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Is Regionalism Simply a Diversion?
Evidence from the Evolution of the EC and EFTA 1/

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Abstract

This paper considers the impact on trade of preferential arrangements in Europe since the 1950s. Using a first difference version of the gravity model, we find that the EEC and EFTA altered the pattern of international trade. We also find evidence of trade diversion in several cases, notably that of the EEC in the 1960s.

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F13, F14

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Summary

The difficulties of reforming international institutions and practices at the global level provide increasingly powerful impetus for regional economic arrangements. Of these arrangements, the European Union (EU) is the one with the most far-reaching implications. Observers in other parts of the world thus have good reason to look to Europe to gauge the possible future evolution of their own regional arrangements. This paper takes a step toward providing the historical perspective they require by reviewing the impact of regionalism in Europe. As a customs union was the EU's (or, as it was then known, the EEC's) first economic initiative, trade creation and diversion are the logical starting points.

The gravity model has long been the workhorse for empirical studies of the pattern of trade. As in the Newtonian equation after which it is named, attraction (trade) depends upon mass (the product of economic size) and geographic distance. To look at regional trading arrangements, investigators have then added dummy variables for participation in various preferential arrangements. A positive coefficient on a dummy variable, indicating that both countries participate in the same arrangement, implies that these countries trade more with each other than predicted and that the arrangement is creating trade between members. A negative coefficient on a dummy variable, indicating that only one member of the pair participates in a particular preferential arrangement, is taken as evidence of trade diversion vis-à-vis the rest of the world. Results obtained using this approach can be questioned on several grounds, the most basic of which is that coefficients on dummy variables for subgroups of countries will pick up all respects in which those countries differ in their trade performance that are not controlled for in the gravity equation. To meet this concern, the paper proposes and implements a new specification that departs from the standard model in that the gravity equation is estimated in differences rather than levels. Thus, unobserved heterogeneity across countries that is constant over time will not contaminate the results.

Using this approach, the paper finds that the formation of the EEC and EFTA free trade areas had significant impacts on Europe's trade. For the founding members, these trade effects were concentrated in the early years of their arrangements' existence. EFTA was probably heavily trade creating, but the EEC promoted intrabloc trade through a combination of trade creation and trade diversion. This conclusion is reinforced by results from EEC enlargements other than the accession of Portugal and Spain, which led to little if any trade diversion.

There are a number of potential extensions to the results reported in this paper. One involves expanding the geographical coverage to include developing countries. Another is to estimate the model for trade in different types of products, such as food or manufactures. This extension may be of particular interest as one especially potent source of protection and trade diversion in the EC has been the Common Agricultural Policy.

I. Introduction

The difficulties of reforming international institutions and practices at the global level provide increasingly powerful impetus for regional economic arrangements. Readers hardly need to be reminded of the prominence of ASEAN and APEC in Asia and the Pacific or of NAFTA and MERCOSUR in the Americas, to list but a few of the familiar acronyms. Of these arrangements, the European Union (EU) is the one with the most far-reaching implications. It is the most long lived; in 1997 the Treaty of Rome will turn 40 and the EU will have reached middle age. Having started life as a customs union (and an atomic energy consortium), the European Economic Community (EEC), as it was initially known, created a regional mechanism for limiting exchange rate flexibility in the 1970s and established an integrated internal market throughout which goods, services, capital and labor could flow in the 1990s. The Maastricht Treaty negotiated in 1991 provides a framework for the creation of a single European currency, a European Central Bank, and the harmonized social and fiscal policies regarded as concomitants.

Observers in other parts of the world thus have good reason to look to Europe in order to gauge the possible future evolution of own their regional arrangements or, for that matter, of identifying distinctive features of their own integration processes. In this paper we take a step toward providing the historical perspective they require by reviewing the impact of regionalism in Europe. Since a customs union was the EEC's first economic initiative, trade creation and diversion are the logical starting points.

The gravity model has long been the work-horse for empirical studies of the pattern of trade. As in the Newtonian equation after which it is named, attraction (trade) depends upon mass (the product of economic size) and distance (geographic or economic). ^{1/} Specifically, the volume of trade between two countries should increase with their real GDPs (the so-called gravity variable), since large countries should trade more than small ones, and with per capita incomes, since rich countries should trade more than poor ones. It should diminish with geographical distance because proximity reduces transportation and information costs. Since the dependent variable in the gravity model is bilateral trade between pairs of countries, each variable (other than distance) is entered in product form. Investigators then add dummy variables for participation in various preferential arrangements (Hamilton and Winters 1992, Frankel and Wei 1993). If one finds a positive coefficient on the dummy variable indicating that two countries, both of which participate in the same preferential arrangement, trade more with one another than predicted by their incomes and distance, then the conclusion drawn is that the arrangement is trade creating for its members. If there is a negative coefficient on the dummy variable

^{1/} See Anderson (1979) and Bergstrand (1985). Frankel and Wei (1995), provide an extensive discussion of the theoretical underpinnings of the model.

indicating that only one member of the pair participates in a particular preferential arrangement, this is taken as evidence of trade diversion vis-à-vis the rest of the world. 1/

Results obtained using this approach can be questioned on several grounds. One is that the coefficients on dummy variables for subgroups of countries will pick up all respects in which those countries differ in their trade performance that are not controlled for in the gravity equation. To take an example pursued by Frankel and Wei (1993), if all the countries in a region share a common language, then including a dummy variable for that region but not a measure of language will tend to spuriously attribute the effects of the shared language in encouraging economic links to commercial policy measures. More generally, dummy variables for preferential arrangements serve as a catch basin for omitted factors. There is an analogy with early regression studies of the union wage premium in which a dummy variable for union membership was simply added to the wage equation, encouraging the attribution to unionization of the wage effects of unobserved heterogeneity among workers.

Related to this is the difficulty of measuring economic distance independent of the trade flows that the investigator seeks to explain. The underlying theory appeals to transactions costs to trade, and in empirical implementation it is posited that such costs should rise with distance. But economic and geographic distance are not the same. Insofar as economic distance is mismeasured, its effects may be loaded into the dummy variables intended to capture the effects of regionalism (Bayoumi 1993).

A further problem with the gravity model is the omission of third-country effects. It is generally assumed that bilateral trade depends only on economic conditions in the two countries considered. In practice, however, bilateral trade will also depend upon competitiveness relative to other countries and markets. More generally, insofar as economic variables in third countries affect trade flows between other country pairs, gravity equations suffer from omitted-variables bias.

A final problem arises from the practice of pooling data for industrial and developing countries. While this maximizes degrees of freedom, the relationship between trade and economic characteristics may vary between the two groups of countries. The income elasticity of trade may be different at high and low levels of income or for different types of goods, for example. Transactions costs may have very different structures in countries with more and less articulated markets. Results based on heterogeneous cross sections may therefore suffer from subsample instability and heteroskedasticity.

