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## Integration, Disintegration and Trade in Europe: Evolution of Trade Relations During the 1990s

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**WORKING PAPER 42**

**Integration, Disintegration and Trade in Europe:  
Evolution of Trade Relations During the 1990s**

Jarko Fidrmuc

Jan Fidrmuc

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## Editorial

In this study, Jan Fidrmuc and Jarko Fidrmuc investigate the effects of integration and disintegration in Europe on trade in the course of the last decade. The analysis utilizes the gravity model of trade, which relates bilateral trade flows to the distance between the countries and their economic size, proxied by total GDP. The authors document the evolution of trade intensities among the former constituent parts of extinct federations in Eastern Europe—Czechoslovakia, Yugoslavia and the former Soviet Union. They find that the bilateral trade among the constituent parts of the former Czechoslovakia, the Baltics and the Soviet Union (Belarus, Russia and Ukraine) around the time of disintegration exceeded the *potential* level, i.e. the level that is predicted by the distance and economic size, approximately 40 times. The trade intensity between Slovenia and Croatia (due to lacking data, other former Yugoslav Republics could not be included in the analysis) was lower, but at 11 times the *potential* level still very high. Disintegration brought about a sharp fall in bilateral trade intensity, but the trade relations remain important. By 1998, the bilateral trade exceeded the *potential* level seven times in case of the Czech and Slovak Republics, 13 times in the Baltics, two times for Slovenia and Croatia, and 30 times for Belarus, Russia and Ukraine (rebounding from eight times the *potential* level in 1997). These results are contrasted with the effects of the EU, CEFTA and the Association Agreements on trade. The authors find that the intra-EU trade exceeds the *potential* level 1.4 times, whereas the trade within CEFTA (Central European Free Trade Agreement) was nearly twice the *potential* level by 1998. Finally, the liberalization of trade between the EU and the Accession Countries has so far resulted only in *normalization* of trade relations, i.e. bringing East-West trade back to the *potential* level.

June 20, 2000



# Integration, Disintegration and Trade in Europe: Evolution of Trade Relations During the 1990s<sup>\*</sup>

Jarko Fidrmuc<sup>†</sup>

Jan Fidrmuc<sup>‡</sup>

## Abstract:

The gravity model of trade is used to assess the economic consequences of new borders, which arose in the wake of break-ups of multinational federations in Eastern Europe. The intensity of trade relations among the constituent parts of Czechoslovakia, Soviet Union and the Baltics was very high around the time of disintegration, exceeding the *normal* level of trade approximately 40 times. Disintegration has been followed by a sharp fall in trade intensity. On the other hand, the trade liberalization between East and West has led to gradual normalization of trade relations, and liberalization within CEFTA has reversed the fall in trade intensity among Central European countries.

Keywords: Gravity Model, International Trade, European Integration, Disintegration

JEL Classification Numbers: F13, F15, F41

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## 1. Introduction

The 1990s were an eventful decade for Europe in the field of political and economic (dis)integration. In Western Europe, the process of integration within the EU deepened with the introduction of the Single Market, the entry of three new members (Austria, Finland, and Sweden), and finally the formation of the EMU. At the same time, the countries of Eastern Europe opened up to trade with Western European countries, and several of them<sup>1</sup> concluded association agreements (Europe Agreements) with the EU. In Eastern Europe, in contrast, this was a decade of disintegration, characterized by the collapse of the Council of Mutual Economic Assistance (CMEA) and the disintegration of the Soviet Union, Yugoslavia and Czechoslovakia.

Economic consequences of the (dis)integration processes unfolding in Europe during the 1990s were undoubtedly substantial. Trade is one of the main channels for the realization of the gains from integration on the one hand and the costs of disintegration on the other hand. Integration, in the form of free-trade areas, customs unions or currency unions lowers or eliminates explicit barriers to trade, transactions costs and exchange rate uncertainty. Disintegration, on the other hand, brings about new national borders, and with them the creation of trade barriers where previously there were none.

However, the measurement of these effects is not a simple task. Nominal trade flows between a particular pair of countries fluctuate not only because of (dis)integration process affecting the two countries, but also because of business cycle effects in either country, price level changes, ongoing (dis)integration processes with respect to third countries, and global trade development. The gravity model of trade controls for these effects and therefore is particularly suited for measuring the economic effects of (dis)integration. The gravity model relates bilateral trade between two countries to the distance between them and their economic sizes proxied usually by their gross outputs. The presence of *abnormal* or *subnormal* trade relations is detected by means of specific dummy variables. Countries can



have preferential trade relations for various reasons—because they share a common border or a common language, belong to the same free trade area or currency union, or because they previously were parts of the same country. In order to capture the evolution of the (dis)integration processes in Europe, we estimate a separate gravity equation for each year over the period from 1990 to 1998. We can thus observe whether a particular pair or group of countries experienced intensification or deterioration of trade relations.

The processes of integration in Western Europe and on other continents received substantial attention in the literature (see, for example, Bayoumi and Eichengreen, 1995, Eichengreen and Irwin, 1996, and Soloaga and Winters, 1999). The liberalization of trade after the collapse of communist regimes in Eastern Europe is also steadily gaining prominence (see Hamilton and Winters, 1992, and Baldwin, 1994). On the disintegration front, Cheikbossian and Maurel (1998) analyze the intensity of trade within the CMEA over the period from 1980 to 1993. However, the economic consequences of disintegration of the former federations in Eastern Europe were so far left unexplored. Besides problems with obtaining reliable data, this lack of interest may reflect the predominant orientation of economists on integration rather than disintegration, as the former is seen as being more forward looking. Yet, history tells us that countries break-up much more often than they unite.<sup>2</sup>

The costs of disintegration in terms of trade can be potentially very high. Rose (2000) finds that two countries using the same currency trade three times more with each other than two comparable countries using separate currencies. The effect of complete (economic and political) integration on trade is even more profound. John McCallum (1995) and Helliwell (1997) find that Canadian provinces trade 20 times more intensively with each other than with US states, after controlling for distance and economic size, despite large extent of economic integration and the absence of linguistic and cultural barriers between these two countries. Anderson and Smith (1999) found a similar effect, using an improved dataset. Moreover, they found a strong border effect also with respect to trade in transport equipment, even though US-Canadian trade in this commodity group has been liberalized for several decades. Shang-Jin Wei (1995) finds that for the OECD countries, internal

trade is on average only two-and-half times greater than trade with other countries. Nitsch (1998) challenges Wei's results and argues that internal trade of the member countries of the EU trade is on average five to eight times greater than the trade across their national borders, after controlling for size, distance, common language, common border, and remoteness. Hence, even within closely integrated free trade areas, such as the EU and the NAFTA, national borders still play a very important role. In turn, the imposition of new borders can be expected to bring about a substantial deterioration of trade relations, even with sustained liberalization.

This paper is an empirical exploration of the economic effect of new borders. We analyze the development of trade flows between former constituent parts of three Eastern European federations that disintegrated during early 1990s: the Soviet Union, Yugoslavia and Czechoslovakia. Then, we compare these trade intensities with those obtained for Western and Eastern European preferential trade areas (PTA's) and for the liberalization of trade between Eastern and Western Europe.

