Zentrum für Europäische Integrationsforschung
Center for European Integration Studies
Rheinische Friedrich-Wilhelms-Universität Bonn

Working Paper

Jarko and Jan Fidrmuc

# Disintegration and Trade

B 24
2001

# Disintegration and Trade*

Jarko Fidrmuc†

Foreign Research Division,
Oesterreichische Nationalbank,
Vienna

Jan Fidrmuc‡

Center for European Integration
Studies (ZEI), University of Bonn;
CPB Netherlands Bureau for
Economic Policy Analysis, The
Hague; and CEPR London

March 2001

* We benefited from comments and suggestions from Bas van Aarle, Richard E. Baldwin, Franc Klaassen, Vladimir Gligorov, Ingrid Haschke, Eduard Hochreiter, Jürgen von Hagen, Andreas Wörgötter, E. Kwan Choi, as well as seminar participants at Erasmus University (Rotterdam), Center for European Integration Studies (Bonn), and the CPB Netherlands Bureau for Economic Policy Analysis (The Hague). The views expressed in this paper are those of the authors and do not represent the position of the Oesterreichische Nationalbank.

† Oesterreichische Nationalbank, Foreign Research Division, Schwarzspanier-Str. 5, A-1090 Vienna, Austria. E-mail: Jarko.Fidrmuc@oenb.co.at; Tel.: +431 40420-5218, Fax: +431 40420-5299.

‡ Corresponding author. Center for European Integration Studies (ZEI), University of Bonn, Walter-Flex-Strasse 3, 53113 Bonn, Germany. Email: JFidrmuc@uni-bonn.de. Phone: +49-228-73-1821, Fax: +49-228-73-1809. Web: http://www.tbns.net/fidrmuc/.

# Disintegration and Trade

**Abstract:**

The gravity model of trade is utilized to assess the impact of disintegration on trade. The analysis is based on three recent disintegration episodes involving the former Soviet Union, Yugoslavia and Czechoslovakia. The results point to a very strong home bias around the time of disintegration, with intra-union trade exceeding *normal* trade approximately 43 times in the former Soviet Union and Czechoslovakia, and 24 times in the former Yugoslavia. Disintegration was followed by a sharp fall in trade intensity. Nevertheless, there is a considerable hysteresis in economic relations, with trade flows among the former constituent Republics still between two and 30 times greater than *normal* trade in 1998.

**Keywords**: Gravity Model, International Trade, Disintegration, Panel Data

**JEL Classification Numbers:** C23, F13, F15, F41

# 1 Introduction

Many papers and monographs have been written recently about economic aspects and consequences of integration. This surge of interest largely is a response to the slow but steady intensification of integration processes in Western Europe and elsewhere. Yet, history tells us that countries break up much more often than they unite. The number of countries on the face of the Earth increased more than three-fold during the last century. The economic consequences of disintegration are undoubtedly substantial, even when the break-up is peaceful. However, very little research has been done to assess the costs of disintegration. In this paper, we attempt to fill this gap, by looking at three recent disintegration episodes in Europe. We use the gravity model to assess the impact of disintegration on trade among the former constituent Republics of three demised federations in Central and Eastern Europe: the Soviet Union (the Baltic countries, and Belarus, Russia and Ukraine), Yugoslavia and Czechoslovakia. For comparison, we also evaluate the impact of integration on trade, in particular, we consider German reunification, creation of preferential trade areas (PTA's) in Western and Eastern Europe, and liberalization of trade between Eastern and Western Europe.

The gravity model, in an analogy to the Theory of Gravity in Physics, relates the trade between a pair of countries to their *economic* mass, measured by their respective GDPs, and the distance between them. The non-standard nature of trade relations is identified by means of dummies for pairs or groups of countries of interest—a positive coefficient implies above normal, or preferential, trade relations whereas a negative coefficient indicates below normal, or discriminatory, trade relations. We estimate the gravity model with trade flows among OECD countries and selected Central and Eastern European countries. By estimating the gravity equation separately for each year between 1990 and 1998, we are able to observe the evolution of trade patterns over time. We are particularly interested in the evolution of bilateral trade within former federations in the wake of disintegration.

We find that around the time of disintegration, the trade flows between constituent parts of Czechoslovakia, Soviet Union (represented here by Belarus, Russia and Ukraine) and the Baltic countries were approximately 43 times greater than the *normal* trade level (i.e. the extent of trade corresponding to the GDPs of the

respective countries and the distance between them). In contrast, the trade relations between Slovenia and Croatia were somewhat less intensive, exceeding the normal trade intensity approximately 24 times at the time of the break-up. The result for the former Soviet Union, the Baltics and the former Czechoslovakia thus indicates a very strong *home bias* in comparison with developed market economies. For example, McCallum (1995) finds that Canadian provinces trade 22 times more among themselves than with US states of comparable economic size and distance. Wolf (2000) estimates a similar tendency for 'excessive' trade within the federal states in the US. Helliwell (1997) estimates the home bias of OECD countries not sharing the same language to be on average 13. According to Head and Mayer (2000), an average EU country purchases 14 times more from domestic producers than from equally distant foreign ones. Nitsch (1998) estimates the home bias for EU counties as 7 on average, ranging between 1.8 for the Netherlands and 68 for Portugal.[1]

Disintegration was followed by a sharp fall in trade intensity in all of former federations. Nonetheless, the legacy of common past remains strong. By 1998, trade relations still exceeded the *normal* level two times between Slovenia and Croatia, seven times in the former Czechoslovakia, 13 times for the Baltics, and 30 times for Belarus, Russia and Ukraine. Such trade intensities by far surpass the effects of formal preferential trade areas. For comparison, our findings indicate that trade within the EU and the CEFTA (Central European Free Trade Area) exceeds normal trade approximately one-and-a-half times and two times, respectively. Rose (2000) studies the impact of currency unions on trade and finds that two countries using the same currency trade three times more with each other than two comparable countries using separate currencies. Apparently, common history is more important than formal liberalization of trade (although in the case of the Baltics and Belarus-Russia-Ukraine, the home bias can be partially attributed also to their relative geographical isolation).

To our knowledge, the effects of disintegration on trade received little attention in previous literature. This is probably due to lack of reliable data as well as lack of suitable disintegration episodes. There are a few exceptions though. De Ménil and Maurel (1994) use the gravity model to assess the effects of disintegration of Austro-

[1] Obstfeld and Rogoff (2000) provide a recent survey of estimates of the home bias in several countries.

Hungarian Empire in 1918 on the subsequent trade patterns. Cheikbossian and Maurel (1998) similarly analyze the consequences of the CMEA collapse. Finally, Djankov and Freund (2000) estimate home bias for trade among selected Russian regions before the onset of economic reforms (1987–1990) and for a few years after the disintegration of the Soviet Union in 1992 (1994–1996).

Instead, most of the literature is concerned with the impact of integration on trade, such as free-trade areas, customs unions (see, for example, Bayoumi and Eichengreen, 1995, and Soloaga and Winters, 1999) or currency unions (Rose, 2000). Yet, it is difficult to distinguish the impact of a preferential-trade area from hysteresis in trade. As Eichengreen and Irwin (1996,) point out, formal integration usually follows above-standard trade relations in the past. By focusing on disintegration episodes in the time dimension, we are able to observe and evaluate the changes in trade patterns in the wake of disintegration. We find that although there is considerable hysteresis in trade relations after disintegration, the fall in trade intensity is enormous.

The next section describes the gravity model and discusses the main methodological issues. Section 3 describes the data. Sections 4, 5 and 6 present the results of our empirical analysis for the former federations in Eastern Europe, the German reunification, and formal preferential trade areas, respectively. The last section summarizes our conclusions.

# 2 The Gravity Model

The gravity model (Linnemann, 1966, and Linder, 1961) relates trade flows between two countries to the importer's demand, the exporter's supply and the costs of engaging in trade. The demand and supply are proxied by the aggregate output (GDP) of the two countries (in addition, some studies use also output per capita and/or land area). Trade costs (transport and transaction costs) are proxied by distance, typically measured as the distance between capital cities of the two countries (some studies use alternative measures of remoteness, see 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 ambiguous, and were only developed after the model had proven successful in

empirical analysis. 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 and concludes that the gravity relation subsumes many models and, therefore, it cannot be used for testing 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:

$$M = \beta_1 + \sum_{h=X,M} \beta_h Y_h + \beta_4 d + \sum_k \beta_k D_k + \varepsilon\,, \qquad (1)$$

where $M$ stands for bilateral imports[2], $Y$ 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[3], and $\varepsilon$ is the disturbance term. All these variables are in logs. In line with the terminology common for the literature using the gravity model, we refer to the level of trade predicted by the countries' economic sizes and distance as *normal* or *potential* trade. The intensity of non-standard trade relations is measured by means of dummy variables, $D_k$, for specific pairs or groups of countries. A positive coefficient estimate implies above-normal or preferential trade relations whereas a negative coefficient estimate, in contrast, implies below-normal or discriminatory trade pattern.

We include dummies to capture three types of trade relations. First, sharing a common border or common language reduces transaction costs. Therefore, our regression equation contains a dummy for countries sharing a common border, and a dummy for English speaking countries. We do not include dummies for other languages as most of the other countries (out of those included in our data set) sharing

[2] 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.

[3] 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.

a language also share borders.[4] Since the effect of language on trade is not our primary interest, we allow for the common-language effect to be picked up by the border dummy in these cases.

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, denoted henceforth as the EU12), the EFTA, the CEFTA (Czech Republic, Hungary, Poland, Slovakia and Slovenia), the last EU enlargement round (distinguishing trade flows between the EU12 and Austria, Finland, and Sweden, henceforth EFTA3), and the Europe Agreements between the EU and the associated countries.[5] To capture the evolution of trade relations, we use the same set of dummies for the entire period, i.e. also before the formal agreement was concluded. Finally, we include dummies for the successor states of former federations in Central and Eastern Europe. Because of problems with availability and reliability of the data, we are unable to include all former Republics of the Soviet Union and Yugoslavia. Therefore, we analyze trade patterns only among the Baltic countries, Belarus-Russia-Ukraine, and Slovenia-Croatia. We consider the Baltics separately from the rest of the former Soviet Union because of their specific historical and political background.

