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Simple Measures of Regional Concentration in Trade

Worldwide trade has expanded steadily. Since World War II, trade has grown much faster than income.[1] This global phenomenon appears in most countries as an increase in the ratio of trade to GDP, a simple measure of openness. The most obvious explanations for this trend include declining transportation costs and declining tariffs. Our econometric tests will shed light on these two key factors, as well as on a third factor: poor countries trade more as they become richer.

Has the growth in trade been biased toward trade within regions and away from trade between regions? This would constitute a movement toward regional trading blocs. It is the central question for the next few chapters of this book. This chapter begins the analysis by reviewing the measures most commonly used to gauge tendencies toward regional concentration in trade.

The preceding chapter briefly recounted the recent history of explicit preferential trade arrangements (appendix A does so at greater length). Nominal or explicit preferential trade arrangements and operational regional trading blocs are not necessarily the same thing, however. On the one hand, one can't be sure that explicit proclamations of de jure regional trading arrangements are carried out de facto. As is clear from the review of recent regional trading arrangements in appendix A, there is a long history of grandly proclaimed agreements falling short in practice. It is a story of failure to translate visions into specific plans, of delays in

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1. See Rose (1991) or Krugman (1995a). This was also true over the two centuries preceding World War I (e.g., Council of Economic Advisers 1992, 194); 1914-45 was the exception.

implementation, of rampant sectoral exclusions or escape clauses, and of poor enforcement of nominal agreements.

This is particularly true among less developed countries. For example, the Economic Community of West African States (ECOWAS), set up in 1975 with the objective of becoming a customs union, has been rated ''progress negligible'' over the subsequent two decades. Similar ratings have been given to the Latin American Free Trade Area (LAFTA), West African Customs Union (WACU), Central American Common Market (CACM), and East African Common Market (EACM). The Association of Southeast Asian Nations (ASEAN) and the Andean Pact repeatedly postponed their plans for regional integration in the 1970s and 1980s (e.g., de la Torre and Kelly 1992, 26; Balassa 1987).[2] Thus we want to test whether regional arrangements are actually affecting patterns of trade rather than accepting it at face value.

Conversely, even where explicit preferential trade arrangements do not exist, some observers see the same effect as if they did. The effects are thought to come through other means: foreign direct investment (FDI), overseas development assistance (ODA), currency links, and even political intervention or threats of military force. These tools are thought to distort and redirect trade toward the regional hegemon. Certainly, the hypothesis put forward by heralds of an emerging yen bloc in East Asia, or a modern ''Greater Asia Co-Prosperity Sphere,'' is not that Japan has organized an explicit free trade area (FTA). To the contrary, Japan is the only industrialized country that does not have reciprocal preferential trade arrangements with any neighbors. Rather, the hypothesis is that Japan is forming an economic bloc in the same way that it runs its economy: by means of policies that are implicit, indirect, and invisible.[3] Earlier opponents of US ''imperialism'' in Latin America had similar views.

In this book, we consider both kinds of groups: more narrowly defined groups of countries representing formal regional trading arrangements and broader geographical groups where trade has been alleged to have been artificially concentrated. Under the narrow definition, we look chiefly at the North American Free Trade Agreement (NAFTA), Mercado Commun del Sur (Mercosur), the Andean Pact, ASEAN, and the European Community and the European Free Trade Association (EFTA) (for the 1970s and 1980s) or the European Union (for today). Under the broader definition, we look at Western Europe, the Western Hemisphere, and East Asia. Momentum for expanding the European Community into the

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2. Hoekman and Leidy (1993) detail loopholes that typify this history and other ''slips twixt cup and lip.''

3. An incomplete and imperfect list of possible examples includes Arase (1989, 1991), Dornbusch (1989; 1990, 126-27), Encarnation (1992), Kirkpatrick (1994), Kwan (1994), Thurow (1992, 16 and 65), and Young (1993). Press articles abound, such as ''The Yen Block: A New Balance in Asia?'' *The Economist*, 15 July 1989, 5-20; ''Half-full, Half-empty,'' *Far Eastern*

European Economic Area (EEA) and the European Union, and momentum for expanding NAFTA into the Free Trade Area of the Americas (FTAA) provide some motivation for looking at these continent-scale blocs. Finally, we consider two potential transoceanic groups: the Asia Pacific Economic Cooperation forum (APEC) and the Trans-Atlantic Free Trade Agreement (TAFTA).

Intraregional Trade Shares and What Is Wrong with Them

We want to know what effect all these impressive-sounding acronyms have had on the actual pattern of trade. Many studies of regional trading arrangements attempt to document effects on trade by reporting simple statistics on shares of intraregional trade. The denominator in this ratio, for a member of a particular group, is its total trade, and the numerator is the subset of that trade it undertakes with others members of the grouping. This is supposed to reflect tendencies for countries to direct their trade toward other members of their group. We begin our exploration with this measure, though we shall argue that it is unserviceably primitive.

