An Examination of the Formation of Natural Trading Blocs in East Asia

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Abstract
This paper seeks to identify the appropriate form of a regional trading agreement in East Asia by estimating the intra-regional trade bias of various informal regional groups. The major conclusion is that ASEAN+3 would be the natural policy choice for the formation of a regional trading agreement in East Asia. Moreover, ASEAN+3 will not diverge from the principles of open regionalism and multilateralism, when we consider its inherently open character and the positive influence of the United States and Japan.

1. Introduction

With a second wave of regionalism sweeping the world, East Asian countries have come to acknowledge the need for some form of regional economic cooperation. Japan and Singapore recently concluded a bilateral free trade agreement (FTA), and various other forms of regional cooperation are being proposed in East Asia, such as those among ASEAN+3 (ASEAN plus South Korea, Japan, and China) and ASEAN and China, as well as an FTA for China, Japan, and South Korea. However, there have been no serious efforts to answer the following questions: Which regional integration agreement is the most natural choice for East Asian countries from an economic perspective? Which regional integration agreements should East Asian countries pursue?

We start from the presumption that the institutionalization of a natural trading region, rather than the deliberate creation of preferential arrangements, would be more effective in accelerating trade among members because it would exploit existing economic and sociocultural connec-

tions, production networks, and other ties.[1] Wonnacott and Lutz (1989) introduced the concept of "natural trading partners," emphasizing two defining criteria: close trade relations and geographical proximity. This concept of natural trading partners was popularized as "natural trading blocs" by Krugman (1991), who emphasized the importance of geographical proximity.

In this paper, we focus on the empirical identification of natural trading regions using the gravity model of Frankel (1997). We test various combinations of regional groups as possible natural trading blocs, including the various pairings of China, Japan, and South Korea; China–Japan–South Korea; ASEAN; South Korea–ASEAN, China–ASEAN, and Japan–ASEAN; and ASEAN+3 as a whole. We find no evidence that the three Northeast Asian countries (China, Japan, and South Korea) form a natural trading bloc. In contrast, the tests suggest that ASEAN+3 would be a natural choice for a regional trading agreement.

We explore further the characteristics of ASEAN+3, focusing on two questions. The first question is whether ASEAN+3 is centered on Japan or the United States. The second question is whether there is any possibility that the informal ASEAN+3 trading bloc is diverting trade with nonmembers. The evidence suggests that Japan and the United States serve together as centers for intra-regional trade. The evidence also shows that the creation of ASEAN+3 as a formal trading bloc can be characterized as an example of nondiscriminatory market-driven integration.

2. Empirical framework and data

2.1 Analytical framework

The empirical framework proposed by Frankel (1997) for detecting and quantifying intra-regional trade bias is the gravity model, which captures not only the influences of geographical proximity and economic size on trade, but also the trade effects of formal trading blocs and informal relations. Our basic specification is as follows:

$$\log(T_{ij}) = \alpha + \beta_1 \log(GDP_i \times GDP_j) + \beta_2 \log(TARIFF_j) + \beta_3 \log(DISTANCE_{ij}) + \beta_4 (ADJACENT_{ij}) + \beta_5 (LANGUAGE_j) + \gamma_k \Sigma_k BLOC_k, \quad (1)$$

1 Natural trading regions have been conceptualized as "natural trading partners," "natural integration regions," or "market integration" by Wonnacott and Lutz (1989), Lorenz (1992, 1993), and Drysdale and Garnaut (1993). These analysts argue that growth and efficiency in natural trading regions are likely to be greatly enhanced if they are supported by regional trade agreements. Intentionally creating a trading bloc is more costly because extra measures are required to create close common political and economic preferences, which are already present in a natural trading bloc.