# 3 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 a separate gravity equation 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. The data for Bulgaria, Hungary, Poland and Romania span the

[4] For example, Austria, Germany and Switzerland, Belgium and France, or Belgium and the Netherlands. The main exception is Canada and the remaining French-speaking countries.

[5] Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia.

entire period. In contrast, the trade data for Belarus, Croatia, Estonia, Latvia, Lithuania, Russia, Slovenia, and Ukraine start as of 1992, and those for the Czech Republic and Slovakia start as of 1993. We use estimates of pre-disintegration trade flows between the Czech and Slovak Republics (1991-93) and Slovenia and Croatia (1990) where available, as described below. The source of data on trade flows and aggregate outputs 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.

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.[6] An exception is the trade between the Czech and Slovak Republics, where estimates of the bilateral trade flows are 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 Republics.[7] Two caveats apply to these data. First, they are based on enterprise reports, not customs statistics. Second, they include only deliveries of enterprises with 25 and more employees. Therefore, these data are not necessarily comparable with the official statistics. Nevertheless, the estimates obtained for 1993 based on the two types of data are almost identical and not statistically significantly different from each other. Therefore, we believe it is instructive to use these data to assess the trade intensity before break-up.

Similar data have been reported for Slovene trade with the other former federal Republics of Yugoslavia. According to Mencinger (1998), the rest of Yugoslavia accounted for 57.7 % and 58.7 % of Slovenia's total exports and imports in 1990,

[6] According to Djankov and Freund (2000), inter-republic trade flows were not reported for the former Soviet Union between 1990 and 1993. Boss and Havlik (1994) report several estimates of trade flows among selected FSU countries at the beginning of the 1990s. However, these data are hardly comparable to later trade flows due to high inflation rate in the successor countries. Furthermore, the range of their estimates makes any comparisons questionable, although they generally confirm a significant decline of trade.

[7] The sources of the data are: *Vzajomne dodavky medzi SR a CR: 1.-4. stvrtrok 1992*, Statistical Office of the Slovak Republic, 1993; and *Predaj tovarov medzi SR a CR v roku 1993 podla stvrtrokov*, Statistical Office of the Slovak Republic, 1994.

respectively. Croatia was the most important trade partner (28.8 % of both exports and imports) within the former federation. Stiblar (1996) reports a similar trade structure for Slovenia at the end of the 1980s. Based on this figures, along with estimates of Slovenia's total trade (without the rest of former Yugoslavia) reported by WIIW (1999), we are able to estimate the trade flows between Slovenia and Croatia in 1990, one year before independence.

Finally, we compare the trade development in these countries to trade between West Germany and the former German Democratic Republic. Our data are based on German Statistical Office's reports of trade flows (including services) between both German regions from 1992 to 1994.[8]

# 4 Trade Effects of Disintegration

The number of observations[9] in our dataset nearly doubles between 1990 and 1998 as new countries arise from the ruins of the Soviet Union, Yugoslavia, and Czechoslovakia. The inclusion of additional observations might affect the results. 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 throughout the entire period from 1990 to 1998. We refer to this data subset as the restricted sample, and the results are reported in Table 1. Then, we estimate the gravity model on the full sample, containing also observations for the newly created countries. The results for the full sample are reported in Table 2. The last set of results makes use of alternative estimates of trade between the Czech and Slovak Republics, Slovenia and Croatia, and the two parts of Germany. For the sake of comparability, the results based on these alternative data sources are reported separately in Table 3. We estimate a separate equation for each year between 1990 and 1998 in order to be able to observe the evolution of trade relations over time.

---

[8] See *Vierteljahresergebnisse der Inlandsproduktsberechnung, 1991 bis 1994, Früheres Bundesgebiet*, Statistisches Bundesamt Wiesbaden, September 1997, p. 23.

[9] We succeeded to collect nearly all data on trade flows among countries of our sample. For example, we have only 23 missing or zero-trade observations for 1997. Therefore, the possibility of a bias due to truncated data is not important in this case. See for example Baldwin (1994) and Head and Mayer (2000) for discussion of gravity models estimated with truncated data.

**Insert Tables 1-3 about here.**

The gravity model gives very good explanation of trade patterns as evidenced by the high values of adjusted $R^2$, all exceeding 0.8. As expected, the effect of distance is negative and strongly significant. The coefficients estimated for GDPs of the importing and exporting countries are not significantly different from each other. This is a general property of the gravity model—the home and foreign economies have the same effects on bilateral trade flows. Although there is some variation in the coefficient estimates over time, the values for individual years are never significantly different from each other at conventional levels. 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 (trade as predicted by GDP and distance between the two countries) of trade nearly 1.5 times, and trade between English-speaking countries exceeds the *normal* level nearly three times. The effects of common border and English language appear also very stable over time.

Our primary interest concerns trade patterns among the former constituent Republics of the Soviet Union, Yugoslavia and Czechoslovakia. The intensity of trade relations among these countries is reflected in the coefficient estimates for the respective dummies (Table 2). In addition, Figure 1 depicts the evolution of these coefficients graphically, along with two-standard-error bounds.

**Insert Figure 1 about here.**

The results are strikingly similar for the former Soviet Union, the Baltics and the former Czechoslovakia, with trade flows exceeding the *normal* level approximately 41-43 times[10] during the first year for which we have data (1991 for Czechoslovakia, and 1992 for the Baltics and Belarus-Russia-Ukraine). These results indicate a much higher home bias that what is typically found in the literature (cf. McCallum, 1995, Helliwell, 1997, Wei 1996, and Nitsch, 1998).

Clearly, the intensity of trade within the former federations in Eastern Europe cannot be justified only by greater efficiency of intra-federation trade. In part, it

[10] The coefficient estimates for the first year are between 3.71 and 3.77. The corresponding multiplicative factors are exp(3.71)= 40.9 and exp(3.77)= 43.4.

reflected the relative closed nature of these formerly socialist economies and the fact that during the early 1990s, their trade with Western Europe was still not very liberalized (East-West trade relations are discussed in greater detail below). In the case of the Baltics and Belarus-Russia-Ukraine, their relative remoteness from major Western European markets probably played a role too. In contrast to the former Soviet Union and Czechoslovakia, the trade between Slovenia and Croatia exceeded the normal level *only* 24 (exp(3.184)=24.1.) times in 1990.[11] This extent of home bias, while still high, is more similar to that observed for market economies.

The intensity of trade relations fell sharply after disintegration. To some extent, the reduction in trade intensity was natural because of the extremely high inward orientation and closed nature of these countries' economies as discussed above. Most likely, the home bias would have fallen even without the break-up. Indeed, in the case of the former Czechoslovakia, the trade intensity fell already between 1991 and 1992, i.e. before the break-up, to 32 times the normal level. Nevertheless, the timing and the steepness of the decline suggest that disintegration was an important factor.

While the decline in trade intensity occurred immediately after the break-up in the cases of Slovenia and Croatia, the Baltics, and the former Czechoslovakia, the decline of trade intensity among Belarus, Russia and Ukraine started in the earnest only in 1995. This delay probably reflects the continued existence of a common economic area and in particular the continued use of the Soviet (Russian) ruble in the CIS for an intermediate period after the break-up in 1991.

The case of the former Czechoslovakia is particularly interesting. The intensity of trade between the Czech and Slovak Republics fell sharply and uninterruptedly despite attempts by the successor countries to sustain a relatively high degree of integration. The Czech and Slovak Republics retained a customs union, a temporary clearing-account payment mechanism (until 1997), and free movement of labor (see Dedek, 1996). Yet, the intensity of trade relations dropped sharply, especially during 1993 and 1994, i.e. the first two years after the division of Czechoslovakia. Bilateral

[11] Note that we do not have trade between Slovenia and Croatia in 1991. This is indicated in Figure 1 on the x-axis, as well as by a dotted line before 1992.

trade, which still exceeded the normal level 32 times in 1992, fell to 11 times the normal level by 1994. Then, the decline slowed down but continued, falling eventually to about seven times the *normal* level in 1998. Although the trade intensity as measured by the estimated coefficient on trade flows between the Czech Republic and Slovakia declined continuously, the actual volume of trade recovered slightly between 1993 and 1998.

Unlike in the former Czechoslovakia, the trade intensity among the Baltic countries and between Slovenia and Croatia picked up temporarily after the initial sharp decline of trade in the wake of the break-up, before declining further eventually. For the Baltics, the trade intensity fell to 12 times the normal level in 1994, rising again to 23 in 1997 and finally falling to 13 times the *normal* level by 1998. The trade intensity between Slovenia and Croatia deteriorated to three times the *normal* level by 1994. After a slight recovery in 1995 and 1996 (with the home bias rising to four), it fell again to approximately two times the *normal* level by 1998. The renewed deterioration of bilateral trade among the Baltics and between Slovenia and Croatia may be due to the inclusion of Estonia and Slovenia in the first wave of EU accession negotiations. This political decision increased the attractiveness of these two countries for trade and investment flows from the EU as well as third countries, thus diverting trade from the traditional trade partners. The negative opinion of the European Commission regarding non-standard trade relations of potential new members with the 'left-outs' may have played a role too. Similar factors may be behind the continued fall of bilateral trade between the Czech and Slovak Republics.

In contrast, trade relations among Belarus, Russia and Ukraine followed a U-shaped pattern. The disintegration of the Soviet Union brought about a sharp deterioration of trade, reaching the bottom at eight times the *normal* level in 1997. However, 1998 resulted in a sharp recovery to more than 30 times the *normal* level. Besides potential political reasons, such as the attempts at re-integration between Russia and Belarus, this may have been a consequence of the Russian crisis. The crisis caused a breakdown of trade between the FSU and the developed countries. This may have carried over to the rise of relative importance of trade within the FSU area. In addition, this increase in trade intensity may be driven by greater prevalence of re-exports from Belarus and Ukraine to Russia while reporting them as bilateral trade.