Intraregional trade shares are reported in table 2.1.[4] The trade shares are also graphed in figures 2.1a (depicting the formal FTAs) and 2.1b (for the larger continental groups). The most serious problem with this measure shows up right away. The share is very high for large groups such as APEC or Europe and very low for small groups such as the Andean Pact countries. Is this because APEC has been very successful at promoting trade among its members and the Andean Pact has not? No, not necessarily. Rather, it reflects primarily that APEC is a large group of countries, both in the sense of the number of members that belong and in the sense that many of them are quite large trading countries, while the Andean Pact represents a relatively small group of small countries. It is a necessary property of the intraregional share measure that the bigger the set of countries around which one throws the lasso, the higher will be the apparent concentration of trade within. In the limit, if one

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Economic Review, December 1991, 69; ''Japan Covets Lead Role in Asia,'' *Financial Times*, 11 January 1993, 11.

4. Tables 2.1 and 2.2 pertain to a relatively large data set of 163 countries (implying 26,406 import pairs plus export pairs if all were reported: 163 × 162). Estimates of the gravity model of bilateral trade that are reported in later chapters pertain to a narrower data set of 63 countries (implying 3,906 pairs when all are reported: 63 × 62). Data for this set are more consistently available. For comparability with the gravity coefficients discussed in later chapters, the versions of tables 2.1 and 2.2 that correspond to this narrower data set of 63 countries are reported in a statistical appendix (tables B2.1 and B2.2). The intraregional concentration ratios are generally within 4 percent of those reported in table 2.2 here.

Table 2.1 Intraregional trade as a share of total trade of the region,[a] 1962-94

Group	1962	1965	1970	1975	1980	1985	1990	1994
East Asia	0.33	0.30	0.29	0.31	0.36	0.38	0.44	0.50
APEC	0.53	0.55	0.60	0.57	0.59	0.68	0.69	0.74
ASEAN-6	0.31	0.23	0.18	0.14	0.14	0.18	0.17	0.21
Europe	0.65	0.68	0.70	0.69	0.69	0.70	0.74	0.73
EU-12	0.49	0.51	0.54	0.54	0.53	0.55	0.60	0.58
EU-15	0.56	0.59	0.61	0.60	0.58	0.60	0.66	0.64
EFTA	0.22	0.25	0.28	0.18	0.13	0.13	0.13	0.12
Western Hemisphere	0.48	0.48	0.49	0.48	0.44	0.47	0.44	0.50
Mercosur	0.06	0.11	0.10	0.07	0.11	0.07	0.11	0.19
Andean Community	0.01	0.02	0.02	0.04	0.05	0.05	0.05	0.10
NAFTA	0.36	0.37	0.40	0.38	0.34	0.40	0.38	0.43
Africa	0.04	0.03	0.05	0.03	0.03	0.04	0.04	0.03

Countries in each group for the full data set trade statistics (number of countries used in trade concentration ratio in parentheses)

East Asia-11: the six ASEAN countries plus China, Hong Kong, Japan, Korea, and Taiwan.
APEC-18: the countries of the EAEC-11 and NAFTA-3 plus Australia, Chile, New Zealand, and Papua New Guinea.
ASEAN-6: Brunei, Indonesia, Malaysia, Philippines, Singapore, and Thailand.
Europe-32: the countries of the EU-12 and EFTA-6 plus Gibraltar, Malta, Albania, Bulgaria, Czechoslovakia (Czech Republic and Slovakia), East Germany (before reunification), Hungary, Poland, Romania, Yugoslavia (and derivative nations), and the Soviet Union (and derivative nations).
EU-12: Belgium (and Luxembourg), Denmark, France, Germany, Greece, Ireland, Italy, Netherlands, Portugal, Spain, and the United Kingdom.
EU-15: the countries of the EU-12 plus Austria, Finland, and Sweden.
EFTA-6: Austria, Finland, Iceland, Norway, Sweden, and Switzerland.
Western Hemisphere-34: the countries of Mercosur, the Andean Pact, and NAFTA plus the Bahamas, Barbados, Belize, Bermuda, Chile, Costa Rica, Dominica, Dominican Republic, El Salvador, Guatemala, Guyana, Haiti, Honduras, Jamaica, Nicaragua, Panama, St. Kitts and Nevis, Suriname, and Trinidad and Tobago.
Mercosur-4: Argentina, Brazil, Paraguay, and Uruguay.
Andean-5: Bolivia, Colombia, Ecuador, Peru, and Venezuela.
NAFTA-3: the United States, Canada, and Mexico.
Africa-48: Algeria, Angola, Benin, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Congo, Cote d'Ivoire, Djibouti, Equatorial Guinea, Ethiopia, Gabon, the Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Liberia, Madagascar, Malawi, Mali, Mauritania, Mauritius, Morocco, Mozambique, Niger, Nigeria, Reunion, Rwanda, St. Helena, Sao Tome & Principe, Senegal, Seychelles, Sierra Leone, Somalia, South Africa Sudan, Tanzania, Togo, Tunisia, Uganda, Zaire, Zambia, and Zimbabwe.

