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THE POTENTIAL FOR TRADE BETWEEN THE COUNTRIES OF EFTA AND CENTRAL AND EASTERN EUROPE

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ABSTRACT

The Potential for Trade Between the Countries of EFTA and Central and Eastern Europe*

Recent events, historical evidence and geographical proximity suggest that the six EFTAns and twelve Central and East European countries (CEECs) are natural trading partners. This paper evaluates this suggestion by estimating the potential for EFTA-CEEC trade using the gravity model of Wang and Winters (1991). The findings show that even at 1989 CEEC income levels, EFTA-CEEC trade should have been four times greater than it was. Thus the CEEC markets should have been as important to Austria, Iceland and Switzerland as were the EFTA markets. A second estimation is carried out assuming that CEECs' incomes catch up to 70% of the EC's by 2005, 2010 and 2020. In this scenario, EFTA-CEEC trade grows at double digit rates for decades, finally attaining a level where CEEC markets account for almost a fifth of EFTA members' exports to all of Europe.

JEL classification: F02, F14, F15, F17
Keywords: East-West trade, regional integration, gravity model, EFTA, Eastern Europe

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NON-TECHNICAL SUMMARY

The reintegration of 110 million consumers living in Central and Eastern Europe constitutes an unprecedented opportunity for West European exporters. Currently, the average consumer in these countries is only two-fifths as rich as the average EC consumer. But this will change: some – and perhaps many – of the CEECs will catch up to Western income levels in the coming decades. Those that do will grow two or three times faster than Western Europe for one or two decades. Their demand for West European consumer goods and industrial products is likely to grow at least that fast. The geographical situation and historical connections of many EFTA members put them in an ideal position to capitalize on this opportunity. Indeed recent events, historical evidence and geographical proximity suggest that the EFTA states and the Central and East European Countries (CEECs) are natural trading partners.

This paper evaluates the potential for EFTA-CEEC trade in the coming decades. It employs an analytic framework, the so-called gravity model, which explains bilateral trade relationships on the basis of per capita and total income levels in trading partners as well as the geographical distance. The particular implementation used in this paper is that of Wang and Winters (1991). My findings reveal a potential for rapid and sustained trade growth between EFTA and the CEECs. This potential stems from two fundamental sources: (i) the dismantling of the systematic trade barriers that hobbled East-West trade prior to the 1989 revolutions; and (ii) the possibility of rapid income growth if the Central and Eastern economies begin to catch up to West European levels of per capita income. The two scenarios investigated in this paper correspond to the elimination of these two distinct factors that have restrained EFTA-CEEC trade until recently.

The Results

The results show that the CEECs are potentially very important trading partners of most EFTA nations. In particular the results show that: (i) Even without extra income growth in the CEECs, EFTA sales to these markets should increase fourfold from 1989 levels. This means that for Austria, Iceland and Switzerland, the CEEC markets should be as important as intra-EFTA trade is today. Furthermore, the CEECs themselves are estimated to rely heavily on the sum of EFTA and other CEEC markets. For instance for the CEECs in Central Europe (the Czech Republic, Slovakia, Hungary and Slovenia), the EFTA-cum-CEEC market should account for between 25% and 50% of their exports to Europe. (ii) If CEECs' incomes grow fast enough to catch up to 70% of the EC average in the coming decades, EFTA export sales to the Central and Eastern nations should continue to expand at double digit rates. When this catchup is complete, CEEC markets will account for almost one-fifth of EFTA Members' exports to

Europe as a whole. While this sort of growth is quite high, it is not unprecedented. To take a specific example, real exports from Austria to a rapidly growing country like Spain rose at over 20% per annum in the 1980s.

Policy Implications

As a practical and political matter, EFTA exports to the CEECs cannot continue to rise at 10% to 20% annually unless EFTA and EC purchases from these emerging market economies also rise rapidly. Foreign capital inflows and increased indebtedness could sustain CEEC trade deficits for a number of years. In the longish run, however, imports must be paid for with exports. The obvious implication is that West European markets must be open to Eastern goods if the trade potential is to be realized.

The large share of the CEECs' potential exports that are likely to go to the EFTA-CEEC area suggests that several of the CEECs – expecially the Czech Republic, Slovenia and Hungary – are natural members of EFTA. The Baltic States' trade with the Nordic EFTAns suggests the same conclusion. I have argued elsewhere (Baldwin (1992)) that an Eastern expansion of EFTA would benefit both groups.

Even if they are eventually refused entry into EFTA, the CEECs – expecially the smaller Central and Northern countries – should ask anyway. The estimates in this paper suggest that there would be great political support for the CEECs among EFTA-based firms. Thus even if the EFTAn governments could not see their way to admitting the CEECs as EFTA members, pressure from their exporters (and general embarrassment) is likely to lead the EFTA governments to respond to the CEEC's request with increased assistance programmes.

Rapid income and trade growth cannot happen unless the CEECs' domestic policies are in order. For instance rapid trade and income growth will require a stable macroeconomic environment and a continued commitment to completing the transition to market-based economies. Growth will also demand sustained and substantial inflows of private Western capital and know-how. These can only happen if the CEECs adopt and maintain policies that encourage investment and technology transfers.

The Model

The gravity model, which is the workhorse for our calculations of trade potential, is somewhat of an anomaly in the international trade literature: its empirical validity has been extensively documented, while its theoretical underpinning is quite undeveloped. The gravity equation has been estimated many times on many different sets of countries and over many different periods. It has uniformly been able to explain most of the variation in all of these data sets. Even if the

lack of theory may disturb (and stimulate) some theorists, the very solid and reliable empirical performance of the model should reassure policy analysts.

The basic idea is that countries tend to import more of all types of products the larger is their GDP and the higher is their GDP per capita. Likewise the higher are a country's GDP and GDP per capita, the more varieties of tradable products it is likely to have available for export. Thus it is clear why the GDPs of both the importer and exporter govern bilateral trade: for the importer GDP is a measure of income; for the exporter it is a measure of output. The final step is to assume that the price importers face of any given variety of exported good rises with the costs of doing business internationally. The cost of doing business internationally is broadly proxied for by distance.

1. INTRODUCTION AND SUMMARY OF RESULTS

The reintegration of 110 million consumers living in Central and Eastern Europe constitutes an unprecedented opportunity for European exporters. Although they are currently poorer than most of the 370 million consumers in West Europe, most analysts believe that some - and perhaps many - Central and East European countries (CEECs) will catch up to Western income levels, even if the process takes decades. During this catch-up phase, markets in the successful CEECs are likely to grow two or three times faster than West European markets. The geographical situation and historical connections of many EFTA countries put them in an ideal position to capitalize on this unprecedented opportunity. Indeed, recent events, historical evidence and geographical proximity suggest that the EFTA States and the nations of Central and Eastern Europe are natural trading partners. For instance, since the revolutions of 1989, trade between EFTA countries and the CEECs has swelled at double digit rates. Moreover, before World War II and the imposition of central planning, Central Europe accounted for a major share of several EFTA countries' trade.

The purpose of this paper is to evaluate the potential for trade between EFTA countries and the CEECs in the coming decades. The paper employs a parsimonious analytic framework that explains bilateral trade relationships on the basis of per capita GDP, total GDP and geographical distance between partners. This framework, introduced in 1966 and known as the gravity model, has been used by many analysts over the years to explain trade patterns in many parts of the world. Despite its simplicity, the model explains the actual pattern of trade remarkably well, especially compared with the desultory empirical performance of other trade models. The particular implementation employed is based on Wang and Winters (1992) but is updated to 1989 and extended to include Albania, Croatia, Slovenia, the Czech Republic and Slovakia separately in addition to Hungary, Poland, Bulgaria, Romania and the Baltic States.

The paper estimates how much trade would occur between EFTA countries and 12 Central and East European nations, if two fundamental barriers to East-West trade were eliminated: (i) the systematic trade barriers that hobbled East-West trade before the 1989 revolutions, and (ii) the low level of the CEECs' income that resulted from the inefficiencies of central planning. The paper investigates potential trade under two scenarios that correspond to the elimination of these two distinct restraints on trade between Eastern and Western Europe under the old Communist regimes. The first generates medium-run trade potential numbers, which show the extent to which East-West trade would have occurred without controls such as import licensing, state monopolies on foreign trade, foreign exchange restrictions and direct central planning, but without any change in the CEECs' income. The second generates long-run trade potential estimates, which additionally incorporates the trade-boosting effect of Eastern incomes catching up to 70 per cent of the EC level.

The findings presented in this paper confirm the idea that the CEECs are potentially very important trading partners of most EFTA countries. The results show that EFTA export sales to the Central and East European nations have the potential to continue expanding at double digit rates for decades. If the CEECs do manage to catch up to the income levels of the poorer EC nations, it is estimated that the CEEC markets could account for almost a fifth of EFTA countries' exports to Europe. For Austria the number is 50 per cent higher. Moreover, exports to the CEEC markets will potentially become as important for Austria, Iceland and Switzerland as are their exports to other EFTA countries. It is important to note that this

potential trade need not occur. Many events, such as the imposition of extraordinary trade barriers against East-West trade, or a collapse of the transformation process in the East could preclude rapid growth of exports to and from the CEECs.

As a practical and political matter, EFTA exports to the CEECs cannot continue to rise at 10 to 20 per cent annually (as they have since 1989) unless EFTA and EC purchases from these emerging market economies also rise rapidly. The point is that the CEECs could not sustain prolonged periods of rapid import growth without also enjoying rapidly growing exports. Certainly, foreign capital inflows and increased indebtedness could sustain CEEC trade deficits for a number of years, however, in the longish run imports must be paid for with exports. The results presented here suggest that for a majority of the CEECs, the EFTA markets would potentially account for roughly one-fifth of their exports to Europe. The Baltic States, especially Latvia and Estonia, will potentially rely on EFTA countries (primarily Finland, Norway and Sweden) for more than a quarter of their exports. Finally, the results suggest the emergence of an important trading network in central Europe; the sum of the long-run potential exports by the CEECs to EFTA and CEEC markets accounts for more than half of all European exports for most of the CEECs.

The paper is organized in six sections including this introductory section. The second and third sections, which are fairly technical in nature, review previous studies, their main findings and theoretical foundations. All of the previous studies agree with the basic findings in this paper, namely, actual EFTA-CEEC trade would have to increase many times over to reach its "normal," i.e., potential level. The fourth section discusses the practical and empirical problems of updating and extending the analytic framework to include the smaller CEECs. The fifth section presents the results, and the sixth presents concluding remarks.

2. REVIEW OF PREVIOUS STUDIES

The two most important previous studies of the trade potential of Eastern and Central Europe are Wang and Winters (1992) and Collins and Rodrik (1991).[1] Both studies attempt to estimate a model of how a "normal" country's geographic trade pattern is related to various characteristics. The next step is to assume that the CEECs' trade patterns will fit this mould once they complete their transitions to market economies. The two difficulties that each study must face are: (1) the choice and estimation of the model of the trade pattern, and (2) the estimation of what the CEECs own characteristics will be once they get through their transitions.