In summary, the empirical evidence suggests that disintegration processes in Eastern Europe brought about substantial declines in trade relations between the former constituent Republics. Nevertheless, the trade intensity continues to be relatively high, even when controlling for common border and membership in free trade areas such as CEFTA. This is in line with the findings of Fidrmuc (1999) who notes that Western European countries with common history and/or the same or similar languages also have more intensive bilateral trade relations. For example, he reports that Austrian trade with Germany is approximately twice higher than the *normal* level, trade between Sweden and Norway, and between the UK and Ireland exceeds the *normal* level 2.5 times, whereas trade between Belgium and the Netherlands is triple the *normal* level. Accordingly, given the obvious cultural, social and linguistic links among the countries included in our analysis, it is reasonable to expect that, absent further exogenous shocks, their bilateral trade relations will continue to be substantially more intensive than relations with respect to third countries.

# 5 German Reunification

In this section, we consider an episode presenting the counterpart of disintegration—the reunification of Germany. Available trade statistics indicate that the reunification brought about a sharp increase of trade between former West Germany and the GDR, with the bulk of this increase occurring already before the political reunification.[12] According to West German data, West German exports to former East Germany nearly tripled between 1988 and 1990. However, export growth slowed down between 1992 and 1994. The growth of West German imports from former East Germany was not nearly as dramatic as the growth of exports. In 1994, the volume of West German exports exceeded imports from the East approximately five times.

[12] After the fall of the Berlin Wall in November 1989, the two Germanies formed an economic and monetary union on July 1, 1990. The political unification formally took effect on October 3, 1990.

Because data pertaining the pre-reunification period are not comparable with the later data,[13] we estimate the intensity of trade between the two German entities starting as of 1991. Moreover, we were unable to obtain data on East-West trade after 1994. For these reasons, our analysis of intra-German post-reunification trade pertains only to the period between 1991 and 1994. As the previous discussion suggests, the evolution of West German exports and imports differs considerably. Therefore, we estimate separate coefficients for both directions of trade flows. The distance between West and East Germany is estimated as the distance between Berlin and Frankfurt (530 km). Using different distance would change the coefficient estimates correspondingly, but not the evolution of estimated trade intensities over time. GDP estimates for former East Germany are taken from Ragnitz et al. (2000). According to Ragnitz et al. (2000) and Von Hagen and Strauch (2000), transfers from West German States amounted to between 40 % and 50 % of East German GDP during the analyzed period. To account for the transfers, we reduced the estimates of East German GDP accordingly. So-adjusted GDP serves as a better proxy for the potential supply of goods available for West German imports from this region.

According to our estimates (Figure 2), West German exports were approximately six times above the *normal* level in 1991. The subsequent years brought a slight decline, to five times the *normal* level in 1994. This trade intensity corresponds to the lower bound of available estimates of *home bias* in developed countries. As such, it is in fact lower than the estimate of German home bias (ten) reported by Nitsch (1998). The slight decline in intensity of exports may reflect the gradual reduction of budgetary transfers and infrastructure investment in former East Germany during the analyzed period. On the other hand, the intensity of East German exports to West Germany increased between 1991 and 1994, albeit remaining at a much lower level: 71% above the normal level in 1991 and increasing to 77% by 1994. Hence, our results suggest that the German reunification brought about a substantial increase in the intensity of West German exports to former East Germany, whereas the intensity of flows in the opposite direction increased much more modestly. Apparently, much of the increase in exports was fueled by government transfers and infrastructure

[13] The pre-unification data measure only goods exports whereas the later data also include services, see Haschke (1993).

investments, rather than East German demand. As transfers and investments continue to fall in the future, so will the intensity of West German exports.

**Insert Figure 2 about here.**

# 6 Formal Preferential Trade Areas

The results presented in the previous section suggest that the former constituent Republics of demised federations retain above-normal trade relations also after the disintegration, but the intensity of trade declines sharply compared to pre break-up levels. In the present section, we discuss the trade effects of formal preferential-trade areas—the EU, EFTA, CEFTA and the Europe Agreements—and compare them with trade patterns in former federations.

Trade among the five Central European countries that eventually formed the CEFTA (Central European Free Trade Agreement) was initially on a downward trajectory following the dissolution of the CMEA in 1991—see Figure 3.[14] During 1992 and 1993, trade within CEFTA (encompassing initially the Czech Republic, Hungary, Poland and Slovakia and subsequently extended to include also Slovenia[15]) roughly corresponded to their income levels and distance (after controlling for the special trade relations between the Czech and Slovak Republic). Afterwards, trade relations gradually intensified, until reaching approximately twice the normal level of trade by 1997. According to the full sample, intra-CEFTA trade deteriorated again in 1998, to some 40 % above the normal level, it remains to be seen whether this is change in trend will be sustained.

**Insert Figure 3 about here.**

Trade between Western and Eastern European countries 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

[14] Cheikbossian and Maurel (1998) show that the collapse of trade among the CMEA countries started already in the mid 1980s.

[15] 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

countries, with which it later concluded the Europe Agreements[16], was about 40 % below the *normal* level. The trade of Austria, Finland and Sweden with these countries was approximately one-third below the *normal* level. According to the full sample, the trade intensity was even lower. However, the subsequent trade liberalization following the collapse of communist regimes boosted trade among the former cold-war adversaries. The results based on the restricted 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 the associated countries even faster. Nevertheless, according to the full sample, which also includes the newly created countries, the trade relations of both the EC12 and EFTA3 with the associated countries did not reach the *normal* level until 1995.

**Insert Figure 4 about here.**

Formation of free trade areas in Western Europe had a positive although not very strong effect on trade flows—see Figure 5. In fact, the trade effect of Western European preferential-trade areas falls short even of that of the CEFTA. On average, trade between two EU (EC12) countries exceeds trade between two comparable non-EU countries by one half. 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.[17] 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-quarter more with the EC countries than with the other countries in our sample. The

[16] Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia.

[17] This disappointing result is in line with the findings of Soloaga and Winter (1999), and others.

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.

**Insert Figure 5 about here.**

# 7 Sensitivity Analysis—Augmented Gravity Models

In this Section, we subject our results to robustness checks by replicating the analysis for alternative specifications of the gravity model augmented by additional explanatory variables. Besides assessing robustness, some of these variables, especially those related to exchange-rate variability, can provide additional insights on factors explaining the sharp decline of the 'home bias' in the wake of disintegration.

One of the additional variables frequently included in the gravity equation is income per capita, $y$. This variable proxies the level of economic development. According to Linder (1961), there is a strong relationship between per-capita income and the consumption patterns—in particular, he argues that demand for tradables increases with per-capita income. Therefore, income per capita should have a positive effect on trade.

Another extension of the gravity equation that we test is using an alternative measure of remoteness. Deardoff (1995) argues that the volume of bilateral trade is determined not only by the distance between the two countries but also by their overall geographic position relative to other countries. Given the bilateral distance, two countries trade more if they are both relatively far from other potential trade partners. Following this argument, Wei (1996) augments the gravity model by a weighted-average distance to other countries:

$$R_k = \sum_i w_i D_{ik} \ , \ k = X, M, \tag{2}$$

where $X$ and $M$ distinguish the exporting and importing country, respectively, and the weight $w_i$ is the share of country $i$ in world output.[18] As the countries under focus in

[18] We also tried an alternative measure of remoteness used by Wolf (2000) defined as ratio of the bilateral distance to an average of $R_X$ and $R_M$, $R_{IJ} = D_{IJ} / 0.5 \ (R_X + R_M)$. However, this remoteness measure was less robust than that defined by (2).

this paper are generally located on the periphery (at least relative to the other countries included in our sample), former members of disintegrated countries should on average trade more intensively with each other than with similar, but more centrally located, countries.

Another extension of the gravity model aims at capturing the effects of exchange-rate volatility on trade, including the impact of currency unions on trade among the participating countries. Rose (2000) estimates that countries with a common currency trade more than three times more with other than countries with different currencies. This result is reexamined and confirmed by Frankel and Rose (2000). Unfortunately, we cannot separate the effects of currency separation from those of political disintegration because the two events typically unfolded (nearly) simultaneously. Nevertheless, we can assess the impact of increased exchange-rate volatility on bilateral trade in the wake of disintegration. Following Rose (2000), we measure exchange-rate volatility by standard deviation of monthly bilateral exchange rate (first difference of logs), $s_{ij}$, in respective years. Furthermore, following Wei (1996), we measure average exchange rate volatility of each country vis-à-vis the remaining $n$ countries as: $s_i = \sum_j^n s_{ij} \Big/ n$.

However, the results reported in the literature are mixed. Rose (2000) finds that although the impact of bilateral exchange-rate volatility on trade is statistically significant, the effect of currency unions goes beyond what can be accounted by elimination of exchange-rate volatility. Wei (1996), in contrast, fails to find any significant and theory-consistent effect of exchange-rate volatility on trade flows. De Grauwe and Skudelny (2000) obtain substantially different coefficients for exchange-rate volatility for individual EU countries, moreover, those for France and Italy are not significant.

Thus, our augmented version of the gravity model includes the following additional variables: the per-capita income of both countries, $y_k$ (with $k=X,M$ denoting the exporting and the importing country, respectively), the remoteness measure, $R_i$, the bilateral exchange-rate volatility, $s_{ij}$, and the average exchange rate volatility, $s_L$:

$$M = \beta_1 + \sum_{h=X,M} \beta_h Y_h + \beta_4 d + \sum_{k=X,M} \beta_k y_k + \beta_7 s_{ij} + \sum_{l=X,M} \beta_l s_l + \sum_{r=X,M} \beta_r \log(R_i) + \sum_d \beta_d D_d + \varepsilon . \quad (3)$$

The results obtained with the augmented gravity model are reported in Table 4. Income per capita of the importing country appears positive and significant during early 1990s, but negative (and significant) later. Income per capita of the exporting country, in contrast, is positive and significant almost during the entire period (except 1993 and 1994). Remoteness of the exporter and the importer appears with the correct (positive) sign and is significant in both cases.