1/ This approach, which we also adopt, takes economic growth within the Community as given. It therefore ignores any benefits to the rest of the world from greater prosperity within Europe generated by the regional integration.

In this paper we develop and implement an approach designed to meet these concerns. Our main focus is on a specification which, while compatible with the basic theory, departs from the standard model in important ways. We estimate our equation in differences rather than levels; thus, unobserved heterogeneity across countries that is constant over time will not contaminate our results. (To return to the analogy with the literature on the union wage premium, recent studies use panel data to estimate the wage equation in first-difference form, identifying the effects of unionism on the basis of the differential change in wages for workers whose union status has changed. By following the same workers, this minimizes the problems created by forms of unobserved heterogeneity which are constant over time. The same is true of our differenced gravity specification; it eliminates omitted variables bias due to time invariant sources of unobserved heterogeneity). We augment the specification to include the real exchange rate vis-à-vis the United States to control for third-country effects. We limit our sample to 21 industrial countries to reduce the danger of conflating distinct industrial- and developing-country effects; it is the fact that the resulting sample is heavily European that leads us to focus on the EC and EFTA. And we analyze successive cross sections as a way of identifying differences over time in the trade-creating and trade-diverting effects of European regionalism.

The rest of the paper is organized as follows. Section II describes the data and specification used in our empirical analysis. Section III reports and discusses the results. Section IV provides comparisons with other studies and presents our own results using the standard gravity formulation. Section V draws out the implications for regionalism in Europe and Pacific Asia.

II. Data and Specification

The typical gravity model specification relates bilateral trade to income, population (or per capita income) and distance between the trading partners:

$$\log(\text{TRADE}_{ijt}) = a + B_1 \log(Y_{it}Y_{jt}) + B_2 \log(P_{it}P_{jt}) + B_3 (\text{DIST}_{ij}) \quad (1)$$

where TRADE_{ijt} is bilateral trade between countries i and j at time t (measured in U.S. dollars), Y is real income (the so-called gravity variable), P is population, and DIST is distance. As trade is expected to increase with size and per capita income and to decline with distance, B_1 should be positive, B_2 and B_3 negative.

We estimate this equation after adding a measure of the deviation of the exchange rate from purchasing power parity. One of the difficulties in measuring economic size across countries is that exchange rates appear to deviate from the values implied by the relative prices of goods, and it is unclear whether output should be measured in terms of current exchange rates or their purchasing power parity counterparts. Market rates measure current

buying power more accurately. However, purchasing power parity rates provide a better measure of relative living standards. This is particularly true for the industrial countries, where recent research indicates a tendency for exchange rates to revert to PPP over the long term. ^{1/} And it is not clear whether the gravity term in Equation (1) is properly based on a measure of income or wealth. In our specification, real output is measured at PPP levels and a term in the product of deviations of both exchange rates from purchasing power parity was added, resulting in the following equation:

$$\log(\text{TRADE}_{ijt}) = a + B_1 \log(Y_{it}Y_{jt}) + B_2 \log(P_{it}P_{jt}) + B_3(\text{DIST}_{ij}) + B_4 \log(R_{it}R_{jt}) \quad (1')$$

where R_i is country i 's real exchange rate vis-à-vis the United States, and other variables are defined as above.

Our alternative specification also uses bilateral trade data but focuses on changes over time:

$$d\log(\text{TRADE}_{ijt}) = a + B_1 d\log(Y_{it}Y_{jt}) + B_2 d\log(P_{it}P_{jt}) + B_3 d\log(R_{it}R_{jt}) \quad (2)$$

where d is the difference operator. Variables like DIST that are constant over time drop out of this specification. In the tradition of the gravity model, we add dummy variables for membership in preferential arrangements with the objective of analyzing their trade-creating and trade-diverting effects.

Equation (2) has several advantages. First, to the extent that economic distance and other, unobserved country characteristics influencing the volume of trade are constant over time, problems related to their measurement or omission will not bias our results. Second, including the change in the real exchange rate allows us to analyze third-country effects. If the dollar falls against both currencies, then trade between other countries in terms of dollars will tend to rise. If the rise in the dollar value of trade is proportional, then B_3 in equation (2) will equal one half (this is because the term is the product of both exchange rates). If dollar depreciation causes some trade to be diverted to other countries, then $B_3 < 1/2$. Finally, the constants in Equation (2) shed light on the relationship between trade and growth. If the constant is small, this implies that trade and output grow proportionately. If the constant term is

^{1/} This is less true of a comparison of developing and industrial countries, where exchange rates appear to consistently deviate from PPP values due to differences in productivity between traded and nontraded goods sectors (the Balassa-Samuelson effect).

negative, then trade expands more than proportionately with changes in output, and conversely if the constant term is positive. 1/

We collected annual data on bilateral trade flows among 21 industrial countries from the machine-readable version of the IMF's Direction of Trade Statistics. 2/ The data covered the years 1953-92 and were converted to constant dollars using the U.S. GDP deflator. 3/ Real GDP and deviations of the exchange rate from purchasing power parity (which were also used to measure changes in the real exchange rate in our alternative approach) were drawn from the Penn-Wharton World Tables. 4/ We averaged three years of successive, non-overlapping annual figures to construct our data set. While it would have been possible to estimate the model using the annual data themselves, business-cycle effects would have dominated the analysis. 5/

We divided the sample into three overlapping periods: that of the formation of the EEC and EFTA (1956-73); that when the EEC was expanded to include the United Kingdom, Ireland and Denmark and when the remaining EFTA countries concluded trade agreements with the Community (1965-80); and that when the Community was enlarged to include Greece, Portugal and Spain (1975-92). We constructed each subsample period so that it began just prior to the events in question; this enables us to examine whether the trends in trade commonly attributed to changes in preferential arrangements in these periods were in fact already evident in prior years.

1/ Equation (2) does have an important disadvantage. When the gravity model is estimated in levels, it predicts the level of trade. When the rate of change specification is used, it is only possible to analyze whether trade is growing faster or slower than expected.

2/ The countries were the United States, Japan, Germany, France, Italy, the United Kingdom, Canada, Australia, Austria, Belgium/Luxembourg, Denmark, Finland, Greece, Ireland, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, and Switzerland.

3/ The U.S. GDP deflator rose by nearly 1 percent per annum faster than the export deflator over the period. This should be borne in mind in interpreting the constant terms.

4/ In the alternative approach we experimented with various methods of calculating the real exchange rate. As they made little difference, we chose to use the PPP values. Distances between major cities, which were needed for the traditional gravity model, were obtained from USAF Aeronautical Chart for bilateral links in which one or both countries were outside of Europe, and from Rand McNally otherwise. Hence, within Europe distances were measured in terms of distances by road, those outside in terms of air miles.