Source: Author's calculations.

throws the lasso around all countries of planet Earth, one would find a ratio of 100 percent.

To illustrate the point, consider an arbitrary set of countries: those having names that do not begin with the letter F. This large group of countries conducts over 94 percent of their trade with each other, as compared with the three countries that *do* begin with the letter F (Fiji, Finland, and France), which conduct only 1 percent of their trade with other members of their group. This difference reflects nothing more than

Figure 2.1a Formal FTAs: intraregional trade shares[a]
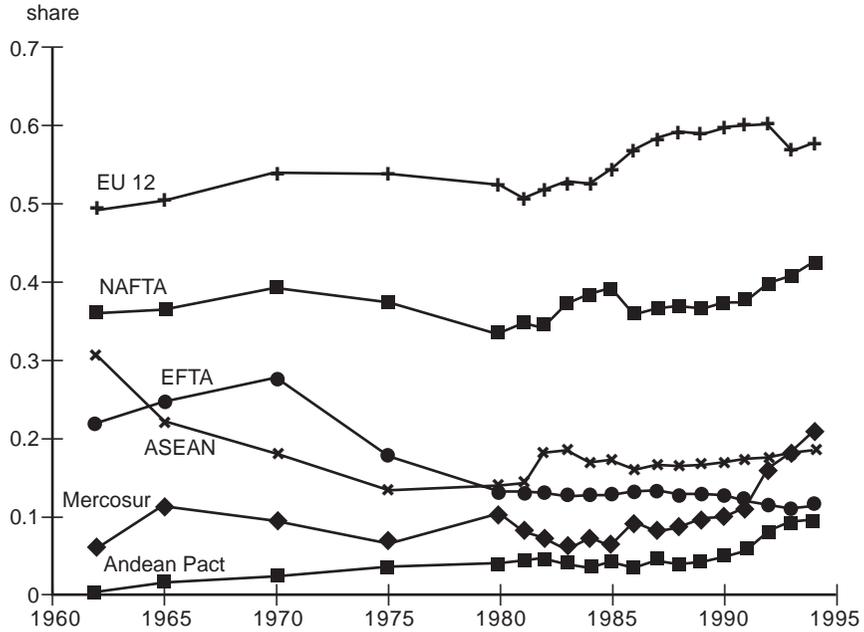
a. Includes all available countries.

Sources: Statistics Canada, World Trade Database; UN COMTRADE data base.

that only a small part of the world's trade is accounted for by the second group of countries. One would not want to conclude from these two statistics that countries that do not begin with F are more inclined to preferential trade arrangements with each other than countries that do begin with F.

The fallacy often arises in comparisons across groups. Boosters of APEC, for example, sometimes point to its intraregional share of 71 percent, forgetting to acknowledge that members of any group that comprises such a large share of the world economy will inevitably trade a lot with each other. Only after one takes into account APEC's share of world trade (41 percent) can one consider its intraregional trade to be noteworthy.

The fallacy arises even more often in comparisons across time. The shares are often used to illustrate the increasing intraregional bias in world trade. It is pointed out that the intraregional trade share among Western European countries increased substantially in 1965, when six were in the European Economic Community,[5] and increased further after 1973, when Denmark, the United Kingdom, and Ireland joined. As table 2.1 shows, the EU-12's ratio of internal trade to total trade rose from 49 percent in 1962 to 60 percent in 1990, by which time the accessions of

5. Early studies of the effect of the original formation of the EEC and EFTA on trade shares were reviewed and improved upon by Williamson and Bottrill (1971; see also Truman 1969; Kreinin 1974).

Figure 2.1b Continental groups: intraregional trade shares,[a] 1960-95
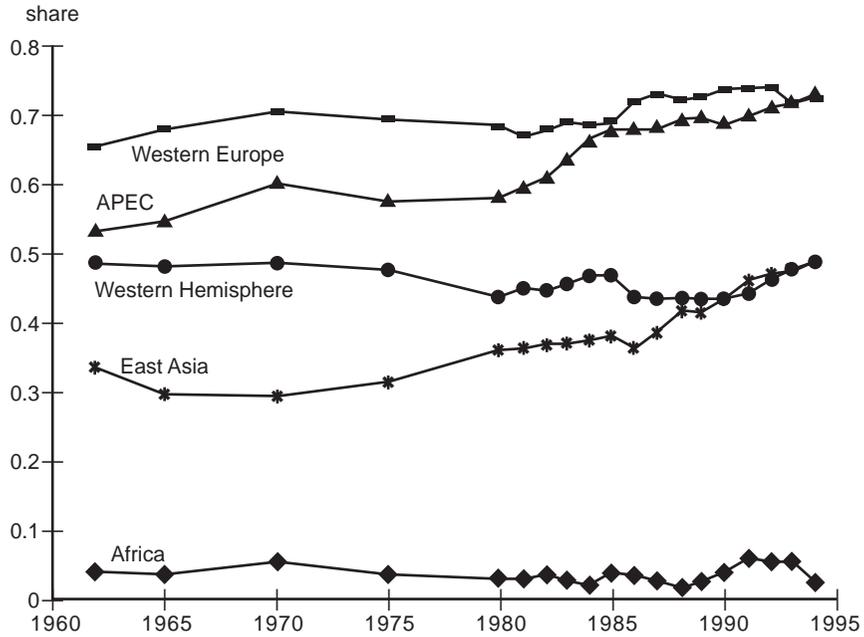
APEC = Asia Pacific Economic Cooperation forum.