**Insert Table 4 about here.**

In general, our results do not show any consistent effect of the bilateral exchange rate variability on trade flows, although the effect of average exchange-rate volatility of both exporter and importer appears negative and significant for several years. In fact, the effect of bilateral exchange-rate volatility turns out significant and positive in two years (1995 and 1996) and significantly negative in one year (1991). This can be due to the inclusion of additional Central and Eastern European countries, with high trade growth and high exchange-rate fluctuations. Indeed, the bilateral exchange rate has the correct (negative) sign when we estimate (3) with the restricted sample at the beginning of the analyzed period, although the estimated coefficient is again not robust in the subsequent years.[19]

Importantly, the inclusion of additional variables has little effect on our estimates of the home bias within former federations in Eastern Europe (and especially so for Slovenia-Croatia and the former Czechoslovakia). For most of the analyzed period, the estimates of home bias differ little whether estimated with the traditional or the augmented gravity model. Hence, the relative remoteness of these countries and the increased exchange-rate volatility in the wake of the break-up do not explain away the size of this bias. Given the overall low robustness of these additional variables, the traditional specification of the gravity model seems to be more appropriate for this kind of analysis.

Another refinement of the gravity model concerns the estimation technique. So far, we estimated gravity models in a series of independent cross sections for individual years. Baldwin (1994), Mátyás (1997), and Cheng and Wall (1999) argue that instead panel-data techniques are more appropriate. In particular, Cheng and Wall

[19] These results are available from the authors on request.

(1999) argue that, in cross-section analysis, the gravity model yields biased estimates, which tend to overestimate trade for low-trade countries and underestimate trade among high-trade countries.

Therefore, we estimate the gravity model in another three alternative specifications (see Table 5): (a) pooled cross section, (b) fixed effects model with time effects for individual years ($\tau_t$), and (c) fixed effect model with country effects ($\phi_{ij}$).

$$M = \beta_1 + \sum_{h=X,M} \beta_h Y_h + \beta_4 d + \sum_{k=X,M} \beta_k y_k + \beta_7 s_{ij} + \sum_{j=X,M} \beta_j s_j + \sum_{i=X,M} \beta_i \log(R_i) + \sum_k \beta_k D_k + \varepsilon \quad (4a)$$

$$M = \sum_{t=1990}^{1998} \tau_t + \sum_{h=X,M} \beta_h Y_h + \beta_4 d + \sum_{k=X,M} \beta_k y_k + \beta_7 s_{ij} + \sum_{j=X,M} \beta_j s_j + \sum_{i=X,M} \beta_i \log(R_i) + \sum_k \beta_k D_k + \varepsilon \quad (4b)$$

$$M = \sum_i \sum_j \phi_{ij} + \sum_{h=X,M} \beta_h Y_h + \sum_{k=X,M} \beta_k y_k + \beta_5 s_{ij} + \sum_{j=X,M} \beta_j s_j + \sum_k \beta_k D_k + \varepsilon \quad (4c)$$

Following Cheng and Wall (1999), we construct fixed effects for each of the approximately 1300 pairs of trade partners and for both directions of trade flows, i.e. $\phi_{ij} \neq \phi_{ij}$. The set of fixed country and time effects replaces the constant in the equation. We measure the effects of disintegration by including a set of dummy variables for selected groups of countries in each available year. This set is multicollinear with the country effects, therefore, we drop one fixed effect for each group of countries created from former multinational federations. The fixed country effects reflect all factors, which are constant for a given pair of countries. Therefore, we have to drop distance, participation in various free trade agreements, and measures of remoteness in the third specification (4c). In general, the time effects (not reported in Table 5) do not have much explanatory power with respect to trade flows between 1990 and 1998.

**Insert Table 5 about here.**

Our major results remain also largely unchanged in the panel specifications. The average volatility of exchange rates of the importer and the exporter has the correct (negative) sign and is highly significant in the regression with fixed country effects. In contrast, the volatility of bilateral exchange rate and income per capita of both countries have the wrong signs (and they are significant). Nevertheless, the fixed effect estimation of the gravity model confirm our conclusions regarding evolution of the home bias in former federations. In all countries, trade intensity declined dramatically after disintegration.

# 8 Conclusions

Our objective in this paper was to investigate the impact of disintegration on trade. Unlike the impact of integration, the economic consequences of disintegration have been little explored in the literature. We study three recent disintegration episodes in Europe—the break-ups of the Soviet Union, Yugoslavia and Czechoslovakia between 1991 and 1993. Using the gravity model of trade, we assess the evolution of trade relations among the former constituent Republics of these federations in the wake of disintegration. We find evidence of a strong home bias in the former federations: around the time of disintegration, trade between the constituent parts of Czechoslovakia, Soviet Union (represented in our data by Belarus, Russia and Ukraine) and the Baltic countries was approximately 43 times greater than trade with third countries (controlling for GDP and distance). The home bias was lower in Slovenia and Croatia, with their bilateral trade exceeding the normal extent of trade *only* 24 times in 1990. Disintegration was followed by a sharp deterioration of this home bias. Nevertheless, traditional relations die hard and by 1998, trade within the former federations exceeded normal trade twice for Slovenia-Croatia, seven times for the former Czechoslovakia, 13 times for the Baltics, and 30 times for Belarus-Russia-Ukraine.

We then proceed to compare the trade effects of disintegration episodes with the effects of integration. We find that, not surprisingly, German reunification was followed by an increase in bilateral trade. However, the home bias obtained for trade between the former West Germany and the GDR is dwarfed by the figures reported above for the former federations in Eastern Europe. In fact, our estimate of inter-German home bias even falls short of the figure estimated for West Germany by Nitsch (1998).

In comparison to the formal preferential-trade areas in Eastern and Western Europe, trade relations among the former constituent Republics of demised federations appear very strong indeed. The difference is particularly pronounced with respect to intra-EU trade—we found that EU membership on average increases bilateral trade only 1.5 times. Trade intensity in the former federations continues to be high despite greater open and hidden barriers to trade among the successor countries, higher transaction costs and exchange rate uncertainty as well as political instability.

These results suggest that although disintegration was followed by a sharp deterioration of the bilateral trade intensity, the relations between former constituent parts of a federation retain some of their specific nature for several years after the break-up. The outside economic and political environment seems to matter as well though. The Czech and Slovak Republics, which enjoy greater proximity to Western Europe, experienced a deeper collapse of bilateral trade than the Baltics or Belarus, Russia and Ukraine, despite generally lower barriers to trade in the former Czechoslovakia. The prospects of an early EU membership for the Czech Republic, Slovenia and Estonia may have contributed to the further deterioration of trade with their traditional partners in the late 1990s. In contrast, trade intensity among Belarus, Russia and Ukraine actually increased in 1998, possibly as a consequence of the Russian crisis, and efforts towards re-unification between Russia and Belarus. Hence, while disintegration matters, the overall context is important as well.

Our findings are broadly consistent with earlier findings on currency unions. In particular, Rose (2000) shows that a common currency increases bilateral trade flows approximately three times. Indeed, we found a decline of bilateral trade intensity by about this factor during the first years of independence. However, we cannot separate the effect of the currency separation from that of the political disintegration as both effects occurred (more or less) simultaneously in the countries under scrutiny. Nevertheless, we find that volatility of exchange rates did not have a significant effect on bilateral trade within our data set.

# References


Baldwin, Richard E. (1994), *Towards an Integrated Europe*, CEPR, London.

Bayoumi, Tamim, and Eichengreen, Barry (1995), *Is Regionalism Simply a Diversion? Evidence from the Evolution of the EC and EFTA*, CEPR Discussion Paper No. 1294.

Cheikbossian, Guillaume and Mathilde Maurel (1998), "The New Geography of East European Trade," *Kyklos* **51** (1), pp. 45-71.

Cheng, I-Hui and Howard J. Wall (1999), *Controlling for Heterogeneity in Gravity Models of Trade*, Federal Reserve Bank of St. Luis, Working Paper No. 99-01A.

De Grauwe, Paul and Frauke Skudelny (2000), "The Impact of EMU on Trade Flows," *Weltwirtschaftliches Archiv* **136** (3), 381-402.

De Ménil, Georges and Maurel, Mathilde (1994), "Breaking up a Customs Union: The Case of the Austro-Hungarian Empire in 1919," *Weltwirtschaftliches Archiv*; **130** (3), 553-575.

Deardorff, Allan V. (1995), *Determinants of Bilateral Trade: Does Gravity Work in a Neoclassical World?*, NBER Working Paper No. 5377.

Dedek, Oldrich, Ed. (1996), *The Break-up of Czechoslovakia: An In-depth Economic Analysis*. Avebury, UK: Aldershot.

Djankov, Simeon and Caroline Freund (2000), *Disintegration*, CEPR Discussion Paper No. 2545.

Eichengreen, Barry, and Douglas A. Irwin (1996), *The Role of History in Bilateral Trade Flows*, CEPR Discussion Paper No. 5565.

Evenett, S. J., and W. Keller (1998), *On the Theories Explaining the Success of the Gravity Equation*, NBER Working Paper No. 6529.

Fidrmuc, Jarko (1999), "Trade Diversion in 'Left-Outs' in Eastward Enlargement of European Union, The Case of Slovakia," *Europe-Asia Studies* **51** (4), 633-645.

Frankel, Jeffrey A and Andrew K. Rose (2000), *Estimating the Effects of Currency Unions on Trade and Output*, NBER Working Paper No. 7857.

Haschke, Ingrid (1993), "Der innerdeutsche Handel im Strukturwandel," *Konjunkturbericht* Nr. 5-6, Institut für Wirtschaftsforschung, Halle, 13-19.

Head, K. and T. Mayer (2000), "Non-Europe: The Magnitude and Causes of Market Fragmentation in the EU," *Weltwirtschaftliches Archiv* **136** (2), 284-314.

Helliwell, John F. (1997), *National Borders, Trade and Migration*, NBER Working Paper No. 6027.

Helpman, E. and P. R. Krugman (1985), *Market Structure and Foreign Trade: Increasing Returns, Imperfect Competition, and the International Economy*, MIT Press, Cambridge.

Holzmann, R. and K. Zukowska-Gagelmann (1996), "Exportchancen und Importschocks: Eine Untersuchung zur Asymetrie der Handelsanpassung der OECD-Länder im Gefolge der Marktöffnung in Mittel- und Osteuropa," in Holzmann, R. and R. Neck (Eds.), *Ostöffnung: Wirtschaftliche Folgen für Österreich*, Manzsche Verlags- Universitätsbuchhandlung, Wien.