5/ Three-year averaging was a compromise between the desire to focus on secular rather than cyclical effects and the wish to distinguish as many separate periods as possible. We also experimented with four- and five-year averages, which in practice yielded very similar results.

III. Results

We estimate both the traditional gravity model and our alternative specification over the entire three-decade period. For the traditional model, estimation runs from 1954-56 to 1990-92, while for the first difference specification it runs from 1957-59 to 1990-92 (the first period being used in data construction).

Table 1 reports the coefficients on the product of real GDPs, population, the real exchange rate, and, in the case of the traditional model, distance and the constant term, as well as dummy variables for each three-year period. The behavioral variables are correctly signed, highly significant, and plausible in magnitude. In the traditional model, the coefficient on the gravity term is around 1.4. Since that term is the product of the two countries GDPs, this implies an elasticity of trade with respect to changes in GDP of 3, consistent with the tendency for trade to grow faster than income over the postwar period. 1/ At -0.66, the coefficients on the product of the populations implies elasticities on the product of GDP and GDP per capita of two thirds. The coefficient on the deviation of the exchange rate from PPP is 0.58, about half the value of the gravity coefficient. This implies that both measures of relative GDP--at PPP exchange rates and at current exchange rates--matter for trade. The coefficient on distance implies that each percentage point increase in that variable reduces trade by 0.77 percent. 2/

The coefficients on the behavioral variables in the first difference formulation are broadly similar to those in the traditional model, although their precision, as measured by the standard errors, is lower. The differenced specification gives rather more weight to per capita as opposed to aggregate GDP. The coefficient on the change in the real exchange rate against the dollar is also somewhat smaller. At significantly less than 1/2, it implies a role for third country effects in the determination of bilateral trade.

The coefficients on dummy variables for each period from 1957-59 to 1990-92 are also reported. In the traditional model they imply that the constant in 1990-92 is 1.49 below the corresponding constant term in

1/ For those, including ourselves, who regard this elasticity as implausibly large, this may be evidence of model misspecification. We return to this possibility below. Further evidence on the relationship between trade and growth in the industrial countries after World War II is provided by Irwin (1995).

2/ Experimentation with alternative formulations of the distance variable, such as adding the square and cube of the logarithm of distance or including the absolute value of distance rather than its logarithm, produced some discernible changes in the estimated effect of distance. However, none of these alternative formulations significantly altered the coefficients on the other variables in the model.

Table 1. Results from Traditional "Levels" Gravity Model
and from "Rate of Change" Version

	Level of Trade	Change in Trade
Log of GDPs at PPP	1.39 (.03)**	1.25 (.07)**
Log of populations	-0.66 (.03)**	-1.12 (.17)**
Log of deviations from PPP	0.58 (.06)**	0.38 (.04)**
Log of distance	-0.77 (.01)**	--
Constant	-1.44 (.51)**	--
Dummy variables		
1957-59	-0.14 (.08)	-0.09 (.07)**
1960-62	-0.29 (.08)**	-0.08 (.03)**
1963-65	-0.50 (.08)**	-0.10 (.03)**
1966-68	-0.71 (.08)**	-0.14 (.02)**
1969-71	-0.85 (.08)**	-0.08 (.02)**
1972-74	-0.99 (.09)**	0.01 (.03)
1975-77	-1.08 (.09)**	-0.02 (.02)
1978-80	-1.19 (.10)**	-0.03 (.02)
1981-83	-1.16 (.09)**	-0.03 (.02)
1984-86	-1.18 (.09)**	-0.03 (.02)
1987-89	-1.37 (.10)**	-0.04 (.03)
1990-92	-1.49 (.11)**	-0.05 (.02)**
Implied Percentage Reduction in Trade Due to Time Dummies (Percent per annum)	-4.1	-1.9
R ²	0.89	0.49

Note: All standard errors are adjusted for heteroskedacity; +, *, and ** represent coefficients which are significant at the 10, 5, and 1 percent significance level, respectively.

1954-56, reflecting the steady downward trend of the constant over time. Apparently, the estimated coefficients on the behavioral variables overstate the growth in trade, other variables held constant, requiring a compensating fall in the constant. This reduction in the constant implies a 4.1 percent per annum fall in real trade after controlling for the other determinants featured in the standard gravity formulation, which seems implausibly large--too large, that is, to be explained by differences in the growth of the implicit deflators for trade and for overall GDP. ^{1/} This points to the likelihood of model misspecification.

The results of estimating the constant terms in the first-difference formulation are also reported in Table 1. The standard errors of the coefficients on the time-specific constants are significantly smaller than in the traditional formulation, a result which carries over when dummy variables for trade blocs are added (see below). While most of the time-specific constants are still negative, the implied fall in real trade over the period, at 1.5 percent per annum, is smaller than that suggested by the traditional formulation. There is a break around 1970, the constant terms being negative and significant prior to this but small and insignificant subsequently. This suggests a change in the relationship between trade and growth around the time of the breakdown of the Bretton Woods System and the New Protectionism that accompanied the slowdown in industrial country growth.

Table 2 shows corresponding results for the first-difference specification distinguishing the three periods on which we focus in the remainder of the paper: 1956-73, 1966-80, and 1975-92. (These regressions add dummy variables to capture the impact of free trade agreements). The coefficients on the behavioral variables are correctly signed for each subperiod. There is some evidence of a decline over time in the tendency for the growth of trade to outstrip the growth of income, consistent with the idea that trade has been catching up to its potential level following the tariff warfare of the 1930s and the Great Depression. The coefficient on population growth is less well determined, presumably reflecting limited variation in the growth of population over time. The coefficient on the real exchange rate is uniformly large and significant. While its value differs from period to period, there is some evidence on balance that third-country effects are important for bilateral trade flows. The constant terms follow the pattern observed in the regression for the entire sample.

1. The formation of the EEC and EFTA

Capturing the effects of preferential arrangements involves including dummy variables. For the regression covering the 1956-73 period, five dummies associated with the EEC and EFTA were added. These measure trade

^{1/} Recall that the volume trade of trade is calculated using the GDP deflator for the United States.