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1 The well-known Hamilton and Winters (1992) study contains estimates of East-West trade that are based on the Wang and Winters (1992) paper.

2.1 Wang and Winters

Wang and Winters (1992) estimate the potential for trade flows between Eastern and Western Europe using the gravity model. The next section explores the theoretical foundations of the gravity model in some depth, so here we simply describe their estimating equation and their simulations.

Using data averaged over the 1984-1986 period from 76 non-CEEC countries, Wang and Winters estimate the coefficients in the following equation:

$$X_{xi} = \beta_0 + \beta_1 Pop_i + \beta_2 GDP_i + \beta_3 Pop_x + \beta_4 GDP_x + \beta_5 Dist_{xi} + \text{dummies} \qquad (1)$$

where all variables are in logs, X_{xi} is the aggregate exports of country "x" to country "i", GDP and POP are total GDP and populations of the relevant countries, $Dist_{xi}$ is the distance from i to x, and the list of dummies includes a dummy for adjacency and mutual membership in preferential trade areas.

The authors use ordinary least squares to estimate the parameters on the averaged cross-section data, assuming the errors are identically and independently distributed. The authors tried two ways of dealing with zero recorded trade flows: substitution of small values, and simple exclusion of such flows. The two approaches yield similar point estimates of the beta's, but the errors from the regression with substituted data are non-normal. The results of the regression with the omitted data are reported in Table 1. Notice that the variables for both the importing and exporting country have approximately the same size.

Table 1 : Wang-Winters Regression Estimates

C	GDP_i	Pop_i	GDP_X	Pop_X	$Dist_{xi}$
-12.49	1.02	-0.22	1.17	-0.38	-0.75
(32.4)	(42.8)	(8.2)	(58.2)	(15.7)	(22.3)

$R^2 = 0.7$
Number of Observations = 4320
All variables in logs.

It is useful to rearrange the equation into total and per capita income in both countries. This yields (omitting the dummies):

$$X_{xi} = -12.5 + 0.38\,(GDP/Pop)_x + 0.79\,GDP_x + 0.22\,(GDP/Pop)_i + 0.8\,GDP_i - 0.75\,Dist_{xi} \qquad (2)$$

where again all variables are in logs. This shows quite clearly that bilateral trade flows are increasing in the personal and total income and decreasing in distance.

Projecting CEECs Trade Potential

The gravity model, which was estimated on data that does not include Central and East European countries, gives the relationship between GDP, population, distance and bilateral trade flows in a "normal" country, i.e., one that is as integrated into the world trade system as the average of their 76 country sample. This allows Wang and Winters to predict what the CEECs trade pattern will be once they also become "normal" countries. That is to say, once they complete their transitions to market economies and are integrated with the world trading system. The mechanics of the projection is simple. Estimates for the CEECs' GDP, population and distance are simply plugged into the equation and this together with the data for the other 76 countries generates an import and export pattern for all of the CEECs with each of the 76 countries. Wang and Winters focus on the aggregate potential trade flows predicted by their model using the Summers-Heston estimates of the CEECs GDPs in 1985 (see Appendix Box I).

Estimated Trade Potential

The Wang-Winters study does not list potential or actual exports for individual EFTA countries. The aggregate numbers are shown in Table 2.

Table 2 : Wang and Winters (1992) Estimates EFTA Actual and Potential Exports to CEECs in 1985 (in billion USD)

1985	CSFR	Hungary	Poland	Romania	Bulgaria
EFTA Actual	0.66	0.69	0.76	0.19	0.08
EFTA Potential	2.2	0.9	2.6	1.3	0.6
Potential/Actual	3.3	1.3	3.4	6.8	7.5

It is clear that the potential trade in 1985 is in all cases estimated to be much larger than the actual. The gap ranges from about 30 per cent for Hungary to almost 650 per cent for Bulgaria.

2.2 Collins and Rodrik

Collins and Rodrik (1991) estimate the potential for trade in Europe using a methodology that is not based on an integrated procedure or model such as the gravity model. Their approach, which has never before been tried, is pragmatic and based on a number of empirical regularities and plausible conjectures. The technique breaks down the trade pattern into an aggregate export figure and country-specific trade shares. Thus, instead of directly estimating the exports of, say, Hungary to Sweden and Norway, the Collins-Rodrik technique first estimates total Hungarian exports and then separately estimates the shares of the total that go to Sweden and to Norway. We address these two procedures in order.

Aggregate Exports

The first step of the Collins-Rodrik methodology is itself composed of two intermediate steps: first they estimate what the CEECs' export to GDP ratios should be, if they were normal market economies, then they multiply this ratio by an estimate of the CEECs' GDP to get aggregate exports. Aggregate imports are assumed to equal aggregate exports.

Table 3 : Collins-Rodrik's Model of a "Normal" Export/GDP Ratio

GNP	lnGNP	lnPOP	D40	DMIDE	DDD	DLA	DSA
$-4*10^{-6}$	4.3	-6.6	29.7	-11.3	-9.1	-7.9	-5.0
(-3.1)	(11.9)	(-7.8)	(12.1)	(-3.5)	(-3.3)	(-3.3)	(-2.7)

Dummy Variables:
D40 = countries where the dependent variable is over 40 per cent.
DMIDE = Middle-East countries
DDD = Developed countries
DLA = Latin America
DSA = Sub-Saharan Africa

$R^2 = 0.79$
Mean of dependent variable = 21.7

1988 Data.

To estimate what the CEECs' normal export-to-GDP ratio should be, the authors rely on the well-known empirical regularity that the richer a country gets, the more open it gets. In other words, export to GDP ratios are positively correlated with per capita GDP. Reasons for this regularity abound. Some focus on how high incomes tend to be associated with a high relative demand for imported goods. Others reverse the causality, asserting the openness boosts per capita income. To capture this relationship quantitatively, Collins and Rodrik take a pragmatic approach. Using data from 1988, they regress the openness ratio (exports to GDP) of a cross section of 91 countries (no CEECs are included) on GNP, the log of GNP, the log of population, and a series of dummies including, notably, a dummy for countries whose export to GNP ratio exceeds 40 per cent. The results are reproduced in Table 3.[2] Notice that the R^2 statistic is quite high for a cross-section regression. The point estimates suggest that a country tends to become more open as its per capita income rises but less open as its population rises.

Apart from its lack of theoretical justification, the estimated equation is rather unusual in several respects. For instance, no constant term is included, GNP ***and*** the log of GNP enter both on the right hand side, and the dependent variable is measured in percentage points rather than the log of percentage points. Moreover, it is not usual to include a dummy, such as D40, that depends upon the realization of the dependent variable. The problem is that such a

2 The regression results were not reported in the Collins-Rodrik study.

variable is correlated with the error term by construction.

Finally, to get forecasted 1988 trade flows the authors plug estimates of the CEECs' current GNPs and populations into the estimated openness equation. This generates an export/GNP ratio. The 1988 GDP estimates used are those of PlanEcon (see Appendix Box I).

Trade Shares

Estimating the trade share is more problematic since it is hard to know what the CEEC trade pattern would have been had they been part of the West since World War II. To get around this, Collins and Rodrik base their predictions of the CEECs' trade shares on their 1928 trade shares, updated to reflect changes in the relative economic importance of certain nations between 1928 and 1991.

Specifically, the 1928 trade shares come from a League of Nations survey that was published in the 1940s. The authors argue that these trade shares reflect the CEECs' normal trade pattern in that year in the sense that trade was not yet systematically distorted by planned economy mechanisms or war. As Collins and Rodrik point out, it is obvious that one should not expect the CEECs' 1928 pattern to re-emerge in the post-transition period, if for no other reason than the changes that have taken place in the Western countries. For instance in 1928, the UK was the clear leader in world trade. Since 1928, however, the UK role in world trade has fallen sharply relative to the US and Germany, inter alia. Consequently, we should expect that the UK's shares of the CEECs' trade will be systematically lower after the CEECs complete their transitions. The authors attempt to correct for this change in the importance of various market economies since 1928 by examining how the trade patterns of six Western countries changed between 1928 and 1989.

The procedure for updating the relative importance of the various Western partners of the CEECs is based on a pragmatic approach. The authors examine how the trade shares of six "comparator" countries shifted between 1928 and 1989 with 33 partner countries. The 33 partners include the six comparators themselves, six of the CEECs (the CSFR, Hungary, Poland, Bulgaria, Romania and Yugoslavia) and the Soviet Union. Some countries, such as Japan, Korea and Taiwan were combined and treated as a single partner. The six comparator countries, chosen on the basis of the authors' introspection, were Austria, Finland, Germany, Italy, Portugal and Spain. The shift is quantified by regression analysis. Namely, the 1989 shares of the 6 comparator countries with 33 partner countries were regressed on a constant, the 1928 share and a dummy for each partner country. That is, the estimating equation is:

$$s_{ix}^{89} = \beta_0 C + \beta_1 s_{ix}^{28} + \Sigma_j \beta_j (D_j) \qquad (3)$$

where the D_j are dummies for each partner, with a single dummy for all CEECs. Note that this is estimated on cross-section data that contains 192 observations (6 times 33 minus 6). The idea behind this estimating equation is that the 1989 shares should be related to the 1928 shares and partner-specific shifts captured by the dummies. It may be useful to think of this regression as measuring how the trade shares of the comparator countries changed on average between 1928 and 1989.

This procedure is somewhat difficult to understand at first glance, so it is worth illustrating the point. Consider the USA's share of imports in the six comparator countries in 1989. These 1989 share data will constitute six of 192 observations on the dependent variable. The fitted value for each of the six observations will depend only on the US 1928 share for each of the six comparator countries and the common US dummy. Heuristically speaking, the US dummy is estimated on only six observations. The results of the Collins and Rodrik least square regression for import shares are reported in Table 4.

Table 4 : Collins and Rodrik Import Share Regressions

Variable	Estimate	t-stat
Constant	.009	3.2
s^{28}	.266	5.3
US dummy	.015	1.2
Japan-Korea-Taiwan dummy	.053	4.8
Belgium-Luxembourg dummy	.022	2.0
France dummy	.072169	6.3
Germany dummy	.169	11.7
Italy dummy	.069	5.8
The Netherlands dummy	.033	3.1
Spain dummy	.030	2.5
Soviet Union dummy	0.020	1.8
Eastern Europe dummy	-.009	-1.9

R^2 = 0.71
Number of observations = 192

1989 data.

* Note that dummies with a t-statistic less than one were dropped.