Linder, S. (1961), *An Essay on Trade and Transformation*, Almqvist and Wiksells, Uppsala.

Linnemann, Hans (1966), *An Econometric Study of International Trade Flows*, Amsterdam.

Mátyás, L. (1997), "Proper Econometric Specification of the Gravity Model," *World Economy* **20** (3), 363-368.

McCallum, John (1995), "National Borders Matter: Canada-U.S. Regional Trade Patterns," *American Economic Review* **85** (3), 615-623.

Mencinger, Joze (1997), "Slovenia: The Economic Situation," in Heuberger, V., Riegler, H. and H. Vidovic (Eds.), *At the Crossroads: Disaster or Normalization? The Yugoslav Successor States in the 1990s*, Peter Lang Verlag, Wien, 79-90.

Nitsch, Volker (1998), *National Borders and International Trade: Evidence from the European Union*, Humbolt University Berlin, mimeo.

Obstfeld, Maurice and Kenneth Rogoff (2000), *The Six Major Puzzles in International Macroeconomics: Is There a Common Cause?*, NBER Working Paper No. 7777.

Ragnitz, Joachim; Dreger, Christian; Komar, Walter and Gerald Müller (2000), *Simulationsrechnungen zu den Auswirkungen einer Kürzung von Transferleistungen für die neuen Bundesländer*, Institut für Wirtschaftsforschung, Halle.

Rose, Andrew K. (2000), "One Money, One Market: Estimating the Effect of Common Currencies on Trade," *Economic Policy: A European Forum*, April 2000, 7-45.

Smarzynska, Beata K. (1999), "Does Relative Location Matter for Bilateral Trade Flows? An Extension of the Gravity Model," The World Bank, mimeo.

Soloaga, Isidro and L. Alan Winters (1999), *Regionalism in the Nineties: What Effect on Trade?*, CEPR Discussion Paper No. 2183, London.

Stiblar, Franjo (1996), "Potencialni pomen trgov ex-Jugoslavije za Slovenijo," Gospodarska Gibanja No. 267, 23-43.

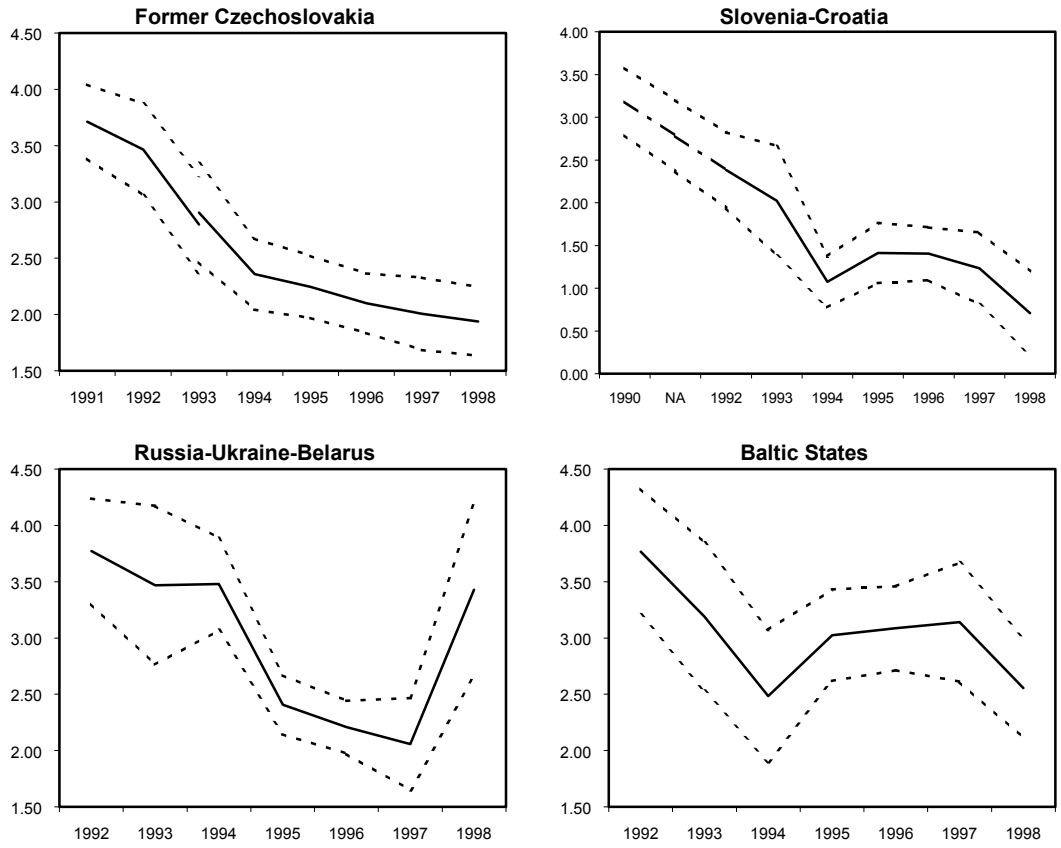
Von Hagen, Jürgen, and Rolf R. Strauch (2000), *East Germany: Transition with Unification—Experiments and Experiences*. CEPR Discussion Paper No. 2386.

Wei, Shang-Jin (1996), *Intra-national Versus International Trade: How Stubborn Are Nations in Global Integration?*, NBER Working Paper No. 5531.

Wolf (2000), “Intranational Home Bias in Trade”, *Review of Economics and Statistics* **82** (4), 555-563.

WIIW (1999), *Countries in Transition 1999*, The Vienna Institute for International Economic Studies, Vienna.

## Figure 1: 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. Trade flows between Slovenia and Croatia in 1990 are according to Mencinger (1998) and WIIW (1999), while trade data on 1991 are not available.

## Figure 2: German Reunification, Restricted Sample

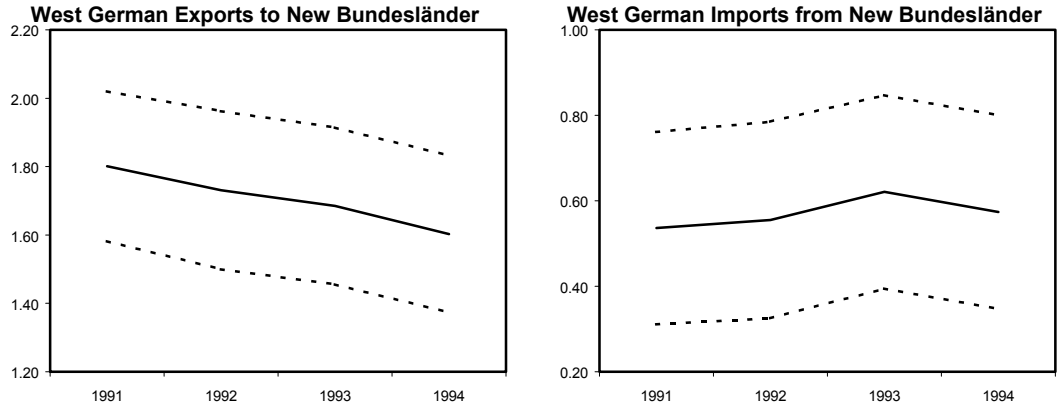
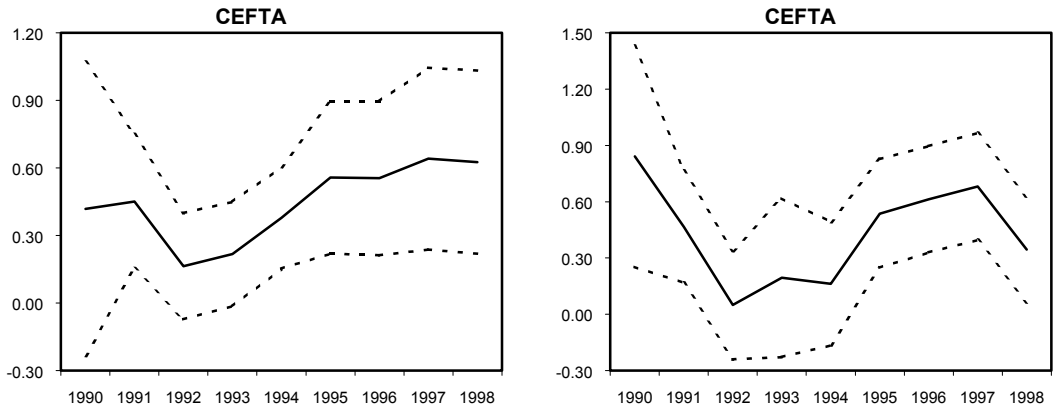


**Figure 3: Trade Liberalization in Eastern Europe**

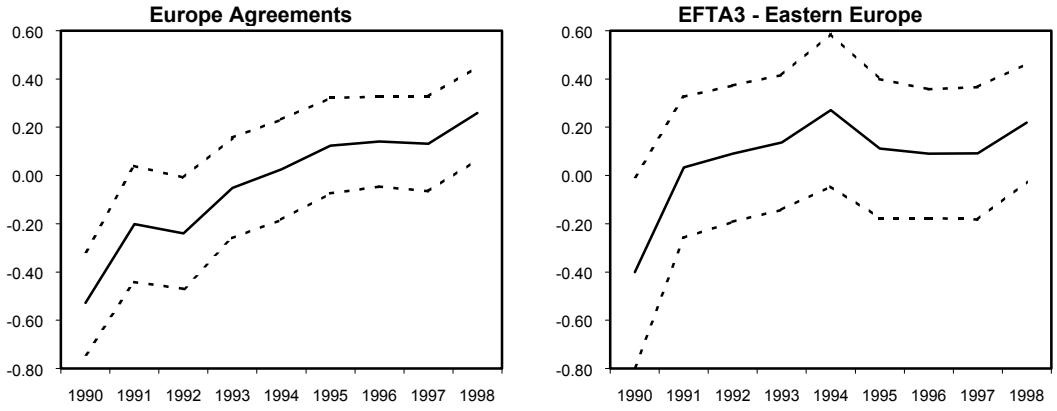
**A: Restricted Sample*** **B: Full Sample**



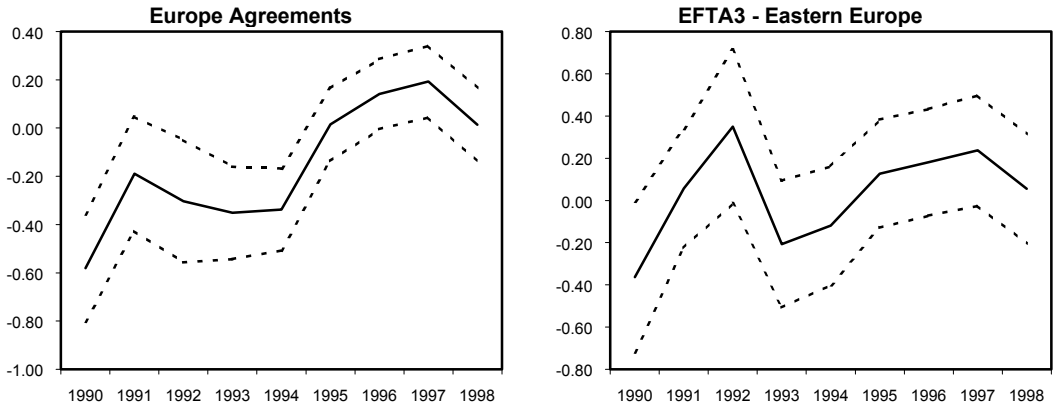

Note: * The restricted sample only contains bilateral trade flows that are available during the whole period 1990-1998.