Table 2. Results from "Change" Gravity Model
Over Different Periods

	1953-73	1963-80	1978-92
Change in GDP at PPP	1.52 (.11)**	1.29 (.11)**	0.95 (.09)**
Change in population	-0.45 (.25)+	-1.56 (.31)**	-0.77 (.29)**
Change in real exchange rate vs. U.S. dollar	0.36 (.09)**	0.44 (.05)**	0.30 (.05)**
Time constant terms			
1956-58	-0.19 (.06)**		
1959-61	-0.15 (.06)**		
1962-64	-0.18 (.06)**		
1965-67	-0.28 (.05)**		
1968-70	-0.25 (.06)**	-0.15 (.05)** <u>1/</u>	
1971-73	-0.13 (.06)*	0.03 (.06) <u>1/</u>	
1975-77		0.00 (.05)	-0.03 (.05)
1978-79		-0.04 (.04)	0.03 (.04)
1981-83		-0.08 (.04)*	-0.03 (.04)
1984-86			-0.03 (.04)
1987-89			-0.07 (.04)+
1990-92			-0.06 (.04)*

1/ Period is one year later than indicated.

Note: All standard errors are adjusted for heteroskedacity; +, *, and ** represent coefficients which are significant at the 10, 5, and 1 percent significance level, respectively.

within the EEC, 1/ trade within EFTA, 2/ trade between the EEC and EFTA, trade between the EEC and other industrial countries, and trade between EFTA and other industrial countries. Each dummy is then multiplied by the relevant time-specific constant terms to differentiate the impact of preferential arrangements over time.

Consider first the results for the six founding members of the EEC. There is little evidence in Table 3 that trade among the six was already increasing faster in the second half of the 1950s (prior to the founding of the EEC) than predicted by the arguments of the gravity model. The coefficient on the dummy variable representing trade among future EEC members, at 0.02 for 1956-58, is statistically insignificant. As the equation is in logarithms, this implies that trade among the Six future members of the Community grew by a total of just 2 percent more between 1953-55 and 1956-58 than would have been predicted by their economic characteristics and the average behavior of countries in the sample. The coefficient for 1959-61, immediately after the founding of the EEC, is five times as large and significant at the 10 percent level. This contradicts widespread skepticism about the trade-creating effects of the EEC, commonly expressed on the grounds that long-standing economic ties and the legacy of prior regional initiatives like the European Payments Union and the European Coal and Steel Community (whose membership was coincident with the Six) caused these countries to trade disproportionately with one another not because of their nascent customs union but due to other, unobservable characteristics correlated with and spuriously attributed to EEC membership. Our results suggest that insofar as those unobservable characteristics were constant between 1956-58 and 1959-61, they cannot explain the increasing tendency for the Six to trade with one another following the founding of the Community. Other potential explanations of this differential increase in trade, such as a beneficial trade structure (for example, the income elasticity of trade in manufactures may be higher than the corresponding elasticity for primary goods), would also still have to explain why these effects would be so much smaller immediately prior to the formation of the EEC than they were immediately after.

The coefficient on intra-EEC trade remains large and significant through 1970 before fading in 1971-73. As reported in the last column of the table, these estimates imply that trade among the Six grew 3.2 percent per annum faster than can be explained by their observable economic

1/ Comprising West Germany, France, Italy, the Netherlands, Belgium, and Luxembourg.

2/ Comprising, over this period, of the United Kingdom, Austria, Switzerland, Sweden, Norway, Denmark, and Finland. Iceland and Liechtenstein were also members, but were excluded due to their small size.

Table 3. Effects of Free Trade Agreements: 1956-73

	1956-58	1959-61	1962-64	1965-67	1968-70	1971-73	Implied Accumulated Percent per Annum
EC6 with itself	.02 (.06)	.11 (.06)+	.11 (.07)+	.15 (.04)**	.13 (.05)**	.04 (.04)	3.2**
EFTA7 with itself	.01 (.06)	.02 (.06)	.01 (.06)	.16 (.04)**	.21 (.05)**	.02 (.05)	2.3**
EC6 with EFTA7	.02 (.06)	-.09 (.06)	-.10 (.06)	-.02 (.03)	-.02 (.03)	-.05 (.04)	-1.5*
With other industrialized countries							
EC6	-.03 (.06)	-.11 (.06)+	-.08 (.07)	.02 (.04)	-.06 (.04)	-.05 (.04)	-1.7*
EFTA7	-.00 (.07)	-.11 (.06)+	-.06 (.06)	.08 (.04)+	.02 (.04)	.02 (.04)	-0.8

Note: The EC at this time comprised France, Germany, Italy, Luxembourg and the Netherlands. EFTA7 comprised Austria, Denmark, Finland, Norway, Sweden, Switzerland and the United Kingdom over this period. Other members of EFTA at the time, but not included in the estimation, were Iceland and Liechtenstein. All standard errors are adjusted for heteroskedacity; +, *, and ** represent coefficients which are significant at the 10, 5, and 1 percent significance level, respectively.

characteristics and the average behavior of countries over the full 1953-73 sample. ^{1/}

The next row looks focuses on the experience of the members of European Free Trade Area. Although the Stockholm Convention founding EFTA was signed in 1960, the free trade area only came into operation in 1965. Again, we find evidence that the agreement caused trade among the participating countries to expand significantly. Up to 1964 the growth of trade between EFTA members was within 1 or 2 percent of the rate predicted by the gravity model. After the free trade area came into operation, however, trade within EFTA expanded faster than otherwise explicable, the cumulative increase reaching 45 percent by 1970. The growth of intra-EFTA trade then reverted to the levels predicted by the model. But since the model is in differences, the impact on the volume of trade of the creation of EFTA does not disappear in the 1970s and subsequently. Over the entire period, trade between members of EFTA is estimated to have expanded at a highly significant 2.3 percent per annum faster than predicted by the standard gravity variables, with nearly the entire spurt occurring in the late 1960s.

The next row of Table 3 shows the behavior of trade between the EEC and EFTA. After growing unexceptionably before 1959, trade between the two blocs fell in the five years following the formation of the EEC, the cumulated decline reaching $\exp(-.19) = -17$ percent. Since EFTA did not come into operation until 1965, it seems reasonable to attribute this contraction to the formation of the EEC. The estimated coefficients on this variable remain negative after 1965, indicating a continued reduction in EEC-EFTA trade relative to what might be expected. However, the size of the coefficients declines after 1965, the implied reduction in the growth of trade per annum being only about one third the earlier rate. Over the entire period, the growth of trade is 1.5 percent per annum slower than is explicable in terms of the other observable characteristics of the countries involved.

The last two rows of Table 3 report coefficients on dummy variables representing trade between the EEC and EFTA on the one hand and the remaining industrial countries on the other. For the EEC, where all but one of the estimated coefficients are negative, there is some evidence of trade diversion. But of the individual coefficients, only that for 1959-61, the period immediately after the formation of the EEC, differs significantly from zero (at the 10 percent level). For the period as a whole, trade between the EEC and industrial countries which were not members of the EEC or EFTA fell at a statistically significant 1.7 percent per annum relative

^{1/} This value was calculated by an ancillary regression in which the EEC and EFTA dummy variables were included without time-specific dummies, which is equivalent to measuring the differential expansion in trade over the entire period. This is why the value is accompanied by an estimate of its statistical significance.

to expectations, a reduction similar to that experienced by the EFTA countries themselves.