a. Includes all available countries.

Sources: Statistics Canada, World Trade Database; UN COMTRADE data base.

Greece, Portugal, and Spain were complete.[6] In the early 1990s, however, the intra-EC trade ratio leveled off, showing no evidence of the effect of the Single Europe Act, which went into force in 1992. This might be puzzling if one considered the intraregional trade ratio to be a good measure of the effects of regional trading arrangements.

Similarly, it is pointed out that some regional groups within the Western Hemisphere also have shown a bit of an upward trend in intraregional trade shares and that the intraregional trade share in the East Asian Economic Caucus (EAEC) has increased the most rapidly of all—by as much as one-half between 1970 and 1990 (table 2.1).[7] The intraregional trade share in East Asia reached .50 in 1994 (versus .73 in Europe and .50 in the Western Hemisphere). This rapid trend is cited as evidence that Japan is building a trade bloc in East Asia, even without explicit policy

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6. If one restricts the data set to the 63 countries used in the gravity estimation of later chapters, then the ratio rose from 53 percent in 1962 to 64 percent in 1990 (appendix table B2.1).

7. See, for example, Frankel, Stein, and Wei (1994, table 1) or Frankel, Stein, and Wei (1995, table 1). There, the share was defined as intraregional trade divided by total trade involving countries of the region, which is slightly different from the ratio reported in table 2.1.

steps toward a preferential trade arrangement. We shall see that these inferences regarding the speed with which trade is becoming intraregionally concentrated in Europe and Asia are incorrect.

Levels of intraregional trade—as reflected, for example, in table 2.1— are indeed useful for some purposes. Let us say we are interested not in the effects of preferential tariffs and other policy determinants on bilateral trade patterns but rather in the *effects of bilateral trade*. Such effects would be of interest, for example, to businesspeople, macroeconomists, and political scientists. Then it would be perfectly appropriate to look at the intraregional trade shares.

A businessperson, particularly one in a trade-related industry such as shipping, might want to know in what parts of the world bilateral trade is increasing most rapidly so he or she can plan where to invest. A macroeconomist might want to know the sensitivity of a particular small Asian economy to sudden cyclical fluctuations emanating from the United States or Japan, which depends importantly on the magnitude of its trade links with these two countries. The old principle that East Asian economies are highly dependent on North American growth is rapidly becoming less true, as trade within Asia becomes more important. For that matter, Japan is itself declining in importance as compared with a ''third growth pole'' on the East Asian mainland.

Intraregional trade may have important political implications as well. Hirschman (1980), in a classic study, pointed out the international influence that arises from trade. In times of political or military conflict, a country may be reluctant to side against a large trade partner. Hirschman made it clear that the trade need not be the outcome of a preferential trade arrangement.

> For the political or power implications of trade to exist and to make themselves felt, it is not essential that the state should exercise positive action, i.e., organize and direct trade centrally; the negative right of veto on trade with which *every* sovereign state is invested is quite sufficient. (16-17)

Thus to observe from table 2.1 that intraregional trade shares for groups that include such large countries as the United States and Japan (e.g., APEC) will necessarily be large is to observe accurately that the United States and Japan are powerful players. To repeat the central objection to the trade shares, however, they cannot be used to assess whether trade is in any meaningful sense necessarily concentrated or biased toward the United States or Japan, or toward all the members of APEC, beyond what would be expected from the size of these countries.

Concentration or Intensity Ratios

To obtain a usable measure of regional concentration, we need to adjust the intraregional trade shares by a measure of each group's importance

Table 2.2 Simple intraregional trade concentration ratios,[a] 1962-94

Group	1962	1965	1970	1975	1980	1985	1990	1994
East Asia	3.93	3.51	2.86	2.74	2.53	2.24	2.22	2.09
APEC	1.64	1.69	1.82	1.86	1.82	1.74	1.76	1.63
ASEAN-6	9.57	9.22	8.22	4.86	4.08	5.11	3.98	3.60
Europe	1.29	1.29	1.33	1.41	1.46	1.51	1.49	1.66
EU-15	1.24	1.28	1.33	1.41	1.47	1.58	1.51	1.63
EU-12	1.18	1.23	1.31	1.41	1.47	1.59	1.52	1.62
EFTA	1.25	1.39	1.74	2.61	2.21	2.29	2.01	2.13
Western Hemisphere	1.68	1.82	1.91	2.13	2.11	1.97	2.12	2.17
Mercosur	2.45	6.42	5.57	3.82	6.14	4.84	9.07	12.84
Andean Community	0.29	0.69	1.57	2.63	3.37	4.41	8.06	12.63
NAFTA	1.63	1.76	1.93	2.17	2.08	1.95	2.09	2.20
Africa	0.86	0.77	1.18	0.65	0.52	1.05	1.56	1.24

a. Calculated as the intraregional trade share in total trade of the region divided by the region's share of world trade and by total world trade.