**Figure 4: Trade Relations between East and West**

**A: Restricted Sample**

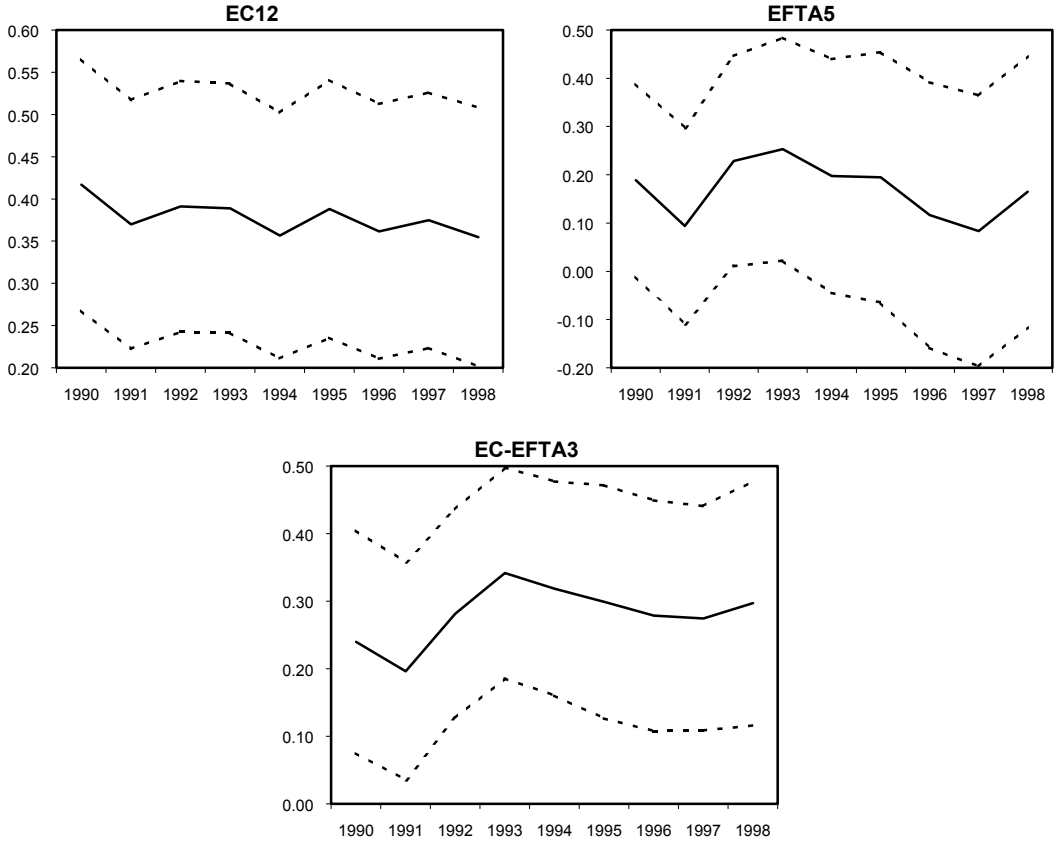



**B: Full Sample**




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

**Figure 5: 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.

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

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 |
|---|---|---|---|---|---|---|---|---|---|
| No. of observations | 630 | 630 | 630 | 630 | 630 | 630 | 630 | 630 | 630 |
| Adjusted $R^2$ | 0.8698 | 0.8853 | 0.8358 | 0.8029 | 0.8361 | 0.8479 | 0.8478 | 0.8407 | 0.8161 |
| Constant | 3.346 | 3.659 | 3.796 | 3.765 | 3.519 | 3.285 | 3.480 | 3.604 | 3.552 |
| | (8.742) | (9.540) | (10.251) | (10.358) | (9.962) | (9.128) | (10.121) | (10.519) | (10.242) |
| GDP of importing country | 0.875 | 0.839 | 0.838 | 0.838 | 0.850 | 0.868 | 0.861 | 0.857 | 0.845 |
| | (36.485) | (35.237) | (36.879) | (36.946) | (36.663) | (37.394) | (39.104) | (37.823) | (35.882) |
| GDP of exporting country | 0.913 | 0.894 | 0.909 | 0.925 | 0.911 | 0.922 | 0.921 | 0.909 | 0.902 |
| | (40.054) | (44.008) | (43.995) | (45.415) | (45.092) | (42.083) | (44.140) | (44.257) | (40.754) |
| Distance | -0.866 | -0.872 | -0.884 | -0.900 | -0.881 | -0.876 | -0.888 | -0.875 | -0.868 |
| | (-21.313) | (-21.950) | (-22.333) | (-22.616) | (-22.308) | (-21.557) | (-22.887) | (-22.214) | (-21.796) |
| Dummy: Common border | 0.406 | 0.445 | 0.427 | 0.398 | 0.421 | 0.385 | 0.389 | 0.397 | 0.386 |
| | (3.617) | (3.606) | (3.257) | (3.084) | (3.241) | (3.185) | (3.359) | (3.589) | (3.332) |
| Dummy: English speaking countries | 1.136 | 1.109 | 1.105 | 1.174 | 1.180 | 1.251 | 1.154 | 1.130 | 1.276 |
| | (6.178) | (5.953) | (5.469) | (6.122) | (6.262) | (6.946) | (6.397) | (6.065) | (7.001) |
| Dummy: EC12 | 0.417 | 0.370 | 0.391 | 0.389 | 0.357 | 0.388 | 0.361 | 0.375 | 0.355 |
| | (5.459) | (4.892) | (5.134) | (5.134) | (4.779) | (4.961) | (4.669) | (4.836) | (4.517) |
| Dummy: CEFTA | 0.418 | 0.451 | 0.164 | 0.217 | 0.378 | 0.557 | 0.554 | 0.641 | 0.626 |
| | (1.249) | (2.960) | (1.353) | (1.825) | (3.257) | (3.213) | (3.159) | (3.094) | (2.997) |
| Dummy: Europe Agreements | -0.528 | -0.201 | -0.240 | -0.052 | 0.025 | 0.124 | 0.140 | 0.132 | 0.259 |
| | (-4.832) | (-1.626) | (-2.027) | (-0.484) | (0.237) | (1.220) | (1.466) | (1.310) | (2.632) |
| Dummy: EFTA | 0.189 | 0.094 | 0.228 | 0.253 | 0.198 | 0.195 | 0.116 | 0.083 | 0.165 |
| | (1.845) | (0.900) | (2.041) | (2.138) | (1.592) | (1.463) | (0.823) | (0.578) | (1.147) |
| Dummy: EC12- EFTA3 | 0.240 | 0.196 | 0.281 | 0.342 | 0.319 | 0.299 | 0.279 | 0.275 | 0.297 |
| | (2.836) | (2.374) | (3.550) | (4.267) | (3.924) | (3.379) | (3.180) | (3.224) | (3.201) |
| Dummy: EFTA3-Associated | -0.400 | 0.034 | 0.091 | 0.137 | 0.271 | 0.112 | 0.090 | 0.092 | 0.219 |
| countries | (-1.975) | (0.225) | (0.628) | (0.959) | (1.671) | (0.759) | (0.659) | (0.652) | (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. CEFTA includes the Czech Republic, Hungary, Poland, Slovakia and Slovenia. EC12 refers to the 12 countries, which were 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, Full Sample**