where T_{ij} is the bilateral volume of trade (imports) between importing (i) and exporting (j) countries, GDP_i and GDP_j are the importing (i) and exporting (j) countries' GDPs, $TARIFF_j$ indicates the average import tariff in country j and $DISTANCE_{ij}$ is the distance between countries i and j. The various formal and informal trading blocs are represented by $\Sigma_k BLOC_k$, where k = EU, NAFTA, MERCOSUR (Mercado Común del Sur), AFTA (ASEAN Free Trade Agreement), and ASEAN+3. Following the tradition of the gravity model, bilateral distance (which represents transportation costs) is measured by the log of physical distance between the capital cities of the two countries. In addition, we introduce the dummy variable $ADJACENT_{ij}$ into the gravity model to indicate when the two countries share a common land border and the variable $LANGUAGE_j$ to capture the effects of a common language on bilateral trade.[2]

Methodologically, we extend the usual gravity equation by explicitly introducing import tariffs. The theoretical gravity models define trade costs as all trade barriers impeding bilateral trade and assume that geographical distance represents all trade costs. Baier and Bergstrand (2001) extend the usual gravity equation by introducing explicit import tariffs and find that tariffs have a great negative impact on trade. (See also Deardorff 1998 and Anderson and van Wincoop 2003.)

Once the norm has been established by the gravity model, a dummy variable can be added to represent the case in which both countries in a given pair belong to the same regional trading bloc (either formal or informal). A statistically significant positive coefficient for the bloc dummy can be interpreted to mean that a trading bloc is forming naturally if there are no formal regional integration agreements.

There has been a long debate on the major reasons for regional trade concentration. Krugman (1991) and Summers (1991) point out that regional concentration in trade is attributable to geographical proximity, whereas Bhagwati (1992) and Panagariya (1995) emphasize "artificial" preferential trade policies as the dominant explanation for high trade concentration ratios. Frankel, Stein, and Wei (1997) refer to the real-world situation between the two extremes of "natural" and "artificial" trade blocs as a "super-natural" bloc. Frankel (1997) uses the term "informal trading bloc" as a contrasting concept to the existing idea of a "formal trading bloc." In this paper, we focus on the existence of a regional trade bias; thus, the bloc dummy in our gravity equation represents all the regional trade biases: formal and artificial factors, geographic natural factors, and other unidentified natural factors.

2 We allow for countries in which more than one language is spoken and consider English, Chinese, German, French, Japanese, Spanish, and Portuguese. A common language reduces transaction costs and enhances exporters and importers' mutual understanding of their respective cultures and legal systems.

2.2 Data

Our data set covers 51 countries[3] for the 1990–2001 period. The source for bilateral trade flows is the International Monetary Fund's *Direction of Trade Statistics.* We use current GDPs (expressed in U.S. dollars) obtained from the World Bank's *World Development Indicators.*

We faced some difficulties in obtaining bilateral tariff rates. Prewo (1978) provides annual bilateral tariff rates for 18 OECD countries for 1958 through 1974, and Deardorff and Stern (1990) also provide measures for pre– and post–Tokyo Round average tariff rates for 18 OECD countries. We could not obtain bilateral tariff rates for other countries, so we use the means of the national tariff rates given in the World Trade Organization's Integrated Data Base.

3. Are trading blocs forming in East Asia?

3.1 Do South Korea, Japan, and China constitute a regional trading bloc?

To test whether an informal regional trading bloc is forming in Northeast Asia, we estimate the gravity equation (a panel estimation using a random-effects model) to include a Northeast Asian bloc dummy in addition to contemporary regional trading blocs, such as the EU, NAFTA, MERCOSUR, and AFTA.

The estimation results are summarized in table 1.[4] We focus on the bloc effect. The coefficient for the EU shows a statistically significant level of 0.233 in 1990–2001 for the case of China–Japan–South Korea. The coefficients for NAFTA and MERCOSUR are not statistically significant for any years tested. The regional dummy of AFTA (ASEAN) exhibits a strong inward trade bias during 1990–2001. The coefficient on the Northeast Asian dummy (China–Japan–South Korea) shows statistical significance for this period at the 10 percent level. Thus, we find weak evidence to sug-

3 Countries in the data set are Algeria, Angola, Argentina, Australia, Austria, Bahamas, Bahrain, Bangladesh, Belgium, Brazil, Canada, Chile, China, Colombia, Denmark, Egypt, Finland, France, Germany, Ghana, Greece, Guatemala, Honduras, Hong Kong, India, Indonesia, Ireland, Italy, Japan, Kenya, South Korea, Malaysia, Mexico, Morocco, Netherlands, Peru, Philippines, Poland, Portugal, Singapore, South Africa, Spain, Sri Lanka, Sweden, Switzerland, Thailand, Turkey, United Kingdom, United States, Uruguay, and Venezuela.