The results for the export shares are qualitatively similar, however the coefficient on the 1928 share is almost twice as large as the coefficient on the 1928 import share. Apparently indicating that the import patterns of the comparator countries have changed much more than the export patterns. Collins and Rodrik use the estimates from the regressions on the comparator countries to update the CEECs' 1928 trade shares. That is, they assume that the trade shares of the CEECs will change in the same way as the shares did, on average, for the comparator countries. For instance, to get a forecast of Hungary's post-transition trade share with Germany, they take Hungary's 1928 German import share, multiply it by 0.266, add .009 (i.e., the constant in the comparator country regression) and then add 0.169 (i.e., the German constant). In this way, Collins and Rodrik assume that the 1928 and modern trade patterns of

the CEECs will change in the same way as the six comparator countries' pattern changed on average.

Finally, to get aggregate bilateral trade flows for 1988, Collins and Rodrik multiply each forecasted 1989 import and export share by the forecasted aggregate import and export totals for 1988.

Estimated Medium Run Potential Trade

The results that the Collins-Rodrik studies find are broadly similar to those of Wang and Winters (1992). Although the authors do not explicitly report the results for EFTA countries' trade with the CEECs, the numbers can be imputed by combining information on the trade shares of each EFTA country and aggregate CEEC exports. Table 5 below reports the findings of these calculations. The potential exports by EFTA countries to the large CEECs were substantially larger than the actual trade was in 1988. The pattern of the potential-actual gaps was also quite similar, with Hungary estimated to have the smallest (28 per cent) and Bulgaria and Romania the largest (both about 1,800 per cent). The magnitudes to the gaps are quite close to the Wang-Winters gaps for Czechoslovakia, Hungary and Poland, however, the Collins-Rodrik gaps for Bulgaria and Romania are three times larger than those of Wang and Winters. This implies that the Collins-Rodrik numbers suggest that EFTA countries' exports to these latter two nations will increase even more than estimated by Wang and Winters.

Table 5 : Collins and Rodrik Medium-Run Results
EFTA Potential and Actual Exports to CEECs in 1988
(in billion USD)

1988	CSFR	Hungary	Poland	Romania	Bulgaria
EFTA Actual	0.85	1.0	0.88	0.07	0.04
EFTA Potential	2.36	1.28	2.62	1.30	0.76
Potential/Actual	2.8	1.28	3.0	18.6	19.0

Estimated Long-Run Potential Trade

Collins and Rodrik also examine how large trade would be if the incomes of the CEECs caught up to the EC average, but the trade shares remained at their 1989 levels. This exercise points up the shortcomings of the pragmatic approach to trade shares adopted by the authors. If the incomes of the 110 million citizens in the CEECs caught up to the average EC country, the economic structure of Europe would be fundamentally altered. It is hard to believe that such a radical change in the output and income pattern in Europe would have no effect on the import and export shares of the CEECs. Since the Collins-Rodrik method of estimating the 1989 shares is not based on a theoretical model, they cannot calculate how their assumed growth of CEEC output would affect the CEECs' trade pattern. Recall that the estimated dummies

shown in Table 4 are intended to capture the changing importance of various nations between 1928 and 1989. Updating the trade shares to match the assumed higher incomes, would have required Collins and Rodrik to estimate new dummies to reflect the changing importance of European nations between 1928 and the catch-up year. Since data for the catch-up year is obviously not available, the authors are forced to assume that the transformation and catch-up of Eastern Europe will not substantially change the CEECs' trading patterns.

To calculate trade with catch-up, the authors repeat the two steps for obtaining aggregate exports. That is, they use the estimates shown in Table 3 to see how the assumed increase in GNP and log of GNP would increase the export to GNP ratios, and then they multiply this ratio by the GNP figure. The resulting increase in total exports of the CEECs is 180 per cent. Again EFTA-CEEC trade is not reported explicitly by Collins and Rodrik, but the figure can be calculated as above. The results of these calculations are summarized in the following table.

Table 6 : Collins and Rodrik (1991) Results
EFTA Long-Run Potential and 1988 Actual Exports to CEECs
(in billion USD)

Catch-Up	CSFR	Hungary	Poland	Romania	Bulgaria
EFTA Actual (1988)	0.85	1.0	0.88	0.07	0.04
EFTA Long-Run Potential	3.41	4.24	7.48	5.34	2.04
Potential /Actual	4.0	4.24	8.5	76.3	51.0

Assumes CEECs' per capita incomes catch up to EC average.

The estimated potential exports to the CEECs are large. These would involve an approximate fourfold increase in EFTA country exports to the CSFR and Hungary, an approximately nine-fold increase to Poland and an extraordinary 76-fold and 56-fold increase in exports to Romania and Bulgaria. The radical size of the estimates for Romania and Bulgaria stem from the enormous growth it would take these countries to catch up to the EC average as assumed.

2.3 Other Studies

Two other recent studies have looked at how trade flows of the CEECs were affected by central planning. Biessen (1991) estimates an openness equation that is similar to, but simpler, than that of Collins and Rodrik (1991). Specifically he regresses export/GDP ratios on a constant, per capita GDP and population, using data from 1980 that was adjusted to reflect a series of mis-valuations of the CEECs trade flows. He finds that the CEECs are not outliers in this regression. Thus, he concludes that the CEECs total trade levels were not obviously repressed. To investigate whether central planning distorted the direction of the CEECs trade, he estimates a gravity model using EC countries, EFTA countries, 6 CEECs and the USSR. The estimating equation is similar to that of Wang and Winters, however, he includes East-West and West-East dummies, and uses the "as the crow flies" distances between capital cities

as a measure of distance (instead of the more commonly used transport-based distance measures). His main point estimates are fairly close to those of Wang and Winters (1992). Since both East-West dummies turn out to be negative and highly significant, he concludes that central planning and Western restrictions greatly reduced East-West trade in Europe. Although the author does not perform the calculation, it is possible to deduce the degree of trade East-West trade repression from his estimates. Thus, actual Western exports to the East were only one sixth of the level that the model predicts would have occurred with the CEECs, if they had been as integrated as the West European countries. In other words, an opening up of the CEECs would result, on average, in sixfold expansion of Western exports to the East.

Bergeijk and Oldersma (1990) estimate a gravity model for 49 countries (including 6 CEECs) involving the usual population, income and distance variables plus a dummy for East-West trade and intra-East trade. As in Biessen (1991), the East-West dummy is estimated to be negative and highly significant. The estimates of the dummies indicate that all bilateral trade flows in 1985 between the East and West were about one-eighth as large as the gravity model would predict based solely on income, population and distance. Unlike Biessen (1991), Bergeijk and Oldersma (1990) find that intra-East trade was also below the norm defined by the model by about 50 per cent.

3. COMPARISON OF METHODOLOGIES AND THEORETICAL FOUNDATIONS

3.1 Theoretical Foundations of the Gravity Model

While the gravity model has long played a role in policy research, it may as defined by equation (1) appear peculiar to many trade theorists. Specifically, it may not be immediately obvious why one includes the GDP and population variable of both the importer and exporter. To understand the equation in a simple and intuitive way, contemplate the analogy of an individual family's pattern of purchases.

Consider a family that lives near two shopping areas. Factors influencing how much the family buys at each shopping area may be pigeonholed into those that concern the family's characteristics and those that concern the particular shopping area's traits. For instance, the richer the family gets per capita, the more it will tend to spend on goods from both shopping areas. Likewise, holding constant the per capita income of the family but increasing its size - and thereby the family's total income - would increase the amount bought at both sites. The division of purchases between the two shopping areas would depend primarily on the various characteristics of the shopping areas themselves. It is likely that the family would buy relatively more from the area that offered the wider selection of goods. Also, other things being equal, the family will tend to do more of its shopping at the nearby shopping area.

In the gravity model, as with the family, a country's total purchases from foreign countries increase with per capita and total income. Also, the gravity model assumes that the selection of goods a particular country has to offer is positively correlated with the exporting country's per capita and total GDP. Thus, other things being equal, a particular country tends to import more from a large, rich partner. Finally distance dampens trade since it is generally more convenient and cheaper to buy from nearby countries.

A Gravity Relationship in the Frictionless Krugman Model

In the simplest Krugman (1979) model of intra-industry trade, a gravity-like equation is easily derived. In that model, tastes in all countries are symmetric and given by a constant elasticity of the substitution utility function. The monopolistic competition equilibrium involves each firm producing an identical amount of output and charging an identical price, with free entry determining how many products a country must produce in order to ensure full employment of its resources. In this special set-up, consumers in each country buy an equal amount of each variety regardless of where it is produced; also, the number of varieties produced by a country is proportional to its resources and therefore also proportional to its GDP. Clearly, then the exports of any country increase with its own GDP and the imports of any country increases with its GDP. Putting these together, it is clear that the size (income level) of both the importing country and the exporting country will affect the level of bilateral trade. If we went beyond the model and supposed that distance increases the consumer prices of products, we would observe that consumers would buy more of the goods produced close to them. This addition would yield the standard gravity equation.

3.2 The Collins-Rodrik Methodology

The Collins-Rodrik methodology is not based on a unified analytic framework. Nevertheless, we saw in the previous section that the results were quite similar to those of Wang and Winters (1992). Although there may be many reasons for this, a likely one is that the authors had a gravity-like model in mind when they crafted their methodology. This showed up in two of the choices they made in their pragmatic approach.

First, they presume that the CEECs' trade pattern in the 1990s would be related to their 1928 trade pattern. If one did not have a structural model in mind -- such as the gravity model -- this would seem to be a very implausible assumption. Data from 1928 would shed very little light on most aspects of the post-transformation economies in the East. For example, the relationship between money and prices in 1928 would tell us virtually nothing about what the link would look like in the 1990s since the entire monetary system and financial technology have changed. However, when it comes to trade patterns, the changes in technology are unlikely to change significantly the relative ease of trading with various partners. For instance, in 1928 it was probably much easier for a Hungarian to sell to Germany than to Ireland. Six decades of advances in communications, transportation and market integration have made it easier for a Hungarian to sell to both Ireland and Germany, but it is probably safe to say that Germany is still more accessible to Hungarians.

The second gravity-like assumption made by Collins and Rodrik shows up in their choice of comparator countries. To see this, suppose that one believed that physical geography was only a minor determinate of trade patterns. In this case, one might have chosen comparator countries that shared similar economic structures with the CEECs, such as middle-income LDCs that have recently undergone significant transformations. Instead the authors chose countries that are a long way from being similar to the CEECs in terms of economic structure (e.g., Germany and Austria) but are quite close geographically. Determining exactly why the Collins-Rodrik results parallel those of the gravity model would require more in-depth empirical work, but it would appear that the very strong and very stable correlation between physical distance and trade is the underpinning of both the gravity model and the Collins-

Rodrik methodologies.

