจาการค้ากับประเทศต่างๆ ในระดับทวิภาคีและพหุภาคี ซึ่งรัฐจะต้องสร้างวิสัยทัศน์ที่ชัดเจน เพื่ออนาคตทางการค้าของเอเชียตะวันออกร่วมกัน

Can We Count on Intra-regional Trade as a Source of Growth?

One critical question facing Thailand following her emergence from the financial crisis is what Thailand would rely on as a new source of growth during her next phase of economic development. To answer this question, we examine one principle sub-component of our growth engines: intra-regional exports to East Asia which had been growing rapidly before the eruption of the crisis and accounting for an increasingly larger share of our exports. Recently, as exports to G3 countries rose moderately in the first half of 2003, our exports to East Asia expanded at the rate of 26 percent in US dollar term.[1] We ask whether such trend would be sustainable in a long run and whether Thailand could count on intra-regional trade as her new strength. More importantly, while East Asia returns to its pervious role as the fastest growing region of the world economy and China emerges strongly as a new player in the world markets, how Thailand should position herself to best benefit from this dynamic region.

Figure 1: Exports of Thailand and East Asia



Source: Direction of Trade Statistics, IMF

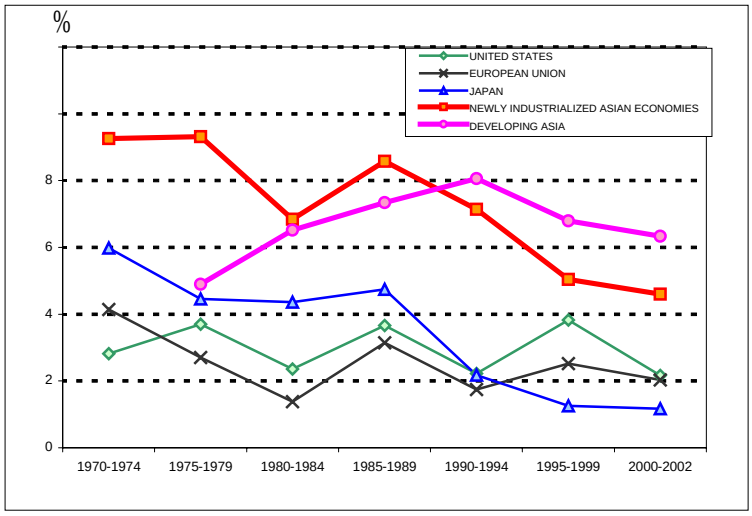
[1] During the first half of 2003, exports to G3 countries expanded only by 12 percent. Exports to China, Hong Kong, Korea, Taiwan, and ASEAN rose 82, 17, 18, 31, and 18 percent, respectively.

This paper represents an attempt to shed some light on these questions. It consists of five parts. **First**, it begins by providing a brief overview of East Asia in the world economy and discusses the past developments of trade flows within the region.[2,3] Similar to the case of Thailand, intra-regional trade within East Asia has been increasingly intensified, rising rapidly from 20.5 percent of total exports in 1980 to 40.0 percent before the East Asian crisis (Figure 1). It has recently regained its momentum as countries within the region began to recover from the crisis. **In the second part**, we investigate the sources and reasons why such intensification took place by further disaggregating the trade data by countries as well as by product categories. We examine the transformation of the regional production structures which become more and more inter-linked over time; production processes are sub-divided and outsourced; and countries become integrated parts of international production chains through international division of labor. **Third**, in-depth analyses are conducted to unveil structural changes such as closer synchronization of trade cycles as well as the relative importance of regional demands vis-à-vis external demands from G3 as drivers of intra-regional trade. **Fourth**, the trade gravity equations are estimated to examine potential trades among countries within East Asia. Using the gravity equation coefficients, we predict an evolution of the intra-regional trade vis-à-vis trade with G3 countries toward 2020. It is here that we take up the question on the sustainability of intra-regional trade. Finally, **the last section** discusses possible policy implications for Thailand.

I. East Asia in the World Economy and Linkages within the Region

Comparing with other regions in the world, countries in the East Asia region are best characterized by their relatively high economic performances and their trade openness. Between 1980 and 2002, countries in East Asia have been expanding

Figure 2: Average Real GDP Growth



Source: World Economic Outlook, IMF

[2] In this paper, East Asia includes China, Hong Kong, Indonesia, Malaysia, Philippines, Singapore, South Korea, Taiwan, and Thailand, which together account for more than 80 percent of the region exports. Others are not included given data limitations.

[3] To assess Thailand's intra-regional export potential, we have to understand what is going on in the region from both demand and supply sides, given that changes occur throughout East Asia with demands become more synchronized and its production networks become more inter-linked.

impressively at the rate of 5-9 percent, serving as an important growth pole in the world economy. Consequently, the region's share in world GDP has risen steadily from 4.2 to 8.4 percent, providing the world with expanded production bases and new markets. Should we include Japan, the region's share is now 20.9 percent.

In addition, East Asia serves as one of the main drivers of world trade expansion over the same period. With its outward-oriented policy, it accounts for an increasingly larger portion of world trade. Its collective share in world exports rose from 3 percent in 1986 to 19 percent in 2002, far greater than the corresponding US figure of 11.9 percent and Japan figure of 6.5 percent. Presently, East Asian economies including Japan accounts for more than one quarter of the world exports.

This emergence of East Asia as a production and trading center of the world economy occurred alongside with growth in the world trade. Here, trade across national borders increased far faster than the world GDP; and trade expansion became one of the most impressive and persistent trends of the last several decades. Partly, it reflected advance in transportations and communication technology; it also reflected the political resolves of countries around the world to remove the legal barriers to trade such as tariffs and other non-tariff barriers.[4] As a consequence, exports of goods and services have risen as a percentage of gross domestic products worldwide. Though this may not be a new phenomenon since the world used to be more integrated before World War I, Krugman (1995) observes that there are four new aspects of modern world trade: "the rise of the *intra-trade*, trade in similar goods between similar countries; the ability of producers to *slice up the value chain*, breaking the production process into many geo-graphically separated steps, the resulting emergence of *supertraders*, countries with extremely high ratios of trade to GDP; and the novelty that provoke the most anxiety, the emergence of large exports of manufactured goods from low wages countries…"

Krugman's forces also operated at the regional level in East Asia. But East Asia trade increased much faster than world trade: multiplying by five-fold during 1986-2002 compared with only two-fold increase in the world trade. Data in Table 1 indicates at least two reasons: intensified intra-regional trade (integration with the region) and increasing trade openness (integration with the world economy). Countries in East Asia are now trading more with each other. Its average intra-regional trade is up from 26.1 percent in 1988 to 39.3 percent in 2002 with gain registered in all countries except China. Most of the increase comes from the corresponding 12.4 percent reduction in the trade to G3 countries. Hong Kong and Singapore – given its role as the ports of East Asia – participate actively in the regional trades that accounts for more than 50-60 percent of their total trades. Meanwhile, Thailand and Korea are still at the low end of 29.7 and 29.4 percent, respectively. Yet by 2002, Thailand and Korea are much more integrated with countries in the region compared with integration in 1988. The country that made the most gain is Taiwan whose intra-regional trade share increased by 22.8 percent.[5]

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[4] Economists differ on what are the main causes of the growing world trade. Krugman (1995) viewed that "much of the growth of trade as having essentially political causes, seeing its great expansion after World War II largely as a result of the removal of the protectionist measures that constricted world market since 1913." Yet some economists such as Richard Cooper argued that the technological advancements, especially air freight, may play a larger role than what Krugman allowed: "It may come as a surprise, but 29 percent of US exports by value and 21 of US imports traveled by air in 1993."

[5] The data for bilateral trades of Taiwan available starts in 1986.

Table 1: Intra-regional Trade in East Asia

	Degree of Openness *(Exports/GDP)*			Trade with G3 *(% of Total Trade)*			Intra-regional Trade *(% of Total Trade)*		
	1988	**2002**	**Changes**	**1988**	**2002**	**Changes**	**1988**	**2002**	**Changes**
Hong Kong	107.1	92.8	-14.2	42.8	29.9	-12.9	42.6	57.9	15.3
Singapore	157.3	139.0	-18.3	48.3	36.7	-11.6	32.5	49.2	16.7
Malaysia	60.3	100.1	39.8	51.8	44.1	-7.7	33.2	42.4	9.2
Indonesia	21.8	37.7	16.0	65.1	42.9	-22.1	22.5	38.2	15.7
Taiwan	49.3	46.5	-2.8	69.2	46.5	-22.7	14.8	37.6	22.8
China	11.9	31.0	19.1	41.7	48.9	7.2	35.0	34.7	-0.3
Philippines	18.5	48.5	30.0	61.4	55.1	-6.3	23.0	34.3	11.3
Thailand	25.7	54.6	29.0	57.5	46.4	-11.2	20.4	29.7	9.3
Korea	33.5	34.1	0.6	68.9	44.5	-24.4	11.1	29.4	18.3
East Asia	53.9	64.9	11.0	56.3	43.9	-12.4	26.1	39.3	13.2

Source: Direction of Trades Statistics, IMF. Note that trade in this table includes both imports and exports.

Concerning trade openness, East Asia, with its outward-oriented policy and its supertraders such as Hong Kong and Singapore, has been one of the world most open region as measured by the exports to GDP ratio. During 1988 and 2002, trade openness of the region rose on average by 11 percent to 64.9 percent, driven mostly by countries in South East Asia such as Indonesia, Malaysia, Philippines, and Thailand. As for China, her opening up in the 1990s also contributed to the rise of her trade openness. By 2002, countries in East Asia are now more integrated with the world economy than ever.

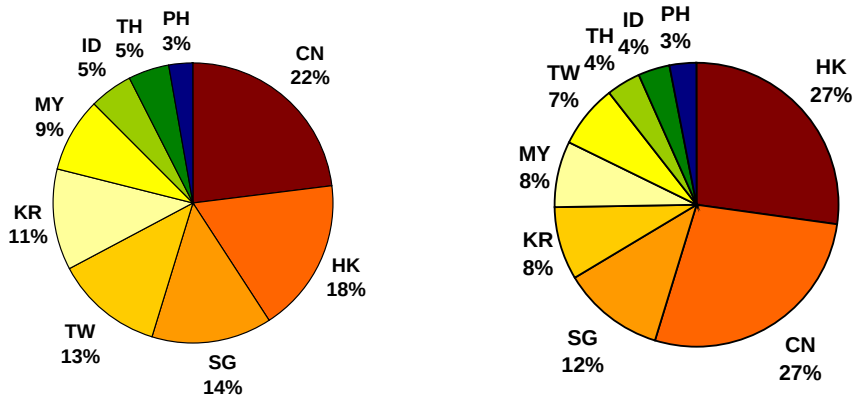
II. Intensification of Intra-regional Trade in East Asia

During 1986 and 2002, intra-regional component of the East Asian trade expanded by 8.6-fold, much faster than the two-fold increase in world trade. Why has it grown and intensified?

2.1 Disaggregation by Countries

From the IMF's Direction of Trade Statistics, one can get a quick overview of the trade direction within the East Asia region. First, there are 5 major players in the East Asia intra-regional trade: China, Hong Kong, Singapore, Taiwan, and Korea. The five countries together account for 78 percent of the intra-regional exports (as exporters) and 72 percent of the markets (as importers), in 2002. Hong Kong, China and Singapore – given their roles as the export re-processing centers of the region – are the top three destinations for the intra-regional exports.

Figure 3: Exporters and Markets for Intra-regional Trade in 2002



Exporters **Importers**

Sources: Direction of Trade Statistics, IMF

To analyze the trade data further, we break the countries in East Asia along its geography into two natural trading areas: North East Asia (China, Hong Kong, Taiwan, and Korea) and South East Asia (Indonesia, Malaysia, Philippines, Singapore and Thailand). Here, Singapore despite its advanced level of development, high income per capita, and its status as one of the newly industrialized countries, still has a closer relationship with South East Asia. Roughly 60 percent of its trade flows occur with the countries nearby, particularly Malaysia, reflecting the role of geographical factors that play in the trade relationship around the world.[6]

Closer examination of the data in Table 2 indicates that trade flows are more concentrated in the NEA than in SEA. Trade flows within the NEA in 2002 total to roughly $240 billion, while that of SEA amount to only $87 billion. Nevertheless, it is interesting to note that trades between SEA and NEA amount to $136 billion, much more than SEA trade among themselves.

Table 2: Bilateral Trades between Countries within East Asia 2002 (Billion USD)

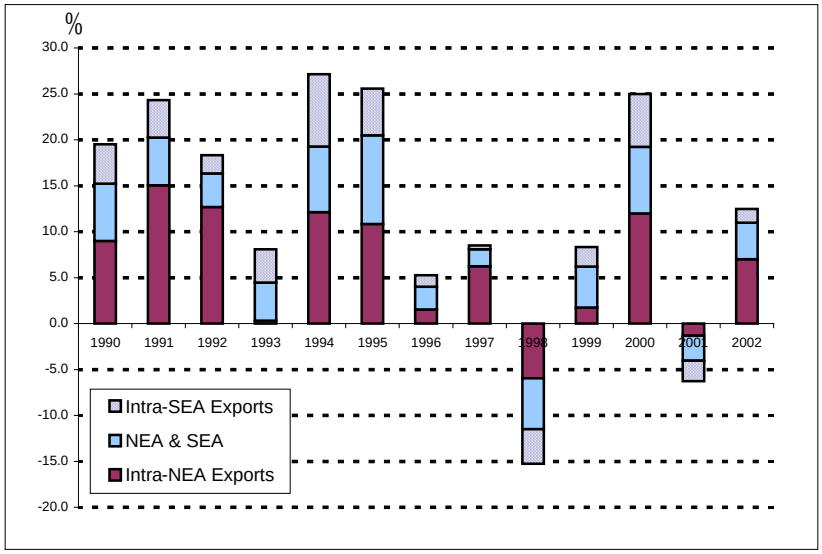
	CN	HK	KR	TW	SG	PH	ID	TH	MY
CN	0.0	128.8	34.1	16.5	14.5	3.2	6.6	7.6	10.1
HK	128.8	0.0	13.9	35.5	14.7	4.3	2.3	5.2	6.9
KR	34.1	13.9	0.0	10.5	9.1	3.9	7.6	3.7	6.7
TW	16.5	35.5	10.5	0.0	10.8	4.5	3.5	4.4	6.7
SG	14.5	14.7	9.1	10.8	0.0	5.3	11.4	11.3	38.7
PH	3.2	4.3	3.9	4.5	5.3	0.0	0.9	2.3	3.5
ID	6.6	2.3	7.6	3.5	11.4	0.9	0.0	3.1	4.0
TH	7.6	5.2	3.7	4.4	11.3	2.3	3.1	0.0	6.7
MY	10.1	6.9	6.7	6.7	38.7	3.5	4.0	6.7	0.0

Source: Direction of Trades Statistics, IMF. Here, bilateral trades are the sum of exports between the two countries.

[6] Geography and trade is one of the active areas of research in international trade since 1990.