4 The sum of two countries' log-GDPs is highly significant statistically in the regressions and generally less than 1, indicating that trade increases with a country's GDP but does so less than proportionally. The coefficient for distance implies that each percentage point increase in distance reduces trade by about 0.89 percent. The coefficient on the dummy variable for language also shows high statistical significance, but the coefficient for a common border is not statistically significant. The introduction of import tariffs as the new independent variable leads to a great increase in the explanatory power of the regressions.

Table 1. Gravity estimation: China–Japan–South Korea

	Basic model	China–Japan–South Korea
Intercept	−32.766***	−32.788***
	(−55.987)	(−56.081)
Log (GDP_i)	0.881***	0.881***
	(100.098)	(99.988)
Log ($DISTANCE_{ij}$)	0.894***	−0.889***
	(−23.198)	(−23.009)
Log ($TARIFF_j$)	−0.142***	−0.143***
	(−9.814)	(−9.855)
$LANGUAGE_j$	0.776***	0.779***
	(10.382)	(10.440)
$ADJACENT_{ij}$	0.296	0.306*
	(1.586)	(1.645)
EU	0.221*	0.233*
	(1.673)	(1.645)
NAFTA	0.607	0.612
	(1.090)	(1.101)
MERCOSUR	0.209	0.210
	(0.366)	(0.369)
AFTA (ASEAN)	0.754***	0.758***
	(2.579)	(2.599)
China–Japan–South Korea		1.019*
		(1.866)
Adjusted R^2	0.945	0.945
No. of observations	26,620	26,620

Note: *Figures in parentheses are t-statistics.*

****Statistically significant at the 1 percent level.*

***Statistically significant at the 5 percent level.*

**Statistically significant at the 10 percent level.*

gest that a trading bloc is forming among the three Northeast Asian countries (column 2 of table 1).

Table 2 tests whether there is any tendency toward a special trade bias in the three possible combinations of regional groupings in the Northeast Asian region: South Korea–Japan, South Korea–China, and China–Japan. None of the coefficients on the regional trading bloc dummies shows statistical significance in the panel estimation, corroborating the assertion that there is no regional trade bias among China, Japan, and South Korea. In other words, the trade relations between them can be simply explained with the gravity variables.

3.2 Does ASEAN+3 constitute a regional trading bloc?

This section investigates the existence of a regional trade bias within the boundary of ASEAN+3. First, we add a new bloc dummy, ASEAN+3, to the baseline model of table 1 and test whether a regional trading bloc is forming from the perspective of the ASEAN+3 framework (table 3). Second, we examine whether there is any ten-

Table 2. Gravity estimation: South Korea–Japan, South Korea–China, and China–Japan

	South Korea–Japan	South Korea–China	China–Japan
Intercept	−32.767***	−32.778***	−32.766***
	(−56.001)	(−55.994)	(−56.003)
Log (GDP_i)	0.881***	0.881***	0.881***
	(100.117)	(100.060)	(99.984)
Log ($DISTANCE_{ij}$)	−0.895***	−0.892***	−0.893***
	(−23.213)	(−23.068)	(−23.148)
Log ($TARIFF_j$)	−0.142***	−0.142***	−0.142***
	(−9.812)	(−9.825)	(−9.824)
$LANGUAGE_j$	0.776***	0.777***	0.777***
	(10.387)	(10.394)	(10.393)
$ADJACENT_{ij}$	0.298	0.299	0.298
	(1.597)	(1.605)	(1.598)
EU	0.223*	0.224*	0.223*
	(1.694)	(1.701)	(1.691)
NAFTA	0.608	0.608	0.608
	(1.094)	(1.092)	(1.093)
MERCOSUR	0.210	0.209	0.209
	(0.368)	(0.367)	(0.367)
AFTA (ASEAN)	0.757***	0.755***	0.755***
	(2.592)	(2.584)	(2.583)
South Korea–Japan	0.093		0.526
	(0.665)		(0.558)
South Korea–China		0.605	
		(0.640)	
China–Japan			0.526
			(0.558)
Adjusted R^2	0.945	0.945	0.945
No. of observations	26,620	26,620	26,620

Note: *Figures in parentheses are t-statistics.*

****Statistically significant at the 1 percent level.*

***Statistically significant at the 5 percent level.*

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dency to promote regional trade between ASEAN as a whole and each of the three Northeast Asian countries, that is, South Korea+ASEAN, Japan+ASEAN, and China+ASEAN (table 4).