4. UPDATING AND EXPANDING THE WANG-WINTERS GRAVITY MODEL

The simplicity of the gravity model permits one to include countries for which only the most basic data are available. In fact one only needs population, GDP and the geographical distances between countries. This section describes how the model was updated to 1989 and how it was extended to include twelve Central and East European nations: Albania, Croatia, the Czech Republic, Bulgaria, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia.

4.1 GDP and Population Data

As yet, there are no hard numbers on per capita GDP figures in the formerly planned economies. The point is that the CEECs have not yet produced national accounts that are up to Western standards. In lieu of hard data, estimates have been developed. There are many such estimates floating around and little agreement on which is best (see Appendix Box I for seven sets of estimates). The analysts producing the estimate appear to be divided into two camps: those that place the richest CEECs in the ranks of poor industrialized countries such as Greece and Portugal, and those that put them together with the upper-middle income LDCs such as Brazil and Mexico.

The choice of GDP numbers for the CEECs has important implications for the results. Inspection of the gravity equation given in Section 2 shows that the estimated bilateral trade flows for the CEECs will be heavily affected by their GDP estimates. Namely, the estimated trade flows will increase approximately in proportion with the GDP numbers assumed. The only two sets of numbers that include all of the countries that our extension requires are Salay (1992) and CEPR (1992). It is fortunate that they represent the two camps. Rather than chose between the two camps, in this paper the average of the Salay (1992) and CEPR (1992) figures were employed. The Salay (1992) numbers and the CEPR (1992) are for 1989.

Despite the disagreement on incomes levels, the two sets of numbers generally agree on income ranking. Slovenia is by far the richest of the CEECs and both sets of numbers place it as richer than Greece. Among the five large CEECs (the Czech and Slovak Republics taken together, Hungary, Poland, Romania and Bulgaria) the CSFR is in the first place followed by Hungary, Bulgaria, Poland and Romania. Note that measured in purchasing power terms, the GNP per capita in the Czech lands (Bohemia and Moravia) is about 16 per cent higher than the figure for Slovakia. The Baltic States are also approximately as affluent as Hungary according to both sets of estimates.

In order to update the Wang-Winters model to 1989, the actual 1985 GDP and population numbers used by Wang and Winters (1992) for the non-CEEC countries were increased to reflect actual real growth observed between the two years. Since the scope of this paper is limited to European trade, all non-European nations were dropped from Wang and Winters' sample of 76 countries. Specifically, in addition to the 12 CEECs mentioned above, the model includes 11 EC countries (Belgium and Luxembourg are combined) and 6 members of EFTA

(Liechtenstein is part of the Swiss customs area). The IMF's *International Financial Statistics 1992 Yearbook* was the source of the real GDP growth figures. The 1985 population figures were similarly updated using data from the World Bank's 1992 *World Table*.

4.2 Distance

The Wang and Winters (1992) data were used for the bilateral distances among EFTA and EC nations. The distance between EFTA and EC nations on the Continent and the CEECs was taken to be the rail distances between the capital cities wherever possible. Albania had to be treated as a special case due to a total lack of rail connections. Road distance between Tirana and Zagreb was used to link Albania to the rail network. The distance among the Nordic EFTA countries and the CEECs was taken to be the sea distances to Gdansk and the rail distance from there to the relevant city. The cities used for calculating distances to the CEECs are: Vienna, Helsinki, Reykjavik, Oslo, Stockholm, Zurich, Tirana, Bucharest, Zagreb, Prague, Tallinn, Budapest, Riga, Vilnius, Warsaw, Sofia, Bratislava and Ljubljana.

5. ESTIMATES OF POTENTIAL TRADE FLOWS

This study reports estimates based on two distinctive scenarios. A medium-run scenario where the CEECs become as integrated into world trade as the average country in Wang and Winters' 76 countries, and a long-run scenario where the average CEEC-12 per capita incomes catch up to the levels of the poorer West European nations.

These two scenarios correspond to the elimination of the two distinct restraints on trade between Eastern and Western Europe under the old Communist regimes. The first restraint consisted of explicit government policies of suppressing East-West trade. The manner in which this suppression was imposed varied from country to country but usually involved import licensing, state monopolies on foreign trade, foreign exchange restrictions and direct central planning. The medium-run trade potential numbers discussed below show the extent to which East-West trade would have occurred in the absence of such controls. The second restraint on East-West trade was less direct. Due to the growth-inhibiting aspects of central planning, the levels of income in Eastern and Central Europe were below what they should have been. The calculations performed in the long-run scenario suggest how large trade flows between EFTA countries and the CEECs could be, if both restraints to East-West trade were removed.

5.1 Medium-Run Trade Potential

The procedure for generating the 1989 potential trade between the CEECs and EFTA is simple. The coefficients estimated by Wang and Winters (1992) and listed in Table 1, were applied to GDP, population and distance data for each of the 72 pairs of countries (each of the six EFTA States with each of the 12 CEECs). For comparison the same was done for each of the EC countries. The results for individual EC countries are presented in Tables 1 and 2 in the Appendix.

*Figure 1 : Medium-Term Potential vs. 1989 Actual EFTA Exports to the CEECs *)*
(Top Bar = Actual, Bottom Bar = Potential)

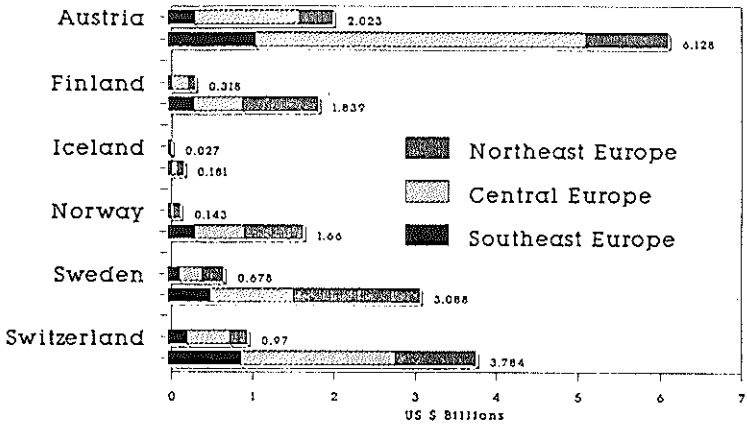
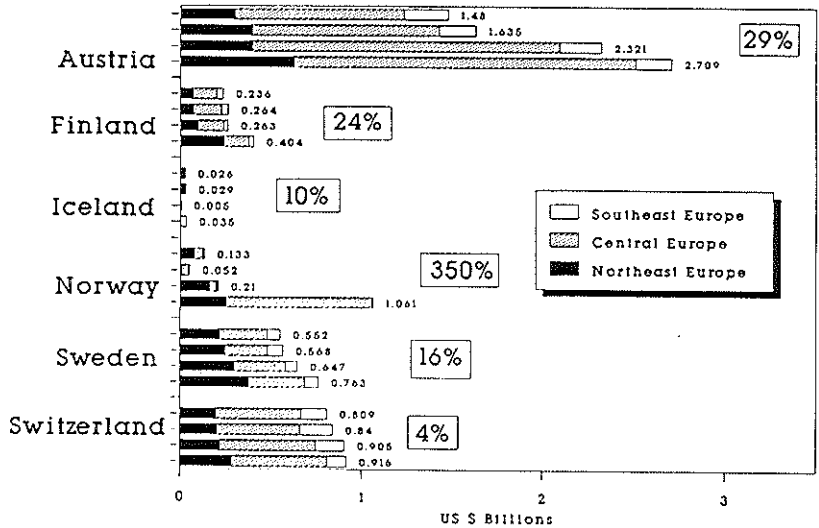


*Figure 2 : Actual EFTA Exports to CEECs, 1988-1991 *)*
(Top Bar = 1988, Bottom Bar = 1991)
(Annual Average Growth 1989 to 1991 Shown Beside Bars)



*) Southeast = Albania + Bulgaria + Croatia + Romania
Central = CSFR + Hungary + Slovenia
Northeast = Baltic States + Poland

Since the transitions that the CEECs are currently undergoing will integrate them into the world trading system and turn them into fairly "normal" market economies, the estimates suggest that EFTA exports to the CEECs will grow rapidly in the next few years. That is, even if the income and output of the CEECs were somehow frozen at their rather low 1989 levels, trade with EFTA countries should expand greatly. The basic logic of this forecast can be illustrated with an analogy. It is clear that cutting tariff barriers between any two OECD countries would stimulate their bilateral trade, and the larger were the tariff cuts the larger would be the trade increase. Analogously, the dismantling of Communist planning mechanisms and foreign trade restrictions should stimulate trade between the formerly Communist countries and EFTA States. Since the Communist policies explicitly and severely reduced trade with the West, the market-opening initiatives underway in Central and Eastern Europe should greatly stimulate their trade with the West. Moreover, since many of the EFTA countries are "natural" trading partners of the CEECs, the transformations of the CEECs should especially promote EFTA-CEEC trade.

Figure 1 shows estimated potential 1989 exports from each EFTA State to the CEECs (bottom bar for each country). These estimates should be interpreted as "what if" numbers. That is, they answer the question: ***What*** would we have expected EFTA States' exports to the CEECs to have been in 1989, ***if*** the CEECs had been normal market economies, integrated into the world trading system? The actual estimated trade matrix is given in Table 1 in the Appendix.

The figure shows graphically that EFTA countries' exports to the CEECs would have been between three times greater (for Austria) and eleven times greater (for Norway) than they actually were in 1989. Measured in real 1989 dollar terms, the gap is very large between actual 1989 and estimated potential 1989 amounts. Austria's is the largest gap at approximately $4 billion, the numbers are still quite sizeable for Sweden and Switzerland (each over $2 billion) as well as for Norway and Finland (each over $1 billion). While the absolute gap is small for Iceland, potential exports are estimated to be almost seven times greater than actual exports.

Figure 2 shows that some progress has already been made in closing the actual-potential gap, with actual exports to the CEECs generally increasing steadily from 1988 to 1991.[3] Indeed, exports from each EFTA country to the CEECs have increased between 1989 and 1991, suggesting that the radical liberalizations and market opening are allowing EFTA exporters to approach their estimated potential. These increases have been moderate for some countries such as Iceland and Switzerland, but export sales from Austria, Finland and Norway to the CEECs have jumped.