Source: Author's calculations.

in world trade. We want to know if a typical member of group *i* trades more with other members of group *i* than does a typical country located anywhere in the world. The simplest way to accomplish this is to divide each intraregional trade share in table 2.1 by that region's share of world trade. We shall call such numbers simple concentration ratios (table 2.2).

The intuitive idea is this: if bilateral trade takes place in geographic patterns that are simply proportionate to the distribution of total trade, then the concentration ratio should be close to one. If trade is concentrated within a given group of countries, that group should show a ratio in excess of one. Petri (1993, 23) calls this ratio the "double-relative" measure of intensity, to indicate that bilateral trade has been deflated both by the total trade of the importing country and the total trade of the exporting country. (In a time-series context, we must also divide by total world trade, so that intensity is not affected by uniform worldwide inflation or by uniform growth in real trade.)[8] These statistics are illustrated in figures 2.2a and 2.2b.

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8. Petri (1991, 1993) also notes that our concentration ratio (his "double-relative") has in the past literature commonly been called a gravity coefficient. We think that the term "gravity" should be reserved for a measure that substitutes GNP for total trade as a measure of size and preferably that takes into account the role of distance as well. Both of these variables are crucial to the gravity model and to the rest of this book. We shall reserve the term "gravity" for an equation that includes these terms, and other determinants of bilateral trade as well, and that estimates their coefficients rather than constraining them. It will turn out that the total estimated coefficients on GNPs will in fact be insignificantly different from one. This finding would help justify computing a "double relative" that deflated bilateral trade by both partners' GNPs. The estimated coefficients on distance, population, and the other variables, however, are clearly very different from zero. This shows the limitations of all the measures based on simple ratios if our goal is to detect true bias in trade patterns.

Figure 2.2a   Formal FTAs: simple intraregional trade intensity ratios,[a] 1960-95
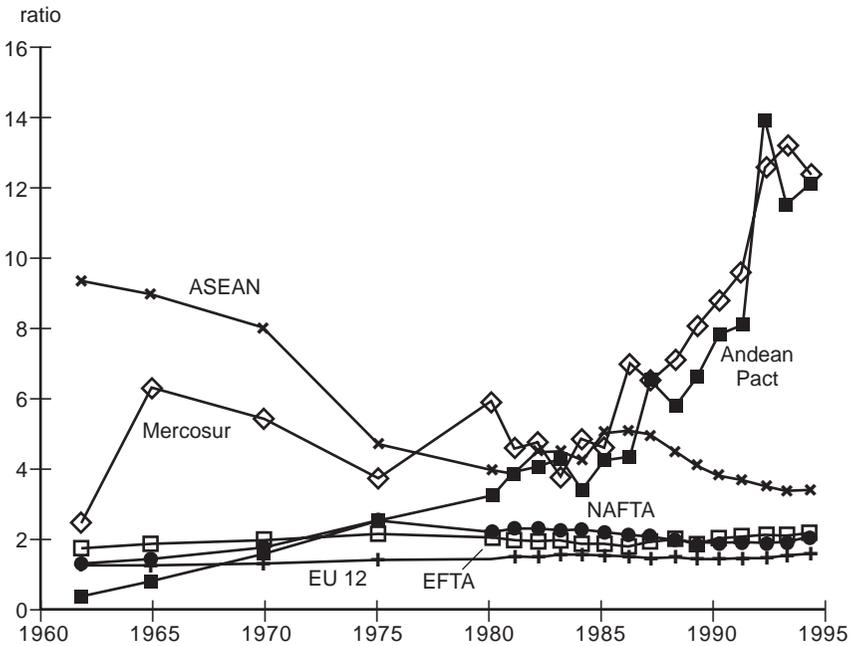
ratio