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 |
|---|---|---|---|---|---|---|---|---|---|
| No. of observations | 670 | 643 | 836 | 1140 | 1219 | 1248 | 1247 | 1238 | 1247 |
| Adjusted $R^2$ | 0.8698 | 0.8853 | 0.8358 | 0.8029 | 0.8361 | 0.8479 | 0.8478 | 0.8407 | 0.8161 |
| Constant | 3.372 | 3.663 | 4.426 | 4.691 | 4.786 | 4.206 | 4.136 | 4.311 | 4.776 |
| | (8.400) | (9.613) | (10.137) | (13.123) | (15.977) | (14.610) | (14.887) | (15.281) | (15.036) |
| GDP of importing country | 0.873 | 0.852 | 0.903 | 0.838 | 0.845 | 0.873 | 0.853 | 0.855 | 0.823 |
| | (35.596) | (36.001) | (38.751) | (43.194) | (47.957) | (51.761) | (50.953) | (51.032) | (40.779) |
| GDP of exporting country | 0.924 | 0.899 | 0.865 | 0.872 | 0.860 | 0.939 | 0.959 | 0.958 | 0.935 |
| | (40.777) | (44.504) | (36.782) | (44.072) | (48.944) | (55.925) | (57.897) | (54.998) | (45.399) |
| Distance | -0.877 | -0.886 | -0.976 | -0.988 | -1.007 | -1.024 | -1.016 | -1.025 | -1.040 |
| | (-21.689) | (-21.920) | (-20.744) | (-24.005) | (-26.899) | (-28.098) | (-28.010) | (-27.599) | (-23.753) |
| Dummy: Common border | 0.317 | 0.454 | 0.608 | 0.537 | 0.760 | 0.664 | 0.631 | 0.595 | 0.670 |
| | (2.552) | (3.706) | (3.575) | (2.251) | (5.691) | (5.567) | (5.712) | (5.364) | (5.009) |
| Dummy: English speaking | 1.169 | 1.128 | 1.179 | 1.342 | 1.360 | 1.536 | 1.479 | 1.493 | 1.535 |
| countries | (6.381) | (6.048) | (5.828) | (7.333) | (7.557) | (8.713) | (8.273) | (7.980) | (8.498) |
| Dummy: EC12 | 0.437 | 0.364 | 0.288 | 0.377 | 0.289 | 0.396 | 0.447 | 0.471 | 0.309 |
| | (5.650) | (4.821) | (3.498) | (4.570) | (3.852) | (5.070) | (5.815) | (6.143) | (3.730) |
| Dummy: CEFTA | 0.842 | 0.466 | 0.050 | 0.195 | 0.163 | 0.537 | 0.613 | 0.681 | 0.344 |
| | (2.783) | (3.051) | (0.334) | (0.901) | (0.965) | (3.627) | (4.227) | (4.653) | (2.387) |
| Dummy: Europe Agreements | -0.580 | -0.190 | -0.303 | -0.351 | -0.337 | 0.015 | 0.141 | 0.193 | 0.014 |
| | (-5.114) | (-1.564) | (-2.329) | (-3.573) | (-3.875) | (0.191) | (1.889) | (2.524) | (0.177) |
| Dummy: EFTA | 0.230 | 0.089 | 0.070 | 0.158 | -0.022 | 0.099 | 0.120 | 0.110 | -0.011 |
| | (2.100) | (0.876) | (0.637) | (1.104) | (-0.209) | (0.881) | (0.985) | (0.880) | (-0.087) |
| Dummy: EC12- EFTA3 | 0.245 | 0.190 | 0.233 | 0.344 | 0.294 | 0.375 | 0.409 | 0.411 | 0.306 |
| | (2.896) | (2.310) | (2.771) | (4.448) | (3.684) | (4.230) | (4.714) | (4.803) | (3.174) |
| Dummy: EFTA3-Associated | -0.364 | 0.057 | 0.350 | -0.207 | -0.119 | 0.127 | 0.181 | 0.237 | 0.055 |
| countries | (-1.982) | (0.392) | (1.879) | (-1.344) | (-0.828) | (0.966) | (1.393) | (1.766) | (0.415) |
| Dummy: Baltic States | | | 3.766 | 3.188 | 2.485 | 3.024 | 3.088 | 3.142 | 2.556 |
| | | | (13.130) | (9.454) | (8.241) | (14.533) | (16.165) | (11.585) | (11.202) |
| Dummy: Russia-Belarus- | | | 3.771 | 3.467 | 3.480 | 2.407 | 2.207 | 2.057 | 3.427 |
| Ukraine | | | (15.740) | (9.596) | (16.561) | (18.024) | (18.347) | (9.807) | (8.663) |
| Dummy: Slovenia-Croatia | | | 2.382 | 2.021 | 1.075 | 1.413 | 1.404 | 1.231 | 0.708 |
| | | | (10.535) | (6.124) | (7.004) | (7.823) | (8.872) | (5.695) | (2.810) |
| Dummy: Former Czechoslovakia | | | | 2.905 | 2.359 | 2.245 | 2.099 | 2.006 | 1.939 |
| | | | | (12.968) | (14.550) | (15.885) | (15.472) | (12.224) | (12.350) |

**Notes:** See Table 1.

**Table 3 Gravity Model of Trade Flows, Using Alternative Estimates of Trade Flows between Selected Pairs of Countries**

| | 1990[SLO] | 1991[CS] | 1992[CS] | 1993[CS] | 1991[GE] | 1992[GE] | 1993[GE] | 1994[GE] |
|---|---|---|---|---|---|---|---|---|
| No. of observations | 672 | 645 | 838 | 1140 | 632 | 632 | 632 | 632 |
| Adjusted $R^2$ | 0.8699 | 0.8855 | 0.8360 | 0.8028 | 0.8825 | 0.8805 | 0.8803 | 0.8786 |
| Constant | 3.372 | 3.663 | 4.426 | 4.691 | 3.659 | 3.796 | 3.765 | 3.519 |
| | (8.400) | (9.613) | (10.137) | (13.123) | (9.540) | (10.251) | (10.358) | (9.962) |
| GDP of importing country | 0.873 | 0.852 | 0.903 | 0.838 | 0.839 | 0.838 | 0.838 | 0.850 |
| | (35.596) | (36.005) | (38.752) | (43.195) | (35.237) | (36.879) | (36.947) | (36.663) |
| GDP of exporting country | 0.924 | 0.899 | 0.865 | 0.872 | 0.894 | 0.909 | 0.925 | 0.911 |
| | (40.780) | (44.510) | (36.787) | (44.071) | (44.008) | (43.995) | (45.415) | (45.092) |
| Distance | -0.877 | -0.886 | -0.976 | -0.988 | -0.872 | -0.884 | -0.900 | -0.881 |
| | (-21.689) | (-21.920) | (-20.744) | (-24.005) | (-21.950) | (-22.333) | (-22.616) | (-22.308) |
| Dummy: Common border | 0.317 | 0.454 | 0.608 | 0.537 | 0.445 | 0.427 | 0.398 | 0.421 |
| | (2.552) | (3.706) | (3.575) | (2.251) | (3.606) | (3.257) | (3.084) | (3.241) |
| Dummy: English speaking | 1.169 | 1.128 | 1.179 | 1.342 | 1.109 | 1.105 | 1.174 | 1.180 |
| Countries | (6.381) | (6.048) | (5.828) | (7.333) | (5.953) | (5.469) | (6.122) | (6.262) |
| Dummy: EC12 | 0.437 | 0.364 | 0.288 | 0.377 | 0.370 | 0.391 | 0.389 | 0.357 |
| | (5.650) | (4.821) | (3.498) | (4.570) | (4.892) | (5.134) | (5.134) | (4.779) |
| Dummy: CEFTA | 0.842 | 0.466 | 0.050 | 0.195 | 0.451 | 0.164 | 0.217 | 0.378 |
| | (2.783) | (3.051) | (0.334) | (0.901) | (2.960) | (1.353) | (1.825) | (3.257) |
| Dummy: Europe Agreements | -0.580 | -0.190 | -0.303 | -0.351 | -0.201 | -0.240 | -0.052 | 0.025 |
| | (-5.114) | (-1.564) | (-2.329) | (-3.573) | (-1.626) | (-2.027) | (-0.484) | (0.237) |
| Dummy: EFTA | 0.230 | 0.089 | 0.070 | 0.158 | 0.094 | 0.228 | 0.253 | 0.198 |
| | (2.100) | (0.876) | (0.637) | (1.104) | (0.900) | (2.041) | (2.138) | (1.592) |
| Dummy: EC12- EFTA3 | 0.245 | 0.190 | 0.233 | 0.344 | 0.196 | 0.281 | 0.342 | 0.319 |
| | (2.896) | (2.310) | (2.771) | (4.448) | (2.374) | (3.550) | (4.267) | (3.924) |
| Dummy: EFTA3-Associated | -0.364 | 0.057 | 0.350 | -0.207 | 0.034 | 0.091 | 0.137 | 0.271 |
| Countries | (-1.982) | (0.392) | (1.879) | (-1.344) | (0.225) | (0.628) | (0.959) | (1.671) |
| Dummy: Baltic States | | | 3.767 | 3.188 | | | | |
| | | | (13.130) | (9.454) | | | | |
| Dummy: Russia-Belarus- | | | 3.771 | 3.467 | | | | |
| Ukraine | | | (15.741) | (9.596) | | | | |
| Dummy: Slovenia-Croatia | 3.184 | | 2.382 | 2.021 | | | | |
| | (15.746) | | (10.535) | (6.124) | | | | |
| Dummy: Former Czechoslovakia | | 3.713 | 3.466 | 2.798 | | | | |
| | | (22.106) | (16.628) | (12.568) | | | | |
| Dummy: West German Exports to | | | | | 1.801 | 1.731 | 1.685 | 1.603 |
| former East Germany | | | | | (16.039) | (14.610) | (14.344) | (13.608) |
| Dummy: West German Imports from | | | | | 0.536 | 0.555 | 0.621 | 0.574 |
| former East Germany | | | | | (4.645) | (4.710) | (5.355) | (4.934) |

**Notes:** See Table 1. [SLO] Estimates of trade flows between Slovenia and Croatia according to Mencinger (1998) and WIIW (1999). [CS] Enterprise delivery statistics as estimates of trade flows between the Czech Republic and Slovakia for 1991-1993. [GE] Trade flows (including services) between West Germany and former East Germany according to German Statistical Office.