Contribution to growth analysis further reveals that during 1990 to 2002, roughly fifty percent of intensified intra-regional exports of East Asia are contributable to the increasing in the exports among countries in North East Asia, particularly between China, Hong Kong, Taiwan, and Korea. Twenty percent come from trade within the SEA. The final thirty percent come from the trade between the two regions. In other words, the main drivers of intra-regional trade in East Asia are occurring within and with the North East Asia region. However, the fastest growing components is the exports from SEA to NEA which multiplied by 3.8-fold compared with an average of 2.5-fold for East Asia.[7]

Figure 4: Contribution to Growth in Intra-regional Exports



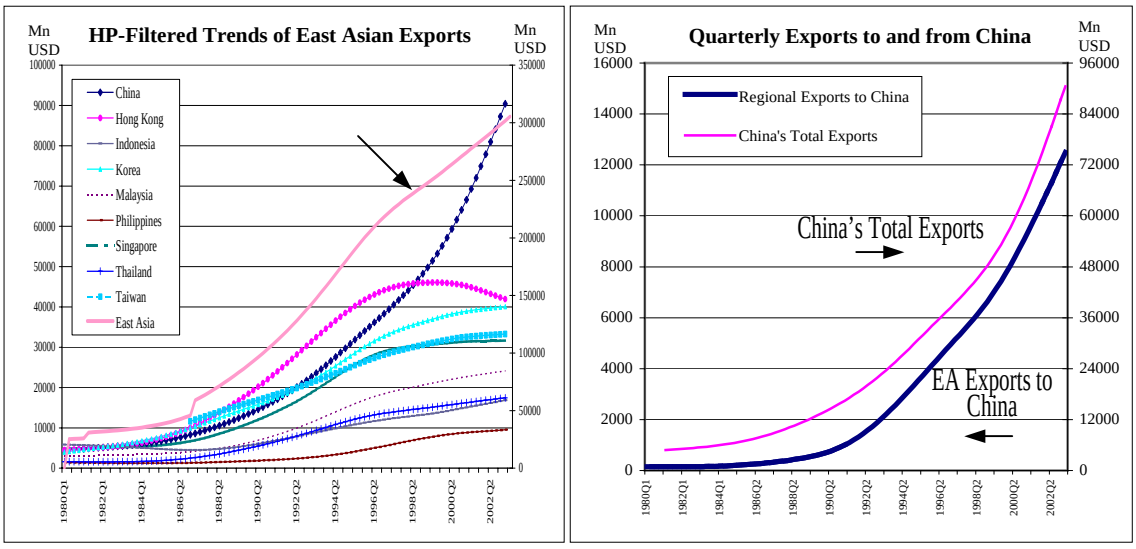
Source: Direction of Trade Statistics, IMF

Behind the figure, China plays a very prominent role in the new landscape of the East Asia trades given her large GDP of $1.2 trillion, roughly twice the size of SEA combined. Following her opening up to trade, Chinese exports to the world markets rose spectacularly from $47 billion to $383 billion between 1988 and 2002. Here, we use the HP filter method to extract the trends of exports of countries within the East Asia region. As illustrated in figure 5, East Asia exports to the world are clearly dominated by China whose exports have increased exponentially and become the number one exporter of the East Asia region since 1998. As for other countries, their exports show a slowdown trends or at least a deceleration compared with the early 1990s.[8] This could possibly be driven by some important factors inside and outside of the region; for instance the rise of China as the new re-exporting center of East Asia as well as the slowdown of the G3 countries.

[7] This may partly reflect the well known facts that SEA are quite similar in term of endowments, skills, and level of development, consequently trade do not occurs much between them. This is consistent with international trade theories' suggestions that there are 3-4 reasons why countries trade with each other: (1) different endowments (ala. Heckscher-Ohlin Trade Model), (2) different productivity (Ricardian Trade Model), (3) increasing returns, and (4) strategic trade decision (where governments provide subsidies for firms to enter into the business and export its products so as to capture monopoly profit currently enjoyed by firms in the other countries such as in the case of Airbus and Boeing).

[8] The pronounced decline in Hong Kong exports toward the end of period is contributable to the fact that an increasing portion of her productions and businesses have been relocated to China, since its return to its motherland.

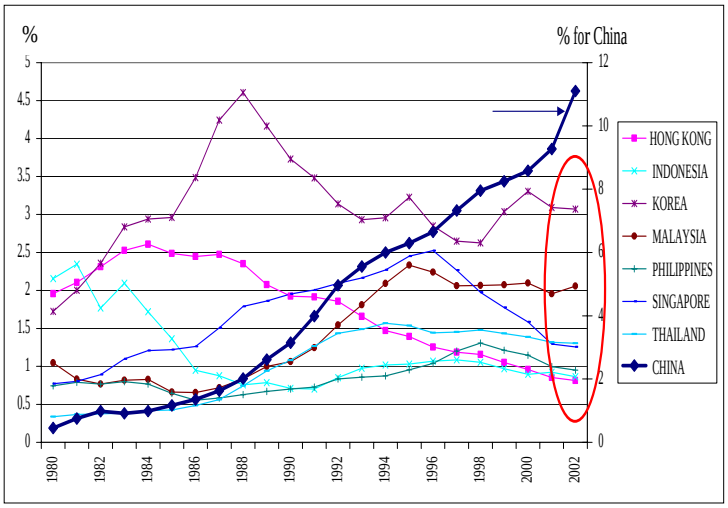
Figure 5: Trends of Exports of Countries within East Asia



Source: Direction of Trades Statistics, IMF

China provides an interesting linkage between the intra-regional trade within East Asia and the world market. The sharp rise of the Chinese exports occurs along with the marked increase of exports from other East Asia countries (excluding Hong Kong) into China which rose from $2.6 billion in 1988 to $50.5 billion in 2002. For Thailand, exports to China also surges 81.8 percent in the first five months of 2003 and now accounting for 6.8 percent of our total exports. This underscores the role that China has played in the region. In addition to the concerns that many have raised about the competitive threats from China's producers and labors in the world markets, the emergence of China also provides countries in East Asia with unprecedented opportunities. First, China offers countries within the region with the new markets with its population of more than 1200 millions. Moreover, China with her abundant labor provides the region with low-cost assembly lines which help lower the costs of the total production within the whole region compared to other region. For instance, the case of the US market, the data reveals a declining share of other East Asian countries' exports to US, leaving China with the only rapid growth in exports to the US. China, in effect,

Figure 6: Import Share of East Asian Countries to the US



Source: Direction of Trades Statistics, IMF

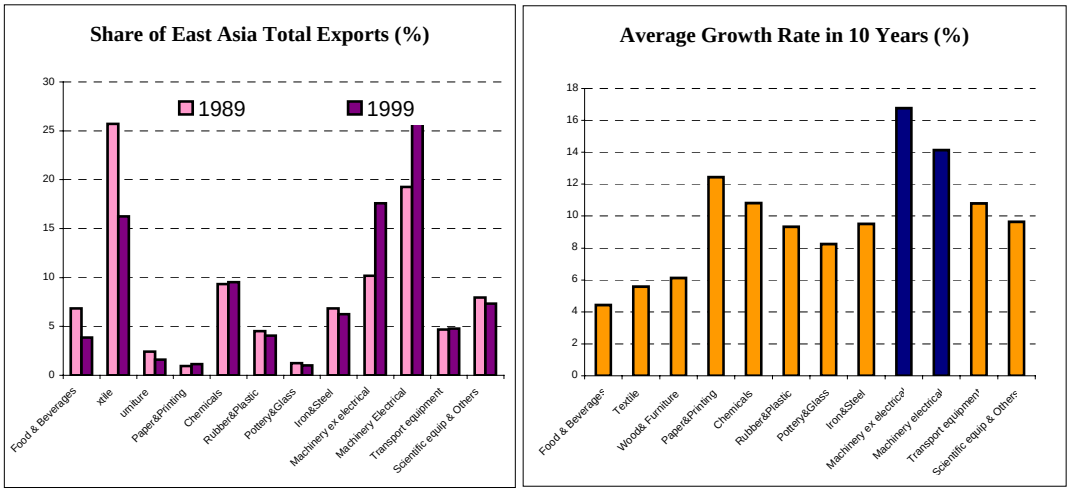
extracts market share from others in the region by re-exporting products from other countries in the region to the world markets. Interestingly, the recent SEACEN study by Tzung-Ta Yen et. al. (2003) indicates that more than 56 percent of the Chinese imports and exports are accounted for by her export reprocessing industries, which mostly are foreign-invested enterprises.

2.2 Disaggregation by Products

Analyses from the bilateral trade data thus far suggests that although most intra-regional trade concentrated in the NEA areas but the fastest growing components intra-regional trade comes from the exports from SEA to NEA which partly driven by the rise of China as new markets and assembly lines of East Asia.

Disaggregation by product types further reveals that the main driver of the intensified intra-regional trade in East Asia came from the rise of the some certain segments of the export industries, particularly machinery and electrics.[9] Due to data constraint, the comparison between 1989 and 1999 is chosen. Figure 7 shows noticeable increase in the machinery and electronics components of the exports is observed during the selected period, rising on average at 14-17 percent per annum. The machinery and electronics categories together account for roughly 45% of the East Asia exports in 1999, compared with 30 percent in the 1989. It occurred at the expense of the textile industry whose share fell sharply by 10 percent over the same period. As a result of the building up of these industries, some countries such as Malaysia, Philippines, and Singapore have become highly dependent on and exposed to the electronic sector, which accounts for 41, 38, and 35 percent of their exports in 1999, respectively.

Figure 7: Changing Production Structure in East Asia during 1989-1999



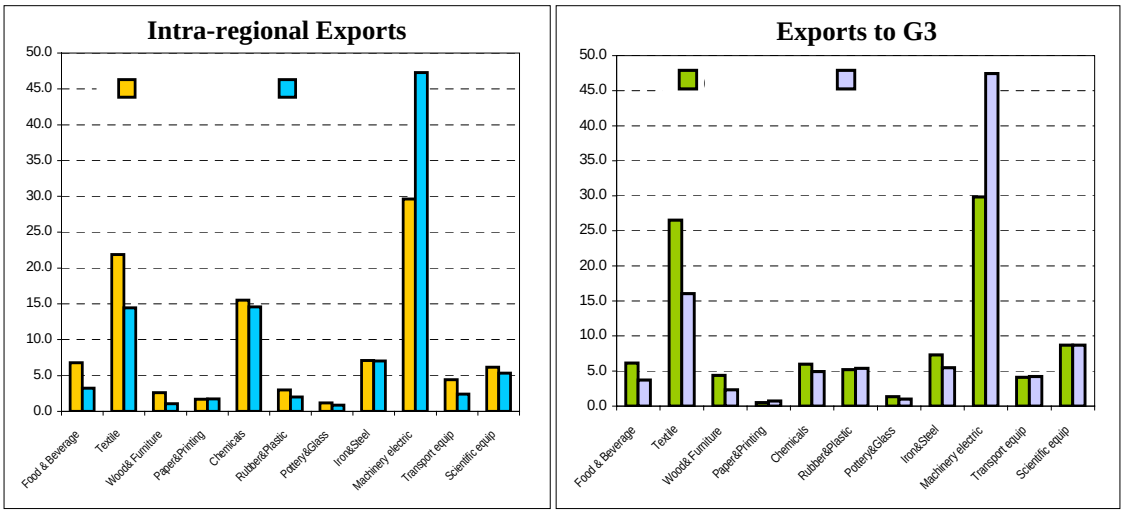
Source: World Bank - Nicita and Olarreaga (1999)

[9] To gain deeper understanding on changing structure of East Asian export composition, we employ the Trade and Production Dataset, 1976-1999, compiled by World Bank researchers, Nicita and Olarreaga (1999) from the UN Comtrade data. The dataset disaggregate exports and imports into 3-digit and 4-digit International Standard Industrial Classifications (ISIC). However, data for Indonesia are available up to 1998 so our figures for East Asia in this section will not include Indonesia, which account for only 5% of the East Asian exports.

Note that if we compare the product composition of East Asian intra-regional exports and its exports to G3 as in Figure 8, it is interesting to find that they are very similar in structure. This suggests that a hypothesis that East Asia trades within the region in those products that are less sophisticated than trading with G3 cannot be confirmed. Rather, excess or new production capacities will be used to serve both markets in and outside the region. There are only two slight differences: (1) East Asia exports chemical products – which includes petroleum products – more within the region and (2) East Asia exports woods & furniture and rubber products to G3 more than its exports intra-regionally.

Furthermore, when we analyze the composition of exports being exchanged between G3 and East Asia, it also confirms that East Asian import proportionally more Industrial Chemicals (ISIC 351) from G3, compared to what their exports to G3; but they export proportionally more textile products. For Machinery and Electrical categories, a further decomposition reveals that, East Asia import proportionally more Machinery Electric (ISIC 383) from G3, while they export proportionally more Machinery except Electrical (ISIC 382) to them.

Figure 8: Product Compositions of East Asian Trades in 1999



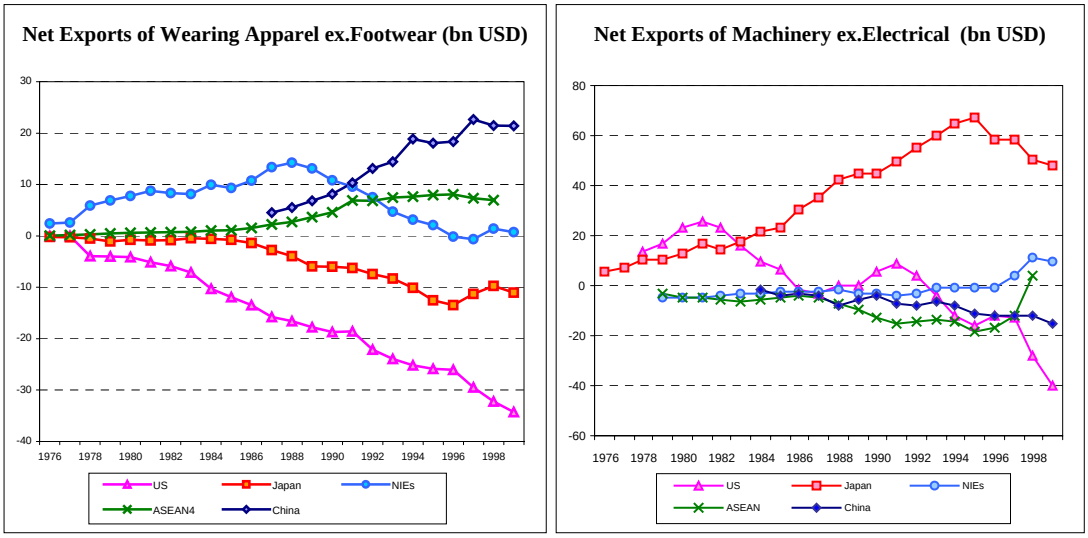
Source: World Bank - Nicita and Olarreaga (1999)

Two explanations can be put forward for the pronounced increase of the machinery and electrics categories: (1) the Product Cycles Theory put forward by Vernon (1966) some time ago in his most celebrated paper "*International Investment and International Trade in Product Life Cycle*" and the moving up of the products ladder by East Asian countries, and (2) the rise of international division of labors and intra-industry trades. According to Vernon, export productions will be shifted from the more advanced members of the region, Japan, to the NIEs such as Korea, Taiwan, Hong Kong, Singapore, and later to ASEAN members such as Indonesia, Malaysia, Philippine and Thailand.[10] Figure 9 tries to capture this phenomenon using the net export data. As an example, the evolution of net export figures for some industries such as Wearing Apparel excluding Footwear (ISIC 322) indicates that productions

[10] Closely related to this concept is the so-called "flying geese model of development" where Japan is viewed as the leader of the East Asia group who lead the NIEs and ASEAN and China, sequentially in their development process.

were being relocated from Japan to NIEs to ASEAN-4 over time. It is interesting to note that toward the end of the period, ASEAN-4's position as the net exporter in the world market in this particular category began its decline while China entered and rose as a net supplier in this market. For more advanced products such as Machinery excluding Electrics (ISIC 383), with the rise of Japan in the early 1980s, the US became a net importer. Japan's position in this market in turn declined with the rise of the NIEs during the second half of 1990s. For ASEAN-4, its position improved toward the end of the period, especially in 1998 due to demand contraction causing by the crisis.