ASEAN

Mercosur
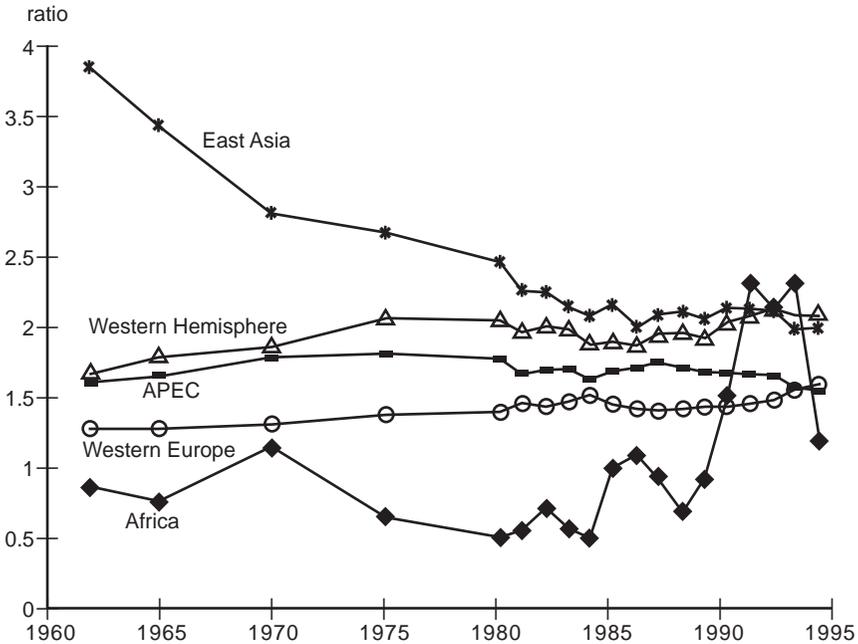
Andean Pact

NAFTA

EU 12   EFTA

a. Includes all available countries.
Sources: Statistics Canada, World Trade Database; UN COMTRADE data base.

An alternative correction would be to divide each bilateral trade quantity by both partners' total GDPs (gross domestic products) instead of their total trade. Adjusting by total trade rather than total GDP, however, has the advantage of taking out the unwanted influence of size while also taking out the unwanted influence of openness. We want to know whether trade of a given country with fellow group members is high relative to nongroup members, not whether all its trade is high.

There is another measure, closely related to the concentration ratio or double-relative, that has been called the intensity coefficient, by some Australian economists in particular (Anderson and Norheim 1993a, 1993b; Drysdale 1988; Drysdale and Garnaut 1982, 1993). When applied to a single pair of countries, the measure is the same as what we have called the simple concentration ratio. But when evaluating intraregional trade within a group of three or more countries, there is an issue as to how to aggregate trade among the pairs. Their intensity coefficient is an improvement in that it makes an adjustment in the denominator of the concentration ratio. We wish to know whether a given country trades more with a fellow bloc member than one would expect from the latter's weight in world trade. To allow this assessment, the intensity coefficient deletes from the second country's weight in world trade its trade with the first

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Figure 2.2b Continental groups: simple intraregional trade intensity ratios,[a] 1960-95

ratio

East Asia

Western Hemisphere

APEC

Western Europe

Africa

a. Includes all available countries.

Sources: Statistics Canada, World Trade Database; UN COMTRADE data base.

country. The reason is that the numerator does not count the first country's trade with itself, and one wishes to make the numerator and denominator comparable. The resulting measures of intraregional trade intensity are reported in table 2.3, under the name ''corrected concentration ratios.''[9]

These authors also go on to use more sophisticated measures designed to adjust for trade complementarity by commodity, presumably dictated by innate comparative advantage, and for openness. We shall not pursue these extensions, being anxious to proceed to the full-fledged gravity equation in later chapters. This in part reflects a suspicion that the differentiated-products view of trade offers a better overall description of aggregate patterns than do classic theories of comparative advantage. It also reflects a strong belief that distance and the other factors in the gravity equation are essential to uncovering evidence of true bias in trade patterns, which requires estimation of the parameters in an equation, instead of

9. Anderson and Norheim (1993a) and Drysdale and Garnaut (1982, 1993) explain the intensity coefficient at greater length. Their adjustment in the denominator gets more complicated when the intensities of members of a region are aggregated, as they are here. (Although a country's trade with itself does not appear in international trade statistics, international trade among members of the region does.)

Table 2.3 Corrected intraregional trade concentration ratios, 1962-94

Group	1962	1965	1970	1975	1980	1985	1990	1994
East Asia	4.29	3.83	3.11	2.98	2.75	2.43	2.40	2.24
APEC	1.70	1.76	1.89	1.94	1.89	1.81	1.82	1.68
ASEAN-6	11.43	11.01	9.82	5.81	4.86	6.09	4.74	4.28
Europe	1.31	1.31	1.35	1.43	1.48	1.53	1.52	1.69
EU-15	1.29	1.32	1.38	1.47	1.54	1.65	1.57	1.70
EU-12	1.24	1.29	1.38	1.49	1.56	1.68	1.60	1.72
EFTA	1.45	1.61	2.03	3.10	2.62	2.72	2.39	2.54
Western Hemisphere	1.71	1.86	1.96	2.18	2.16	2.02	2.17	2.22
Mercosur	3.24	8.52	7.39	5.07	8.16	6.43	12.06	17.05
Andean Community	0.36	0.86	1.96	3.28	4.20	5.50	10.07	15.76
NAFTA	2.27	2.46	2.70	3.06	2.95	2.73	2.94	3.08
Africa	0.87	0.79	1.20	0.67	0.53	1.07	1.60	1.26