We estimate the gravity model with trade flows among OECD countries and selected Central and Eastern European countries. However, data on bilateral trade flows between the entities of multinational federations are not available until well after the break-up (in some cases, such as Serbia, Monte Negro, and Bosnia-Herzegovina, reliable data are not available at all). We can therefore only assess the intensity of bilateral trade relationship after the break-up, without having a basis for comparison with the pre break-up period. The exception is the former Czechoslovakia, where we utilize a unique data set on enterprise deliveries between the two constituent Republics during two years before the break-up (although as explained below these data are not directly comparable with the official trade statistics available later).

We find that the trade flows between the Czech and Slovak Republics, among the Baltic states, and among Belarus, Russia and Ukraine, exceeded the *normal* trade levels approximately 40 times around the time of disintegration. For comparison, trade flows within the EU exceeded the *normal* level only by one-half throughout the 1990s. Disintegration was followed by a sharp fall in trade intensity in all former federations.

Nonetheless, trade relations remain quite strong, still exceeding the *normal* level multiple times by 1998.

The next section describes the gravity model and discusses the main methodological issues. Section 3 describes our data. Section 4 presents the results of our empirical analysis of the effects of (dis)integration on trade flows in Europe. The last section summarizes our conclusion.

## 2. The Gravity Model of Trade Relations

The gravity model (Linnemann, 1966, and Linder, 1961) relates the trade flows between two countries to the importer's demand, the exporter's supply and the trade costs. The importer's demand and the exporter's supply are proxied by aggregate outputs of the two countries (in addition, some studies use also the output per capita and/or the land area). Trade costs (transport and transaction costs) are proxied by geographical distance, typically measured as the distance between the capital cities of the two countries. Some studies use also additional measures of remoteness (see, e.g., Smarzynska, 1999).

Although the gravity model of trade is commonly used to assess trade patterns between countries or within preferential trade areas, its theoretical underpinnings are limited. Helpman and Krugman (1985) formulate the gravity relation in a model with differentiated products and increasing returns to scale. On the other hand, Deardorff (1995) derives the gravity model in the framework of the Heckscher-Ohlin model. He concludes that the gravity model characterizes many models and, therefore, it cannot be used for testing of trade theories. Evenett and Keller (1998) find empirical support for formulations of the gravity model based on both the Heckscher-Ohlin model and increasing returns to scale.

We estimate the gravity model in the following form:

$$M = b_1 + b_2 Y_M + b_3 Y_X + b_4 d + S_{ij} g D_i + e, \quad (1)$$

where  $M$  stands for bilateral imports,<sup>3</sup>  $Y$  is the GDP of the exporting and the importing countries (denoted by  $X$  and  $M$ , respectively),  $d$  is the distance between the capital cities of both countries,<sup>4</sup> and  $e$  is the disturbance term. All these variables are in logs. The intensity of non-standard trade relations is

measured by means of dummy variables,  $D_i$ , for specific pairs or groups of countries. A positive coefficient estimate implies that the trade flows exceed the *normal* level, i.e. the level predicted by the countries' economic sizes and distance (preferential trade). A negative coefficient estimate, in contrast, implies that the trade flows fall short of the *normal* level (discrimination).

We include dummies for three types of trade relations. First, as is quite standard in this literature, we use a dummy for countries sharing a common border, and a dummy for English speaking countries. Second, we use dummies for formal preferential trade areas in Europe. Specifically, we include dummies for the European Union (the 12 countries that formed the EU before the last enlargement), the EFTA, the Central European Free Trade Area (CEFTA, including Czech Republic, Hungary, Poland, Slovakia and Slovenia), the last EU enlargement (depicting trade flows between EU12 and Austria, Finland, and Sweden, which we denote as EFTA3), and the Europe Agreements between the EU and associated countries.<sup>5</sup> To capture the evolution of trade relations, we use the same set of dummies for the entire period, i.e. also for the time before the formal agreement was concluded. Finally, we include dummies for successor states of former federations in Central and Eastern Europe. In particular, we assess trade intensity between the Czech Republic and Slovakia; the Baltic States; Belarus, Russia, and the Ukraine; and Slovenia and Croatia.<sup>6</sup>

Previous studies typically focus on assessment of the effect of formal PTA's, whether in Europe (the EU and EFTA) or elsewhere on trade flows. Bayoumi and Eichengreen (1995) differentiate between trade creation (intensification of trade relations among the countries participating in a PTA) and trade diversion (reduction of trade with third countries) for a sample of 21 industrial countries in the post war period. They found that the EEC heavily promoted intra-bloc trade through a combination of trade creation and trade diversion, although the integration of Portugal and Spain, maybe due to their peripheral location, led to little trade diversion. On the other hand, the formation of EFTA was mainly associated with trade creation. Eichengreen and Irwin (1996), in turn, note that the dummies indicating the membership of both trade partners in a free trade area are highly significant already prior to the creation of a

particular PTA. Moreover, the coefficients do not increase after the PTA's formation. Therefore, they conclude that the formation of PTA's reflects above-standard trade relations in the past. As a result, the exclusion of historical variables (trade levels in the past) may lead to an overstatement of the effects of PTA membership. Soloaga and Winters (1999) assess the effect of increased regionalism on several continents (formation of MERCOSUR and NAFTA and deepening of integration within ASEAN, CACM and ANDEAN) on trade during the 1990s. They find, however, that this new wave of regionalism did not boost intra-bloc trade significantly.

Other studies assess the progress of trade liberalization between Western and Eastern Europe and predict the extent of the East-West trade in the future. An early contribution is that by Hamilton and Winters (1992), who estimate the eventual volume and direction of Central and Eastern European countries' trade. This approach was later followed by Baldwin (1994), Holzmann and Zukowska-Gagelmann (1996), and others

### **3. The Data**

Our data contain bilateral trade flows for OECD countries (excluding Iceland, Mexico and Korea), and selected Central and Eastern European countries. As we are interested in the evolution of trade relations during the processes of integration and disintegration that occurred during the last decade, we estimate equation (1) for each of the nine available years from 1990 to 1998. This data set provides between 600 and 1300 bilateral trade flows. The sample size changes because of data availability and especially because new countries emerged in Eastern Europe during the analyzed period. Hence, the data for Bulgaria, Hungary, Poland and Romania span the entire period. The data for Belarus, Croatia, Estonia, Latvia, Lithuania, Russia, Slovenia, and Ukraine start as of 1992, and the data for the Czech Republic and Slovakia start as of 1993. Additionally, we use data on Czech-Slovak trade flows during 1991-93 estimated on basis of inter-enterprise deliveries (described below).

In 1992 and 1993, ten of the countries included in our analysis emerged from the ruins of the Soviet Union, Yugoslavia, and Czechoslovakia. This nearly doubles the number of available observations on trade flows between 1990

and 1997. This expansion of our data set can have significant effect on the coefficient estimates of some parameters (e. g. European Union and Europe Agreements) which we estimate for the entire period. Therefore, we estimate the gravity model as defined by (1) first on a sample of 630 original observations of bilateral trade flows, which are available during the entire period from 1990 to 1998. We will refer to this data subset as the restricted data sample (see Table 1). Then, we estimate the gravity model on the full data sample (see Table 2).