Figure 9: Product Cycles

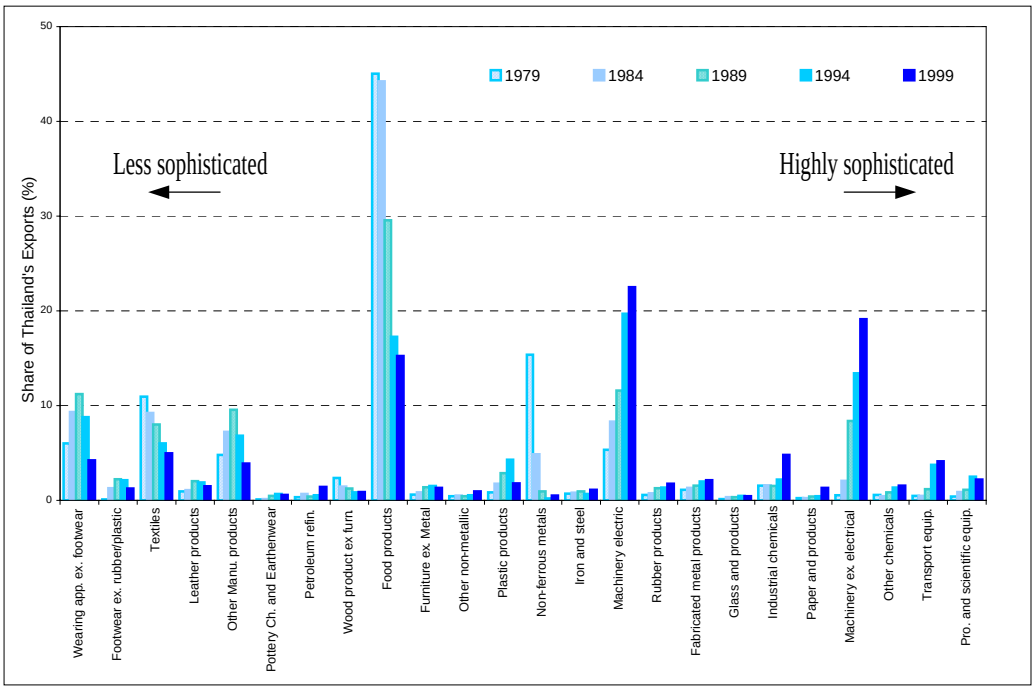


Source: World Bank - Nicita and Olarreaga (1999)

Associated with the product cycles, is the fact that countries are "moving up the products ladder." A more in-depth analysis, base on methodology developed by Kwan (2002), reveals changes in the production composition of the countries within the region. If one ranks the industry according to the product sophistication that partly captured by Kwan's methodology, a very interesting picture of the shift in the production structure will emerge[11]. In the case of Thailand, as illustrated in Figure 10, if one compares the production structure in the five-year interval between 1979 and 1999, one can see that Thailand was constantly moving up the product ladders over time. It shred the less sophisticated industries such as Wearing Apparel except Footwear (ISIC 322), Textile (ISIC 321) and Food Products (ISIC 311) and added to its exports more and more sophisticated products such as Machinery Electric (ISIC 383), Machinery except Electrical (ISIC 382), Industrial Chemicals (ISIC 351), and Transport Equipment (ISIC 384). The transformation occurs steadily even after the 1997 financial crisis erupted and the sharp depreciation of the Baht that helped increase export competitiveness of less advanced products that faced competition from China.

[11] Here, instead of ranking industries by basing on our feeling whether it is a high-tech or a labor-intensive industry, we adapted Kwan's methodology: industries were ranked by first compute the share of each country in the world market for products in each 3-digit ISIC categories. Then, we multiply each country share with its per capita income and sum it up across countries. Thus, products such as electronics that are produced by high-income countries and sold to the world market will received a high index. Whereas products such as textile that produced by a low income countries will have lower indexes. Implicitly, it assumes that products that are produced by high income countries are likely to be more sophisticated than those produce mostly by the low income countries.

Figure 10: Moving up the Products Ladder: the Case of Thailand



Source: World Bank - Nicita and Olarreaga (1999).

The second but more important explanation – the rise of international division of labor and intra-industry trade[12] – has not only been a main driver of growth in the world trade as Krugman (1995) suggested, but also serves as one of the main driving forces of intra-regional trade within East Asia. The 2002 OECD Economic Outlook wrote that "the growing 'internationalization' of production system, which increasingly involve vertical trading chains spanning a number of countries, each specializing in a particular stage of production, is an important feature behind the changing nature and the increasing scale of world trade…The extent of the intra-industry trade is typically much higher across categories of manufactured goods than it is across trade in non-manufactured goods and highest for the more sophisticated manufactured products such as chemical, machinery, transport equipment, electrical equipment, and electronics. This is because sophisticated manufacturing products are more likely to benefit from economies of scale in production and are easier to differentiate to the final consumers, and so facilitate trade in similar products. More complex manufactured products which rely on many components and/or processes may also benefit more readily from splitting up production across countries. … *Furthermore* of particular interest when considering intra-industry trade and the internationalization of production are those countries where exports and imports account for a very high proportion of GDP…Although there is far from a perfect correspondence, these countries all tend to have a relatively high intra-industry trade. (Italic added.)"[13] In East Asia, evidence suggests similar findings.

[12] Usually, there are two major components of the intra-industry trade – the trade in similar goods between similar countries and the trade of product parts whose production process has been breaking up into small pieces and spread across several countries to take advantages in cost and resources of various countries around the world.

[13] In the same report, the OECD also provides very interesting information on intra-firm trade which is closely related to the intra-industry trade: "Cross border trade between multinational companies and their affiliates, accounts for a large share of international trade in goods, although aggregate data are only available for a few countries, most notably the United States and Japan. Intra-firm trade accounts for around one-third of goods exports from Japan and the United States, and a similar proportion for all US goods and one-quarter of all Japanese imports."

As countries in East Asia are moving up of product ladders toward manufactured products and parts of the production processes are being relocated from countries such as Japan, Korea, Taiwan and other countries to the developing East Asia, intra-industry trade and interdependence between countries within the region generally increase. Between 1991 and 1998, with the exception of China and Hong Kong, most countries in East Asia experienced an increase in their level of intra-industry trade. Particularly, for Thailand and the Philippines, intra-industry trade increase by 10 percent.[14] Note that the finding is in line with the finding in the OECD countries where several countries such as Mexico, Japan, Hungary, Czech Republic experienced increases in their intra-industry trade between 10-20 percent during 1990s and their level of intra-industry trade ranges from 30-75 percent.

Table 3: Intra-industry Trade Indices for East Asian Trades

	1991	1998	Change in Index
Singapore	57.3	67.4	10.0
Malaysia	57.4	63.8	6.4
Hong Kong	60.3	58.6	-1.7
Thailand	45.7	56.9	11.1
Philippines	41.2	50.2	9.0
Korea	40.6	41.4	0.8
Taiwan	32.3	39.3	7.0
Indonesia	27.7	37.2	9.5
China	61.8	36.9	-24.9

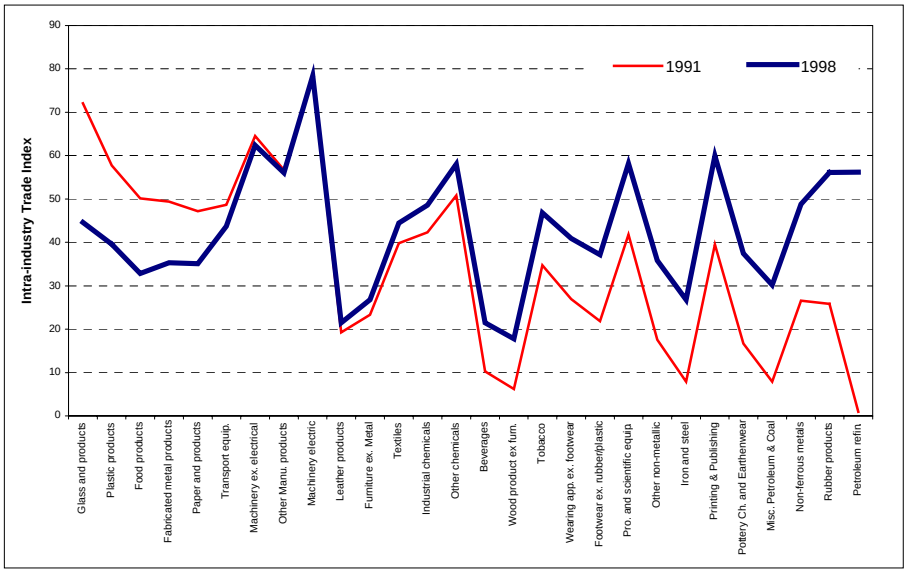
Source: World Bank - Nicita and Olarreaga (1999).

Though the true extent of the internationalization of the production networks cannot be measured due to limited data. We can still find some indications of the direction and extent of the horizontal trade and the vertical integration among countries production process by computing the intra-industry trade index which partly measures how much trade are occurring in the same industry for each particular country.[15] In the case of Thailand, between 1991 and 1998, more than two-third of the industries based on 3-digit International Standard Industrial Classification experienced an increase in their intra-industry trade, as shown in Figure 11. Products that become much more integrated with the regional production networks are the Petroleum Refineries (ISIC 353), Non-Ferrous Metal (ISIC 372), Professional and Scientific Equipment (ISIC 385), etc.

[14] The opening up of China and the return of Hong Kong to China has lead to a reduction in the intra-industry trade between them since the production process now being relocated from Hong Kong to China.

[15] The index computes as IIT = 100*((X+M)-|X-M|) / (X+M), which will equal 100 when all trade is intra-industry or import equals to export of that product category, and will equal 0 if there is no product of the same class that are both exported and imported. Thus, the index will capture, to some extent, (1) those trade in parts that enter into the country and being assembled and re-exported aboard, (2) re-export activities of Singapore and Hong Kong and (3) trade of similar products such as car from two different countries. For figures in Table 3, we weight the intra-industry index using its trade share and then sum up from to obtain the figure for the whole countries.

Figure 11: Production Shift within Thailand toward Greater Intra-industry Trade



Source: World Bank - Nicita and Olarreaga (1999)

This disintegration of the production process reflects division of labor at work at the international level.[16,17] While it effectively makes countries in the region share prosperity of expanded trade together, but it also exposes them to the same external shock and help transmit the shock quickly throughout the region as discussed below.

III. Final Demand and Trade Linkages within East Asia

While disaggregation by countries suggests that some of the intra-regional trade may be driven by demand from outside East Asia, disaggregating the trade data by product types indicates that the intensified intra-regional trade may be the results of supply side changes through more inter-linked regional production networks, especially for the manufactured products. To gain a deeper understanding of the trade linkages within East Asia and draw proper policy implications for Thailand, this section employed various econometric techniques to study the demand structure for exports as well as to analyze the synchronization of trade cycles.

3.1 Demand Structure for Exports

The estimation below is set up so as to test the dependency of regional exports on East Asian domestic demand as well as demand from the G3 countries. The

[16] 1998 Annual Report of the WTO describes the production of a particular "American Car" as follow: "Thirty percent of the car's value goes to Korea for assembly, 17.5% to Japan for components and advanced technology, 7.5% to Germany for design, 4% to Taiwan and Singapore for minor parts, 2.5 % to he United Kingdom for advertising and marketing services, and 1.5% to Ireland and Barbados for data processing. This means that only 37% of the production value ... is generated in the US.

[17] Feenstra (1998) provides another example of outsourcing: the Barbie doll. "The raw materials for the doll (plastic and hair) are obtained from Taiwan and Japan. Assembly used to be done in those countries, as well as the Philippines, but it has now migrated to lower-cost location in Indonesia, Malaysia, and China. The molds themselves come from the United States, as do additional paints used in decorating the dolls. Other than labor, China supplied only the cotton clothes used for the dresses. Of the $2 export value for the dolls when they leave Hong Kong for the United States, about 35 cents covers Chinese labor, 65 cents covers the costs of materials, and the remainder covers transportation and overhead, including profits earned in Hong Kong. The dolls sell for about $10 in the United States…"

specification is applied to three dependent variables (1) total exports, (2) exports to the East Asia region, and (3) exports to G3. It aims to simply test the movements of each dependent variable in response to the demand growth in East Asia and G3 countries, controlling for export prices.[18] As a result, the estimated coefficients partly measure how much East Asian exports and its components respond to the final demand in each region.

Many studies, including our own findings in the previous sections, indicate the increasing roles of intra-regional trade as well as the declining reliance on demands from outside the region. This estimation, therefore, provides a statistical test for the regional dependency on the G3 economies. The analysis relies on the panel regression technique, stacking exports and economic growth data of the East Asian countries to estimate the common coefficients. Instead of using the volatile export values, the regression uses the export growth data to avoid econometric problems emerging from using the fixed effect estimation.

The estimated equation is in the form:

$$ex\_vol_{it} = \alpha_i + \beta G3\_g_{t-1} + \gamma EA\_g_t + \delta Px_{it-1} + \varepsilon_{it}$$

Where

ex_vol_{it}	=	export volume growth of country i at time t
$G3\_g_{t-1}$	=	lagged G3 economic growth using manufacturing production index as a proxy
EA_g_t	=	weighted average of domestic demand growth of East Asian countries
Px_g_{it-1}	=	lagged export price of country i at time t

Some econometric problems could arise from our equation specification. Economic growth between G3 and East Asian could be contemporaneously correlated. The descriptive statistics show common correlation of 0.51 between the two series, which is fairly significant. To mitigate the possibility of multicollinearity, the estimation applies lagged economic growth of G3 as a proxy for the G3 economic expansion, implying the lagged effect of the industrial countries on the regional exports.[19] The other potential econometric drawback lies in the simultaneity of export quantity growth and export price inflation. As a result, the volume of export is set to respond to the past-period prices.

The estimation uses fixed effect technique for panel regression. The Seemingly Unrelated Regression weight is applied with iterative process in order to cope with the heteroskedastic and contemporaneously correlated error terms.

The coefficients from each regression measure the influence of the demand growth of each region on the country's exports. Using growth rates as our regression variables, these coefficients can be interpreted in term of exports elasticity.

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[18] Data description is in Appendix 1.

[19] Diebold (1994) suggest the estimation using each variable that potentially correlates separately. The robustness of the coefficients suggests an insignificant degree of multicollinearity. Our results reveals very low multicollinearity.

Table 4: Results of the Panel Estimations of the Export Equations

	G3_g(-1)	EA_g	Px_g(-1)
Total Exports $R^2 = 0.474$	1.776** (9.511)	1.463** (14.704)	-0.036 (-1.016)
Exports to G3 $R^2 = 0.413$	1.682** (5.703)	0.801** (5.283)	-0.549** (8.531)
Exports to EA $R^2 = 0.473$	1.831** (6.491)	2.045** (13.795)	-0.461** (-5.781)

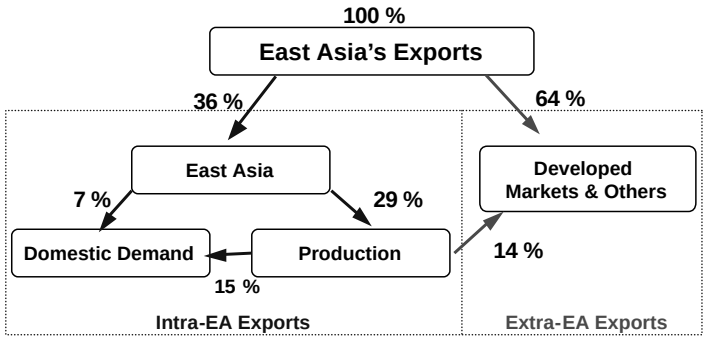
Results from the first estimation shown in Table 4 indicate higher sensitivity of the total regional exports to the lagged economic growth of our main trading partners (G3 countries) relative to demand growth within the region. Moreover, both elasticities are statistically significant and exceed one, implying the interdependency of both regions and the total exports. Specifically, total exports depend on final demands in both regions.