In both Figures 1 and 2, the bars for each country's exports disaggregate the direction of exports to the East at a broad level; South-eastern Europe (Albania, Bulgaria, Croatia and Romania), Central Europe (Slovenia, the Czech Republic, Hungary and Slovakia) and North-eastern Europe (Estonia, Latvia, Lithuania and Poland). This geographical disaggregation involves groupings that are not the most common; however, as the figures show it aids analysis. For instance, observe that most of Austria's potential trade expansion is estimated to

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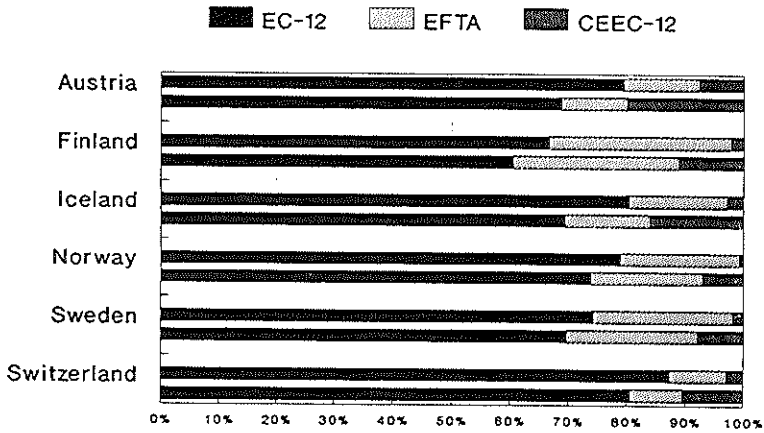
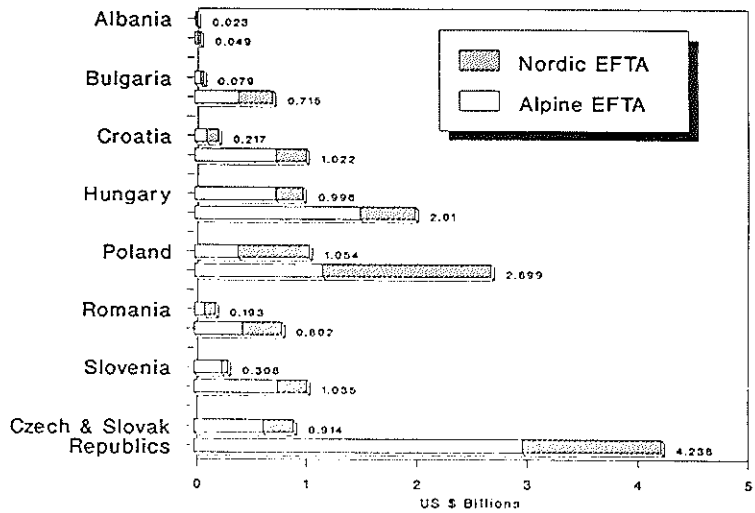
3 Note that systematic figures between EFTA countries and the Baltic States are not available, so the actual trade shown excludes these countries, even though the estimated potential exports do include them.

Figure 3 : EFTA's Potential vs. Actual Export Pattern, 1989
(Top Bar = Actual, Bottom Bar = Potential)



CEEC-12 = **Hungary, Poland, Albania, Bulgaria, Romania, Slovenia, Croatia, the Baltic States, the Czech Republic and Slovakia**

Figure 4 : CEECs' Potential vs. Actual Export Pattern to EFTA Countries, 1989
(Top Bar = Actual, Bottom Bar = Potential)



come from the Central European countries due to their geographic proximity to Austria. For the northern EFTA countries, the potential expansion is greatest with the nearby north-eastern CEECs. Moreover, the actual export growth experienced by the nations of EFTA also conforms to this pattern. For instance, for Sweden most of the total expansion has come from extra sales to the Northeast, while for Austria export growth has been observed foremost to Central Europe.

Implications for EFTA Export Patterns in Europe

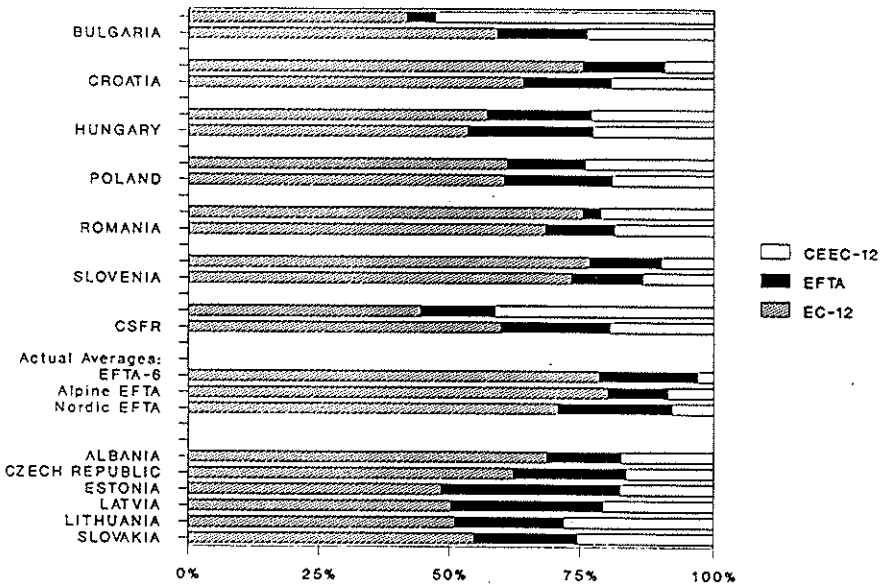
Figure 3 shows the 1989 actual versus potential export patterns of the EFTA countries as concerns their European exports. In order to gauge how important the potential trade with the CEECs would have been compared to actual Western trade in 1989, actual data has been used for EFTA exports to the EC-12 as well as for intra-EFTA trade in both the top and bottom bars for each country. The top bar, however, shows the importance of actual 1989 exports to the CEECs, while the bottom bar shows how important the CEEC markets would be for EFTA exports if the full potential was achieved. It is immediately obvious that although the absolute and relative gaps between actual and potential exports to the CEECs are large, achieving the full potential would only moderately diminish the dominant importance of the EC market for EFTA-based exporters.

Nevertheless, it is interesting to note that if EFTA trade with the East had been at its full potential in 1989, this Eastern trade would have been approximately as important to Austria, Iceland and Switzerland as their trade with other EFTA countries. For Austria, in fact, the CEEC markets would have been more than twice as important as the EFTA markets. For Austria and Switzerland this is due to close geographic proximity of the South-eastern and Central CEECs. By contrast, the result for Iceland comes from its great distance from all EFTA and CEEC markets. That is, the large distance between Iceland and the continent discourages all trade, however Hungary is only 80 per cent further from Iceland than is Finland; in contrast Hungary is 1,000 per cent further from Finland than Sweden and about 800 per cent further than Norway. Furthermore, many of the North-eastern and Central CEECs are actually closer to Iceland than are Switzerland and Austria. This implies that the differences among the various markets are much less important, so the absolute economic mass of the CEECs becomes important. Even at the very low average level of per capita income, the more than 100 million residents account for a total GDP that is almost as large as the total GDP produced by the 32 million inhabitants of the nations that currently belong to EFTA.

CEECs' Exports to EFTA

Figure 4 shows actual and estimated potential exports to the EFTA States by those CEECs for which there is 1989 trade data. The figure shows that for most of the CEECs potential exports far exceed actual exports to the EFTA countries. For all of the CEECs listed, potential 1989 exports to the EFTA States are at least double the 1989 actual level. For several of the CEECs the ratio of potential to actual is more than four. For example, this ratio is 4.6 for the Czech Republic and Slovakia taken together (the potential is estimated separately but 1989 trade data is available only for the CSFR), and 4.2 and 9 for Romania and Bulgaria, respectively.

Figure 5 : CEECs' Potential vs. Actual Export Pattern to CEECs, EFTA and EC Countries, 1989
(Top Bar = Actual, Bottom Bar = Potential)



While there is a general pattern of large increases, the figure shows a good deal of variance among CEECs. These differences are due to different degrees of liberalization achieved already in 1989. For instance, Rodrik (1992) notes that Hungary pursued de-centralization and market opening measures since 1986. Thus by 1989, Hungary was much further along in realizing its trade potential with the West. Poland also pursued economic liberalization policies prior to the 1989 regime change. Czechoslovakia and most of the other states listed in the figure, however, retained substantial central planning and state control of foreign trade right up until 1989. As the figure shows, those countries that are the most open to Western trade in 1989 have the narrowest gaps between actual and potential trade.

CEEC European Export Pattern

Figure 5 compares the 1989 actual (top bar) and potential (bottom bar) pattern of CEEC exports to Europe for the seven countries for which systematic data is available. The 1989 potential pattern is shown for the other CEECs, including for the Czech Republic and Slovakia, separately. The main message of the figure is that the EFTA countries will be important, although not dominant, markets for all of the CEECs. Indeed all of the CEECs are estimated to rely potentially more heavily on trade with EFTA countries than the Alpine EFTA

States do now. For many of the CEECs, the Baltic States, the Czech Republic, Hungary and Slovakia in particular, the EFTA market will account for about one quarter of all export sales to Europe. This reflects the fact that most of the CEECs are quite close to the EFTA States and are therefore their natural trading partners. The figure also shows that, although the EFTA markets are relatively important, the EC-12 are projected to account for more than half of the CEECs' exports to Europe.

For seven CEECs, for which there is systematic bilateral trade data in 1989, the figure also shows how the patterns of exports are likely to shift in the medium run. An important caveat must be mentioned whenever dealing with intra-East trade data. Due to well-known data problems in valuing intra-CEEC trade flows, the actual 1989 flows were probably larger than those indicated in the figure (see Rodrik 1992). Despite this probable underestimate, the figure suggests that the CEECs were doing more trade with each other in 1989 than they would have if they fit the mould of "normal" market economies. This, of course, is a finding that is consistent with all of the studies covered in Section 2 above. The estimates also suggest that EFTA is going to become a much more important partner for these countries. This is moderately so for Hungary and Poland and enormously so for Bulgaria, Romania and the CSFR.

Without systematic 1989 data for Albania and the Baltic States and without separate data for the Czech Republic and Slovakia, the estimated potential trade patterns do not give us an idea in which direction these countries are likely to develop. Nonetheless, the potential trade patterns allow certain comparisons. First, compare the potential pattern for the CEECs to the average potential for EFTA States. For most of the CEECs (including the big 5), EFTA States weigh at least as heavily in their export pattern as they do for the average EFTA country, especially the average Alpine EFTA country.

5.2 Estimated Trade Flows Allowing for Income Growth

The calculations performed in this sub-section explore how large trade flows between EFTA countries and the CEECs are likely to be, if both impediments to East-West trade were removed. That is to say, if the abnormal East-West barriers were removed ***and*** the per capita incomes of the CEECs caught up to something close to West European levels. Implementation of this scenario requires the assumption of two unknowable numbers: How long will the catch-up take and to what level will the CEECs catch up. There is no right way to deal with this sort of uncertainty. The best approach is to make the assumptions simple and transparent and admit up front that the projects are simply educated guesses. More specifically, the trade growth projections presented in this sub-section assume that the average per capita GDP of the more than 100 million residents of the CEEC-12 will catch up to 70 per cent of the EC average. To deal with uncertainty concerning the duration of the transition, we perform the necessary calculations for catch-up in the year 2005, 2010 and 2020; that is 16, 21 and 31 years from the 1989 base year. Finally, to reduce the amount of guess work, we assume that the populations of the CEECs and Western Europe remain constant. For the EC and EFTA, this is probably a good approximation. Allowing the CEEC populations to grow would reduce the estimated trade flows slightly. Specifically the projected export *levels* at catch-up would have to be reduced by one percent for every 5 per cent growth in CEEC population. Since, as we shall see below, the export levels are projected to grow at double

digit rates on average over decades, allowing for population growth in the East would not alter the results substantially.