Table 3 shows that ASEAN+3 has a significant and apparent intra-regional trade bias in two models, with statistically significant coefficients in the models of 1.304 and 1.096, respectively.[5]

5 The estimated coefficient is 1.096, implying that two countries of this bloc trade about 200 percent more with each other (after holding constant the variables for GDP, distance, and tariffs, as well as the other gravity variables) than two otherwise similar countries [exp(1.096) = 2.99]. This suggests that although ASEAN+3 countries have no formal trade agreement, there are unidentified factors that promote bilateral trade in this Northeast Asian region.

Table 3. China–Japan–South Korea, AFTA, and ASEAN+3

	Model 1	Model 2 (model 1 without ASEAN)
Intercept	−32.832***	−32.847***
	(−56.512)	(−56.518)
Log (GDP_i)	0.878***	0.879***
	(99.967)	(−100.060)
Log ($DISTANCE_{ij}$)	−0.872***	−0.873***
	(−22.727)	(−22.723)
Log ($TARIFF_j$)	−0.145***	−0.145***
	(−10.959)	(−10.574)
$LANGUAGE_j$	0.783***	0.783***
	(10.586)	(10.574)
$ADJACENT_{ij}$	0.303*	0.308*
	(1.640)	(1.668)
EU	0.281**	0.279**
	(2.146)	(2.125)
NAFTA	0.662	0.655
	(1.201)	(1.189)
MERCOSUR	0.261	0.254
	(0.464)	(0.451)
AFTA (ASEAN)	−0.522	
	(−1.407)	
China–Japan–South Korea	−0.023	0.147
	(−0.041)	(0.263)
ASEAN+3	1.304***	1.096***
	(5.514)	(5.936)
Adjusted R^2	0.945	0.945
No. of observations	26,620	26,620

Note: *Figures in parentheses are t-statistics.*

****Statistically significant at the 1 percent level.*

***Statistically significant at the 5 percent level.*

**Statistically significant at the 10 percent level.*

When we test for the effect of a China–Japan–South Korea bloc together with the ASEAN+3 effect, the former effect disappears completely. We think that large differences between economic systems and development levels, as well as lack of experience in economic integration, are the biggest challenges for an FTA among these three countries.

Similarly, the coefficient for the AFTA bloc does not show any statistical significance when estimated with ASEAN+3. These results are in line with the conclusion of Frankel and Wei (1996) that all of the increase in intra-Asian trade can be explained by the rapid growth of these economies, not by any special ASEAN effect. This is convincing when we consider that the three countries (South Korea, Japan, and China) accounted for about 70 percent of the total trade of ASEAN+3 countries and about 92 percent of the combined GDP of ASEAN+3 countries in 2000. AFTA might