To discern the possible differential effects from final demands on exports of East Asia to different regions, the regression is then performed on sub-components of our total exports, namely exports to G3 and intra-regional exports independently. As expected, the East Asian export to G3 is quite elastic to the growth of G3 relative to its own domestic demand expansion. This, consequently, confirms that there still exist considerable linkages between external demand and the regional exports. Furthermore, intuitively if all of the exports to G3 were consumed by the final demands in the G3 countries, we expected that the coefficients on the regional demands to be statistically insignificant. However, the low but positive coefficient on the regional demands suggests that parts of the exports to G3 will be re-exported back to the region. (For instance, the products was first shipped to Japan, assembled and then re-exported to some countries in East Asia.)

For the intra-regional exports, the panel regressions reveal that regional exports are largely sensitive to change in domestic demand within the region. This implies that the final demand in the region is driving significant portions of the intra-regional trade. Nevertheless, the considerable elasticity of regional export growth to G3 expansion suggests that significant portions of the intra-regional exports are also being re-exported to the G3 countries. Note that both elasticities are larger than those of the first equation, reflecting the fact that the intra-regional exports are the more responsive/volatile components of the East Asian exports.

Consistent with this finding, Monetary Authority of Singapore published a study on this very topic in January of 2003, suggesting that although regional demand is indeed playing a more prominent role in supporting the intra-regional trade, most of the final demands are contributable to final demand in G3. Specifically, as illustrated in Figure 12, based on 1995 Asian Input-Output table, they estimated that about 36 percent of the total exports are intra-regional exports. Of which 7 are consumed by domestic demand within the region; 15 are intermediate materials for the East Asian production networks that finally consumed by countries within the region; and another 14 are being re-processed and sent to G3 countries. Thus, intra-regional demand accounts for a fairly small portion of the total East Asia Exports – only 22 percent. The rest are sent to G3 and other countries around the world.

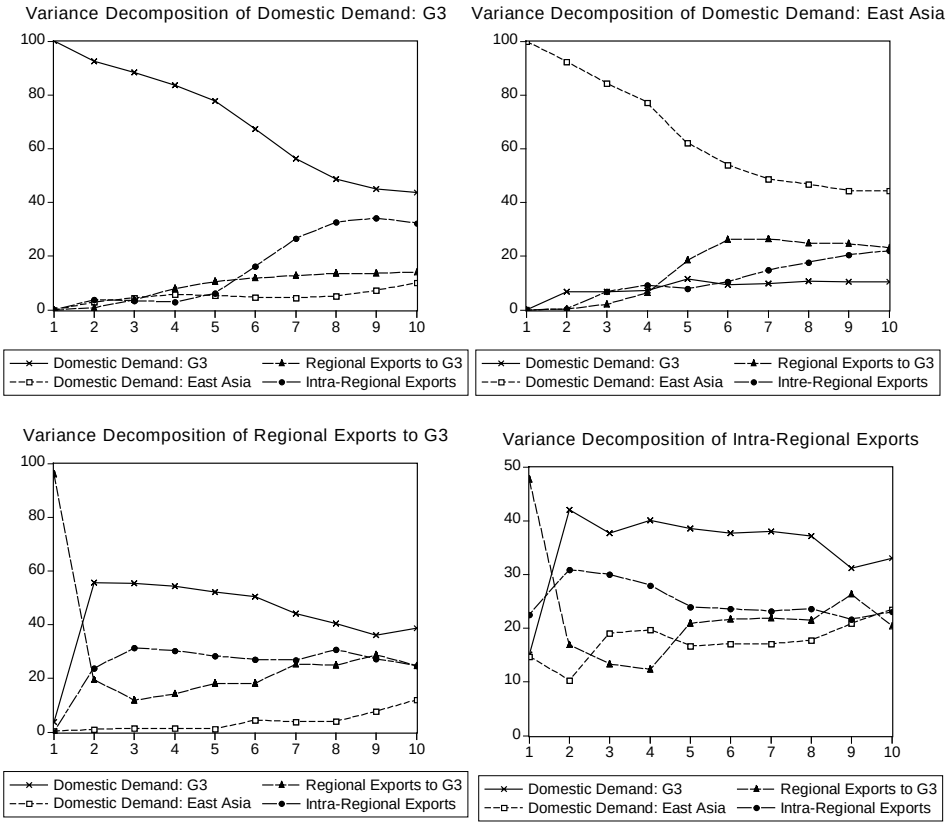
Figure 12: Final demands according to 1995 Asian Input-Output Table



Source: MAS

To gain additional insights into the relative importance of the two demand factors in explaining the East Asian exports growth, we employ the Vector Autoregression (VAR) methodology. Specifically, we investigate the relationship between intra-regional exports and exports to G3 with economic growth of the region and the G3 countries. The results indicate that demand within the region has a very short-lived effect on stimulating intra-regional exports and that more exports to G3 also lead to more intra-regional exports. In other word, our intra-regional trades are also driven by the final demand from those outside the region. Here, variance decomposition, as shown in Figure 13, also confirms that (1) variation in export to G3 is explained by variation in the domestic demand in the G3 countries; (2) around 40 percent of the variation in the intra-regional exports is explained by variation in the G3 demand, with only 20 percent of the variation explained by variation in the

Figure 13: Variance Decomposition



regional demand. Thus, results from the VAR also support the previous findings that intra-regional exports still depends more on our main trading partners' economies.[20]

3.2 Trade Cycle Synchronization and Intra-regional Trade as a Buffer to Demand Shocks from G3

In this section, we complement our earlier analyses on the demand structure of intra-regional trade with a more detailed study on trade cycle linkages. We use the quarterly export data from the Direction of Trade Statistics and the Taiwan export Data from CEIC and examine trade linkages in East Asia by breaking down movement in export series to its three main components: seasonal factors, trends, and cycles. Here, we use the HP-filter to extract the trend from the de-seasonalized export series and then analyze the cyclical components.

Quick examination of the top panel in Figure 14 reveals a close synchronization between intra-regional trade and inter-regional trade, reflecting our earlier findings that the overall demands for the intra-regional trade is partly driven by the final demand in G3. Moreover, trade cycles of countries within the region are also becoming more synchronized with each other, particularly more pronounced after the 1997 Asian crisis. This occurs for both the total export cycles and intra-regional export cycles. This partly reflects the demand factors such as the increased exposure of each countries to East Asian demand fluctuation and the supply factors such as closer integration of the production networks which has become one of the channels where demand and supply shocks are transmitted throughout the region.

Correlation analysis (Table 5) indicates that:

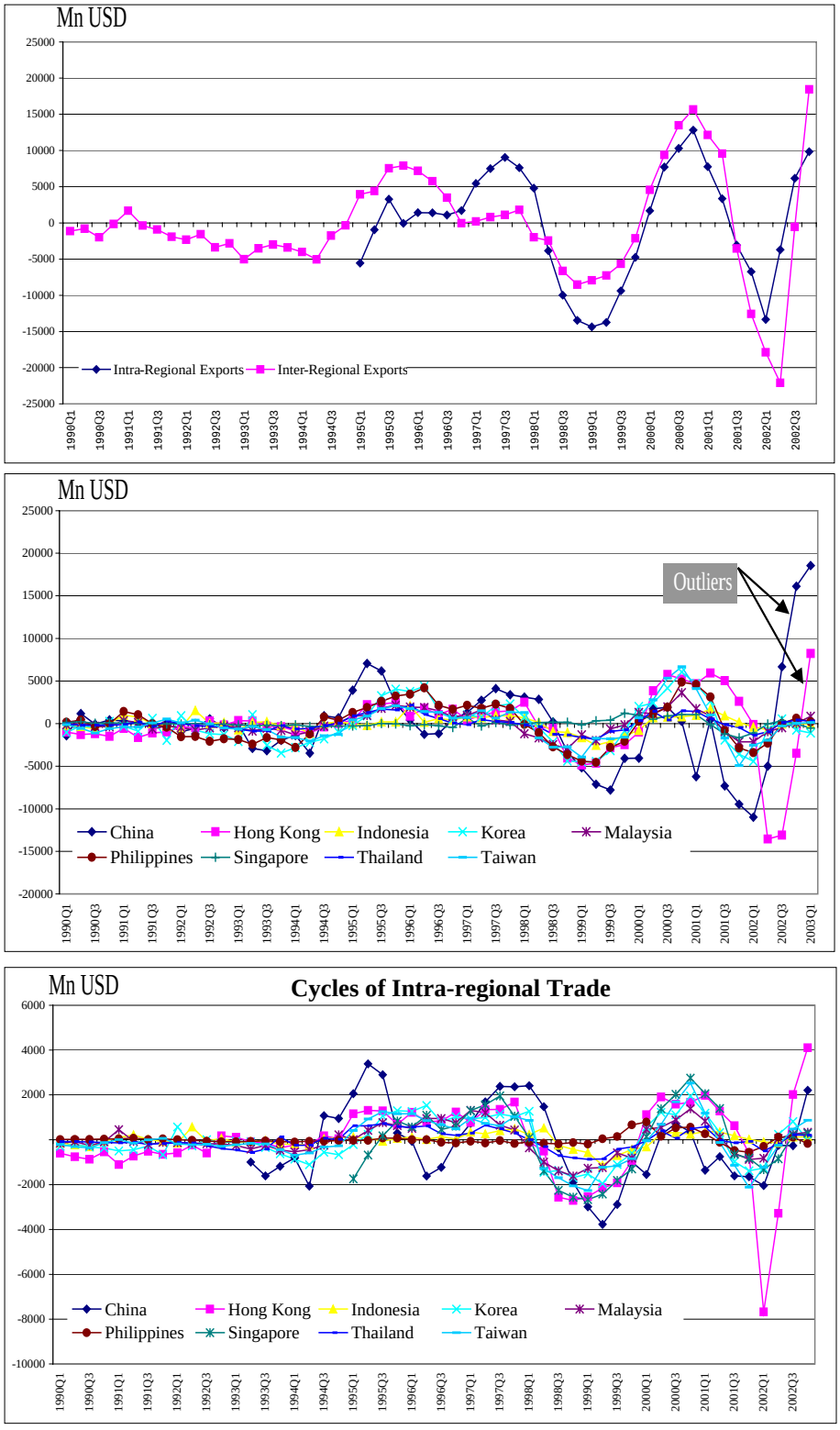
- For roughly **two-third** of the country pairs in East Asia, their correlation statistics of export cycles increased significantly over the past decades. This indicates that trade cycles in the region have become more synchronized over time.
- China is an interesting exception. Toward the end of the period, correlation between its trade cycles with most of the East Asian countries declined. This reflects the fact previously raised in the second section: China is now serving as a new export re-processing center for the East Asia region. Consequently, its trade cycles now tend to deviate from others within the region.
- However, if we focused only on the intra-regional trade sub-components, **34 out of 36** country pairs registered a closer synchronization since 1997. In particular, China's trade cycle is now more synchronized with every country in the East Asia region, compared with 1 out of 8 for its total exports.

The low correlations for China and Hong Kong is due to the construction of correlation coefficients, which takes into account both direction and magnitude of series in the calculation that can be easily affected by one singular event. To remedy

[20] In the case of Thai exports to the region, the VAR estimation suggests similar results to the regional exports. The impulse from regional demand is quite short-lived while the G3 economy poses some lagged effect on Thai exports to the region.

the shortcoming in the correlation analysis, we employed the Concordance Statistics to analyze the linkages and check for robustness of the correlation test. Unlike the

Figure 14: Export Cycles in East Asia



Sources: Direction of Trade Statistics, IMF

Table 5: Correlation in Export Cycles within East Asia

		China	Hong Kong	Indonesia	Korea	Malaysia	Singapore	Philippines	Thailand	Taiwan
China	full sample	1	0.178	0.274	0.319	0.368	0.412	0.086	0.439	0.351
	1986 - 1994	1	0.213	0.146	0.361	0.732	0.633	0.241	0.705	0.412
	1995 - 2002	1	0.175	*0.307*	*0.323*	0.346	0.401	0.074	0.422	0.347
Hong Kong	full sample		1	0.466	0.422	0.458	0.486	-0.094	0.487	0.489
	1986 - 1994		1	0.064	0.524	*0.322*	0.136	0.192	*0.288*	0.532
	1995 - 2002		1	0.544	0.428	0.462	0.523	-0.114	0.502	0.488
Indonesia	full sample			1	0.565	0.513	0.669	-0.078	0.607	0.539
	1986 - 1994			1	0.130	0.341	0.275	0.219	0.167	0.329
	1995 - 2002			1	0.691	0.554	0.776	-0.146	0.712	0.591
Korea	full sample				1	0.830	0.869	0.443	0.809	0.868
	1986 - 1994				1	0.475	0.507	0.654	0.433	0.707
	1995 - 2002				1	0.889	0.943	0.419	0.875	0.901
Malaysia	full sample					1	0.885	0.373	0.854	0.849
	1986 - 1994					1	0.819	0.410	0.764	0.580
	1995 - 2002					1	0.897	0.363	0.860	0.874
Singapore	full sample						1	0.269	0.885	0.801
	1986 - 1994						1	0.470	0.737	0.405
	1995 - 2002						1	0.238	0.906	0.859
Philippines	full sample							1	0.182	0.517
	1986 - 1994							1	0.419	0.641
	1995 - 2002							1	0.148	0.503
Thailand	full sample								1	0.759
	1986 - 1994								1	0.548
	1995 - 2002								1	0.779
Taiwan	full sample									1
	1986 - 1994									1
	1995 - 2002									1

The bold and italic numbers represents 5 and 10 percent level of significant consecutively.
The highlighted patterns identify cases with lower correlation statistics over time.

Table 6: Concordance Statistics between 1986 and 2002

		China	Hong Kong	Indonesia	Korea	Malaysia	Philippines	Singapore	Thailand	Taiwan
China	full sample	1	0.585	0.585	0.554	0.600	0.631	0.554	*0.615*	0.600
	1986 - 1994	1	0.485	0.515	0.515	0.515	0.606	**0.636**	0.576	0.546
	1995 - 2002	1	*0.677*	*0.677*	0.581	*0.677*	0.645	0.452	0.645	0.645
Hong Kong	full sample		1	0.508	**0.662**	0.585	0.554	0.508	0.600	**0.677**
	1986 - 1994		1	0.424	*0.606*	0.546	0.455	0.485	*0.606*	**0.697**
	1995 - 2002		1	0.613	*0.710*	0.613	0.645	0.516	0.581	0.645
Indonesia	full sample			1	0.600	*0.615*	**0.708**	0.600	**0.662**	0.585
	1986 - 1994			1	0.515	*0.636*	*0.667*	**0.697**	*0.636*	*0.606*
	1995 - 2002			1	*0.710*	0.613	**0.774**	0.516	*0.710*	0.581
Korea	full sample				1	*0.615*	**0.739**	**0.723**	*0.631*	**0.708**
	1986 - 1994				1	0.515	*0.606*	**0.697**	0.576	*0.667*
	1995 - 2002				1	*0.710*	**0.871**	**0.742**	0.677	**0.742**
Malaysia	full sample					1	**0.723**	0.585	**0.739**	**0.692**
	1986 - 1994					1	*0.667*	0.576	**0.697**	*0.606*
	1995 - 2002					1	**0.774**	0.581	**0.774**	**0.774**
Philippines	full sample						1	**0.739**	**0.739**	**0.662**
	1986 - 1994						1	**0.788**	*0.667*	*0.636*
	1995 - 2002						1	*0.677*	***0.807***	0.677
Singapore	full sample							1	0.600	0.585
	1986 - 1994							1	*0.636*	0.606
	1995 - 2002							1	0.548	0.548
Thailand	full sample								1	**0.646**
	1986 - 1994								1	*0.606*
	1995 - 2002								1	*0.677*
Taiwan	full sample									1
	1986 - 1994									1
	1995 - 2002									1

The bold and italic numbers represents 5 and 10 percent level of significant consecutively.
The highlighted patterns identify cases with lower concordance statistics over time.

cross correlation, the concordance statistics describes the proportion of time that the cycles of two series spend in the same phase. The statistics can be written in the form

$$C_{ij} = \frac{1}{T}\sum_{t=1}^{T}\left\{(S_{it}S_{jt}) + (1-S_{it})(1-S_{jt})\right\}$$

where S_{it} is an indicator variable for the state of the trade flow in country i in period t. In this study, we apply the statistics in a simple way; if trade is expanding from the previous period, the variable takes the value 1. In a trade contraction, S_{it} becomes 0. The analysis relies on the distribution of the concordance test statistic from Monte Carlo simulation performed by McDermott and Scott (2000).