Of course, the most likely outcome is that some CEECs will catch up rapidly, others slowly and some not at all. To deal with this diverse growth performance of the CEECs, we compute what the CEECs income growth rates would have to be to allow the average CEEC income per capita to catch up to 70 per cent of the EC average GDP per capita. It is hoped that the under-performance of some CEECs will average out with the over-performance of others. In all likelihood, the EC and EFTA average GDP per capita will not stand still in the coming decades, so we allow both to grow at 2 per cent per annum (this was their approximate average annual growth in the 1980s). Consequently, the CEECs' catch-up is to a moving target. In the gravity model, growth in either the importing or exporting country stimulates bilateral trade, so the assumed growth in the EC affects the results.

To check the plausibility of the catch-up period, we calculated the annual average income growth rate that would be necessary to allow catch-up by the prescribed year. These are 5.7, 4.8 and 3.9 per cent for catch-up by 2005, 2010 and 2020, respectively. Note that catch-up in 16 years (by 2005) would require sustained rates of growth that are probably unrealistically high, considering that Japan's average annual growth between 1965 and 1980 was only 6.4 per cent. While some of the successful CEECs might attain similarly high and sustained growth, it seems highly unlikely that the *average* of the CEEC-12 could attain 5.7 per cent for a decade and a half. Catch-up by 2010 allows two full decades of growth and so reduces the necessary annual average growth rates to a high, but more realistic 4.8 per cent. Although this figure is high by West European standards, note that a sustained growth of 4 to 5 per cent is not unusual in a successful developing country such as Mexico. Even catch-up by 2020 will not be simple since it will require the CEECs to grow almost twice as fast as Western Europe's 2 per cent. Note that in taking 1989 as the base year, most of the rapid and severe declines in incomes experienced by the CEECs since 1989 are excluded.

Trade Impact of Income Catch-Up

It is well recognized that rapid income growth is usually associated with rapid trade growth for reasons that have to do both with supply and demand. That is, rapid GDP per capita income growth leads citizens to increase their purchase of imported goods, and faster output growth signifies growth in the range and supply of goods that the country has to offer to foreigners.

Table 7 shows the results for the three catch-up scenarios. The actual export levels are shown in Table 2 in the Appendix. To give an idea of how important the CEEC markets could potentially be for EFTA exporters, the table shows how fast exports would have to grow on average between the base year and the catch-up year in order for exports to reach their potential levels.[4] The calculations show how fast exports would have to grow on average each year between 1989 and 2010 in order for the actual 1989 trade to increase to the long-run potential levels. Thus the growth rates reflect two distinct factors: the jump between the 1989 actual exports and the 1989 potential exports shown in Figure 1 above, and the extra export

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4 Since actual income growth in the coming decades will surely not be constant, actual export growth should not be expected to grow smoothly.

growth stemming solely from the assumed income growth in the exporters and importers. The bottom panel of the table shows the potential trade growth that comes purely from the assumed income growth. Since the scenario imposes a common growth rate on West European nations and another common growth rate on the CEECs, the percentage growth in exports due to GDP growth is common to all EFTA countries.[5]

Table 7: Annual Average Growth of Exports to CEEC-12 Implied by Catch-Up

	EFTA (in per cent)	EC (in per cent)	Catch-Up by 2005 CEEC-12 (in per cent)	Catch-Up by 2010 CEEC-12 (in per cent)	Catch-Up by 2020 CEEC-12 (in per cent)
Austria	4.4	4.4	17.5	14.3	11.1
Finland	4.4	4.4	22.6	18.1	13.5
Iceland	4.4	4.4	22.1	17.7	13.3
Norway	4.4	4.4	27.9	21.9	16.0
Sweden	4.4	4.4	20.3	16.3	12.4
Switzerland	4.4	4.4	18.9	15.3	11.8
EFTA Average	4.4	4.4	19.4	15.7	12.0

Note: Assumes average of CEEC-12 per capita GDP catches up to 70 per cent of EC average. EC and EFTA incomes growing at 2 per cent annually.

Export Growth due to EFTA and CEEC GDP Growth Only

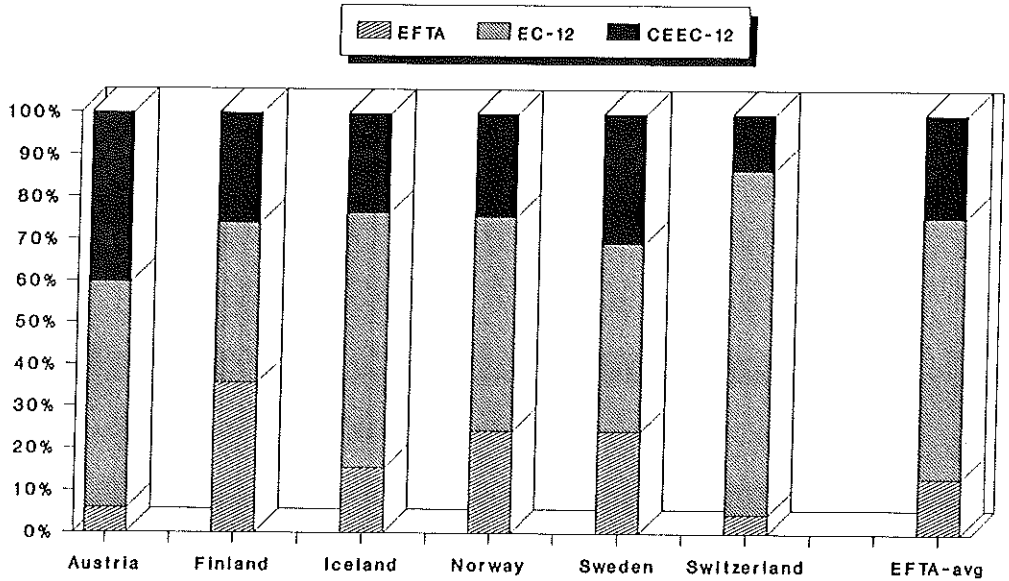
	EFTA (in per cent)	EC (in per cent)	Catch-Up by 2005 CEEC-12 (in per cent)	Catch-Up by 2010 CEEC-12 (in per cent)	Catch-Up by 2020 CEEC-12 (in per cent)
EFTA	4.4	4.4	8.3	7.3	6.4

Note: Catching up by 2005, 2010 and 2020 requires annual average GDP growth of 5.7, 4.8 and 3.9 per cent, respectively.

The difference between the growth rates in the top and bottom panels reflects the size of the 1989 actual-potential gap for each of the countries. The first two columns in the top panel

5 To understand these numbers consider the EFTA to CEEC-12 figure for catch-up in 2010. The Wang-Winters trade-income elasticities imply that exports from a country growing at 2 per cent to a country growing at 4.8 per cent will be 2%*1.17+4.8%*1.02 which equals 7.3 per cent.

Figure 6 : Sources of Export Growth with CEEC Income Catch-Up
(Shares of Total Projected Export Growth due to Export Growth to Listed Region)



	Austria	Finland	Iceland	Norway	Sweden	Switzerland	EFTA-avg
CEEC-12	40%	26%	24%	25%	31%	13%	24%
EC-12	54%	38%	61%	51%	45%	82%	62%
EFTA	6%	36%	15%	24%	24%	4%	13%

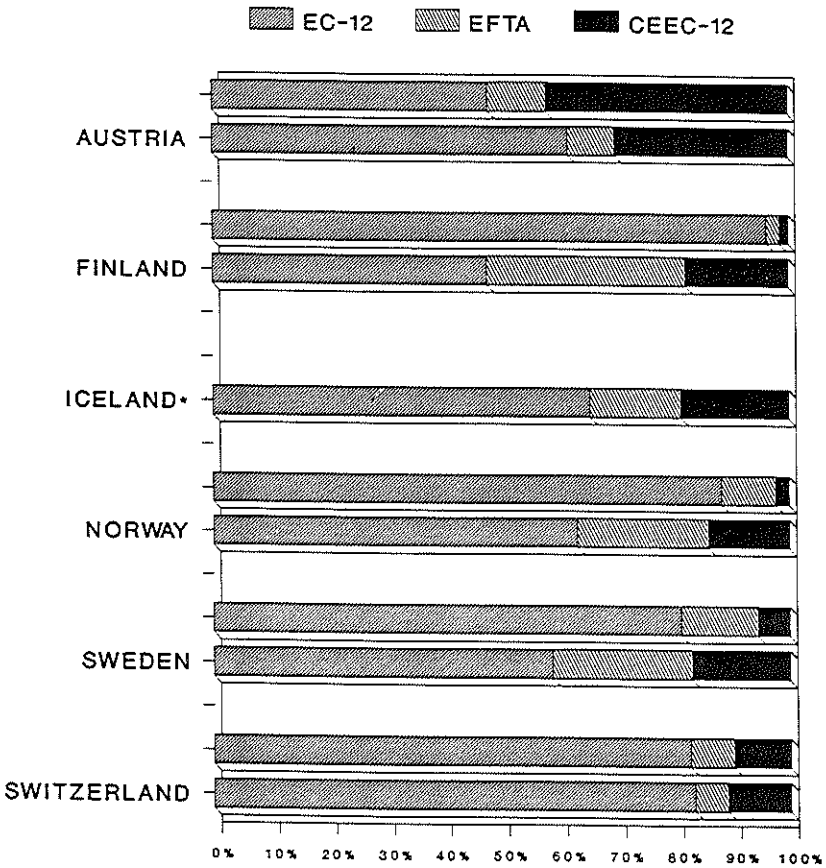
show potential growth of intra-West European trade. Since there is no significant gap between potential and actual 1989 trade among West European countries, the growth rates are all equal to the pure income-growth effects listed in the bottom panel. For comparison, note that in the 1980s total EFTA exports to the EC grew at 5.3 per cent in real terms while intra-EFTA trade grew at 3.4 per cent.