The source of all data on trade flows and aggregate outputs of the selected countries is the IMF (Direction of Trade for trade flows and International Financial Statistics for GDP). Missing data on aggregate output for some CEECs were taken from the EBRD Transition Report 1998. We estimate the trade flows between the Czech Republic and Slovakia during 1991-1993 based on deliveries of medium-sized and large enterprises. Trade flows between Slovenia and Croatia in 1992 are taken from UN Trade Statistics.

Bilateral trade flows between constituent parts of former federations such as the Soviet Union, Yugoslavia, and Czechoslovakia were typically not officially reported, and therefore an assessment of the intensity of trade relations prior to the break-up is difficult.<sup>7</sup> The exception is the trade between the Czech and Slovak Republics, where an alternative data set is available for 1991-1993, the two years before the break-up and the first post break-up year. These data are based on enterprise reports of deliveries between the two entities.<sup>8</sup> Two caveats apply to the use of these data. First, the data are based on enterprise reports, not customs statistics. Second, the data only include deliveries of enterprises with 25 and more employees. Therefore, the results based on these data and on official statistics are not directly comparable. Nonetheless, we believe it is instructive to use these data to assess the trade intensity before break-up. Moreover, the estimates obtained for 1993 based on the two types of data are almost identical and not statistically significantly different from each other.

## 4. Integration, Disintegration, and Trade Flows

Tables 1 and 2 present the results obtained for the restricted sample and the full sample, respectively. The gravity model gives very good explanation of trade patterns as evidenced by the high values of adjusted  $R^2$ , all exceeding 0.8.

Insert Table 1 and Table 2 here.

### 4.1 The Basic Parameters of the Gravity Equation

Figure 1 shows the evolution of the coefficient estimates of basic explanatory variables for the restricted sample: the intercept (reflecting autonomous trade), coefficients on the importer's and exporter's outputs, distance, and the dummies for common border and English language. All estimated coefficients of the basic variables have been quite stable despite significant changes that took place in Europe between 1990 and 1998.

Insert Figure 1 here.

The effect of distance is negative, as expected, and strongly significant. The coefficient estimated for the foreign demand (GDP of the importing country) is not significantly different from that of the domestic supply (GDP of the exporting country). This is a general property of the gravity model—the home and foreign economies have the same effects on bilateral trade flows. However, the effect of the importer's income seems to reflect the underlying cyclical development, while the effect of income in the exporting country is more stable.

Countries sharing the same border, and English-speaking countries trade more intensely with each other. After transformation of logs to levels, trade between two neighboring countries exceeds the *normal* level of trade nearly 1.5 times, and trade between English-speaking countries exceeds the *normal* level nearly three times.

## 4.2 Integration in Western Europe

The integration process in Western Europe is the result of long and gradual trade liberalization. During the 1990s, the process of European integration deepened substantially, with the conclusion of the Single Market in 1992 and the run-up to the formation of the Economic and Monetary Union in 1999. Given its long-term nature, Western European integration gives a good basis for comparison with the more recent trade liberalization between Eastern and Western European countries as well as liberalization among Eastern European countries. In order to avoid potential biases due to adding additional observations as our data set expands (as discussed above), we focus on results from the restricted sample (Table 1). The results for the EU, EFTA and the last EU enlargement are summarized in Figure 2.

Insert Figure 2 here.

Formation of free trade areas in Western Europe apparently only had a moderate positive effect on trade flows. Trade between two EC12 countries exceeds trade between two comparable non-EU countries by one half on average. Despite deepening integration during the 1990s, in particular introduction of the Single Market in 1992, the effect of the EU on trade intensity remained stagnant. In fact, it appears that intra-union trade intensity actually declined slightly over time. The coefficient estimate fell from 0.417 in 1990 to 0.355 in 1998, although this decline is not statistically significant. The accession of Austria, Finland and Sweden in 1995 had little if any effect on the trade intensity between the original EU members and the new members.

The effect of the EFTA on trade intensity is even smaller. Although the coefficient estimate is positive, it is not significant at all except for 1992-93. At its peak in 1993, trade intensity within EFTA exceeded the *normal* level by less than 30%. In contrast, the trade relations of Austria, Finland and Sweden (EFTA3) with the EU were much more intense than the trade relations within EFTA. By 1990, the EFTA3 countries traded by about one-fourth more with the EC countries than with the other countries in our sample. The main upward shift in the trade intensity occurred already in 1992 and preceded



both the formation of the European Economic Area and the entry of these three countries to the European Union.

These results, indicating little effect of European integration on trade intensity, are confirmed by findings of Soloaga and Winter, (1999) who analyze an even longer period, ranging from 1980 to 1996. Nevertheless, they need not be interpreted as evidence of failure of the European integration process. Rather, they reflect the ongoing process of global liberalization, which, in turn, reduces the relative advantage of regional integration.<sup>9</sup>

### **4.3 Trade Relations between East and West**

Our analysis of economic development in Eastern Europe is complicated by the emergence of new independent states at the beginning of the 1990s. Three out of the five countries selected to start membership negotiations in 1999 did not exist in 1990. The restricted sample omits many CEECs, whereas the results for the whole data sample may suffer from biases in 1992 and 1993, when these countries emerged from the former multinational federations. Therefore, we compare the estimates obtained with both the restricted sample and the full sample. The results are presented graphically in Figure 3.

Insert Figure 3 here.

Trade between Western European countries and CEECs was affected by many trade restrictions during the cold war period, and, unsurprisingly, was far below the *normal* level at the beginning of the 1990s. According to the restricted sample, the trade of the 12 member states of the European Community with the group of countries, with which it later concluded the Europe Agreements, was about 40 % below the *normal* level. The trade of Austria, Finland and Sweden with these countries was one-third below the *normal* level. According to the whole data sample, the trade intensity was even lower.

Trade liberalization following the opening-up of Eastern Europe boosted trade among the former cold-war adversaries. The results based on the restricted

data sample indicate that trade between the EC12 and the associated countries reached the *normal* level by 1993. The EFTA3 countries (Austria, Finland and Sweden) liberalized their trade with CEECs even faster.

However, the restricted data sample includes only Bulgaria, Hungary, Poland, and Romania. These countries had better trade relations to the European Union than the former Soviet countries in the Baltic region. Czechoslovakia also traded less with the European Union than its Central European neighbors at the beginning of the transition. When we include also the newly created CEECs, we find that the trade relations of both the EC12 and EFTA3 with the associated countries did not reach the *normal* level until 1995.