The concordance statistics reveal a significant linkage between trade cycles in the region especially the ones that seem to lack the correlation magnitude, for example, the case between China and Hong Kong and in general, Philippines. In addition, in more cases than correlation statistics, these ties have become more intense over time. This implies that the economies in the region are in the same state, regardless of the magnitude of their developments. One noteworthy observation is the considerable difference in relative magnitude between the correlation and concordance statistics of trade cycles between Thailand – Philippines and China – Hong Kong of which the latter far exceed the former. Consequently, the concordance statistics confirm the synchronization of these pairs of countries in terms of state of trade expansion and contraction, even though the magnitudes are not in line.

These findings on trade cycles are consistent with our earlier findings. Synchronization in the intra-regional trade suggests shared drivers and common shocks experienced by the region: most importantly, the demand from G3 countries and the demand within the region. Trade synchronization has been accompanied by the greater business cycle across countries in the region and vice versa.[21] It also reflects the convergence in the supply structure among countries in East Asia whose exports concentrates in the same product groups such as electronics, thereby being exposed to similar cycles such as the so-called "global electronic cycles". Finally, it is also a consequence of countries participating more and more in the inter-linked regional production networks.

From macro-management viewpoint, intra-regional trade will provide a buffer to the demand shock from G3 only by providing the region with the alternate destination for its markets. This depends very much on how the business cycles in the two regions are related.[22] But the role for intra regional trade as a buffer may be limited given that presently sizable portion of intra-regional trade are derived demand from the G3 countries. Furthermore, with more inter-linked supply structures and closer trade synchronization in East Asia, the benefit from diversification within the region will be reduced over time.

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[21] The sharp decline in regional demand following the 1997 Asian crisis brought about the sharp reduction in the intra-regional trade across the countries within East Asia.

[22] Note that when East Asia experienced a sharp demand contraction in 1998, G3 has provide East Asian countries with a buffer to their trade demand with exports being sent to the G3 countries instead, and G3 share in the East Asian exports rose by 5 percent during 1998.

IV. Potential and Trends of Intra-regional Trade

In the last section, we discuss the past and the presence of the East Asian intra-regional trade and try to shed some light on its short-run behavior and its drivers. Here, evidence from various analyses suggest that though regional demand is gaining in relative strength in the recent years, we still rely much on the G3 as the final destination of our products. Moreover, the potential for trade diversification in the region has continued to decline over time as trade cycles within East Asia are more synchronized. In this section, we will turn our attentions to the future and consider issues such as the potential of trade expansion within the region (that is, with whom are we still have room for more trade) and the long-term trend of intra-regional trade vis-à-vis our trade with G3, which provide implications on our trade policies and the roles of intra-regional trade as our source of economic growth.

4.1 Gravity Equations

This section employs the gravity equation framework. The estimated coefficients are used to predict the potential and trends of intra-regional trade. Here, we know from many previous studies that the trade gravity equation is one of the most powerful equations in the empirical trade literatures.[23] It performs well in various regions around the world and helps explaining around 60-80% of the variation of the aggregate bilateral trades between countries.[24] Yet, it requires only minimal and readily available information – GDP of the two countries and the distance between the two capital cities. Consequently, with a small number of coefficients to be estimated and many observations, we can estimate the coefficients with high degree of confidence.

For our tasks at hand, we restrict the estimation to the trade between countries in East Asia region, which has very high degree of trade openness, as well as their trades with the G3 countries. The specification of the gravity model takes on the normal form employed by many of the previous studies, including Feenstra, Markusen, and Rose, (2000). The estimating equation is as follows:

$$Export_{ij} = \alpha + \beta dist_{ij} + \gamma GDPh_i + \delta GDPd_j + \varepsilon$$

where

$Export_{ij}$	=	log value of exports from country i to country j
$dist_{ij}$	=	log value of distance between county i and country j in kilometers
$GDPh_i$	=	log value of GDP of home country i
$GDPd_j$	=	log value of GDP of destination country j

[23] International trade economists have been using gravity equations much before they have theoretical basis for the specifications. Given its successes, it becomes one of the standard tools for applied international economists and for policymakers and has been applied to wide-ranging questions such as the formation of the free trade areas, trade creation/trade diversion, assessment of trade policy measures, etc. Since 1980, there are several theoretical models to explain the success of the equation such as Feenstra, Markusen, and Rose (2000).

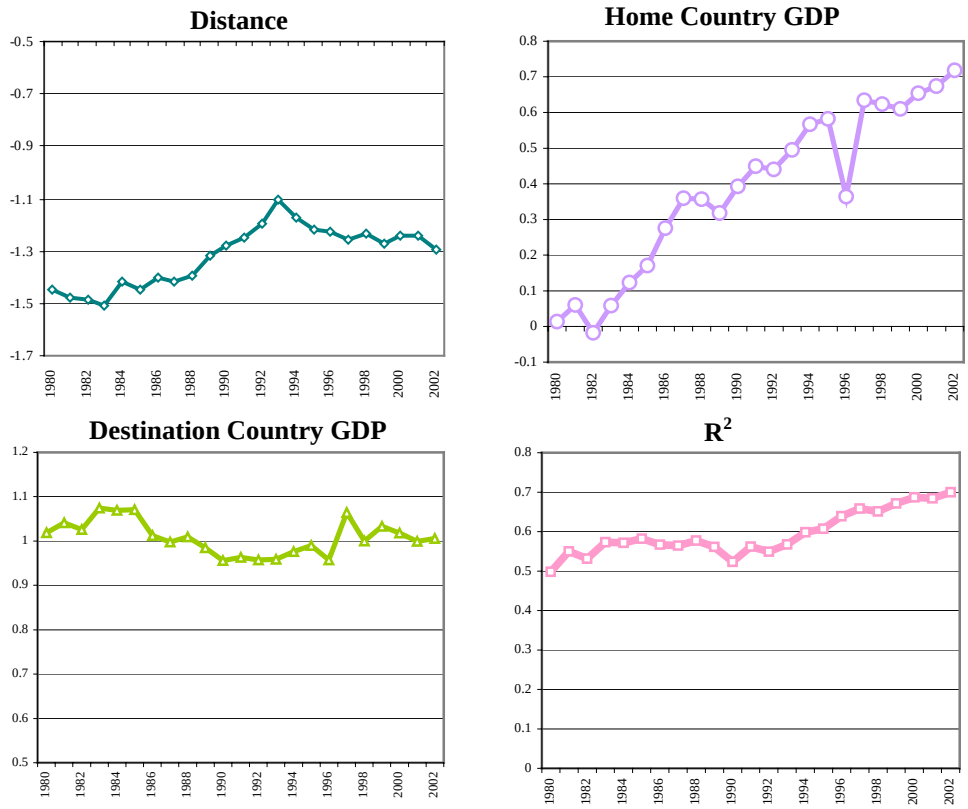
[24] That is, the gravity equation will not explain which of the products, any two countries will trade with each other, but provide a good estimate of how much trade should be between any pair of countries.

The estimation uses Ordinary Least Square (OLS) for annually cross-sectional regression and the General Least Square (GLS) technique for estimating pooled regression, assuming the error terms are not contemporaneously correlated. The least-square yearly regressions are performed in order to derive the development of each coefficient of the equation over time. They are used to predict the potential trade level for a comparison with the actual level of trade. At the same time, the pooled regression is performed across times and samples to obtain the statistical average coefficients for the out-of-sample trade forecast.[25]

Intuitively, the success of the trade gravity equation is based on the facts that countries that are closer will trade much more with each other. Distance – which capture transportation costs, cultural barriers, and other trade barriers for those countries that are far away from each other – will help reduce the amount of the bilateral trades between any two countries. Moreover, trade also depends on the income level of both countries as measured by GDP. Increase in the importing country's income represents demand increase for the products as in the estimation of the export equation. Normally we would expect countries to trade more with the US than with Cuba, since the US has much more income to spend on our products. On the other hand, the increase in the home country GDP (usually not present in the export equation estimation) captures the change in supply side: greater GDP indicating greater production capacities and greater product varieties to trade with other countries.

From the year-by-year estimation, the simple cross-sectional regression yields coefficients that can be compared over time for the evolution of how each exogenous variable in the equations affect the level of bilateral trades. As expected distance in any

Figure 15: Coefficients and R^2 of the Base-line Gravity Equation



[25] Data description is provided in Appendix 1.

gravity estimation from the year 1980 until 2002, has significantly negative effect on exports between any two countries. The further the countries are, in terms of distance between their capital cities, the smaller the trade volume between them. Note that the coefficients become smaller in magnitude toward the end of 1980s and then remains relatively stable in the late 1990s, indicating the decline in the level of transportation costs, improvement in communication technology as well as the increasingly more integrated world economy.

The coefficients on the importing countries income, on the other hand, are relatively stable over time moving around 1, similar in magnitudes with those found in other studies. Here, the coefficient can be interpreted as the elasticity of bilateral trade to the income of the trading partner: 1 percent growth of trading partner income will translate to 1 percentage change on average in the level of exports to that country.

Finally, the coefficients on the exporting countries (or home countries) income show an interesting movement through time. From early 1980 to 2002, the coefficients increase steadily and become statistically significant, reflecting greater influence of home country's GDP on the country exports as time passes by. Positive coefficient indicates that the growth in the home country also means better production techniques, greater competitiveness, higher imports as well as higher exports. Here, Feenstra, Markusen, and Rose (2002) estimated gravity equations for homogenous products such as rice or raw materials as well as for differentiated products such as cars or mobile phones and found that the coefficients of home country GDP for the case of homogenous goods is lower than the case of differentiated products (0.44-0.54 vis-à-vis 1.02-1.15, respectively).[26] This indicates that one could interpret the rise in the coefficients on the home country GDP as found for the case of East Asia as the shifting in the production base from homogenous goods toward the differentiated goods.

Remarkably with a very small number of estimated coefficients (four to be exact), the R^2 for each year is relatively high and rose from 55 percent to 70 toward the end of the sample. In other words, the equations provide us with a reliable way to measure the potential bilateral trades between any pair of countries, since GDP and distance can be measured reasonably well compared with other variables. This, therefore, gives us more confidence since the analysis later draw several forecasts and several implications based on the estimated coefficients.

Since GDP is the most important driver of bilateral trade in the gravity equation, in Figure 16, we provide the GDP distribution within the East Asia region in detail, so as to illustrate the implication of economic geography on intraregional trade. In this Figure, excluding Japan, East Asian GDP concentrate mostly in the North East Asia region, totaling $2.1 trillion (roughly one-half the size of Japan) while South East Asia region accounts for around $550 billion (roughly one-quarter the size of NEA). From the gravity equation perspective, East Asian intra-regional trades will therefore concentrate in North East Asia as well as between North East Asia and South East Asia, as found earlier in Table 2.

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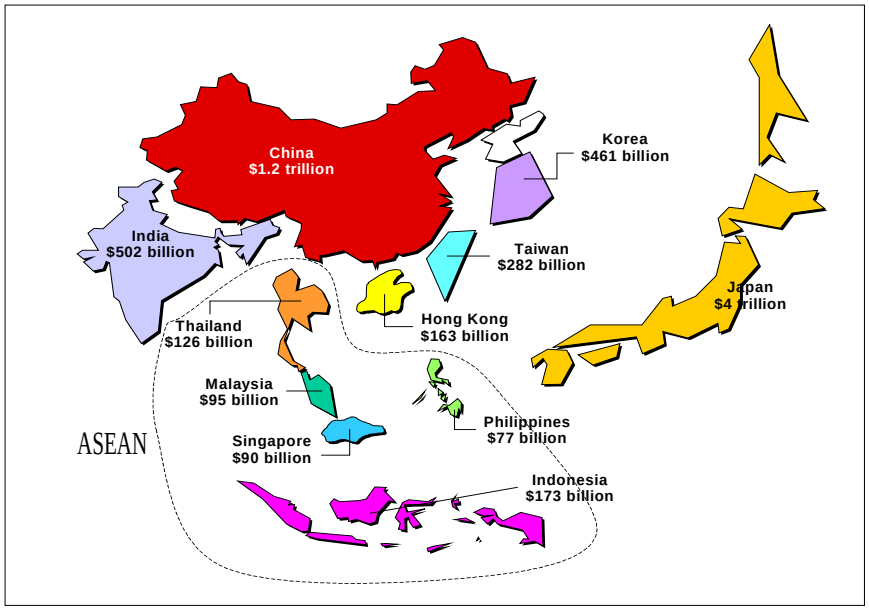
[26] For the differentiated products such as cars, as home country GDP rises, it can afford to produce more varieties of cars such as Ford Motor, DaimlerChrysler, and General Motors and can be traded with other types of cars such as BMW or Porche etc. If the country produces homogenous products such as rice, the only reasons for trade would be that the market is segmented and there is imperfect competition so that larger country (in term of GDP) can engage more in reciprocal dumping behavior and trade more with each other.

Figure 16: GDP of Countries in East Asia in 2002



Source: World Economic Outlooks

As mentioned before, to obtain the statistical average coefficients for the out-of-sample trade forecasts and estimate the impacts of policy variables of interest, we also perform the General Least Square on a panel regression of the gravity model. In this case, the analysis using a common factor with cross sectional weight is applied for the error terms show no sign of contemporaneous correlation.

The estimating equation is as follows;

$$Export_{ij,t} = \alpha + \beta dist_{ij} + \gamma GDPh_{i,t} + \delta GDPd_{j,t} + \varphi VAR_{i,t} + \varepsilon_{it}$$

where

$Export_{ij,t}$ = log value of exports from country i to country j at time t
$dist_{ij}$ = log value of distance between county i and country j in kilometers
$GDPh_{i,t}$ = log value of GDP of home country i at time t
$GDPd_{j,t}$ = log value of GDP of destination country j at time t
$VAR_{i,t}$ = log value of other variable of interest for country i or j at time t

This specification allowed for inclusion of additional policy variables of interest to be tested in explaining the bilateral trade. In the estimation of the gravity equation below, we include policy variables of interest such as openness to FDI, currency volatilities and tariffs. Note that openness to FDI is added into the estimation to capture the changes in the production network within the region which become more inter-linked over time. In effects, it helps partially disentangle the demand and supply factors' contribution to the intensification of intra-regional trade. Tariff is included since many studies – including Krugman (1995) – indicates that political resolves of countries around the world to remove the legal barriers to trade is one of the main explanations of the impressive rise in trade across national border. Finally, we include the volatilities of the exchange rate so as to gain a better understanding on how new

foreign exchange arrangements around the region – which become more flexible after the 1997 crisis, affect the East Asian trades.