All of the growth rates of EFTA States' exports to the CEEC-12 are very large, ranging from 11 per cent for Austria with catch-up in 2020 to 28 per cent for Norway with catch-up in 2005. While these growth rates are quite high, they are not without precedence. For instance, real exports from Austria to a rapidly growing country like Spain rose between 1980 and 1990 at an annual average rate of over 20 per cent. Moreover, as Figure 2 showed, all of the EFTA States except Switzerland have seen their exports to the East rise at double digit rates since 1989. In fact, for the middle scenario the rates of export growth are substantially below the rates that have been observed since the 1989 change of regimes.

As mentioned above, the large variance in the growth-rate numbers in the top panel reflects the extent of the actual-potential gap in 1989. For instance, the average growth for EC exports is slightly greater than that of EFTA since the model estimated that the actual-potential trade gap was slightly narrower for EFTA in 1989. Also Austria, which had long been more open to Eastern trade than the average EFTA State, has the lowest rate while Norway has the highest. Several of the unusually high numbers in the table are explained by the size of the actual-potential gap in 1989. For instance, Icelandic exports to the CEECs in 1989 were only about one-seventh of their estimated potential, while 1989 Austrian exports to the same countries were one-third of their estimated potential. Thus even while trade with the CEECs will be less important for Icelandic exporters than for Austrian exporters (see Figure 3), the fact that Austria had already closed more of the gap between actual and potential trade in 1989 implies that Austrian exports to the area do not need to grow as fast to reach their long-run pattern. Clearly, if the CEECs do manage to catch up, EFTA countries' exports to the CEECs will grow very rapidly. In particular, potential export growth to the CEECs is typically at least 4 times greater than the growth of exports to West European markets.

While the base on which this growth is taking place is fairly small compared to EFTA countries' exports to Western Europe, the rates are so much higher that in fact the CEEC markets are estimated to be an important source of EFTA export growth. This point is illustrated in Figure 6, which presents a breakdown of the estimated growth of each EFTA country's exports to all of Europe. Using actual 1989 data and the estimated long- run level (with catch-up in 2010), the figure shows the relative importance of each of the three regions (EC-12, EFTA and CEEC-12) in the EFTA country's total European export growth. Rising exports to the CEEC-12 are estimated to account for a quarter of all EFTA export growth to Europe. The fraction varies among EFTA States from 40 per cent for Austria to 13 per cent for Switzerland.

Figure 7 : EFTA Long-Run Potential Export Pattern
Catch-Up in 2010 vs. Pattern in 1928
(Top Bars Show 1928 Exports)



* 1928 Data Unavailable for Iceland

Impact on Long-Run Export Patterns

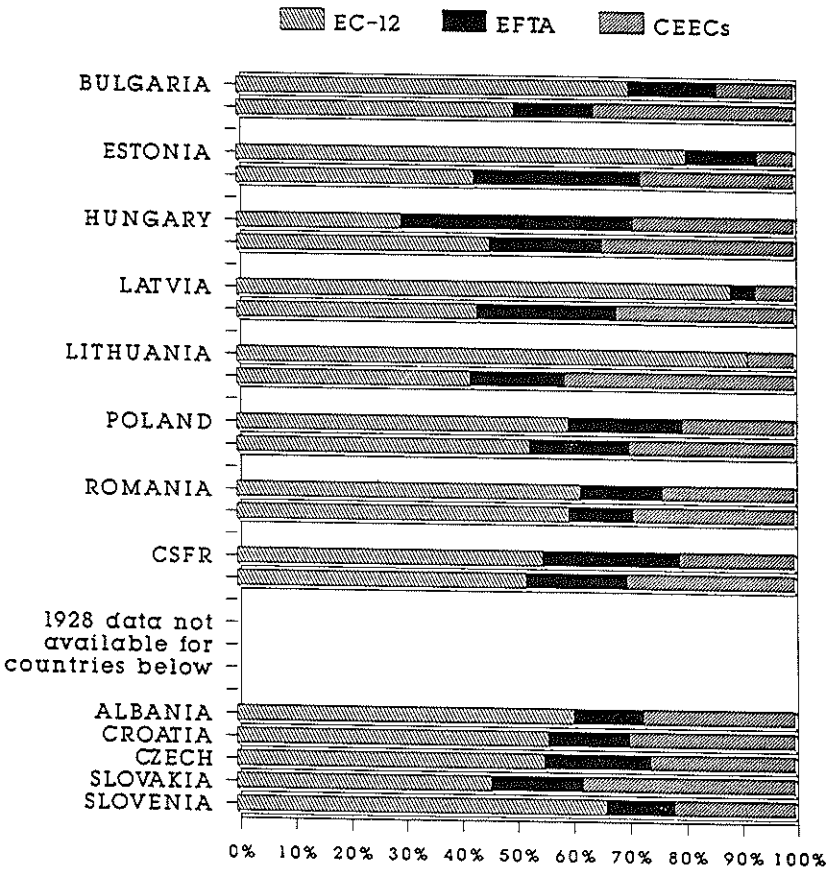
Figure 7 shows the estimated long run pattern of the EFTA States' exports to Europe, assuming CEEC income catch-up by the year 2010 (bottom bar for each country). The pattern for 1928 is shown for comparison (top bar). For Austria and Switzerland, the estimated potential long-run exports imply that the CEEC markets could become much more important than other EFTA markets; four times more important for Austria and twice as important for Switzerland. The share of European exports of the Nordic countries going to the CEEC markets is estimated to be roughly as important as intra-EFTA trade, with both accounting for approximately 20 per cent of exports to Europe. The 1928 patterns are interesting since they suggest that the large importance of Central and East European markets for Switzerland and Austria would be nothing new. In 1928 the Nordic countries were much poorer and less developed relative to the large EC countries than they are now. As a consequence, the degree of intra-EFTA trade is much greater than in 1928 and should continue to be so.

Figure 8 shows similar numbers for the CEEC-12. Here it is clear that for a majority of the CEECs, the EFTA markets would potentially account for roughly one-fifth of their exports to Europe. The Baltic States, especially Latvia and Estonia, will potentially rely on EFTA countries (primarily Finland, Norway and Sweden) for more than a quarter of their exports. Another interesting point is that the sum of the EFTA and CEEC markets accounts for more than half of all European exports for most of the CEECs. Finally, the top bar for the first eight CEECs shows the 1928 pattern. Except for the countries that were at the center of the Austro-Hungarian Empire, the figures show that the CEECs will be much less dependent on the EC than they were before the World War II. The main reasons for this are the assumed catch-up of CEEC incomes and the greatly risen relative standing of the Nordic EFTA countries.

6. CONCLUSIONS AND POLICY IMPLICATIONS

Exports of EFTA countries to Central and Eastern Europe have expanded at a vigorous pace since 1989. The estimates in this paper suggest that CEECs are the natural trade partners of most of the EFTA nations, and as such, EFTA export sales to the Central and East European nations have the potential to continue to expand at double digit rates for decades to come. Eventually, it is estimated that the CEEC markets could account for a 17 per cent share of EFTA countries' exports to all of Europe (for Austria the number is more than twice that). Indeed, exports to the CEEC markets will potentially become as important for Austria, Iceland and Switzerland as are their exports to other EFTA countries. Quite simply, the re-entrance of the Central and East European nations into the European economy constitutes an unprecedented new opportunity for the West European exporter; the geographical situation and historical ties of most EFTA states put them in an ideal position to take advantage of the opportunity. The paper also finds that the EFTA market will be very important for CEEC exporters. The share of CEECs' exports going to the EFTA market could potentially be larger than the share of intra-EFTA exports in the current EFTA countries' trade, and the sum of intra-CEEC and CEEC-EFTA trade is estimated to account for about half of all the CEECs trade. This large share suggests that the CEECs would be natural members of EFTA. Indeed, as I argue in Baldwin (1992), an eastern enlargement of EFTA would be in the interest of both EFTA and CEEC exporters. For the CEECs, EFTA would bring them closer to the European

Figure 8 : CEECs' Potential Long-Run Trade Pattern Catch-Up in 2010 vs. Pattern in 1928
(Top Bar = 1928, Bottom Bar = Potential)



Economic Area and eventual EC membership. In the meantime, EFTA membership would counter the economic and political marginalization implicit in the bilateral trade deals they have signed with Western Europe. For the incumbent EFTA countries it would provide moderate gains at a very small cost. It would help their firms develop business ties in a market with enormous growth potential and it would help counter the anti-EFTA discrimination implicit in the "EC-mania" currently observed in Eastern Europe.

This potential for abundant export growth stems from two fundamental sources: (i) the dismantling of the systematic trade barriers that hobbled East-West trade prior to the 1989 revolutions, and (ii) the rapid income growth that would occur if the Central and East European economies begin to catch up to West European levels of per capita income. Since the 110 million citizens of the CEECs are on average only two-fifths as rich per capita as the average EC resident, catch-up in three decades would lead them to grow twice as fast as Western Europe; for catch-up in a decade and a half the figure is three times faster. The base on which this growth would occur is fairly small for most EFTA States. However, given that intra-West trade would grow much more slowly, EFTA export sales to the CEECs could potentially account for a quarter of all EFTA export growth in the coming decades.

As a practical and political matter, EFTA exports to the CEECs cannot continue to rise at 10 to 20 per cent annually unless EFTA and EC purchases from these emerging market economies also rise rapidly. The point is that the CEECs could not sustain prolonged periods of rapid import growth without also enjoying rapidly growing exports. Certainly, foreign capital inflows and increased indebtedness could sustain CEEC trade deficits for a number of years, however, in the longish run imports must be paid for with exports. Another important point is that rapid income and trade growth require that the CEECs' domestic policies are in order. For instance, rapid trade and income growth will require a stable macroeconomic environment and a continued commitment to completing the transition to market-based economies. Growth will also demand sustained and substantial inflows of private Western capital and know-how. These can only happen if the CEECs adopt and maintain policies that encourage investment and technology transfers.

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Appendix Box I: Various Estimates of Per Capita GNP

The estimates measure different things (e.g., GNP/population with and without purchase power parity PPP corrections) and different years (incomes by all accounts are falling in these countries). Nevertheless, it is striking that these estimates differ by up to several hundred per cent.

	CEPR (1992)[1]	EFTA[2]	CIA[3]	S&H[4]	PLANECON[5]	CSFB[6]	WB[7]
CS	3400	7880	7900	7424	7600	3500	3140
H	2600	6110	6090	5765	6490	3000	2780
PO	1900	4570	4560	4913	5450	2000	1690
YU			5460	5063	4900		3060
RO	1400	3450	3440	4273	4120	1000	1640
BG	2300	5710	5690	5113	5630	1500	2250
CIS			9230	6266	5550	1735	
CRO	2900	7110					
SLO	5200	12520					
EW	2600	6240					
LR	2800	6740					
LT	2400	5880					
AL		1250					
E	9300	10860					11020
GR	5300	7078					9550
IRL		8334					5990
P	3800	7604					4900
D	20400	15720	15250				22320

CS = CSFR, H = Hungary, PO = Poland, YU = Yugoslavia, RO = Romania, BG = Bulgaria, CIS = Commonwealth of Independent States, CRO = Croatia, SLO = Slovenia, EW = Estonia, LR = Latvia, LT = Lithuania, AL = Albania

E = Spain, GR = Greece, IRL = Ireland, P = Portugal, D = Germany

1) CEPR (1992), table 3.1.2.
2) EFTA doc (1992), Annex I table. 1989 data with PPP correction.
3) CIA (1990), Table 3, 1989 data.
4) Summers and Heston (1988). Data for 1985 in 1980 PPP dollars.
5) PlanEcon, data for 1988 current USD.
6) Credit-Swiss First Boston, cited in Wang and Winters (1992). Data for 1988.
7) World Development Report 1992, World Bank, data for 1990 current USD.