#### **4.4 Disintegration in Eastern Europe**

Trade among Eastern European countries exceeded the *normal* level before the beginning of economic reforms in 1990 (see Figure 4).<sup>10</sup> Both data samples indicate a fall in trade intensity that culminated in 1992, in the wake of the CMEA collapse.<sup>11</sup> During 1992 and 1993, the trade intensity was not significantly different from the *normal* level. The formation of the CEFTA (Central European Free Trade Area) encompassing initially the Czech Republic, Hungary, Poland and Slovakia and subsequently extended to include also Slovenia,<sup>12</sup> resulted in a gradual increase of trade intensity. By 1997, both data samples indicate that the trade between two CEFTA countries was nearly double of the *normal* level. The CEFTA thus proved to be a rather successful preferential trade area, with trade intensity actually exceeding that among the EU countries. Nevertheless, CEFTA's success reflects not only the progress in trade liberalization among Central European countries, but perhaps more importantly the collapse of the traditional relations with Eastern European and FSU countries and relatively slow progress of trade liberalization with respect to Western Europe (as discussed in the previous section).

Insert Figure 4 here.

The extent of trade among the countries that have only recently disintegrated (the Czech and Slovak Republics; the Baltic States; Slovenia and Croatia; and Belarus-Russia-Ukraine) remain substantially above the *normal* level, although it is declining over time (see Figure 5). All newly independent countries in Eastern Europe trade much more intensively with their previous counterparts than with other countries.

Insert Figure 5 here.

The case of the former Czechoslovakia is particularly interesting for several reasons. First, using the data on enterprise deliveries, we can estimate the intensity of trade relations in the former Czechoslovakia as early as two years before the break-up. Therefore, for this country we can compare the pre-break-up trade relations with those after the break-up, and thus better infer the effect of disintegration on trade (with the caveat regarding the two data sources as discussed above). Second, the successor states of the former Czechoslovakia attempted to sustain relatively high degree of integration. Thus, after the disintegration of Czechoslovakia, the Czech and Slovak Republics implemented a customs union, a temporary clearing-account payment mechanism, and an agreement stipulating free movement of labor (see Dedek, 1996, and Fidrmuc et al., 1999). Despite these efforts, the Czech and Slovak Republics experienced a steep and uninterrupted fall in trade intensity. The coefficient estimate for 1991, the first year for which we have data, is 3.71. This implies (after transformation from logs) that the trade flows within Czechoslovakia exceeded the *normal* level nearly 40 times! The intensity of trade relations dropped sharply especially during the first two years after the division of Czechoslovakia in 1993. The estimated coefficient for former Czechoslovakia fell to 2.36 (corresponding to trade volume 10.5 times higher than the *normal* level) in 1994 and, finally, to only 1.94 (about seven times the *normal* level) in 1998. The trade intensity as measured by the estimated coefficient on trade flows between the Czech Republic and Slovakia declined continuously since 1993, although the bilateral trade

volume recovered slightly between 1993 (minimum value) and 1998. Still, however, this trade intensity by far exceeds that measured within the EU, even though the custom union between the Czech Republic and Slovakia is largely comparable to trade liberalization within the European Union. A further decline in bilateral trade intensity is to be expected if the custom union is dissolved in the wake of the accession of the Czech Republic to the European Union and the exclusion of Slovakia from the first wave of the Eastern enlargement of the union.

The starting intensity of trade relations among the Baltic States in 1992 was comparable to that between the Czech and Slovak Republics, exceeding the *normal* level approximately 40 times (coefficient estimate 3.77) in 1992. However, although the trade intensity declined after the break-up of the Soviet Union, the fall was not as dramatic as in the case of the former Czechoslovakia. After falling to around 12 times the *normal* level in 1994, trade intensity actually increased again to more than 20 times the *normal* level between 1995 and 1997. The inclusion of Estonia in the first wave of EU accession negotiations and the negative opinion of the European Commission regarding non-standard trade relations of potential new members with the 'left-outs' may be behind the reduction of the Baltic trade flows in 1998. Nonetheless, at about 13 times the *normal* level, the Baltic states trade much more intensively with each other than is the case in the former Czechoslovakia.

The trade relations among Belarus, Russia and Ukraine followed a U-shaped pattern. The initial trade intensity was also very high, approximately 40 times the *normal* level in 1992. The disintegration of the Soviet Union brought about a substantial deterioration of trade relations (see also Kandogan, 1999), reaching the bottom at eight times the *normal* level in 1997. However, 1998 brought about a sharp increase to more than 30 times the *normal* level. Besides potential political reasons, such as the Russian-Belorussian attempts at re-integration, this is probably the consequence of the Russian crisis. The crisis caused a breakdown of trade between the FSU and the developed countries. This was reflected in the rise of relative importance of trade within the FSU area.

In contrast, Slovenia and Croatia traded substantially less with each other already in 1992, with trade intensity exceeding the *normal* level 11 times. The trade intensity declined sharply in the wake of Yugoslavia's disintegration, to about three times the *normal* level in 1994. After increasing moderately between 1995 and 1997, it fell even further in 1998, to only twice the *normal* level. Similarly as in the case of Estonia, this decline may reflect Slovenia's inclusion in the first wave of accession negotiations. The disintegration of the former Yugoslavia thus had much more profound consequences on trade than in other former federations in Eastern Europe. Gligorov (1998) argues that the Balkans as a trading region is currently non-existent. Slovenia and Croatia are the only countries with important bilateral trade relations.

In summary, the empirical evidence suggests that disintegration in Eastern Europe was followed by a substantial declines in the trade relations. Nevertheless, the trade intensity continues to be relatively high, even when controlling for common border and membership in free trade areas such as CEFTA. Fidrmuc (1999) notes that Western European countries with common history and/or the same or similar languages also trade substantially above the *normal* level. For example, based on an analysis of trade flows among the OECD countries, he reports that Austrian trade with Germany is approximately twice higher than the *normal* level, trade between Sweden and Norway, and the UK and Ireland exceeds the *normal* level 2.5 times, and trade between Belgium and the Netherlands is the triple of the *normal* level. Accordingly, given the obvious cultural, social and linguistic links among the CEECs included in our analysis, it is reasonable to expect that, absent further exogenous shocks, their relations will eventually stabilize between two and three times the *normal* level.

## **5 Conclusions**

This paper documents the evolution of trade relations in the wake of integration and disintegration processes in Europe throughout the 1990s. This decade was characteristic for deepening integration in Western Europe and liberalization of trade between East and West on the one hand, and

disintegration of the CMEA and multinational federations in Eastern Europe on the other hand.

Our results indicate, somewhat surprisingly but consistently with previously reported findings (cf. Soloaga and Winters, 1999), that EU membership has only moderate positive effect on trade flows and the effect of EFTA membership is insignificant. The trade intensity between East and West rose substantially over the 1990s. However, much of this trade growth is accounted for by a *normalization* of trade relations. As of 1998, the trade intensity between the associated countries and the EU only slightly exceeds the *normal* level of trade flows, i.e. the level as predicted by the economic potential of the respective countries and the distance between them. On the other hand, the trade intensity within the CEFTA (Central European Free Trade Area) followed a U-shaped pattern, initially decreasing and then rising again. As of 1998, the effect of CEFTA on trade is positive and quite substantial.