Table 4. South Korea+ASEAN, Japan+ASEAN, and China+ASEAN

	South Korea+ASEAN		Japan+ASEAN		China+ASEAN	
Intercept	−33.334***	−33.314***	−33.172***	−33.164***	−33.170***	−33.126***
	(−57.083)	(−57.211)	(−56.928)	(−57.077)	(−56.714)	(−56.770)
Log (GDP_i)	0.884***	0.882***	0.882***	0.880***	0.882***	0.881***
	(101.016)	(100.758)	(100.767)	(100.594)	(100.658)	(100.384)
Log ($DISTANCE_{ij}$)	−0.848***	−0.841***	−0.855***	−0.848***	−0.858***	−0.853***
	(−21.996)	(−21.879)	(−22.190)	(−22.064)	(−22.155)	(−22.126)
Log ($TARIFF_j$)	−0.140***	−0.142***	−0.140***	−0.143***	−0.141***	−0.143***
	(−9.686)	(−9.852)	(−9.693)	(−9.866)	(−9.760)	(−9.919)
$LANGUAGE_j$	0.779***	0.783***	0.777***	0.782***	0.756***	0.767***
	(10.538)	(10.643)	(10.510)	(10.618)	(10.192)	(10.365)
$ADJACENT_{ij}$	0.246	0.267	0.248	0.270	0.263	0.283
	(1.337)	(1.452)	(1.343)	(1.467)	(1.420)	(1.535)
EU	0.319***	0.344***	0.309**	0.333**	0.298**	0.316**
	(2.436)	(2.631)	(2.354)	(2.547)	(2.264)	(2.413)
NAFTA	0.704	0.719	0.701	0.715	0.687	0.696
	(1.279)	(1.313)	(1.273)	(1.304)	(1.243)	(1.266)
MERCOSUR	0.362	0.366	0.346	0.350	0.339	0.332
	(0.642)	(0.653)	(0.614)	(0.623)	(0.599)	(0.590)
South Korea+ASEAN	2.030***	1.692***				
	(8.113)	(6.366)				
Japan+ASEAN			1.850***	1.475***		
			(7.400)	(5.492)		
China+ASEAN					1.672***	1.201***
					(6.653)	(4.215)
ASEAN+3		0.685***		0.714***		0.699***
		(3.625)		(3.733)		(3.450)
Adjusted R^2		0.945	0.945	0.945	0.945	0.945
No. of observations		26,620	26,620	26,620	26,620	26,620

Note: *Figures in parentheses are t-statistics.*

****Statistically significant at the 1 percent level.*

***Statistically significant at the 5 percent level.*

**Statistically significant at the 10 percent level.*

be meaningless without the trade with its major Northeast Asian trading partners. The conclusion seems to be that China, Japan, South Korea, and ASEAN are in fact functioning as a trading bloc.

Table 4 summarizes the results of the tests for possible combinations between ASEAN and each of the three Northeast Asian countries. The trade relations of ASEAN with Japan, China, and South Korea, respectively, are very similar. The coefficients on bloc dummies for South Korea+ASEAN, Japan+ASEAN, and China+ASEAN show significant and apparent intra-regional trade biases in every estimation, and the effects of the two dummies are significant even when the ASEAN+3 dummy with a strong statistical significance is included in the gravity equation (final row, columns 2, 4, and 6). This implies that the South Korean, Japa-

nese, and Chinese networks are in place, as commonly believed, and they are competing for a close relationship with the ASEAN countries.

4. The characteristics and future of ASEAN+3

4.1 Are there special trade relations with Japan and the United States?

The East Asian economies are generally outward-oriented. The United States and Japan are major trading partners of particularly vital importance for the growth of East Asia. One question is whether a trading bloc is forming in East Asia that is centered on Japan and/or the United States. On the issue of regionalization centered on Japan, Frankel (1992), using a separate dummy variable specifically for bilateral Asian trade with Japan, found little evidence in the regional trade patterns that Japan is transforming itself into a center of trade. In contrast, Choudhry, Abu-Bakar, and Wylie (2000), also using a simple gravity model of trade flows within East Asian countries (including Hong Kong and Taiwan), concluded that East Asian intra-regional trade centered on Japan goes beyond what can be explained by the gravity variables.

Table 5 tests for the existence of special trade relations between ASEAN+3 and Japan and between ASEAN+3 and the United States by adding two separate dummy variables for the bilateral trade of countries in ASEAN+3 with Japan and the United States, respectively. The coefficient on the Japan dummy is statistically significant at the 10 percent level, whereas that on the U.S. dummy is significant at the 1 percent level. Hence, these results support the claim that ASEAN+3 is centered on the United States and Japan together.