Table 7: Estimation Results from Panel Regression Including Policy Variables

	Constant	Distance	GDP Home	GDP Dest.	VAR
Base-line R^2 = 0.701	-3.742** (-14.577)	-1.315** (-51.744)	0.511** (25.722)	1.024** (79.233)	
VAR = FDI in home co. R^2 = 0.732	-4.484** (-17.483)	-1.305** (-52.183)	0.316** (14.813)	0.996** (77.886)	0.306** (21.298)
VAR = FX volatility R^2 = 0.727	-4.418** (-16.810)	-1.249** (-48.105)	0.571** (27.672)	1.008** (74.535)	-0.009** (-2.226)
VAR = Average tariff * R^2 = 0.511	-2.480** (-3.226)	-0.720** (-11.727)	0.604** (10.239)	0.677** (20.211)	-0.028** (-7.099)

* Due to the available data, the estimation for tariff rates is performed only from 1996 to 2002.

From Table 7, the estimation indicates, as expected, that stock of FDI inflows, which partially capture the internationalization of the world production and the closer linkages between home countries and the production network outside[27], help stimulate exports of the recipient countries. Note that most of the estimated coefficients are similar to the base case with only one exception – the coefficients on home country GDP. In other words, when we control for the closer linkages with the regional production network and expanding production capacities in the home country with the stock of FDI inflows, the increase in the home country GDP has less positive impact on the bilateral trades.[28] Interestingly, given the current initiatives by governments around the world to encourage the flow of FDI with new Investment Agreements, trades across national borders will probably intensify and the world production network will become even more integrated.

The volatility of exchange rate is found to have negative impacts on the export volume. Rahmatsyah, Rajaguru and Siregar (2002) stated that "many studies in this area such as MaKenzie and Brooks (1997), McKenzie (1998), Daly (1998), Wei (1998) and Chou (2000) found that a rise in exchange rate volatility may have both positive and negative implications on exports and imports." However, very few cases have found the exchange rate volatility to play an insignificant role. For our estimation in Table 7, instead of deriving econometrically complicated index, we simply use the average variance of daily exchange rate returns to measure the yearly FX volatility. We find negative and significant impact of exchange rate volatility on exports, suggesting that a higher exchange rate volatility of a home country discourages exports. That is, under more volatile environments in which expected profit can easily become a loss, high FX volatilities deter exporters from exporting their products so as to avoid being exposed to FX risk. Higher hedging costs to the exporters as well as importers will add to the export prices. The higher price subsequently leads to export slowdown.

[27] Note that although some studies suggest that an increase in the FDI can also reduce imports, since it allows multinational corporations around the world to set up a production line to serve the local market and reduce the need to ship the product from overseas. But, in our specification, this will not cause a problem since we try to capture the impacts of FDI in home country on home country exports.

[28] This helps confirm many studies on the gravity equation that suggest that the home country GDP partially measures the expanded production capacities and the closer linkages with the world production network.

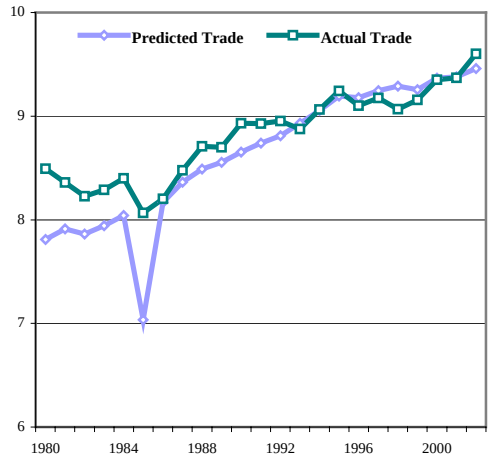
The last policy variable tested in this analysis is the importing countries trade barriers. The average applied tariffs are obtained from Individual Action Plans (IAP) for all APEC member countries in our sample as destination country variable. They include all home countries in the analysis as well as the United States, Australia, New Zealand and Japan. The data are only available since 1996, when the IAP was initiated. The estimating results are as expected; the tariff rates yield statistically significant and negative impact on the volume of trade. Here, though we cannot directly compare with the base case estimates, but quick examination of the coefficients points to the sizable changes in the coefficient estimate of the importing countries GDP. Most studies, as well as most of our estimations thus far, find this particular coefficient to be quite stable over time, around 1.0. However, after we control for the reduction in the importing countries barriers, the coefficient drops sharply, for the first time, to 0.677. This finding is rather interesting, despite the limitation of the tariff data that we use: it helps support the hypothesis – advanced by Krugman (1995) – that a sizable portion of the progress in trade integration around the world is a result of the political resolves of countries around the world to tear down the legal barriers to trade.

4.2 Potential for Trade

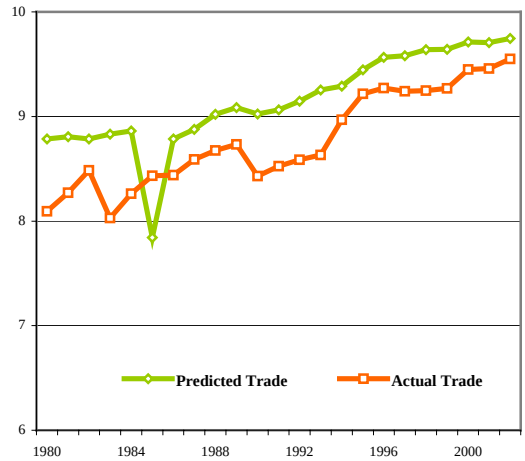
One interesting application of the gravity model is that one can use the model to estimate the **potential for additional trade** between any pair of the countries, both in and out of sample. First, we can use the coefficients from the gravity equation and the actual data on the GDP and distance between the two countries to obtain the predicted level of trade. The difference between the predicted level and the actual level of trade then can be viewed as the "potential trade".[29] Positive potential indicates that there is more room for trade between the particular pair of countries. On the other hand, negative potentials do not necessarily indicate too much export to a particular destination, but should be viewed as a "high performing pair", a desirable quality that both countries should try to maintain.

Figure 17: Predicted and Actual Exports between Thailand and China

Actual and Potential Trade from China



Actual and Potential Thai Exports to China

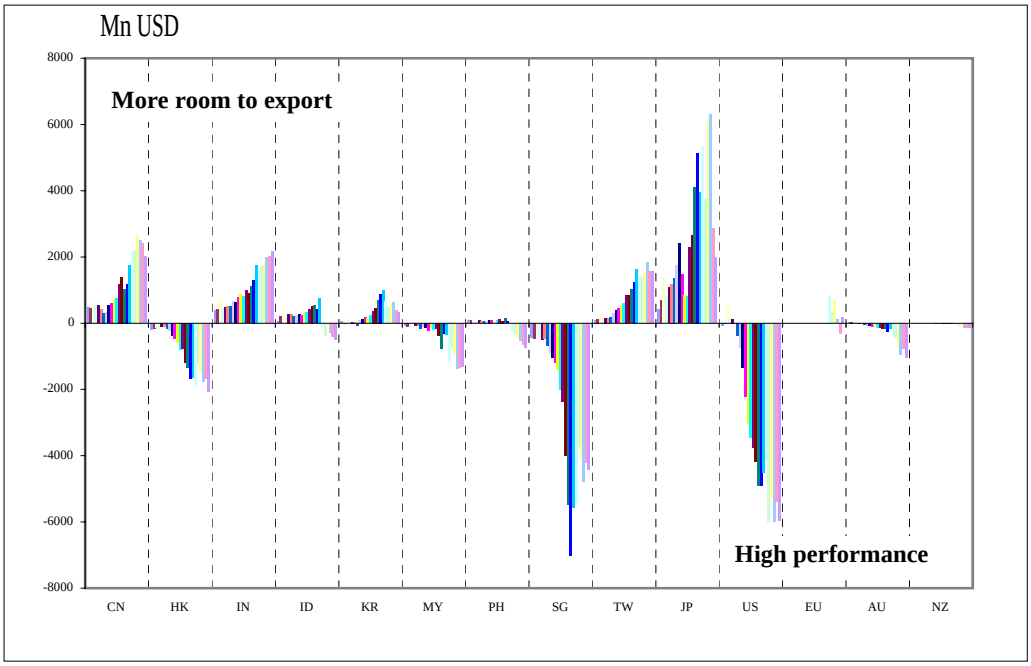


[29] We can then group the pairs of countries according to whether they already reach the predicted level of trade. Those that trading with each other more than predicted by the gravity model can be classified as "high-performing pair" or "over-performing the gravity benchmark". Those that yet to achieve the predicted level of trade, can then be classified as "more room to increase trade with each other".

As an illustration of the gravity model's application, the left panel of Figure 17 plots the predicted exports from China to Thailand. Note that it has tracked the actual level of the exports from China to Thailand quite well, indicating that Chinese has been performing quite well in exporting to Thailand and based on the base-case gravity equation there is no "gap" for China to increase her exports to Thailand. The right panel of the Figure 17, however, indicates that there are still room for exports from Thailand to China to increase and the gap persists over time. One interpretation is that China in 1980s and 1990s is still closed to trade from other countries with her low openness that gradually increased from 11.9 to 31.0 percent of her GDP over the period. With her accession to WTO and her closer integration to the world trading system and East Asia trading networks, the gap will gradually be diminished, as currently happening with the rapid rise of the Thai exports to China in recent years.

One could apply the same methodology and use the base-line gravity model to calculate the "gap" between the predicted and actual bilateral trades in each year from 1980 to 2002 as plotted in Figure 18, with the positive gap viewed as potential room for additional exports. Calculation shows that for the case of Thailand, there are several countries that Thailand by now achieves a high level of exports, much beyond what GDP and distance between the two countries would imply in the gravity model. Countries where Thailand export performs very well include the United States, Hong Kong and Singapore. Note that, for the latter two, it is as expected since they are ports of Asia; moreover, exports to the two countries also include those that are then re-exported to the world Market (that is, not driven by Hong Kong and Singapore GDP).[30] Meanwhile, Thailand has more room to increase its exports to China, Taiwan, Japan, and India, for instance, according to the gravity equation.[31] It is important that we reiterate

Figure 18: Room for Exports Expansion: the Case of Thailand



[30] Data confirms that most countries in our sample export much more than the level that the model-predicted to Hong Kong, especially China. The same is true for the case of Singapore.

[31] However, Thailand still has a large trade potential with Japan. The reason to support this finding could be the sample bias. Due to the fact that most countries in the sample, especially for home countries, tends to be relatively more open compared to Japan. This results in the predicted trade level that biases upward.

here that this exercise does not tell us that there is no further room for additional export to those countries that we already achieve a high performance such as Hong Kong, Singapore, and the US. The results only bring to our attentions where the exports still lacks compare to what it should be given the GDP of and the distance between the two countries; the results also indicate their relative importance so that we can suitably tailor and improve our policies and trade initiatives.

4.3 Future Trend of Intra-regional Trade

Base on the estimated gravity equation, we can then examine the trend of the intra-regional trade as well as analyze the relative importance between G3 and intra-regional trade into the future. (Below, we examine the trend up until 2020). To do this, we base our predictions on (1) the coefficients obtained from the gravity equation and (2) several scenarios of possible growth differential between G3 and the East Asia region.[32]

In order to come up with reasonable assumptions on future GDP growth, we examine the historical growth performance in various regions around the world (Figure 2). The data indicates that between 1970 and 2002 the average growth performance of the G3 countries gradually declined to around 2-3 percent per annum toward the end of the period, while the newly industrialized countries in East Asia and the developing Asia still expanded on average at the rate around 5 and 6 percent, respectively.

This is not surprising. The G3 countries are now already at the frontier of the technological ladder with their labor productivities are one of the highest in the world. Looking at the determinants of GDP growth by components, one finds that most of their physical capital and human capital accumulation already took place and at the high level compared with the rest of the world and their population is roughly constant. So, to move further and increase their GDP further, these countries have to rely mostly on advancement in their technological capability. In other words, they have to rely on the growth in their total factor productivity which has been growing steadily around 2-3 percent per annum since World War II.

On the other hand, East Asia region is relatively young region, which boost one of the highest growth performances and serve as one of the growth pole of the world economy during 1970-2002. Despite, such impressive performance, their physical capital, human capital, and labor productivities (especially in the developing Asia) still lack far behind those of the G3 countries. Their population also grows slightly. Most importantly, they still have much to catch up to the G3 countries in terms of transfers of production techniques and technological knowledge from the west. If the experiences of Japan and the NIEs are of any guidance, the developing ASIA and the NIEs will likely to grow faster than the G3 countries from some period of time as

[32] Forecasting is not really an exact science, but we are encouraged by the facts that we already know the distance between any pairs of countries and our estimated coefficients have very low standard errors. We only need one variable – the future trends of GDP in various regions/groups of countries around the world (particularly East Asia vis-à-vis developed countries), then we can get insights on intra-regional trade. Here, it is fortunate that economic growth is one of the most analyzed areas of economic research and we can base our assumptions on those results. Moreover, we can also analyze the possible implications on intra-regional trade for several growth scenarios and avoid having to take stance of the GDP growth assumptions, and still gain the insights we are looking for.

they continue to accumulate more physical and human capital and upgrade their production capacities.[33]

For our scenario analyses in Table 8, we therefore assume that the G3 will grow at the average rate of 2.5 percent per annum and there are three growth scenarios for East Asian at 5, 6, or 7 percent per annum, respectively.

Table 8: Forecasted Share of Thai Exports to the Region and G3 Countries

Annual Growth Rate			Exports to	2003	2010	2015	2020
Case	G3	EA					
(1)	2.5%	5%	East Asia	0.37	0.42	0.45	0.48
			G3	0.63	0.58	0.55	0.52
(2)	2.5%	6%	East Asia	0.38	0.44	0.48	0.52
			G3	0.62	0.56	0.52	0.48
(3)	2.5%	7%	East Asia	0.38	0.45	0.51	0.57
			G3	0.62	0.55	0.49	0.43

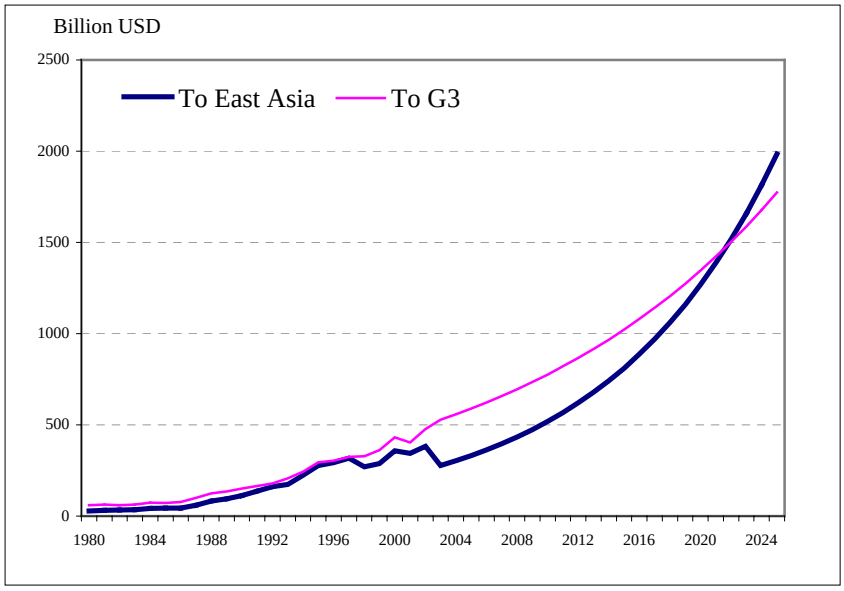
Based on the coefficients from the base-line gravity equation in Table 7, we can then predict the future trends of intra-regional exports and exports to G3, for each of the three growth scenarios as in Table 8.[34] (Note that since we only forecast the predicted bilateral trade between any pair of countries in our sample with East Asia to 2020, and our sample does not include the rest of the world – such as our trade with Africa, the figure reported in Table 8 is share of exports to East Asia or to G3 with respect to the total exports to both regions.) The results are quite clear. It is driven mostly by the absolute differentials between the economic performances of the two regions, not by the choice of 2.5% growth for the G3 countries.