The initial intensity of trade relations within the former multinational federations in Eastern Europe was very high. The trade flows between the Czech and Slovak Republics, the Baltic States, or Belarus, Russia and Ukraine, exceeded the *normal* level 40 times around the time of disintegration. This is twice larger than the border effect found by McCallum (1995) and others for inter-provincial trade in Canada. Disintegration was associated with a sharp decline in the trade intensity among the affected countries, albeit starting from a very high level. Indeed, borders do matter for bilateral trade flows, even when they do not imply the imposition of explicit barriers to trade directly. Nevertheless, despite this decline, trade intensity among the former constituent parts of a single state remains far above the *normal* level several years after disintegration.

The decline of trade intensity among the disintegrating countries may in part reflect political developments, besides explicit barriers to trade. The most striking example is the deterioration of trade relations between Slovenia and Croatia. Slovenia was selected as a front runner for the next EU enlargement, whereas Croatia was engaged in the protracted military conflicts in the Balkans. This most likely contributed to the much lower level of trade intensity

between Slovenia and Croatia compared to the other former federations in Central and Eastern Europe. Similarly, the decline of trade intensity between the Czech and Slovak Republics and among the Baltics in late 1990s may be motivated by the selection of the Czech Republic and Estonia into the first wave of accession negotiations. The prospect of (relatively) early EU membership makes these countries more attractive as trading partners and locations for investment for both the current EU members as well as third countries, which in turn reduced the importance of the traditional trading partners. In contrast, the trade intensity among Belarus, Russia and Ukraine actually increased sharply in 1998.

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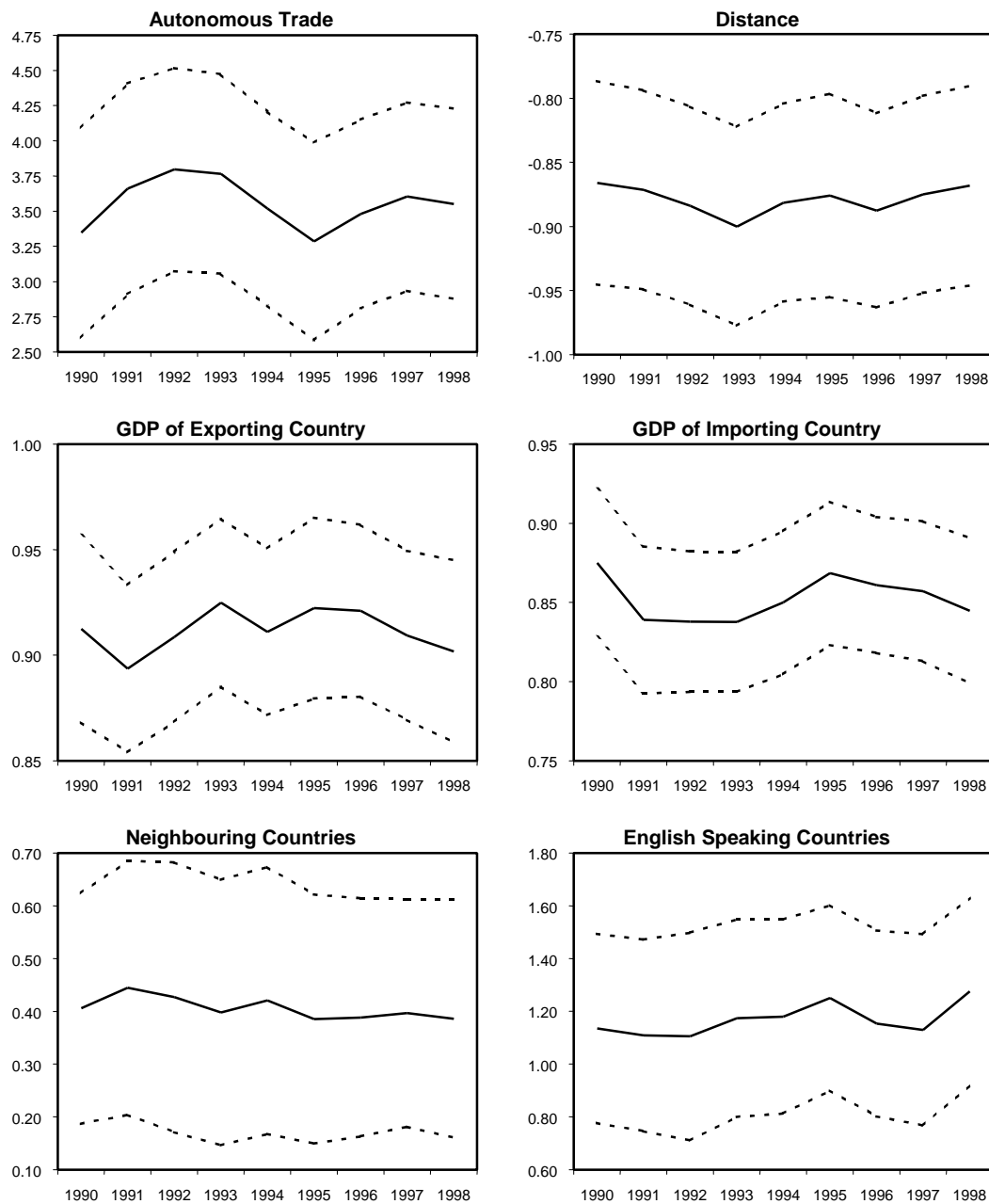


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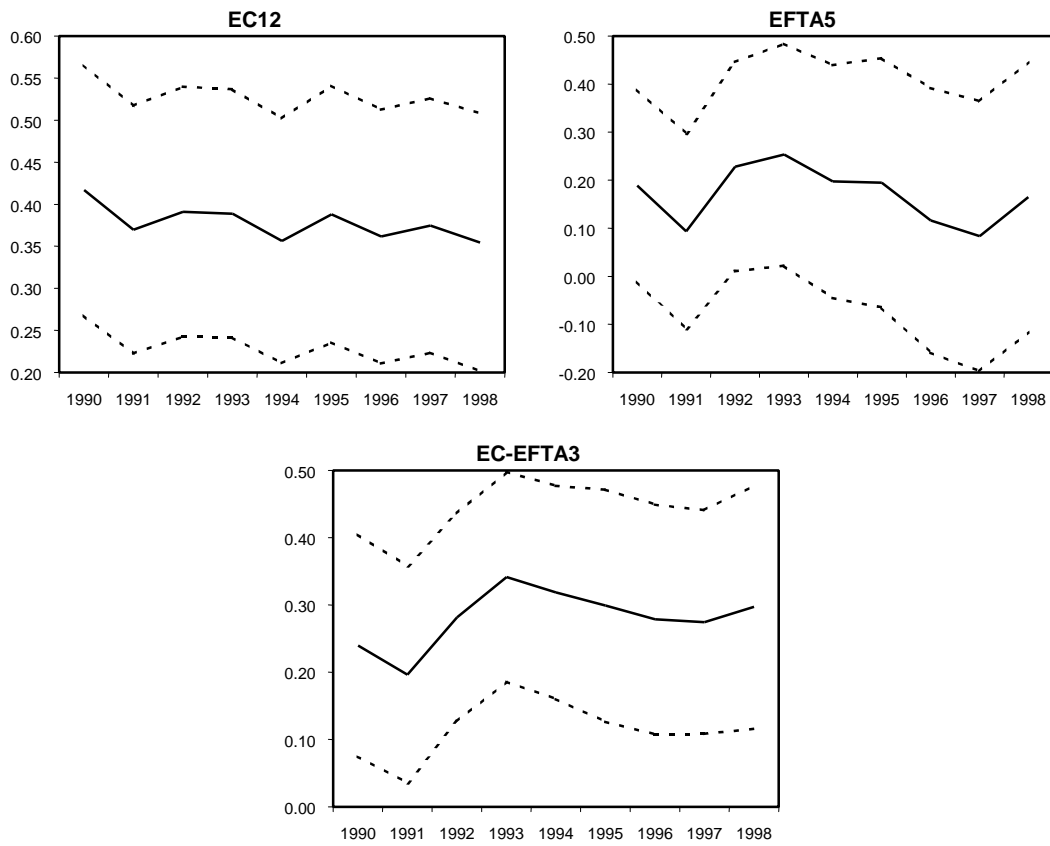
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**Figure 1: Stability of the Parameters of Gravity Models, Restricted Sample\***