The increase in the intra-regional trade of ASEAN+3 might arise from the fact that East Asian economies are highly dependent on the United States for their export markets. It is well known that East Asian countries have developed a low-cost production network in the region to achieve competitiveness in the world market and to export many products to other regions. Within this network, Japan provides countries in the region with capital and intermediate goods, thereby increasing regional trade. The potential for regional growth in trade in East Asia critically depends on growth in final demand for East Asian products in other regions, particularly in North America. The significant and positive economic ties between the United States and ASEAN+3, on the one hand, and between Japan and ASEAN+3, on the other, can be understood in this regard. At the same time, the weaker significance of the Japan dummy, in comparison with the U.S. dummy, might reflect the fact that although Japan has constructed a production network in the ASEAN+3

Table 5. The relationship of ASEAN+3 to Japan and the United States

	Model 1 (U.S. dummy)	Model 2 (Japan dummy)
Intercept	−32.636***	−32.841***
	(−56.129)	(−56.550)
Log (GDP_i)	0.876***	0.878***
	(99.759)	(99.971)
Log ($DISTANCE_{ij}$)	−0.882***	−0.871***
	(−23.120)	(−22.699)
Log ($TARIFF_j$)	−0.147***	−0.145***
	(−10.178)	(−10.062)
$LANGUAGE_j$	0.769***	0.785***
	(10.446)	(10.616)
$ADJACENT_{ij}$	0.306*	0.313*
	(1.666)	(1.699)
EU	0.273**	0.284**
	(2.099)	(2.171)
NAFTA	0.666	0.658
	(1.216)	(1.196)
MERCOSUR	0.257	0.254
	(0.458)	(0.450)
ASEAN+3	1.114***	1.068***
	(6.290)	(5.941)
U.S. dummy	2.024***	
	(4.335)	
Japan dummy		0.837*
		(1.656)
Adjusted R^2	0.945	0.945
No. of observations	26,620	26,620

Note: *Figures in parentheses are t-statistics.*

****Statistically significant at the 1 percent level.*

***Statistically significant at the 5 percent level.*

**Statistically significant at the 10 percent level.*

framework, there has been less than full demand within the region for a large part of those final goods produced by that network.

4.2 Openness of ASEAN+3

We investigate whether there is economically important trade discrimination in ASEAN+3. To capture the extra-bloc effects of ASEAN+3, we introduce the openness dummy variable for each bloc, defined by Frankel and Wei, which takes the value of 1 for the case of imports from all countries by member countries of bloc k.[6] The coefficient of the openness dummy indicates to what extent members of a group trade with other countries in general, regardless of whether they are in the same group. If this variable is negative, it indicates that members of the group in question

6 For example, C (China)-J (Japan)-K (South Korea) openness = 1 when i of T_{ij} = C, J, and K. Otherwise, C-J-K openness = 0.

Table 6. Bloc openness of ASEAN+3

	ASEAN+3 openness	EU openness	NAFTA openness	MERCOSUR openness	All dummies openness
Intercept	−32.513*** (−55.759)	−32.930*** (−56.839)	−32.760*** (−55.714)	−33.099*** (−57.054)	−32.464*** (−55.034)
Log (GDP_i)	0.876*** (99.880)	0.873*** (98.556)	0.877*** (98.334)	0.880*** (100.577)	0.865*** (94.985)
Log ($DISTANCE_{ij}$)	−0.903*** (−23.425)	−0.837*** (−21.558)	−0.876*** (−22.879)	−0.849*** (−22.105)	−0.852*** (−22.109)
Log ($TARIFF_j$)	−0.146*** (−10.131)	−0.151*** (−10.425)	−0.146*** (−10.102)	−0.145*** (−10.053)	−0.157*** (−10.856)
$LANGUAGE_j$	0.794*** (10.779)	0.818*** (11.054)	0.774*** (10.426)	0.788*** (10.701)	0.824*** (11.297)
$ADJACENT_{ij}$	0.275 (1.500)	0.361* (1.959)	0.312* (1.695)	0.350* (1.905)	0.378** (2.093)
ASEAN+3	0.741*** (3.898)				0.790*** (4.226)
ASEAN+3 Open	0.417*** (5.290)				0.527*** (6.413)
EU		0.082 (0.602)			0.061 (0.459)
EU Open		0.344*** (5.151)			0.443*** (6.320)
NAFTA			0.533 (0.952)		0.547 (0.998)
NAFTA Open			0.132 (1.124)		0.322*** (0.007)
MERCOSUR				0.870 (1.521)	0.814 (1.451)
MERCOSUR Open				−0.654*** (5.685)	−0.432*** (−3.714)
Adjusted R^2	0.945	0.945	0.945	0.945	0.945
No. of observations	26,620	26,620	26,620	26,620	26,620