While there was also a reduction in EFTA's trade with the rest of the world, relative to what would have been predicted by the gravity model, of around 0.8 percent per annum between 1956 and 1973, virtually all of this occurs prior to the creation of the free trade area in 1965. Indeed, the results indicate that trade with the rest of the world actually increased relative to expectations from 1965 to 1973.

These results paint contrasting pictures of the early years of the EEC and EFTA. Both European arrangements promoted trade among their members. In the case of the EEC this appears to have been accompanied by a fall in trade relative to expectations with both EFTA and the remainder of the industrial world, suggesting trade diversion. For EFTA the evidence of trade diversion is less clear. EFTA trade with both the EEC and other industrial countries grew only slightly slower than expected over the period as a whole. Most of the reduction in both cases occurred in the early 1960s, prior to the EFTA free trade area coming into operation.

Table 4 reports a measure of the relative importance of trade creation and trade diversion. Its upper part shows the percentage of EEC trade with industrial countries destined for the EEC itself, for EFTA, and for the other industrial countries. These percentages are then combined with the expansion or contraction of trade relative to expectations to calculate the implied increase in overall EEC trade. Using the trends in trade over the entire period in the last column of Table 3, the overall expansion of EEC trade is estimated to have been $\frac{1}{2}$ -1 $\frac{1}{4}$ percent per annum, with the estimated value rising over time as an increasing proportion of EEC trade remains within the Community, where trade rises at a trend rate of 3.2 percent per annum. Meanwhile, a declining proportion of EEC trade takes place with EFTA and other industrial countries.

This calculation is then repeated, taking into account only the expansion of trade with other members of the EEC. The figure that results represents the expansion in overall trade with industrial countries which would have occurred had no trade diversion taken place. The ratio of the two values represents the share of the expansion of intra-EEC trade which did not result in trade diversion. We refer to this as "the trade creation ratio."

Consider for example these calculations for 1962-64, which can be interpreted in the following way. If the 3.2 percent per annum expansion of trade within the EEC had been accompanied by no decrease in trade elsewhere, trade with all industrial countries would have grown annually by 1.8 percent. In fact, it increased at little over half this rate. Hence,

Table 4. Industrial Country Trade Patterns for EEC and EFTA, 1956-70

(Percent of trade with industrial countries)

	1956-58	1962-64	1968-70
<u>EC6 trade with:</u>			
EC6	44.1	53.4	60.8
EFTA7	29.7	25.6	19.8
Other industrial countries	26.2	21.0	19.4
<u>Implied Growth Per Annum in Overall Trade:</u>			
With all industrialized countries	0.52	0.97	1.32
Considering Just EEC	1.41	1.71	1.95
Trade Creation Ratio	0.37	0.57	0.68
<u>EFTA7 trade with:</u>			
EFTA7	27.1	29.1	32.3
EC6	36.4	40.2	38.0
Other industrialized countries	36.5	30.7	29.7
<u>Implied Growth Per Annum in Overall Trade:</u>			
With all industrialized countries	0.55	0.68	0.64
Considering Just EFTA7	0.62	0.67	0.74
Trade Creation Ratio	0.88	1.01	0.86
<u>Memorandum:</u>			
<u>Industrial country trade as a percentage of total trade:</u>			
EC6	66.3	73.3	75.7
EFTA7	70.0	71.7	74.0

Note: The calculations are explained in the text.

around half the increase in intra-EEC trade was offset by losses elsewhere. 1/

As already noted, evidence of trade diversion is less strong for EFTA, as the relative decline in trade with the EEC and the rest of the world occurred largely prior to the formation of the free trade area in 1965. If there was no fall in trade with other countries, of course, then all of the increase in trade within EFTA reflects trade creation. Our calculations in Table 4 assume that intra-EFTA trade rose by 2.3 percent per annum, trade with the EC remained constant, while trade with other industrial countries (excluding members of the EEC) fell by 0.8 percent per annum. On this basis, overall EFTA trade is estimated to have expanded by about 0.6 percent per annum and there is little or no trade diversion.

All of these calculations refer exclusively to trade creation and trade diversion vis-à-vis industrialized countries. Table 4 also reports the share of trade with industrial countries in total trade for each group of countries, and hence, by inference, trade with developing nations. The later proportion declined for both the EEC and EFTA over the period, with a particularly large fall (from 1/3 to 1/4) in the case of the EEC. This reduction could of course have reflected slower growth in this part of the world and differences in the output elasticities between the manufacturing goods primarily produced by industrial countries and the primary goods more often produced by developing countries. Without expanding the scope of the study to include data on developing countries, no definitive answer can be given to this question. But it is conceivable that the results could be significantly affected. For the EEC, for example, if trade with the developing world lagged behind its expected rate of increase by the same 1.7 percent per annum found for trade with other industrial countries, this reduces the trade creation ratio to 20 percent. 2/

2. The first enlargement

Table 5 reports the dummy variable coefficients for the period 1966-80. The results focus on the United Kingdom, Ireland and Denmark, the three countries which joined the EEC on January 1, 1973. (The United Kingdom and Denmark left EFTA, and several remaining EFTA countries negotiated free trade agreements with the Community at that time). The first three rows report the coefficients on dummy variables for trade among the United Kingdom, Ireland, and Denmark, between these countries and the six founding members of the EEC, and between the United Kingdom and Denmark and the

1/ This calculation involves strong assumptions. All of the trend reduction in trade between the EEC and members of EFTA is assumed to reflect trade diversion by the EEC, for example. If some of the reduction in trade between the two blocs was caused by EFTA, then the estimated rate of increase of actual trade, and hence the share of trade creation, would be higher.

2/ This calculation uses 1962-64 weights.