Note: The solid line shows the development of coefficient estimated as defined by (1). The confidence bands (dotted lines) were computed as estimated coefficient  $\pm 1.95$  times standard errors indicating whether coefficients are significant at 5% level. The covariance matrices of the coefficients are corrected for possible heteroscedasticity. \* The restricted sample only contains bilateral trade flows available during the whole period 1990-1998.

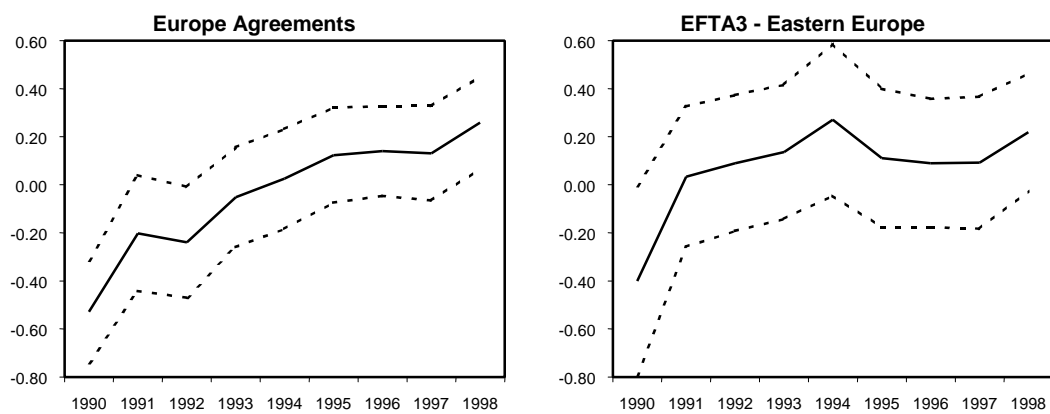
**Figure 2: Free Trade Areas in Western Europe, Restricted Sample\***



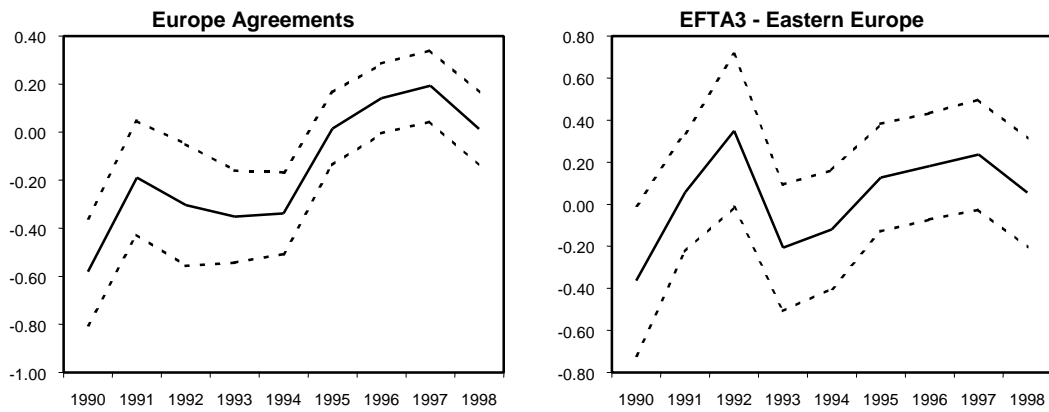
Note: \* The restricted sample only contains bilateral trade flows that are available during the whole period 1990-1998.