Sources: Derived from Statistics Canada, *World Trade Data Set* (derived from UN data base); UN, COMTRADE data base.

computation of ratios. It should be noted, however, that some of the important lessons to emerge from our econometrics are the same that the Australians and others have uncovered with their intensity ratios. This includes the lesson that intraregional concentration in East Asia was slightly lower in 1994 than in the 1950s, 1960s, or 1970s—not sharply higher as has been widely assumed from the simple trade shares.[10]

The Proximity School versus the Discriminatory Policies School

The most striking thing to see in table 2.2 is that almost all the numbers are greater than 1. This reflects the fact that members of each group trade more with each other than would random pairs of countries. The clear conclusion is that trade is geographically concentrated.

Various economists have observed this fact and have drawn varying inferences from it. The key difference in interpretation centers on whether the evident regional concentration in trade should be attributed to the natural factor of geographical proximity or to the artificial factor of preferential trade policy. Two eminent economists, while admitting that existing trade policies must play a role in such statistics, have asserted that the dominant explanation for the high concentration ratios must be geographical proximity (Krugman 1991b, 19-20; Summers 1991, 297-99). Krugman

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10. In addition to authors already cited, Yamazawa, Hirata, and Yokota (1991), Petri (1991, 1993), as well as Goto and Hamada (1994) have come to the same conclusion using concentration or intensity ratios.

adjusts bilateral trade among a small number of large countries for national incomes, and then comments on the resulting estimates:

> To nobody's surprise, they point out very strongly the local bias of trade: the United States and Canada, according to the regression, do thirteen times as much trade as they would if they were not neighbors, while the four major European countries do seven times as much. Of course, these results are in part due to the fact that there are already special trading arrangements between the United States and Canada, on one side, and within the EC on the other. Yet the results are so strong that they make overwhelmingly clear that distance still matters and still creates natural trading blocs. (20)

At the opposite extreme, other also-eminent economists have dismissed the role of geographical proximity and asserted that therefore the explanation for the observed concentration must be existing discriminatory trading arrangements (Bhagwati 1992, 1993a; Panagariya 1995, 9-10). Bhagwati (1992) describes as wrong-headed Krugman's proposition

> . . . that countries sharing borders, or closer geographically to one another, have higher proportions of trade with one another than countries further apart do. . . . If I had access to captive research assistance and funds, I could examine whether, for all conceivable combinations of countries and distances among them, and for several different time periods, the premise is valid. As I do not, I must rely on casual empiricism and *a priori* arguments. Compare for instance the trade through the 1960s between India and Pakistan with that between India and the UK or the USSR. The former trade has been smaller than the latter. Borders can breed hostility and undermine trade, just as alliances among distant countries can promote trade. . . . (544-45)

This issue is important, because each of the two camps engages in a line of reasoning that runs from positive statements, regarding the effect of policy on trade, to normative statements regarding the *desirability* of regional trading arrangements. Chapter 8 of this book will explain the logical connection between trade determinants and policy prescription in developing the notion of natural and supernatural trade blocs. The central task for the book will then be to ascertain econometrically which view seems to be closest to right. Fortunately, one need not rely on "casual empiricism." It is possible to quantify the extent to which intraregional concentration is attributable to proximity, as in the Krugman-Summers view, versus existing preferences, as in the Bhagwati-Panagariya view.

In chapters 4 through 6 we shall adjust the bilateral trade figures for the effects of geographical proximity and other nonpolicy variables that naturally link countries. In this way, we hope to isolate the effects on trade of preferential trade policies in different parts of the world.

Even before we turn to the full model, however, we can draw one tentative lesson from the information we already have: conclusions from comparisons of regionalization across time. The missing factors such as distance, common borders, and common language do not change over

time. (We abstract here from such slow processes as continental drift. More seriously, per capita GDPs do change nonnegligibly during the course of our sample. But their effect is unlikely to alter major conclusions, as can be verified when we come to the full analysis.)

Thus it is legitimate to inspect the concentration ratios and infer that trade is indeed becoming more regionalized over time in some parts of the world. Among the EU-12, concentration has increased over almost every half-decade since 1965. The largest jumps came in the late 1960s, shortly before the United Kingdom, Ireland, and Denmark joined (the agreement did not formally take force until 1 January 1973), and the early 1980s, during the drawn-out period of accession for Greece, Spain, and Portugal (the dates of accession were 1981 for Greece and 1986 for the Iberians). Interestingly, the greatest increase in intraregional trade concentration often seems to take place after an agreement has been decided but before it actually takes effect. Firms rush to open business in order to establish a stake in what they expect to be an important market.