The faster is the growth performance within the East Asia region vis-à-vis the G3 countries, the faster the convergence between intra-regional trades and exports to G3. Intra-regional exports will thus catch up with the combined exports to G3 some time in the future. In effects, the dynamic East Asia region will be the main driver that provides impetus to Thailand's intra-regional trades. Let us take the second scenario of 2.5% growth in G3 and 6% growth in East Asia for example, intra-regional trade will account for 52 percent share of our total exports to G3 and East Asia by 2020. (Note that since we do not include other countries in the world, the actual share of intra-regional exports to the total exports will reach the 52 percent share some time later.) Moreover, if the growth differential between the two regions is larger, the catching up will occur faster as in the third scenario. Intuitively, this underscores the importance of overall regional economic performance in the determination of the future evolution of our external trade. (This is as everyone expects since regional growth will provide additional final demand for regional products and provide the impetus to exports in the region.)

[33] Japan, before it caught up with the US, grew faster than the US by 2.6 percent on average for a period of 30 years during 1959 to 1989.

[34] This can be easily done for any countries or the whole region. For illustrative purpose, we report in Table 8, the figures for the case of Thailand.

Figure 19: Trends of East Asian Exports in the Second Scenario



For East Asia as a region, the same trend will also be in operative. In the second scenario of Table 8, the intra-regional exports between East Asia will overtake its exports to G3 countries by 2022.[35] Retrospectively (or in Figure 1), this finding is not a new phenomenon, it has been occurring steadily for some time, derailed briefly by the East Asia crisis in 1997, and already regained its momentum as the economy in the region began to recover. Moreover, if we compare with other regions, intra-regional trade of East Asia excluding Japan currently only accounts for 38.1 percent of its total trade, roughly at the same level of intra-regional trade in North America of 39.5 percent (Table 9). But, there are still more room to increase if the level of economic integration

Table 9: Intra-regional Trade Share in various Regions around the World in 2001

	North America	Latin America	Western Europe	C./E.Europe /Baltic States/ CIS	Africa	Middle East	Asia	World
North America	39.5	16.5	19.0	0.7	1.3	2.1	20.9	100.0
Latin America	60.8	17.0	12.1	0.9	1.2	1.2	6.3	100.0
Western Europe	10.3	2.3	67.5	5.9	2.5	2.6	7.8	100.0
C./E. Europe /Baltic States/CIS	4.2	2.1	55.2	26.6	1.0	2.8	6.6	100.0
Africa	17.7	3.5	51.8	1.7	7.8	2.1	14.9	100.0
Middle East	16.5	1.3	16.5	0.8	3.8	7.6	47.3	100.0
Asia	25.1	2.7	16.8	1.1	1.6	3.0	48.2	100.0
World	21.9	5.6	40.6	4.2	2.1	2.7	21.7	100.0

Source: WTO

[35] This is consistent with the study done by ADBI (2003). According to the study, by 2020, GDP of China will be greater than that of Japan, but the level will be less than 25% of Japan in per capita term. Moreover, the ADB study also gives a very interesting prediction from its simulation that China will record trade surpluses with G3 countries and trade deficits with East Asia. In effects, the surpluses and demand from G3 countries are being transferred to East Asian countries through China via its re-exporting activities.

within the European Union is of any guidance. In the region, intra-regional trade among countries within the European Union can be as high as 67.5 percent of its total trade. Also, it is interesting to note that in 2001 Asia is the one of the most integrated region in the world, second only to the European Union.[36]

The central message of this paper has become clear: with the rise of East Asia in the world economy, intra-regional trade will play an increasingly more important role for each country within the region. For the case of Thailand, not only we are likely to gain in the short-run driven by export growth to country such as China, but in the medium and longer term, as long as the regional keeps expanding faster than the G3 countries, prosperity within the region will help propel momentum for the intra-regional exports which will be instrumental in providing additional engine of growth to the Thai external sector and its domestic economy.

This pattern could probably last for some time given that the whole region is still much further behind G3 in term of development with GDP per capita of China, Indonesia, Philippines, Thailand, and Malaysia at 2.7%, 2.2%, 2.7%, 5.5% and 10.7% of the US's in 2002. If we together *as a region* manage to repeat the catching up experience by Japan and NIEs, intra-regional exports will serve as a new source of growth for Thailand for the medium-term.

V. Policy Implications for Thailand

So, what do these findings mean for Thailand? And how can we get the most benefit from the intensification in intra-regional trade within East Asia? And more importantly, how should Thailand position herself at the bilateral, regional, and global level? To answer these questions we briefly discuss the recent trade policy initiatives in light of our findings thus far.

Bilateral Free Trade Agreements and Regional Integration

One notable development in trade arrangements around the world in the recent years is the renewed interest of countries in pursuing trade integration in the form of bilateral free trade agreement (FTA). From early-1990s, the number of FTA has risen rapidly from 31 agreements in 1991 to 184 in 2003, driven mostly by trade initiative in Europe (Figure 20). Partly, it reflects the difficulties in progressing with the multilateral free trade agreements in the recent years.

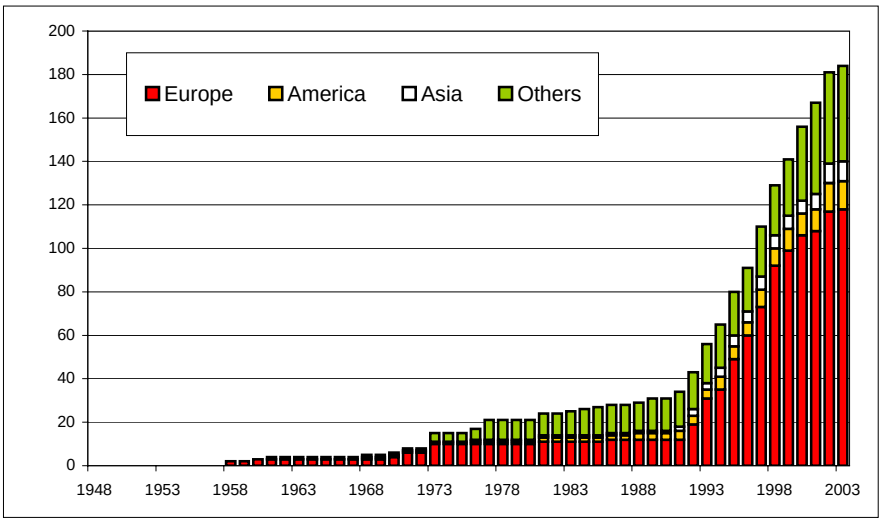
From a bird's eye view, Soesastro (2003) wrote that "current world trade situation is perhaps to a large degree characterized by many trade policy initiatives that are being pursued at the global, regional and bilateral levels at the same time. Many governments have adopted such policy of moving on *multiple fronts*. This is best exemplified by the US strategies of competitive liberalization, in which global, regional, and bilateral trade negotiations are seen as complementing and reinforcing each other…to pursue what USTR Representative Robert Zoellick called 'free trade on

[36] For large and well-integrated countries such as the US and Japan, most of their trades occur within the country. Their external trade only accounts for a very small portion of their GDP, so once the East Asia region become more and more integrated and become bigger, its share of trade with other region will become smaller over time.

the offensive'…. As suggested by Bergsten (2002) the US remains 'the pivotal operator' in the global trading arena. Through its regional and bilateral trade deals the US intends to put pressure on non-members of individual trade agreements either to join the group itself of to conclude broader agreement. The objective is to accelerate liberalization in ever-widening circles until global free trade is achieved."[37]

So far several interesting proposals have emerged, including the proposal to form the Free Trade Area of the America by 2007, the regional deal between the EU and Russia, etc. But for East Asia, it is very interesting to note the lacking of FTAs within the region until 1999. The surge by recent activities increased the number of FTA within the region by four (still very small portion of the recent rise of 153 in other regions since 1991). It marks the shift in the trade framework within East Asia from previously used to rely on open regionalism through loose knit cooperation with organization such as ASEAN or APEC or ASEAN+3 and multilateral trade negotiation trough GATT and WTO. Presently, countries are getting involved in a more direct and more active promotion of free trade.

Figure 20: The Number of Free Trade Agreements in Force



Source: WTO

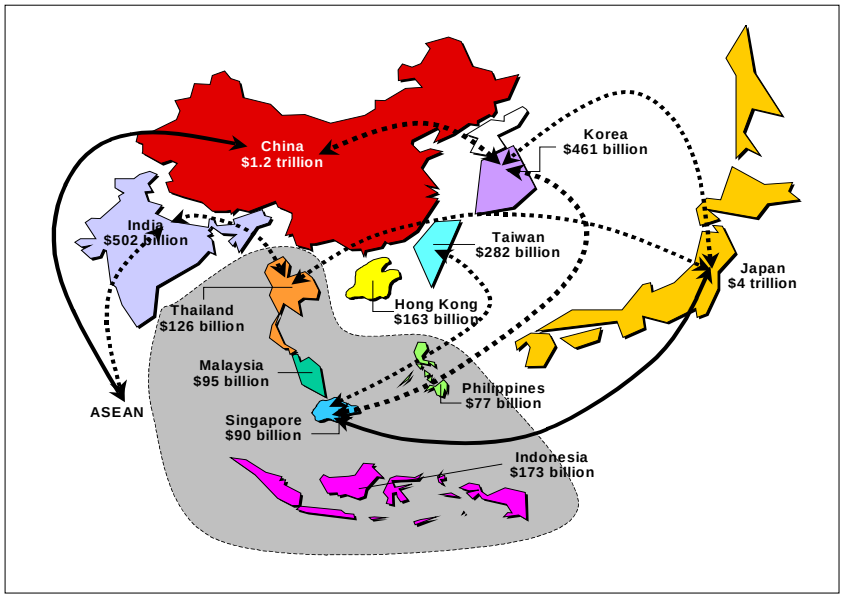
Thus far, several members of the APEC Countries have already decided to join the so-called "FTA Game" and engage in competitive liberalization. Some were forced to consider it on the defensive ground so as to not to be left out from the process that other countries and regions have been actively pursued. In East Asia, other than regional initiative such as the ASEAN Free Trade initiative with China in 2001, there are many proposals of free trade and closer economic partnership at country level. Singapore, for instance, has aggressively signed such agreements with New Zealand in 2000, Japan in 2002, European Free Trade association in 2002, Australia in 2003, and recently the US in 2003, with many more currently under negotiation or on the proposal

[37] "Spelling out America's new trade strategy, Robert Zoellick, the US Trade Representative, explained that its three-pronged strategy of moving on a global, regional and bilateral basis has the purpose of "creating a competition in liberalization, placing America at the heart of a network of initiatives to open markets. The principle idea behind this strategy of "competitive liberalization" is that U.S. bilateral and regional agreements are not only valuable contributions to freeing trade in themselves. Rather, they also put pressure on other countries to push forward with freeing trade multilaterally at the WTO." Renato Ruggierro (2003)

stage such as Canada, India, Korea, Mexico, and Taiwan. Korea recently concluded her FTA with Chile and having official discussions/study with China, Japan, Thailand, Australia, New Zealand, Mexico and the US. The list for Japan includes Canada, Chile, Mexico, and Thailand.[38] And Thailand has recently been active in pursuing FTA with other countries such as China, Bahrain, India, Australia, Singapore, and the US, etc.

With recent spur of the FTA activities, the new trade arrangements then is of the "Hub and Spokes" structure (or "spaghetti bowl" according to Professor Bhagwati) with countries such as Singapore, Korea, Japan, and Thailand that currently striving to serve as the hub of FTA and "in a race for spokes".

Figure 21: The Rise of Hub and Spokes of Free Trade Agreements in 2003



Of course such process is not without its critics. There are arguments against trade arrangements such as bilateral or regional free trade agreements, since from the point of view of the world economy, FTA can create "trade diversion" that should be traded with country outside the block but due to the reduction in tariff via the FTA, it has been instead produced by members of the group at higher costs. In addition, many including the former WTO Director General Renato Ruggierro (2003) succinctly pointed out several possible dangers from such trends:

> "Competitive liberalization thus could be counter-productive. The race for regional advantage between the United States, the EU and others might become a substitute for – rather than a complement to – multilateral liberalization at the WTO… Negotiating bilateral and regional agreements can divert attention and effort from the Doha round. This in turn can create a vicious circle, whereby a lack of progress at the WTO spurs a greater emphasis on bilateralism and regionalism – which in turn further hampers efforts in Geneva. A strategy of "competitive liberalization" might thus in fact lead to a fragmentation of the world trade system rather than freer global trade. As a matter of fact, the risk is that we are moving toward "competitive regionalism." The nightmare scenario could be a world split into defensive – even hostile – regional blocs. There is a political dimension in the move

[38] Mari Pangestu and Sudarshan Goopta (2003)

> toward regional blocs that must be carefully considered….In any case, regional and bilateral deals are a poor second-best to global free trade. By definition, preferences granted to some are handicaps imposed on others. Countries that are excluded from such agreements suffer. Yet, the deals create their own logic, where those who are discriminated against, seek their own preferential deal…. The tangled web of preferential agreements that countries are weaving – each with their own differing tariff rates, rules-of-origin requirements and industrial and health regulations – threatens to tie the world economy up in red tape. It would also distort the pattern of trade and create huge new administrative burdens for exporters – not to mention opportunities for corruption."

For East Asia and particularly ASEAN, Soesastro (2003) noted that:

> "Having been drawn into the game of bilateral FTAs, the challenge to ASEAN as a group is to consolidate the various initiatives that it and its members are engaged in so as to be able to promote region-wide and global trade liberalization…. In doing so it is not so much a matter of becoming a hub – or the hub – in East Asia, but more so to prevent it and its individual members from becoming a spokes to other hubs that could endanger its cohesion….specifically the risk of trade fragmentation and political tensions resulting from uncoordinated process…"

Implications for Thailand

From our discussion thus far, it is clear that the environments and the rules of the game have been changing dynamically. Not only, Thailand has to compete in an increasingly competitive world markets with the emergence of new player such as China and the global production structure that are now subdivided and outsourced where countries now part of closely inter-linked international production chain, but we also being pressured by policies of other countries who actively engage in the game of trade negotiations to secure their positions in the world trading system. Thus, it is important for us to spend sometimes thinking how the analyses and findings in this paper as well as our prediction of the rising relative importance of the intra-regional trade can be used to shape our policy direction and shed some lights on how Thailand should position herself in the emerging East Asia.

The first issue is **our priorities for our free trade agreements**. Despite the concerns mentioned earlier on the possible drawback of bilateral FTAs, it is likely that Thailand and other countries will be forced to participate in the new game of competitive liberalization. Here, our trade potential analysis as done in Figure 18 provides some guidance into which countries we should put our energy.[39]

Intuitively, geography plays a big role in the determination of trade directions. In answering the question "with whom Thailand should be trading", we should first look at those countries with large income/market/ in the world economy/market.

[39] Of course, this is not to put too much into one single and simple analysis – the gravity model of trade, but the exercise clearly demonstrates that we can guide the future of our trade policy initiatives with some applied trade analysis and use the result as the staring point to help focus our policy formulation.

However, since distance matter, our trading partner demand should be rescaled by some appropriate factors, using the coefficient on distance between the two countries from the gravity equation estimate as done in Table 10.

The resulting index is then the new world map of effective demand for Thai products from countries around the world. Note that looking from the perspective of Thai exporters, the US GDP in 2002 of $10.5 trillion is roughly 8.75 times that of China. But, after being properly discounted by the distance, the effective GDP indexes of the two countries are now 1581 and 1237 for the US and China, respectively. In other words, the US effective demand for our products is only 1.27 times larger than the Chinese demand – not 8.75 times. And the top five effective demands for our exports are Japan, EU, US, China, and India, in that order.[40]

In Table 10, Japan, China, India, Taiwan, and Korea stand out given its relatively large effective demand and the existence of the trade gap.