**Figure 3: Trade Relations between East and West**

**A: Restricted Sample\***

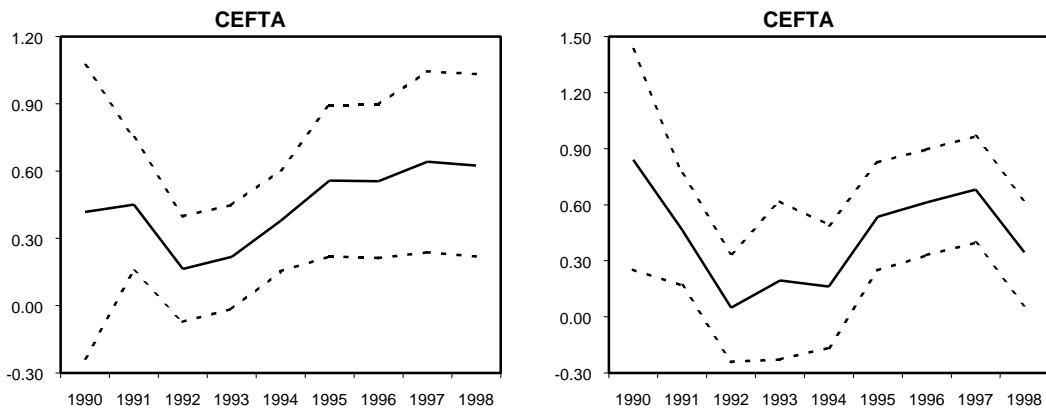


**B: Full Sample**

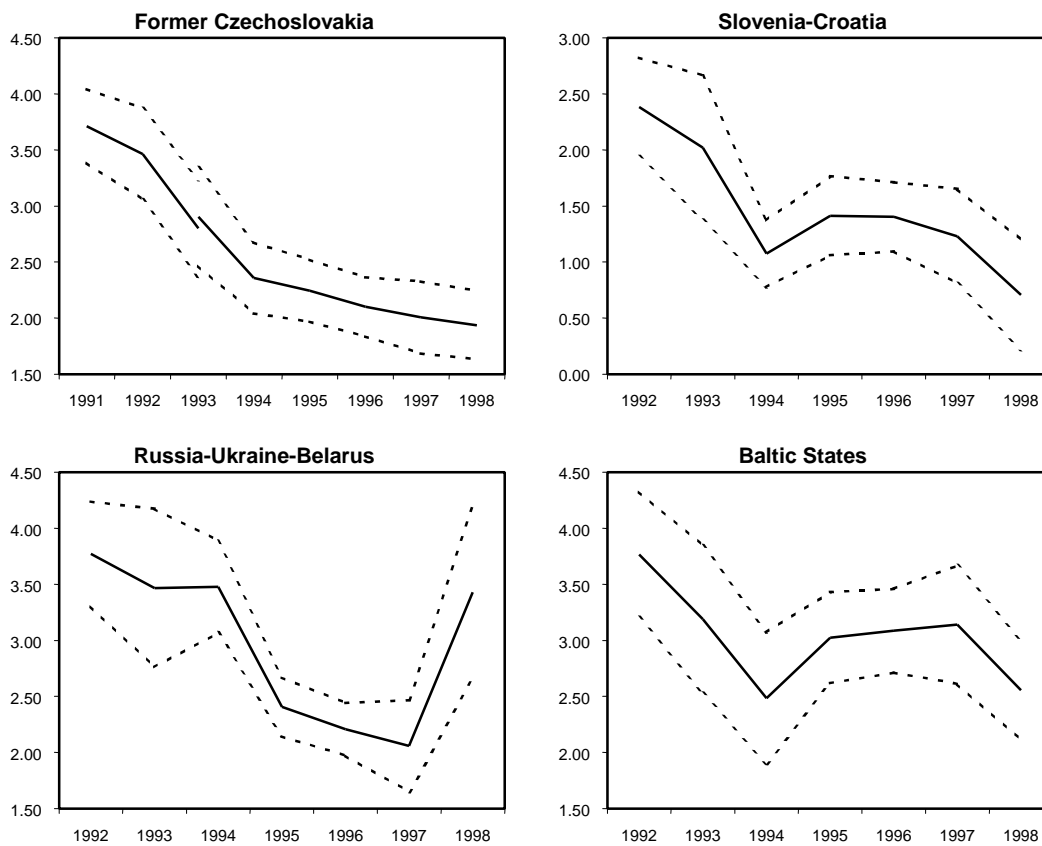


Note: \* The restricted sample only contains bilateral trade flows that are available during the whole period 1990-1998.

**Figure 4: Free Trade Areas in Eastern Europe**  
**A: Restricted Sample\***                      **B: Full Sample**



Note: \* The restricted sample only contains bilateral trade flows that are available during the whole period 1990-1998.

**Figure 5: Disintegration in Eastern Europe, Full Sample**

Note: We use estimates for trade flows between the Czech Republic and Slovakia according to delivery statistics of large enterprises in Slovakia (1991-1993), which are not fully comparable to later custom statistics (1993-1997) causing a discontinuity in our estimates in 1993.

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<sup>1</sup> Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia.

<sup>2</sup> Past disintegration episodes were analyzed, among others, by Cohen (1993) who looks at six successful and unsuccessful currency unions, de Menil and Maurel (1994), Maurel (1995, 1998) and Dornbusch (1992) who study the break-up the Austro-Hungarian Empire, and Fidrmuc et al. (1999) who analyze the break-up of Czechoslovakia.

<sup>3</sup> For various reasons, the data on bilateral trade flows as reported by the two respective countries often differ. To ensure consistency, we use trade flows as reported by the importing country.

<sup>4</sup> We are grateful to Holzmann and Zukowska-Gagelmann (1996) for sharing with us their distance matrix. As in their paper, we use the center of a triangle defined by Frankfurt, Munich, and Berlin rather than the capital as the reference point for Germany.

<sup>5</sup> The associated countries are Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia.

<sup>6</sup> We were unable to include more successor countries of the former Soviet Union and Yugoslavia because of problems with availability and reliability of the data.

<sup>7</sup> Boss and Havlik (1994) report several estimates of trade flows between selected FSU countries before the disintegration of the USSR. However, these data are hardly comparable to later trade flows due to high inflation rate in the successor countries. Furthermore, the range of listed estimates makes any comparisons questionable, although they generally confirm a significant decline of trade.

<sup>8</sup> The sources of the data are: *Vzajomne dodavky medzi SR a CR: 1.-4. stvrtrrok 1992*, Statistical Office of the Slovak Republic, 1993; and *Predaj tovarov medzi SR a CR v roku 1993 podla stvrtrrokov*, Statistical Office of the Slovak Republic, 1994.

<sup>9</sup> Nonetheless, the results do appear disappointing, compared for example with the trade intensity among English-speaking countries, or the results reported for the CEFTA below.

<sup>10</sup> However, one should keep in mind that *exchange* among socialist economies was of different nature than trade among market economies.

<sup>11</sup> Maurel and Cheikbossian (1998) showed that the decline of trade among the CMEA countries started already in mid 1980s.

<sup>12</sup> Bulgaria and Romania recently joined the CEFTA too, however, in our analysis we only consider the trade flows among the four founding members and Slovenia



**Table 1 Gravity Model of Trade Flows, Restricted Data Sample**

	1990	1991	1992	1993	1994	1995	1996	1997	1998
No. of observations	630	630	630	630	630	630	630	630	630
Adjusted R <sup>2</sup>	0.8698	0.8853	0.8358	0.8029	0.8361	0.8479	0.8478	0.8407	0.8161
Constant	3.346 (8.742)	3.659 (9.540)	3.796 (10.251)	3.765 (10.358)	3.519 (9.962)	3.285 (9.128)	3.480 (10.121)	3.604 (10.519)	3.552 (10.242)
GDP of importing country	0.875 (36.485)	0.839 (35.237)	0.838 (36.879)	0.838 (36.946)	0.850 (36.663)	0.868 (37.394)	0.861 (39.104)	0.857 (37.823)	0.845 (35.882)
GDP of exporting country	0.913 (40.054)	0.894 (44.008)	0.909 (43.995)	0.925 (45.415)	0.911 (45.092)	0.922 (42.083)	0.921 (44.140)	0.909 (44.257)	0.902 (40.754)
Distance	-0.866 (-21.313)	-0.872 (-21.950)	-0.884 (-22.333)	-0.900 (-22.616)	-0.881 (-22.308)	-0.876 (-21.557)	-0.888 (-22.887)	-0.875 (-22.214)	-0.868 (-21.796)
Dummy: Common border	0.406 (3.617)	0.445 (3.606)	0.427 (3.257)	0.398 (3.084)	0.421 (3.241)	0.385 (3.185)	0.389 (3.359)	0.397 (3.589)	0.386 (3.332)
Dummy: English speaking countries	1.136 (6.178)	1.109 (5.953)	1.105 (5.469)	1.174 (6.122)	1.180 (6.262)	1.251 (6.946)	1.154 (6.397)	1.130 (6.065)	1.276 (7.001)
Dummy: EC12	0.417 (5.459)	0.370 (4.892)	0.391 (5.134)	0.389 (5.134)	0.357 (4.779)	0.388 (4.961)	0.361 (4.669)	0.375 (4.836)	0.355 (4.517)
Dummy: CEFTA	0.418 (1.249)	0.451 (2.960)	0.164 (1.353)	0.217 (1.825)	0.378 (3.257)	0.557 (3.213)	0.554 (3.159)	0.641 (3.094)	0.626 (2.997)
Dummy: Europe Agreements	-0.528 (-4.832)	-0.201 (-1.626)	-0.240 (-2.027)	-0.052 (-0.484)	0.025 (0.237)	0.124 (1.220)	0.140 (1.466)	0.132 (1.310)	0.259 (2.632)
Dummy: EFTA	0.189 (1.845)	0.094 (0.900)	0.228 (2.041)	0.253 (2.138)	0.198 (1.592)	0.195 (1.463)	0.116 (0.823)	0.083 (0.578)	0.165 (1.147)
Dummy: EC12- EFTA3	0.240 (2.836)	0.196 (2.374)	0.281 (3.550)	0.342 (4.267)	0.319 (3.924)	0.299 (3.379)	0.279 (3.180)	0.275 (3.224)	0.297 (3.201)
Dummy: EFTA3-Associated countries	-0.400 (-1.975)	0.034 (0.225)	0.091 (0.628)	0.137 (0.959)	0.271 (1.671)	0.112 (0.759)	0.090 (0.659)	0.092 (0.652)	0.219 (1.749)