The concentration ratios for the FTAs are graphed in figure 2.2a and for the larger geographic groups in figure 2.2b. As table 2.2 and figure 2.2b indicate, the intra-EC concentration continued to rise during the first half of the 1990s, when the Single Market Initiative went into effect. This result is more sensible than that from the simple intraregional trade shares. The pattern is quite similar if one looks at the current EU-15. EFTA shows a high level of concentration comparable to that of the European Union, but without any positive trend. Moving to the continental level of aggregation, Western Europe shows an upward trend similar to that of the European Union, especially during 1992-94.

When we turn to the formal regional trading arrangements in the Western Hemisphere, we see an illustration of the importance of correcting for the size of the countries in question. Whereas the Andean Pact, Mercosur, and NAFTA have much less intraregional trade than does the European Union (table 2.1), we get a very different answer when we normalize for their shares of trade with the rest of the world. Mercosur has the highest concentration ratio of any group examined. As noted, we cannot distinguish from this statistic whether this concentration of trade in the eastern half of South America is due to proximity or to the emerging customs union. (That the concentration ratio for these four countries was also very high in the 1960s, long before Mercosur, suggests that proximity plays a large role.) More meaningfully, Mercosur also has the concentration ratio that increased by far the most rapidly between 1990 and 1992 (figure 2.2a). The Andean Pact also shows a concentration ratio that is high and rapidly increasing in recent years, reaching a level in 1994 almost as high as Mercosur's. The NAFTA coefficient is lower and shows little upward trend.

Thus we learn from table 2.2 that the recent increase in intra-NAFTA trade evident in table 2.1 can be mostly explained by a general increase

in trade on the part of North American countries. At the hemispheric level, the level and trend of an Americas bloc looks much like NAFTA, reflecting the importance of the North American countries in the region.

Turning to Asia, ASEAN shows a level of concentration that is high but has actually decreased in recent years (table 2.2 and figure 2.2a). When the group is expanded to the East Asian Economic Caucus (EAEC), or to the initial 15-country membership of APEC, the concentration ratio again shows a slight downward trend. In most popular characterizations, the membership of the East Asian group is the same as the membership of the yen bloc. Thus, even on the basis of statistics no more sophisticated than those in table 2.2, we begin to suspect that fears of an intensifying yen bloc in East Asia are overblown. Yes, Japan trades far more with Malaysia than it did 20 years ago. But there is nothing surprising in this. Almost every country in the world trades more with Malaysia than it did 20 years ago because that country has grown so rapidly.[11]

The findings for Asia and the Pacific are also very different from what the simple intraregional trade shares showed, which was a strong upward trend. Correcting for the importance of the region in world trade makes a big difference, just as it did for the South American groups. In the case of the Asian groups, the correction makes a difference because the rapid growth of intraregional trade can be seen to be nothing but the outcome of the rapid income growth of the countries. In the case of the South American groups, it makes a difference because, once one takes into account that these countries *did not* grow rapidly during this period, the modest growth in their intraregional trade becomes quite impressive.

The concentration ratio for Africa starts out much lower than for the other continents, but shows an apparent steep upward trend. Again, what would otherwise look like very slow growth in intra-African trade is more impressive when one adjusts for the even slower growth in the trade or incomes of these African countries.[12]

Each of these conclusions, in addition to others, will be revealed with greater reliability and completeness when we apply the full econometric analysis of subsequent chapters. The full analysis will require first an excursion into the metaphysics of distance, followed by the econometrics of the gravity model.

One might ask, why all the bother? To discover whether bilateral trade patterns are biased by policy, why not just look directly at explicit agreements, tariff preferences, and so forth?

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11. This conclusion was the basis of an earlier essay, Frankel (1991) and has been confirmed by various authors, including in the first three chapters of Frankel and Kahler (1993).

12. The data set omits more countries in Africa than in other parts of the world so that the statistics are not as reliable.

In the first place, as already noted, many nominal agreements haven't materialized in reality, and vice versa. We have mentioned the hypothesized effect of implicit or invisible policies, such as Japan's ODA and FDI in Asia or US politico-military influence in the Western Hemisphere. Artificial trade links were obvious in the old Soviet bloc, yet they could hardly be measured statistically by tariff preferences.

In the second place, even in the case of formal preferential trade arrangements, systematic and comprehensive data on bilateral tariffs are hard to get.

Third, the web of preferences is often complicated, varying from one commodity to the next. It is not clear how to aggregate across commodities. If the European Union's Common Agricultural Policy is observed to discriminate against agricultural imports from nonmembers, should that get a low weight in the aggregate measure of intraregional trade bias because agriculture goods have an (artificially) low weight in EU imports?

Furthermore, nontariff barriers, which are increasingly important relative to tariffs, are notoriously hard to measure. More favorable agricultural quotas on favored partners could in principle be observed, it is true. Preferential procurement policies or a greater reluctance to apply administered protection (such as antidumping duties) against fellow bloc members, however, would be much harder to observe and aggregate. Thus, we instead infer the overall regionalist thrust of trade policies from the apparent effect on trade flows.