Note: *Figures in parentheses are t-statistics.*

****Statistically significant at the 1 percent level.*

***Statistically significant at the 5 percent level.*

**Statistically significant at the 10 percent level.*

trade less with the rest of world than would be predicted, so a regional trade agreement among them might divert trade (Frankel and Wei 1996, 17).

The results are summarized in table 6. The introduction of dummy variables for the openness of the blocs reduces the estimated effect of ASEAN+3, but the coefficient remains highly significant statistically. In addition, the variable representing bloc openness of ASEAN+3 shows significantly positive values for the period 1990–2001. In contrast, the coefficient on the openness dummy for NAFTA is not significant, while that on the openness dummy for MERCOSUR is negative and significant in the same period. After inclusion of the openness dummy for the EU, the coefficient of the EU bloc dummy turns from statistically significant into statistically

insignificant, while the coefficient of the openness dummy for the EU becomes positive and statistically significant. These empirical results show little evidence of trade diversion resulting from an ASEAN+3 bloc.

4.3 Widening ASEAN+3

Frankel and Wei (1996) test the bloc effect of "Asia Pacific," which includes all the countries with eastern coasts on the Pacific, including Australia and New Zealand. Their results show that the coefficient and significance level of this bloc are both higher than those of the East Asia dummy. They also broaden the bloc search and test for the formation of Asia-Pacific Economic Cooperation (APEC), which includes the United States and Canada and other Pacific economies. Frankel and Wei's results are as follows: the coefficient of the APEC bloc dummy was highly significant, whereas that of the Asia Pacific dummy completely disappeared and that of the ASEAN+3 dummy remained significant. This implies that APEC would be the next alternative trading bloc for East Asian countries and that ASEAN+3 would continue to function as a regional trading bloc even with the existence of a wider APEC bloc.[7]

5. Summary and conclusions

Using a modified gravity equation, we have examined whether any regional trading blocs are forming in East Asia. We find no evidence that any trading bloc is naturally forming among the three Northeast Asian countries, but we find that ASEAN+3 shows a significant intra-regional trade bias in all tested cases. The coefficient of the ASEAN+3 dummy is significant and remains so, even when tested together with the bigger APEC group, and even though the magnitude of the APEC effect is great (Frankel and Wei 1996).

We find that the United States and Japan exert special effects on ASEAN+3, promoting intra-regional trade. More importantly, ASEAN+3 is open to trade with the rest of the world (i.e., no trade diversion). The creation of a regional trading bloc in East Asia is expected to contribute to a worldwide institutional framework of multilateralism, given that trade relations with countries outside the region are unquestionably important to the development of the ASEAN+3 trading bloc. Hence, the

7 One might argue that the bigger the regional group, the higher the intra-regional bias among its members. However, there is significant evidence that this is not the case. Frankel (1997) tests a potential TAFTA (Trans-Atlantic Free Trade Agreement) bloc, defined as including all 15 EU members plus all 3 members of NAFTA, and shows that the coefficient is always negative.

evolution of ASEAN+3 into a formal trading agreement would further promote and reinforce both intra-regional trade and inter-regional trade.

When we regard regionalization as a process of dynamic development of trade patterns by way of building gravity centers (following Lorenz 1992), it seems clear that a regional trade agreement among ASEAN+3 countries would be the first step for regionalization in East Asia. The provision of a formal institutional framework would help to stabilize the existing unidentified ties among ASEAN+3 countries, such as production networks and sociocultural linkages, and accelerate further growth and efficiency in this region. Moreover, the creation of an ASEAN+3 formal trading bloc would likely be defined by market-driven integration (Drysdale and Garnaut 1993). For a more successful and rapid development of the intra-regional market potential in East Asia, the creation of a formal regional trading bloc to advance the process of regionalization should now be considered.

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