**Notes:** T-statistics (heteroscedasticity robust) in parentheses. Estimated on bilateral trade flows among OECD countries (excl. Mexico and Korea), and Central and Eastern European countries. \* Bilateral trade flows available during the whole period 1990-1998. CEFTA includes the Czech Republic, Hungary, Poland, Slovakia and Slovenia. EC12 refers to the 12 countries who were the members of the European Community until 1995. EFTA includes EFTA3 (Austria, Finland, and Sweden ) and Norway and Switzerland. Associated countries are Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia.

**Table 2 Gravity Model of Trade Flows, Whole Data Sample**

	1990	1991 <sup>CS</sup>	1992 <sup>CS</sup>	1993 <sup>CS</sup>	1993	1994	1995	1996	1997	1998
No. of observations	670	645	838	1140	1140	1219	1248	1247	1238	1247
Adjusted R <sup>2</sup>	0.8698	0.8855	0.8360	0.8028	0.8029	0.8361	0.8479	0.8478	0.8407	0.8161
Constant	3.372	3.663	4.426	4.691	4.691	4.786	4.206	4.136	4.311	4.776
	(8.400)	(9.613)	(10.137)	(13.123)	(13.123)	(15.977)	(14.610)	(14.887)	(15.281)	(15.036)
GDP of importing country	0.873	0.852	0.903	0.838	0.838	0.845	0.873	0.853	0.855	0.823
	(35.596)	(36.005)	(38.752)	(43.195)	(43.194)	(47.957)	(51.761)	(50.953)	(51.032)	(40.779)
GDP of exporting country	0.924	0.899	0.865	0.872	0.872	0.860	0.939	0.959	0.958	0.935
	(40.777)	(44.510)	(36.787)	(44.071)	(44.072)	(48.944)	(55.925)	(57.897)	(54.998)	(45.399)
Distance	-0.877	-0.886	-0.976	-0.988	-0.988	-1.007	-1.024	-1.016	-1.025	-1.040
	(-21.689)	(-21.920)	(-20.744)	(-24.005)	(-24.005)	(-26.899)	(-28.098)	(-28.010)	(-27.599)	(-23.753)
Dummy: Common border	0.317	0.454	0.608	0.537	0.537	0.760	0.664	0.631	0.595	0.670
	(2.552)	(3.706)	(3.575)	(2.251)	(2.251)	(5.691)	(5.567)	(5.712)	(5.364)	(5.009)
Dummy: English speaking countries	1.169	1.128	1.179	1.342	1.342	1.360	1.536	1.479	1.493	1.535
	(6.381)	(6.048)	(5.828)	(7.333)	(7.333)	(7.557)	(8.713)	(8.273)	(7.980)	(8.498)
Dummy: EC12	0.437	0.364	0.288	0.377	0.377	0.289	0.396	0.447	0.471	0.309
	(5.650)	(4.821)	(3.498)	(4.570)	(4.570)	(3.852)	(5.070)	(5.815)	(6.143)	(3.730)
Dummy: CEFTA	0.842	0.466	0.050	0.195	0.195	0.163	0.537	0.613	0.681	0.344
	(2.783)	(3.051)	(0.334)	(0.901)	(0.901)	(0.965)	(3.627)	(4.227)	(4.653)	(2.387)
Dummy: Europe Agreements	-0.580	-0.190	-0.303	-0.351	-0.351	-0.337	0.015	0.141	0.193	0.014
	(-5.114)	(-1.564)	(-2.329)	(-3.573)	(-3.573)	(-3.875)	(0.191)	(1.889)	(2.524)	(0.177)
Dummy: EFTA	0.230	0.089	0.070	0.158	0.158	-0.022	0.099	0.120	0.110	-0.011
	(2.100)	(0.876)	(0.637)	(1.104)	(1.104)	(-0.209)	(0.881)	(0.985)	(0.880)	(-0.087)
Dummy: EC12- EFTA3	0.245	0.190	0.233	0.344	0.344	0.294	0.375	0.409	0.411	0.306
	(2.896)	(2.310)	(2.771)	(4.448)	(4.448)	(3.684)	(4.230)	(4.714)	(4.803)	(3.174)
Dummy: EFTA3-Associated countries	-0.364	0.057	0.350	-0.207	-0.207	-0.119	0.127	0.181	0.237	0.055
	(-1.982)	(0.392)	(1.879)	(-1.344)	(-1.344)	(-0.828)	(0.966)	(1.393)	(1.766)	(0.415)
Dummy: Baltic States			3.767	3.188	3.188	2.485	3.024	3.088	3.142	2.556
			(13.130)	(9.454)	(9.454)	(8.241)	(14.533)	(16.165)	(11.585)	(11.202)
Dummy: Russia-Belarus-Ukraine			3.771	3.467	3.467	3.480	2.407	2.207	2.057	3.427
			(15.741)	(9.596)	(9.596)	(16.561)	(18.024)	(18.347)	(9.807)	(8.663)
Dummy: Slovenia-Croatia			2.382	2.021	2.021	1.075	1.413	1.404	1.231	0.708
			(10.535)	(6.124)	(6.124)	(7.004)	(7.823)	(8.872)	(5.695)	(2.810)
Dummy: Former CSFR		3.713	3.466	2.798	2.905	2.359	2.245	2.099	2.006	1.939
		(22.106)	(16.628)	(12.568)	(12.968)	(14.550)	(15.885)	(15.472)	(12.224)	(12.350)

**Notes:** T-statistics (heteroscedasticity robust) in parentheses. CEFTA includes the Czech Republic, Hungary, Poland, Slovakia and Slovenia. EC12 refers to the 12 countries who were the members of the European Community until 1995. EFTA includes EFTA3 (Austria, Finland, and Sweden ) and Norway and Switzerland. Associated countries are Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia. <sup>CS</sup> We use enterprise delivery statistics to estimates the trade flows between the Czech Republic and Slovakia for 1991-1993.

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