Table 5. Effects of European Free Trade Agreement: 1966-80

	1966-68	1979-71	1972-74	1975-77	1978-80	Implied Accumulated Percent per Annum	
						66-71	72-80
United Kingdom, Denmark, Ireland with themselves	.04 (.07)	.00 (.12)	-.18 (.08)*	-.09 (.14)	.14 (.09)	0.7	-1.5
United Kingdom, Denmark, Ireland with EC6	-.02 (.04)	-.07 (.07)	.14 (.04)**	.22 (.05)**	.16 (.05)**	-1.6	5.9**
United Kingdom, Denmark with EFTA5	.12 (.04)**	.04 (.06)	-.06 (.04)	-.04 (.06)	-.01 (.05)	2.8*	-1.2
EC6 with itself	.13 (.03)**	.05 (.06)	.02 (.03)	.02 (.04)	.02 (.04)	3.0**	0.5
EFTA5 with itself	.22 (.05)**	.18 (.06)**	-.02 (.04)	-.02 (.05)	-.06 (.04)	6.8**	-1.3
EC6 with EFTA5	-.06 (.04)+	-.10 (.05)+	-.04 (.04)	.04 (.04)	.07 (.04)+	-2.6*	0.6
United Kingdom with Commonwealth	-.13 (.04)**	-.13 (.05)**	-.32 (.03)**	-.16 (.04)**	-.15 (.03)**	-4.0**	-6.7
With Other Industrialized Countries:							
United Kingdom, Denmark, Ireland	.01 (.04)	.00 (.05)	.05 (.03)	.03 (.04)	.16 (.04)**	0.0	2.6**
EC6	-.01 (.04)	-.10 (.05)+	.01 (.03)	.04 (.04)	.05 (.04)	-1.8+	1.0
EFTA5	.05 (.04)	-.04 (.04)	-.02 (.04)	-.00 (.05)	.01 (.04)	0.0	0.0

Note: EC6 comprises Belgium/Luxembourg, France, Germany, Italy and the Netherlands. EFTA5 comprises Austria, Finland, Norway, Sweden and Switzerland. Iceland and Liechtenstein were also members of EFTA over this period. The Commonwealth comprises Australia, Canada and New Zealand. Numerous other developing countries were also members of the Commonwealth over this period. All standard errors are adjusted for heteroskedasticity; +, *, and ** represent coefficients which are significant at the 10, 5, and 1 percent significance level, respectively.

remaining five members of EFTA. Prior to 1971, trade between these three countries and the EEC was falling, while that between the United Kingdom and Denmark on the one hand and the rest of EFTA on the other was rising. Trade among the three countries themselves shows no unusual trend. To the extent that trade between these countries and the founding members of the EEC expanded subsequently, this was not attributable to factors which had already caused trade among these countries to grow disproportionately in prior years. It should be noted that the trend increase in trade between the United Kingdom and Denmark and the other members of EFTA, as well as the trend decline in trade between the United Kingdom, Denmark and Ireland and the EEC, was smaller than the corresponding trends for the remaining members of EFTA.

Both the EEC and the other members of EFTA show pronounced increases in internal trade (3.0 percent per annum within the EEC and 6.8 percent between the remaining five members of EFTA) and decreases in trade with each other, in line with the results for the earlier period in Table 3. Insofar as these trends are less distinct for the United Kingdom and Denmark, it is possible to identify a sense in which these future EEC members behaved differently from the remaining EFTA countries. 1/

Table 5 also reports results for a crumbling trade bloc: the British Commonwealth. 2/ Trade between the United Kingdom and her Commonwealth declined at a highly significant annual rate of 4.0 percent per annum prior to 1971. From these results it is clear the disintegration of preferential arrangements can alter the direction of trade as powerfully as the formation of new ones.

The results after 1972 are very different. Trade between the United Kingdom, Denmark, and Ireland declined after the accession of these countries to the EEC, most dramatically in the immediately subsequent years. Presumably because there existed a bilateral free trade arrangement between the United Kingdom and Ireland and because the United Kingdom and Denmark were both members of EFTA, EEC membership produced no direct gain in terms of trade creation within this group; indeed, trade fell relative to expectations formed on the basis of the gravity model. This decline plausibly reflects a reorientation of trade from within this group to the rest of the EEC. Trade between the three new members and the original Six expanded significantly relative to expectations, at a rate of 5.2 percent per annum between 1972 and 1980. At the same time the exceptional expansion of trade among the Six came to an end. Trade between the United Kingdom and

1/ Trade between the United Kingdom, Denmark, and Ireland and other industrial countries and between the remaining members of EFTA and other industrial countries show no particular pattern, while there is a significant fall compared to expectations in the equivalent trade for the EEC.

2/ As only industrial countries are considered, the Commonwealth consists of Canada, Australia, and New Zealand.

Denmark on the one hand and the remaining members of EFTA on the other declined after the two countries joined the EEC. This decline proceeded at almost exactly the same rate, however, as the decrease of trade between the EFTA countries themselves. The defection of the United Kingdom and Denmark, together with the signing of trade arrangements with the newly expanded EEC, appears to have created a trend decrease in the growth of intra-EFTA trade. However, these arrangements with the EEC do not appear to have reversed the earlier trend decline in trade relative to expectations between the two trade blocs. Rather, trade now moved in line with that predicted by the model.

Trade between the United Kingdom, Denmark, Ireland and the rest of the world grew significantly faster after 1972 than predicted by the model. Whatever the barriers to trade between the EEC and the rest of the world, in other words, these were generally less onerous than previous arrangements in these countries. The exception is trade between the United Kingdom and the Commonwealth, whose decline accelerated after Britain's accession to the EEC; significant new impediments were apparently created in this case. 1/

Table 6 analyzes the degree to which the EEC's first enlargement created and diverted trade. It shows the proportion of the total trade of the three new member states and all industrial countries directed toward one another and toward the Six. 2/ The implied increase in overall trade is then calculated using trends in trade from 1972 to 1980, reported in the last column of Table 5. These calculations imply that between 60 percent and 90 percent of new trade with the EEC was trade creation. 3/

3. The second enlargement

The final period considered, 1975-92, spans the second enlargement of the EC (as the EEC had by then renamed itself), Greece being admitted in 1981, Spain and Portugal in 1986. As can be seen in Table 7, Greek trade with the EC had begun to expand unusually rapidly as early as 1975-77; this cautions against attributing the entire growth of Greece's EC trade to the country's admission to the Community. Greece was undergoing significant economic liberalization in the late 1970s, and trade with the rest of the world in fact expanded even faster than trade with the EC between 1975 and 1977. Trade with other industrial countries then went into decline between 1978 and 1983, around the time of EC admission, with a drop relative to

1/ Trade between the original EEC countries and the remaining EFTA countries on the one hand and the rest of the world on the other show no pattern over and above that predicted by the model.

2/ It also considers trade between the United Kingdom and Denmark and the remaining EFTA members; between the United Kingdom and the Commonwealth; and between all three countries and other industrial countries.

3/ Again, however, there appears to be a marked decrease in the proportion of trade with developing countries.

Table 6. Denmark, Ireland and United Kingdom Trade Patterns, 1969-80

(Percent of trade with industrial countries)

	1969-71	1978-80
With each other	16.2	14.7
With EC6	29.7	44.7
Denmark and the United Kingdom with EFTA5	18.8	16.3
United Kingdom with Commonwealth	12.4	4.8
Other Industrialized Countries	22.9	19.5
<u>Implied Growth Per Annum in Overall Trade:</u>		
With All Industrialized Countries	1.05	2.41
Considering Just EEC	1.75	2.64
Trade Creation Ratio	0.60	0.91
<u>Memorandum:</u>		
Trade with industrial countries		
as a percentage of total trade	69.3	74.0

Note: The calculations are explained in the text.