Appendix Table 1 : Estimated Medium-Term Trade Matrix, 1989 (in million USD)
(Exporters listed down the side, Importers across the top)

	AUT	FIN	ICE	NOR	SWE	SWI	efta	ALB	BGR	CRO	CZR	EST	HUN	LAT	LIT	POL	ROM	SLK	SLO	CEEC12	EC
AUSTRIA	0	309	34	306	523	1692	2864	19	232	542	1504	40	1328	80	108	761	282	754	480	6128	22122
FINLAND	319	0	46	1382	4057	408	6213	9	99	84	261	147	156	159	110	502	124	115	75	1839	8675
ICELAND	38	49	0	57	72	53	269	1	14	11	28	5	19	8	9	46	17	13	10	181	1117
NORWAY	327	1427	56	0	2472	425	4706	9	104	88	262	51	161	83	92	486	131	117	78	1660	13119
SWEDEN	539	4049	68	2388	0	680	7724	14	162	140	450	167	262	281	189	902	203	194	124	3088	18789
SWITZERLAND	1831	428	52	431	714	0	3455	22	257	315	775	50	446	95	120	725	302	354	323	3784	50756
EFTA	3053	6261	256	4565	7838	3257	25231	73	868	1180	3279	460	2371	705	628	3422	1058	1546	1089	16680	114578
ALBANIA	13	6	1	6	9	14	49	0	10	4	7	1	8	1	2	10	8	5	4	60	238
BULGARIA	199	82	11	84	135	204	715	13	0	72	111	11	129	20	25	148	348	71	56	1004	2490
CROATIA	485	73	9	74	122	260	1022	6	75	0	135	9	310	18	23	146	78	88	299	1186	3952
CZECH	1368	229	23	223	397	651	2893	10	117	137	0	25	264	50	68	830	144	432	145	2224	8450
ESTONIA	35	127	4	42	143	41	393	1	11	9	25	0	17	35	15	54	16	13	8	203	563
HUNGARY	1154	131	15	131	221	358	2010	10	131	301	252	17	0	33	44	294	268	456	117	1924	4534
LATVIA	71	137	7	69	244	78	606	2	21	18	49	35	34	0	78	125	31	25	16	434	1050
LITHUANIA	94	93	7	75	159	97	526	2	26	22	66	15	44	76	0	366	39	34	20	710	1292
POLAND	625	399	35	374	718	549	2699	12	141	134	748	50	277	114	344	0	175	396	118	2509	7961
ROMANIA	223	95	12	97	156	220	802	9	320	69	125	14	244	27	36	168	0	79	55	1147	4214
SLOVAKIA	675	99	11	98	169	293	1346	6	74	89	426	13	471	25	35	432	90	0	79	1740	3741
SLOVENIA	472	71	9	72	118	294	1035	5	64	328	157	9	133	17	23	142	69	86	0	1034	5661
CEEC-12	5415	1542	143	1344	2592	3061	14097	75	990	1183	2101	198	1932	418	693	2713	1266	1686	918	14175	44146
CSFR	2044	329	34	321	566	944	4238	16	191	226	426	38	735	76	103	1262	234	432	224	3964	12191
BELGIUM-LX	586	358	43	445	623	551	2606	13	79	139	143	16	110	27	32	167	114	71	123	1034	39754
GERMANY*	10667	1937	289	4261	6797	16025	39975	91	1083	1159	2302	90	1075	155	180	1626	2231	672	1026	11690	104420
DENMARK	576	338	43	877	2146	866	4847	11	76	127	147	15	141	27	31	168	113	74	113	1044	14900
SPAIN	736	245	37	241	712	1106	3077	15	273	158	175	37	134	66	80	440	240	88	148	1854	13250
FRANCE	2518	1493	190	1820	2559	12887	21466	58	576	712	1935	108	1401	192	230	1258	929	970	691	9059	104468
GREECE	52	37	7	43	63	79	281	21	30	40	98	9	57	16	21	120	45	49	34	539	1881
IRELAND	137	64	6	40	104	205	557	3	28	33	108	9	59	16	21	124	43	54	29	527	2344
ITALY	3918	947	124	1051	1447	9615	17102	61	367	1288	1436	119	776	224	286	1744	566	719	2815	10401	27526
NETHERLANDS	609	1405	74	978	1409	556	5031	16	159	158	564	37	327	66	79	436	243	283	140	2508	49912
PORTUGAL	80	39	5	36	52	120	332	2	24	19	120	9	50	17	22	145	36	60	17	521	1798
BRITAIN	1798	1344	177	2284	2038	3841	11482	43	418	448	1984	161	935	322	439	3093	654	994	397	9888	68959
EC	21678	8207	995	12078	17950	45850	106757	332	3110	4281	9012	609	5068	1129	1421	9320	5216	4033	5534	49066	429213

*Includes West Germany only.

Appendix Table 2 : Potential Trade Levels with CEEC Per Capita GDP Catch-Up to 70 per cent of EC Average by 2010
(in million USD)
(Exporters listed down the side, Importers across the top)

	AUT	FIN	ICE	NOR	SWE	SWI	EFTA	ALB	BGR	CRO	CZR	EST	HUN	LAT	LIT	POL	ROM	SLK	SLO	CEEC-12	EC
AUSTRIA	0	767	85	761	1301	4206	7120	82	1024	2395	6641	176	5863	351	479	3361	1246	3328	2016	26961	54997
FINLAND	793	0	115	3436	10087	1015	15445	38	436	372	1151	651	688	702	487	2216	546	506	314	8105	21567
ICELAND	94	122	0	142	180	131	668	5	60	48	124	22	84	36	40	205	76	59	41	799	2778
NORWAY	812	3549	139	0	6144	1057	11700	40	459	387	1156	224	710	365	406	2147	576	516	327	7313	32616
SWEDEN	1341	10065	169	5937	0	1689	19203	62	717	618	1987	736	1157	1242	833	3983	897	858	522	13612	46712
SWITZERLAND	4552	1063	129	1072	1774	0	8590	96	1135	1391	3422	223	1971	419	531	3200	1333	1562	1358	16640	126185
EFTA	7591	15566	637	11349	19487	8097	62727	323	3831	5211	14480	2031	10472	3114	2775	15112	4674	6829	4577	73430	284855
																				0	
ALBANIA	62	28	4	28	45	67	233	0	87	38	63	6	68	12	15	85	71	39	29	513	1146
BULGARIA	958	394	51	403	651	981	3438	108	0	616	945	92	1103	171	216	1262	2973	608	457	8551	11968
CROATIA	2332	350	43	353	584	1251	4913	49	641	0	1152	79	2646	152	196	1244	663	755	2426	10003	18994
CZECH	6575	1103	112	1072	1908	3130	13901	83	1000	1172	0	214	2256	428	585	7084	1231	3692	1178	18923	40608
ESTONIA	170	609	19	203	689	199	1889	8	95	79	209	0	147	299	126	457	137	107	67	1731	2703
HUNGARY	5544	630	73	629	1061	1722	9659	85	1115	2571	2154	144	0	283	378	2505	2288	3897	954	16374	21786
LATVIA	341	660	32	332	1171	376	2913	15	178	151	421	301	291	0	666	1063	264	216	129	3695	5046
LITHUANIA	454	447	35	361	766	466	2528	19	219	191	560	124	379	650	0	3122	335	290	163	6052	6207
POLAND	3001	1916	167	1797	3450	2640	12971	101	1205	1141	6389	423	2366	977	2939	0	1492	3377	962	21371	38257
ROMANIA	1071	454	60	464	748	1058	3855	81	2732	585	1069	122	2080	234	304	1436	0	678	447	9766	20250
SLOVAKIA	3246	477	52	472	812	1408	6468	50	634	756	3637	108	4019	217	298	3689	769	0	640	14819	17976
SLOVENIA	2141	322	39	325	538	1333	4699	41	519	2647	1264	74	1072	141	183	1144	553	697	0	8335	25696
CEEC-12	25895	7391	686	6441	12425	14630	67467	641	8424	9947	17863	1687	16425	3563	5906	23092	10776	14355	7454	120133	210639
CSFR	9821	1580	164	1545	2721	4538	20368	133	1634	1928	3637	322	6275	645	883	10773	2000	3692	1819	33742	58584
																				0	
BELGIUM-LX	1458	889	106	1107	1549	1370	6478	56	349	613	630	70	487	121	141	739	503	316	517	4541	98833
GERMANY*	26520	4815	719	10593	16897	39839	99383	402	4782	5117	10166	397	4748	684	796	7179	9854	2966	4313	51404	259601
DENMARK	1433	841	108	2181	5335	2152	12050	49	335	563	650	67	624	118	139	741	500	325	475	4584	37044
SPAIN	1831	609	91	600	1770	2750	7651	65	1204	698	772	164	591	293	353	1944	1062	387	621	8154	32942
FRANCE	6261	3711	472	4524	6361	32039	53367	254	2545	3144	8547	476	6188	847	1015	5555	4103	4282	2905	39860	259721
GREECE	130	91	17	108	157	195	698	91	131	178	433	39	252	73	91	529	200	217	141	2374	4676
IRELAND	340	160	15	100	258	511	1385	14	122	147	479	38	260	72	91	547	188	240	124	2320	5828
ITALY	9740	2354	308	2613	3598	23904	42517	272	1619	5686	6340	524	3429	991	1265	7702	2499	3176	11830	45332	68433
NETHERLANDS	1513	3494	183	2432	3504	1382	12508	69	701	699	2491	162	1446	290	349	1927	1075	1248	590	11047	124088
PORTUGAL	199	96	13	90	129	299	827	8	104	83	532	38	223	74	98	639	161	266	73	2298	4469
BRITAIN	4470	3342	440	5679	5066	9549	28546	188	1845	1977	8761	713	4131	1423	1941	13658	2890	4389	1668	43583	171440
EC	53894	20402	2473	30026	44625	113989	265410	1467	13736	18904	39800	2689	22380	4984	6276	41160	23035	17812	23256	215499	1067074

*Includes West Germany only.