Table 10: GDP of the Thailand's Trading Partners Discounted by Distance

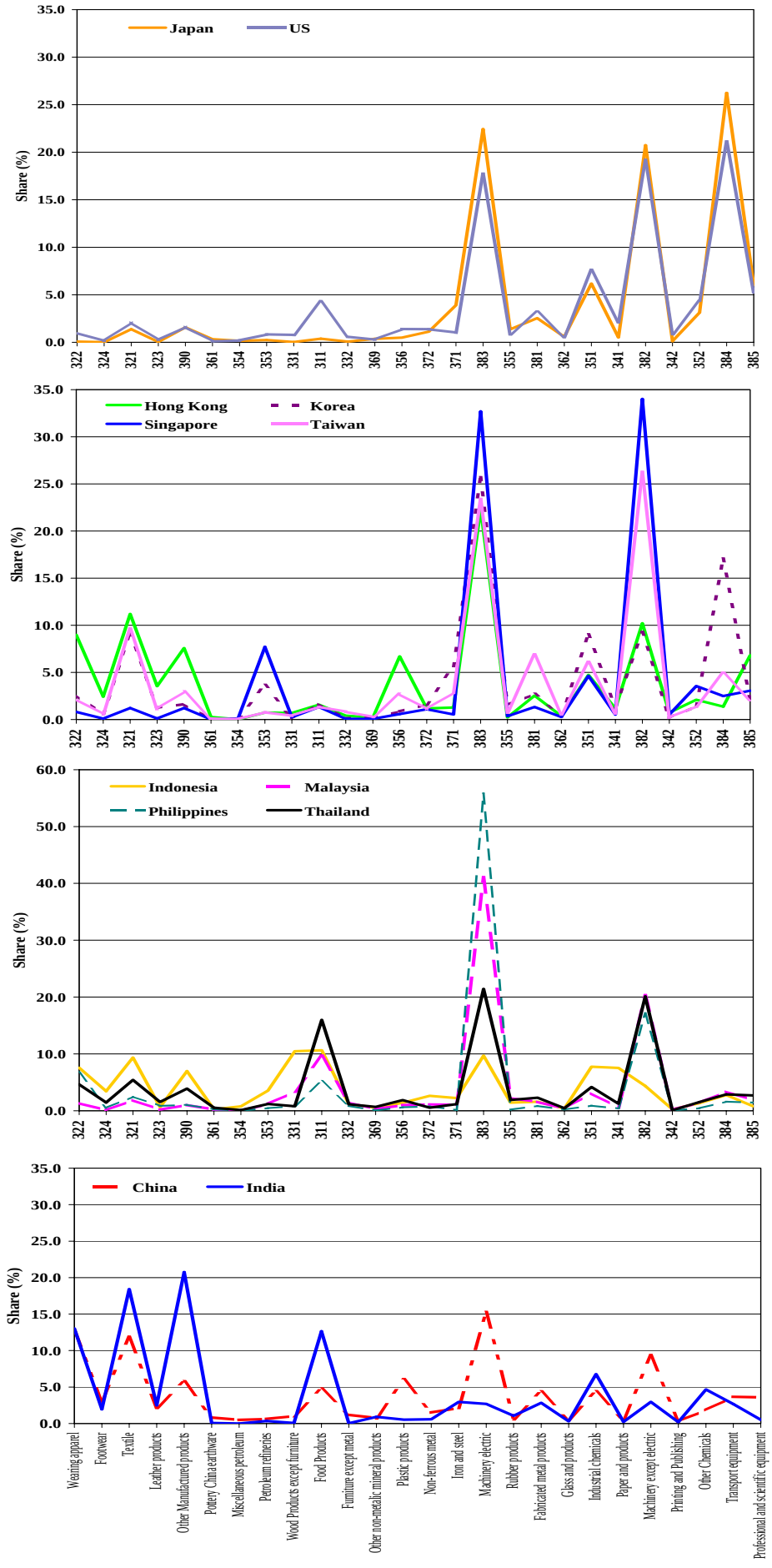
	US	EU	Japan	China	India	Korea	Taiw.	Indo	HK	Mala.	Sing.	Phil
Distance (km.)	14168	9197	4613	3301	2924	3727	2531	2323	1725	1185	1435	2211
GDP ($ Billion)	10445	8515	3992	1237	502	461	281	173	162	95	90	77
Eff.GDP (Index)	1581	2256	2587	1237	587	394	397	273	378	359	265	129
Trade gap ($ Billion)	-6.0	0.2	1.9	2.0	2.2	0.4	1.5	-0.5	-2.0	-1.3	-4.4	-0.7

From the gravity model prediction, much of the intra-regional trade will occur within the NEA as well as between the NEA and SEA regions. Thus, the freer trade arrangements with China, Taiwan, and Korea will position Thailand to participate in the core of the activities.

Furthermore, we can separate East Asian based on Kwan (2002) methodology, into four groups according to their export structure into (1) Japan, (2) NIES, (3) ASEAN-4 and (4) China and India, as done in Figure 22. It is very interesting to see that export structure of countries in each group are very similar to each other, with exports of more advanced countries concentrate on more sophisticated products to the right of the panel. Most importantly, as we looked across groups of countries, there exist trade complementarities between them. Thus, future move for free trade area that involve the country in the north and south would probably have high potential to be successful in creating trade expansion within and with outside the region.

[40] This calculation is done for illustrative purpose, using a quick back-of-the-envelope calculation, so we should not put much into it. (Much more detailed studies are required, since other factor such as tariffs, trade arrangements, etc.). But it does give us some interesting pictures.

Figure 22: Product Competition between Countries in East Asia



Presently, the Royal Thai government has made much progress on this front with the FTA between China and ASEAN signed, FTA with India to be signed later this year as well as many more in the negotiation process.[41]

The second issue concerns **the supply structure within the region**, given the findings a significant portion of the intra-regional trade at the present still rely on final demand from G3, it is in the best interest of East Asia to come together to create a strong and well integrated production base to compete in the world economy. In the 1990s, much of the discussion in the trade literatures was about how to use the region as a platform for the world market (by enlarging the scale of your production within the region to lower cost and subsequently use that advantages for the competition outside the region). Now the discussion is shifted to the internationalization of the production process and how countries in the region can come together as one part of the assembly line and help lower the cost of the production and use it as a basis to trade in the world market. (The Chinese example is quite instructive. As discussed earlier, China provides the region with her raw material and low-cost assembly lines. Thus from the integrated production process viewpoint, China, in effect, helps reduce production cost for East Asian industries and allow East Asia to compete in the world market more vigorously.)

From our preliminary analysis, governments have several measures at their disposals to create a single production base that parts can be freely move around from countries to countries to create the low cost production center of the world trading system. Such measures include Investment Agreements to encourage FDI as well as the reduction in the tariffs and non-tariff barriers as well as less volatilities in the foreign exchange etc.

The final issue concerns **the demand structure of South East Asia**. Quick inspection of the GDP map reveals that demands within ASEAN are quite fragmented compared with China and India. It is thus in the best interest of ASEAN – in addition to fostering a more integrated production process – to create a more integrated market that provide the world with an attractive access to a population of more than 500 million with income of more than $550 billion. The list of possible regional preferential trading arrangements to be considered according to Lloyd and Crosby (2002) include free trade area, custom unions, common market, single market, economic union, monetary union, and fiscal union. Here, it is important to realize that status quo of fragmented ASEAN is not an option, since South East Asia will be at the disadvantage with respect to the neighbor countries with large markets. What is needed then is a clear vision of what we would like to achieve together as a region and a political resolve to do whatever necessary to achieve it.

Rodolfo Severino, former Secretary-General of the ASEAN remarked forcefully on this particular point a year ago that “For ASEAN to compete in the global economy today, the regional economy has to be brought to a much deeper and broader state of integration than its members have so far been willing to undertake. This has become urgent with the rapid rise of continent-sized economies like China and India, with their increasing openness, attractiveness to investors and greater economic

[41] Beside China and India, the list of other countries at the various stage for free trade agreement with Thailand, include Bahrain, Japan, Peru, Australia, US, Mexico, South Africa, Sri Lanka, Bangladesh, Brazil, etc.

vigor...the question is whether the ASEAN countries are willing to make the political decisions to bring this about."[42]

VI. Conclusion

Looking ahead, intra-regional trade will become more and more important in the external trade of East Asian countries. With this region will become one of the largest trading areas in the world with the largest consumers, the critical question is how can we position ourselves in the region and how together achieve the full potential of our region. To do that we need a clear vision of what we want to achieve which will allow us to well position for the increasingly competitive world trading system in the new millenniums.

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Appendix 1: Data Description

The analysis of the paper starts from 1980 to 2002 or as early as the data are available from the corresponding sources. For example, most Taiwan's data series starts from 1986 as the earliest. The data sources for each section are as follows.

1. Descriptive Statistics

The analysis uses quarterly trade transactions of ASEAN + 3 countries as export originators and the G3 countries as major trading partners. The East Asian countries include China, Hong Kong, Korea, Taiwan, Singapore, Indonesia, Malaysia, Philippines and Thailand. The export data for all countries recorded in the US dollar term are obtained from the Direction of Trade Statistics except Taiwan where the data are obtained from the CEIC database. Additionally, due to the unavailability of Singapore trade data to Indonesia, we use, therefore, Indonesian trade data with Singapore as a proxy. The detailed data for sectoral exports are extracted using the International Standardized Industrial Classification (ISIC) from CD-Rom supplied by the World Bank. (Development, Trade and the WTO by World Bank researchers – Alessandro Nicita and Marcelo Olarreaga)

2. Export equation panel data regression

The quarterly data in the estimation include the ASEAN + 3 countries. The export volume data are either obtained directly from the International Financial Statistics or calculated from the export value data from the Direction of Trade Statistics. Export prices, consumer price indices and the developed country industrial production indices are also extracted from the IFS. However, the domestic demand component of East Asia countries is provided by the CEIC database.

3. Gravity equation

The gravity equation is estimated annually with the annual data from 1980 to 2002. The home countries are those in the East Asia while the destination includes East Asian countries, G3 economies, Australia, New Zealand, and the "potential India". The bilateral export data are in the US dollar term obtained from the Direction of Trade Statistics and the annual nominal GDP data in US dollar term are obtained from World Economic Outlook (WEO) Database 2003 (IMF website). In the estimation, the additional variables are supplied by various data sources. The simple average applied tariff rates for the destination countries are taken from the Individual Action Plan of the APEC member countries while the stock of FDI inflow of all home countries are downloaded from the UNCTAD website. The exchange rate volatility is the yearly average of 30 day-moving variance of daily exchange rate returns from Bloomberg.

Appendix 2: International Standardized Industry Classification

ISIC 3 digit description

311 Food products
313 Beverages
314 Tobacco
321 Textiles
322 Wearing apparel except footwear
323 Leather products
324 Footwear except rubber or plastic
331 Wood products except furniture
332 Furniture except metal
341 Paper and products
342 Printing and publishing
351 Industrial chemicals
352 Other chemicals
353 Petroleum refineries
354 Miscellaneous petroleum and coal products
355 Rubber products
356 Plastic products
361 Pottery china earthenware
362 Glass and products
369 Other non-metallic mineral products
371 Iron and steel
372 Non-ferrous metals
381 Fabricated metal products
382 Machinery except electrical
383 Machinery electric
384 Transport equipment
385 Professional and scientific equipment
390 Other manufactured products

ISIC 4 digit description

3111 Slaughtering preparing and preserving meat
3112 Manufacture of dairy products
3113 Canning and preserving of fruits and vegetables
3114 Canning preserving and processing of fish crustacea and similar foods
3115 Manufacture of vegetable and animal oils and fats
3116 Grain mill products
3117 Manufacture of bakery products
3118 Sugar factories and refineries
3119 Manufacture of cocoa chocolate and sugar confectionery
3121 Manufacture of food products not elsewhere classified
3122 Manufacture of prepared animal feeds
3131 Distilling rectifying and blending spirits
3132 Wine industries
3133 Malt liquors and malt
3134 Soft drinks and carbonated waters industries
3140 Tobacco manufactures

3211 Spinning weaving and finishing textiles
3212 Manufacture of made-up textile goods except wearing apparel
3213 Knitting mills
3214 Manufacture of carpets and rugs
3215 Cordage rope and twine industries
3219 Manufacture of textiles not elsewhere classified
3220 Manufacture of wearing apparel except footwear
3231 Tanneries and leather finishing
3232 Fur dressing and dyeing industries
3233 Manufacture of products of leather and leather substitutes except footwear and
3240 Manufacture of footwear except vulcanized or molded rubber or plastic footwear
3311 Sawmills planning and other wood mills
3312 Manufacture of wooden and cane containers and small cane ware
3319 Manufacture of wood and cork products not elsewhere classified
3320 Manufacture of furniture and fixtures except primarily of metal
3411 Manufacture of pulp paper and paperboard
3412 Manufacture of containers and boxes of paper and paperboard
3419 Manufacture of pulp paper and paperboard articles not elsewhere classified
3420 Printing publishing and allied industries
3511 Manufacture of basic industrial chemicals except fertilizers
3512 Manufacture of fertilizers and pesticides
3513 Manufacture of synthetic resins plastic materials and man-made fibres except glass fibres
3521 Manufacture of paints varnishes and lacquers
3522 Manufacture of drugs and medicines
3523 Manufacture of soap and cleaning preparations perfumes cosmetics and other toiletries
3529 Manufacture of chemical products not elsewhere classified
3530 Petroleum refineries
3540 Manufacture of miscellaneous products of petroleum and coal
3551 Tyre and tube industries
3559 Manufacture of rubber products not elsewhere classified
3560 Manufacture of plastic products not elsewhere classified
3610 Manufacture of pottery china and earthenware
3620 Manufacture of glass and glass products
3691 Manufacture of structural clay products
3692 Manufacture of cement lime and plaster
3699 Manufacture of non-metallic mineral products not elsewhere classified
3710 Iron and steel basic industries
3720 Non-ferrous metal basic industries
3811 Manufacture of cutlery hand tools and general hardware
3812 Manufacture of furniture and fixtures primarily of metal
3813 Manufacture of structural metal products
3819 Manufacture of fabricated metal products except machinery and equipment not - electronic
3821 Manufacture of engines and turbines
3822 Manufacture of agricultural machinery and equipment
3823 Manufacture of metal and woodworking machinery
3824 Manufacture of special industrial machinery and equipment except metal and – wood working machinery
3825 Manufacture of office computing and accounting machinery

3829 Machinery and equipment except electrical not elsewhere classified
3831 Manufacture of electrical industrial machinery and apparatus
3832 Manufacture of radio television and communication equipment and apparatus
3833 Manufacture of electrical appliances and housewares
3839 Manufacture of electrical apparatus and supplies not elsewhere classified
3841 Shipbuilding and repairing
3842 Manufacture of railroad equipment
3843 Manufacture of motor vehicles
3844 Manufacture of motorcycles and bicycles
3845 Manufacture of aircraft
3849 Manufacture of transport equipment not elsewhere classified
3851 Manufacture of professional and scientific and measuring and controlling equipment
3852 Manufacture of photographic and optical goods
3853 Manufacture of watches and clocks
3901 Manufacture of jewelry and related articles
3902 Manufacture of musical instruments
3903 Manufacture of sporting and athletic goods
3909 Manufacturing industries not elsewhere classified

Note: When we collapse the 4 digit categories into 3 digit, the standard practice is to aggregate 312x and 311x into 311.