Table 7. Effects of European Free Trade Arrangements: 1975-92

	1975-77	1978-80	1981-83	1984-86	1987-89	1990-92	Average over period
Greece with EC9	.06 (.03)+	.07 (.09)	.10 (.06)	.01 (.04)	.08 (.03)**	.09 (.03)**	2.0**
Within SP, PO	-.17 (.04)**	.27 (.04)**	.23 (.03)**	.28 (.03)**	.70 (.04)**	.31 (.04)**	8.9**
SP, PO with EC10	-.08 (.04)+	.03 (.03)	.10 (.04)**	.09 (.03)**	.26 (.04)**	.20 (.03)**	2.9**
Within EC6	.06 (.05)	.00 (.04)	-.07 (.04)	.02 (.04)	.12 (.03)**	.04 (.03)	0.0
Within Denmark, Ireland and the United Kingdom	-.05 (.14)	.01 (.09)	-.06 (.10)				-1.3
Denmark, Ireland, the United Kingdom with EC6	.26 (.05)**	.12 (.05)*	.00 (.04)				2.6**
Within EFTA5	.04 (.05)	-.10 (.05)*	-.17 (.04)**	-.04 (.04)	.08 (.04)+	-.01 (.04)	-1.9*
EC9 with EFTA5	.06 (.05)	.04 (.04)	-.03 (.04)	.01 (.04)	.12 (.03)**	.06 (.03)*	0.6
United Kingdom with Commonwealth	-.17 (.05)**	-.21 (.04)**	-.25 (.04)**	-.15 (.04)	-.02 (.07)	-.07 (.05)**	-4.9
<u>With Other Industrialized Countries:</u>							
Greece	.17 (.11)	-.23 (.08)**	-.24 (.07)**	.06 (.05)	.08 (.04)*	.02 (.05)	-1.7
SP, PO	-.07 (.06)	-.09 (.05)*	-.01 (.04)				-0.4
E6	.07 (.05)	-.01 (.04)	-.03 (.03)				0.6
Denmark, Ireland, the United Kingdom	.05 (.05)	.09 (.04)*	.05 (.04)	.04 (.03)	.05 (.02)**	-.02 (.06)	1.0
EFTA5	.02 (.06)	-.01 (.05)	.00 (.04)	.03 (.04)	.15 (.03)**	.10 (.04)*	1.3+

Note: EC6 comprised Belgium/Luxembourg, France, Germany, Italy and the Netherlands. EC9 adds Denmark, Iceland and the United Kingdom to this group, while EC10 also includes Greece. EFTA5 comprises Austria, Finland, Norway, Sweden and Switzerland. Other members of EFTA at this time were Iceland and Liechtenstein. The Commonwealth comprises Australia, Canada and New Zealand. Numerous other developing countries were also members of the Commonwealth over this period. All standard errors are adjusted for heteroskedasticity; +, *, and ** represent coefficients which are significant at the 10, 5, and 1 percent significance level, respectively.

expectations of $\exp(-.46)$ or 37 percent. This decline was not reversed subsequently.

The growth of trade between Spain and Portugal and the EC (including Greece) also accelerated prior to entry, although these increases became much more dramatic after 1986. ^{1/} More striking than the growth of Spain and Portugal's trade with the EC was the very rapid expansion of their trade with one another. Between 1978 and 1992 the two countries' bilateral trade grew by $\exp(1.79)$ or 599 percent more than predicted by the model. This rapid increase in trade with other members of the EC was accomplished with little or no decrease in trade with the other industrial countries. Clearly this is a case where admission to the EC was strongly trade creating.

Our other findings for the period of the second enlargement are generally plausible. The differential expansion of trade between the United Kingdom, Ireland and Denmark evident in the earlier period slowed in the 1980s, and EFTA began to show signs of unraveling. While EFTA's trade with the rest of the world showed some expansion in the 1980s, there was a differential decline in intra-EFTA trade after 1978. EFTA's trade with the EC expanded, which can be interpreted in terms of EFTA's trade becoming increasingly multilateralized. Finally, the long decline in the relative importance of trade between the United Kingdom and other Commonwealth countries finally wound down in the mid-1980.

According to Table 8, somewhere between two-thirds and three-quarters of Greece's additional exports to and imports from the rest of the EC represented trade creation. Accession appears to have been super-trade creating for Spain and Portugal in the sense that the expansion of trade exceeded that implied by the increase in trade between these countries and the rest of the EC, a result which mainly reflects the expansion in trade between the two countries themselves. It is also worth noting, however, the particularly striking fall in percentage of trade with developing countries in this case.

Overall, then, we find strong effects of preferential trade agreements on the pattern of Europe's trade. Intra-EEC trade increased from the Community's inception in ways that cannot be attributed solely to a history of intimate trade relations or other unobserved characteristics of the Six omitted from the gravity model. We find that the EEC stimulated the volume of intra-Community trade as early as 1959-61--that is, even while its customs union was still being completed. That intra-EEC trade barriers were progressively reduced over the first half of the 1960s provides a potential explanation. This expansion of intra-EEC trade relative to expectations was accompanied by declines in trade with the rest of the world, implying that the EEC caused some trade diversion in the 1960s. We similarly find evidence of trade expansion within EFTA in its early years. The same

^{1/} As in the case of Greece, this may reflect general liberalization of the trade regime.

Table 8. Trade Patterns of Greece, Spain, and Portugal, 1978-92
(Percent of trade with industrial countries)

	1978-80	1984-86	1990-92
<u>Greece with:</u>			
EC9	70.7	76.7	77.9
Other	29.3	23.3	22.1
<u>Implied Growth Per Annum in Overall Trade:</u>			
With All Blocs	0.92	1.14	1.18
Considering Just EC9	1.41	1.53	1.56
Trade Creation Ratio	0.65	0.74	0.76
<u>Spain and Portugal with:</u>			
Each Other	3.0	4.2	8.4
EC10	67.4	68.8	73.9
Other Industrial Countries	29.6	27.0	17.7
<u>Implied Growth Per Annum in Overall Trade:</u>			
With All Blocs	2.10	2.25	2.80
Considering Just EC10	1.96	2.00	2.14
Trade Creation Ratio	1.07	1.13	1.31
<u>Memorandum:</u>			
<u>Trade with industrial countries as a percentage of total trade:</u>			
Greece	71.8	72.2	77.2
Spain and Portugal	62.2	68.0	79.4

Note: The calculations are explained in the text.

pattern is evident in the rapid expansion of trade between Denmark, Ireland and the United Kingdom on the one hand and the EEC Six on the other in the period following the first enlargement. Accession produced a pronounced rise in trade with the rest of the EEC, some of which reflected trade diversion, a pattern repeated with the entry of Greece. Only in the case of Spain and Portugal is there no evidence of trade diversion. By the time they joined the EC, however, the exceptionally rapid growth of intra-EC trade had begun to slow, and there are signs of the unravelling of the EFTA bloc.

Thus, our results confirm that preferential trade arrangements can strongly encourage trade and that the unravelling of such arrangements can reverse those effects. They paint a mixed picture of the trade-creating and trade-diverting effects.

IV. Comparisons With Other Studies and Approaches

It is interesting to ask how our results differ from those obtained in other studies. ^{1/} In this section we therefore compare our findings with those of previous investigators and re-estimate their specifications using our data.

Three studies that have used gravity model to analyze the effects of the EEC and EFTA are Frankel, Stein and Wei (1993), Aitken (1973) and DeGrauwe (1988). Our results closely resemble those of Aitken and DeGrauwe, who also estimate the model in level form. Aitken, considering a sample of industrial countries, found that EEC membership had a significant effect on the volume of trade between member states starting in the 1960s. In parallel with our results, he turned up little evidence that membership in the European Coal and Steel Community had stimulated trade in the 1950s. DeGrauwe considered bilateral trade flows among 10 industrial countries since the 1960s. He found that EC membership significantly increased trade among the six founding members in the 1960s but no longer had a discernible effect in the 1970s, a contrast which he attributed to increased trade diversion following the admission of the three new members in 1973. But he also found a strong trade-creating effect in the 1970s for the three new entrants themselves. Our results are consistent with his in these respects.

Frankel, Stein and Wei also estimate the gravity model in level form, using a large cross section of developing and industrial countries for every five years starting in 1965. They find that the EC only gains significance as a trade-creating force in the 1980s. It is highly significant in 1985 and declines in importance thereafter. Their 1990 estimates suggest that if two countries are both located in the EC, their bilateral trade will be

^{1/} We confine ourselves to studies using the gravity model methodology. For results from other approaches see Jacquemin and Sapir (1988), and Balassa (1975).

70 percent higher than it would have been otherwise. Frankel, Stein and Wei's failure to find a significant effect of the EEC prior to 1980 stands in contrast to Table 3 above. They attribute the pre- and post-1980 difference to the accession of Greece, Spain and Portugal; our results suggest that this cannot be the entire story. And in contrast to our results, Frankel, Stein and Wei fail to identify any trade creating effects of EFTA.

One reason for the difference between the results of Frankel et al. and the others may be that the dummy variable they used for the EC included all 12 countries who were members in the early 1990s, even if they were not members at earlier periods. Hence, their earlier regressions included countries in the EC dummy which were not members of the EEC in the relevant year. Estimating our first difference specification including their dummy variables produces exactly the results found by Frankel et al., namely that the "EC" showed little or no differential trade expansion in the 1960s and 1970s, and a significant expansion in the 1980s. Hence, Frankel et al. are correct in supposing that their results reflect the accession of Greece, Spain, and Portugal to the EC, but only because these countries were also included in the "EC" in their earlier regressions.

We also estimated the traditional gravity model on our data, adding dummy variables for preferential arrangements. To avoid a proliferation of results, Table 9 only reports the results for dummy variables representing the relevant core EC members over the three full sample periods. 1/ A first feature to note is that the standard errors on the dummy variables tend to be larger, although since the coefficients are also generally larger, inferences are still possible. While the estimates for 1956-73 and 1966-80 suggest that members of the EC traded significantly more among themselves than would be expected on the basis of their observable characteristics, consistent with the conclusions drawn from estimates of our first-difference model, those for the 1975-92 period suggest they traded significantly less--a difference in results which holds for the period for which the two samples overlap, and which apparently comes from a large change in the estimated coefficient on income per capita in the 1975-92 regression. These significant differences in results are consistent with our concern that traditional gravity models are liable to misspecification. 2/ By contrast, the results using the first difference specification appear reasonably consistent across overlapping sample periods.

1/ Complete results on all regressions are available from the authors on request.

2/ This may be particularly important for a region such as Europe which includes a large number of countries which are geographically close to each other by the standards of the rest of the world, and hence where the distance variable may be particularly liable to misspecification.

Table 9. Results for EC of Estimation Using the Traditional Model

	1956-73	1963-80	1975-92
EC6	0.64 (0.12)**	0.45 (0.11)**	-0.45 (0.13)**
United Kingdom, Ireland, Denmark		0.93 (0.24)**	-0.45 (0.13)**
EC6 with United Kingdom, Ireland, Denmark		-0.32 (0.11)**	-0.45 (0.13)**

Note: The coefficient in other dummy variables are not reported. All standard errors are adjusted for heteroskedacity; *, and ** represent coefficients which are significant at the 10, 5, and 1 percent significance level, respectively.

V. Conclusions

The increasing complexity of international relations and consequent problems with global economic institutions appear to be economic facts of life at the end of the 20th century. Notwithstanding the creation of the World Trade Organization and the effort to establish commercial rules of the road at the global level, this gives grounds for thinking that regional economic arrangements, whose negotiation involves fewer transactions costs, will be the wave of the future. The rise of regionalism has understandably raised the specter of exclusionary blocs and concern over the danger of trade diversion. This paper has asked whether there are grounds for drawing such inferences from the history of regionalism in Europe.

We have found that the formation of the EEC and EFTA free trade areas had significant impacts on Europe's trade that cannot be attributed to the participating countries' observable economic characteristics or even to unobservable factors, such as histories of intimate trade relations or beneficial trade structures, whose effects remained constant over time. For the founding members, these trade effects were concentrated in the early years of existence of their arrangements. EFTA was heavily trade creating, but the EEC promoted intra-bloc trade through a combination of trade creation and trade diversion. This conclusion is reinforced by our results for the first two enlargements of the Community, for which we also find both trade-creation and trade-diversion effects (the accession of Portugal and Spain, by contrast, led to little if any trade diversion). This is an important caution to those contemplating regional initiatives in Asia and other parts of the world.

At the same time, some limitations of the analysis should be recognized. The analytic framework takes no account of the potential impact of preferential trading arrangements on the growth of output in member countries or of the global trend to more openness to trade caused, in part, by a general postwar liberalization of trade. Within the methodology, several potential extensions of the underlying approach could also be considered. One is to differentiate trade in different types of products, such as food or manufactures. In addition to addressing concerns that the underlying behavioral coefficients may vary by type of good, distinguishing between these types of goods is of particular interest for the EC, where one particularly potent source of protection and trade diversion has been the Common Agricultural Policy. Another extension would be to expand the geographical coverage to include developing countries, possibly while allowing these countries to have different behavioral coefficients. Both of these tasks are on our future agenda.

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