**Table 4 Augmented Gravity Model of Trade Flows, Full Sample**

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 |
|---|---|---|---|---|---|---|---|---|---|
| No. of observations | 619 | 643 | 641 | 1140 | 1219 | 1248 | 1247 | 1238 | 1247 |
| Adjusted $R^2$ | 0.8791 | 0.8943 | 0.8922 | 0.8092 | 0.8424 | 0.8535 | 0.8545 | 0.8461 | 0.8317 |
| Constant | -6.863 | -7.734 | -6.626 | -7.543 | -5.144 | -2.876 | -1.975 | -2.281 | -1.922 |
| | (-2.501) | (-2.617) | (-2.210) | (-2.536) | (-1.698) | (-0.938) | (-0.722) | (-0.859) | (-0.687) |
| GDP of importing country | 0.868 | 0.883 | 0.870 | 0.967 | 0.948 | 0.977 | 0.927 | 0.920 | 0.918 |
| | (31.037) | (31.947) | (30.512) | (37.158) | (38.322) | (36.207) | (40.311) | (39.352) | (33.505) |
| GDP of exporting country | 0.851 | 0.876 | 0.829 | 0.923 | 0.933 | 0.877 | 0.934 | 0.916 | 0.939 |
| | (30.276) | (31.055) | (30.289) | (27.499) | (33.086) | (33.810) | (37.998) | (35.782) | (34.481) |
| Distance | -0.937 | -1.015 | -1.061 | -1.091 | -1.112 | -1.123 | -1.119 | -1.113 | -1.130 |
| | (-16.666) | (-16.125) | (-18.245) | (-22.729) | (-25.011) | (-25.046) | (-26.393) | (-26.648) | (-24.575) |
| GDP per capita of importing country | 0.169 | 0.032 | 0.064 | -0.161 | -0.135 | -0.167 | -0.107 | -0.105 | -0.116 |
| | (3.262) | (0.630) | (1.370) | (-3.955) | (-3.095) | (-3.868) | (-2.836) | (-2.601) | (-2.507) |
| GDP per capita of exporting country | 0.250 | 0.240 | 0.323 | 0.010 | -0.061 | 0.153 | 0.134 | 0.180 | 0.132 |
| | (4.312) | (5.054) | (6.662) | (0.201) | (-1.211) | (3.800) | (3.426) | (4.230) | (3.155) |
| Remoteness of importing country | 0.687 | 0.665 | 0.728 | 0.732 | 0.614 | 0.635 | 0.434 | 0.433 | 0.220 |
| | (3.396) | (2.916) | (3.161) | (3.032) | (2.491) | (2.593) | (2.022) | (2.043) | (0.946) |
| Remoteness of exporting country | 0.397 | 0.592 | 0.524 | 0.623 | 0.553 | 0.261 | 0.378 | 0.376 | 0.558 |
| | (2.040) | (2.784) | (2.465) | (3.014) | (2.695) | (1.224) | (1.994) | (2.021) | (2.766) |
| Volatility of bilateral exch. rate | -0.131 | -0.054 | 0.067 | -0.031 | 0.047 | 0.147 | 0.311 | 0.034 | 0.086 |
| | (-1.724) | (-2.346) | (1.353) | (-0.668) | (0.858) | (3.733) | (3.311) | (1.216) | (1.979) |
| Average exchange rate volatility | 0.141 | 0.057 | -0.045 | 0.044 | -0.032 | -0.201 | -0.306 | -0.040 | -0.064 |
| of importing country | (1.801) | (2.333) | (-0.696) | (0.848) | (-0.541) | (-3.407) | (-3.124) | (-1.386) | (-1.300) |
| Average exchange rate volatility | 0.138 | 0.069 | 0.022 | 0.056 | -0.023 | -0.032 | -0.262 | -0.017 | -0.031 |
| of exporting country | (1.690) | (2.851) | (0.386) | (1.114) | (-0.384) | (-0.517) | (-2.668) | (-0.580) | (-0.652) |

**Table 4: Continued**

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 |
|---|---|---|---|---|---|---|---|---|---|
| Dummy: Common border | 0.254 | 0.277 | 0.343 | 0.363 | 0.614 | 0.571 | 0.590 | 0.548 | 0.544 |
| | (2.081) | (2.150) | (2.426) | (1.460) | (4.637) | (4.698) | (5.044) | (4.637) | (4.373) |
| Dummy: English speaking | 0.807 | 0.844 | 0.961 | 1.233 | 1.364 | 1.537 | 1.485 | 1.395 | 1.553 |
| countries | (5.497) | (5.376) | (5.494) | (7.509) | (8.054) | (9.375) | (8.746) | (8.356) | (8.591) |
| Dummy: EC12 | 0.330 | 0.285 | 0.294 | 0.444 | 0.417 | 0.412 | 0.459 | 0.434 | 0.438 |
| | (4.231) | (3.809) | (3.827) | (5.027) | (5.296) | (5.230) | (5.700) | (5.423) | (5.028) |
| Dummy: CEFTA | 1.438 | 0.845 | 0.553 | 0.435 | 0.337 | 0.559 | 0.662 | 0.719 | 0.562 |
| | (4.655) | (3.872) | (3.243) | (1.960) | (1.973) | (3.692) | (4.535) | (4.985) | (4.183) |
| Dummy: Europe Agreements | -0.183 | 0.048 | -0.121 | -0.187 | -0.206 | 0.084 | 0.159 | 0.204 | 0.222 |
| | (-1.180) | (0.357) | (-0.944) | (-1.865) | (-2.393) | (1.076) | (2.212) | (2.738) | (2.742) |
| Dummy: EFTA | -0.138 | -0.104 | -0.154 | 0.411 | 0.287 | 0.186 | 0.093 | 0.031 | 0.154 |
| | (-1.114) | (-0.870) | (-1.239) | (2.343) | (2.277) | (1.478) | (0.663) | (0.214) | (1.059) |
| Dummy: EC12- EFTA3 | 0.055 | 0.096 | 0.113 | 0.497 | 0.487 | 0.444 | 0.429 | 0.396 | 0.463 |
| | (0.617) | (1.106) | (1.368) | (5.430) | (5.400) | (4.624) | (4.623) | (4.263) | (4.587) |
| Dummy: EFTA3-Associated | -0.089 | 0.175 | 0.082 | -0.033 | 0.022 | 0.141 | 0.120 | 0.183 | 0.243 |
| Countries | (-0.395) | (1.120) | (0.525) | (-0.212) | (0.157) | (1.117) | (0.955) | (1.379) | (1.864) |
| Dummy: Baltic States | | | | 3.527 | 2.762 | 3.008 | 3.180 | 3.184 | 2.956 |
| | | | | (10.124) | (9.648) | (17.323) | (18.227) | (11.999) | (13.831) |
| Dummy: Russia-Belarus- | | | | 2.402 | 2.928 | 2.462 | 2.226 | 2.086 | 3.248 |
| Ukraine | | | | (4.335) | (9.443) | (11.103) | (12.568) | (9.074) | (5.031) |
| Dummy: Slovenia-Croatia | | | | 2.262 | 1.375 | 1.554 | 1.547 | 1.121 | 1.038 |
| | | | | (6.083) | (9.535) | (11.249) | (11.177) | (5.953) | (5.365) |
| Dummy: Former Czechoslovakia | | | | 2.924 | 2.412 | 2.362 | 2.119 | 1.986 | 1.981 |
| | | | | (12.646) | (15.064) | (16.267) | (15.402) | (12.112) | (13.259) |

**Notes:** See Table 1.

**Table 5 Augmented Gravity Model of Trade Flows, Panel Data**

| | Pooled Data [a] | Time Effects [b] | Country effects [c] |
|---|---|---|---|
| No. of observations | 9242 | 9242 | 9242 |
| Adjusted $R^2$ | 0.8464 | 0.8472 | 0.9704 |
| GDP of importing country | 0.931 | 0.929 | 1.581 |
| | (104.873) | (104.818) | (7.677) |
| GDP of exporting country | 0.922 | 0.920 | 1.404 |
| | (93.641) | (93.462) | (6.277) |
| Distance | -1.094 | -1.100 | |
| | (-68.696) | (-68.206) | |
| Dummy: Common border | 0.481 | 0.488 | |
| | (9.468) | (9.442) | |
| Dummy: English speaking | 1.264 | 1.279 | |
| countries | (23.314) | (22.885) | |
| Dummy: EC12 | 0.403 | 0.396 | |
| | (14.986) | (14.598) | |
| Dummy: CEFTA | 0.551 | 0.541 | |
| | (9.313) | (9.030) | |
| Dummy: Europe Agreements | -0.056 | -0.067 | |
| | (-1.862) | (-2.222) | |
| Dummy: EFTA | 0.168 | 0.152 | |
| | (3.586) | (3.258) | |
| Dummy: EC12- EFTA3 | 0.383 | 0.375 | |
| | (12.250) | (11.980) | |
| Dummy: EFTA3-Associated | 0.051 | 0.036 | |
| Countries | (1.044) | (0.725) | |
| GDP per capita of importing country | -0.105 | -0.108 | -0.730 |
| | (-7.418) | (-7.582) | (-3.509) |
| GDP per capita of exporting country | 0.078 | 0.076 | -1.062 |
| | (5.096) | (4.975) | (-4.680) |
| Remoteness of importing country | 0.578 | 0.580 | |
| | (7.514) | (7.514) | |
| Remoteness of exporting country | 0.519 | 0.522 | |
| | (7.653) | (7.646) | |
| Volatility of bilateral exch. rate | 0.008 | 0.039 | 0.011 |
| | (1.745) | (2.315) | (5.359) |
| Average exchange rate volatility | -0.003 | -0.037 | -0.007 |
| of importing country | (-0.720) | (-2.036) | (-3.085) |
| Average exchange rate volatility | 0.013 | -0.020 | -0.011 |
| of exporting country | (2.791) | (-1.109) | (-4.683) |

**Table 5: Continued**

| | Pooled Data [a] | Time Effects [b] | Country effects [c] |
|---|---|---|---|
| Dummy for CSFR, 1993 | 2.753 | 2.725 | 7.967 |
| | (42.977) | (37.288) | (10.012) |
| Dummy for CSFR, 1994 | 2.406 | 2.411 | 7.639 |
| | (39.146) | (36.021) | (9.594) |
| Dummy for CSFR, 1995 | 2.280 | 2.357 | 7.585 |
| | (35.125) | (33.912) | (9.486) |
| Dummy for CSFR, 1996 | 2.148 | 2.194 | 7.502 |
| | (37.158) | (35.230) | (9.394) |
| Dummy for CSFR, 1997 | 2.174 | 2.156 | 7.560 |
| | (18.216) | (17.719) | (9.470) |
| Dummy for CSFR, 1998 | 2.006 | 1.963 | 7.497 |
| | (17.033) | (16.247) | (9.359) |
| Dummy for SLO-HR, 1993 | 2.125 | 2.049 | 9.467 |
| | (24.439) | (20.132) | (9.385) |
| Dummy for SLO-HR, 1994 | 1.524 | 1.511 | 8.907 |
| | (22.225) | (20.764) | (8.808) |
| Dummy for SLO-HR, 1995 | 1.440 | 1.519 | 8.894 |
| | (15.712) | (16.080) | (8.799) |
| Dummy for SLO-HR, 1996 | 1.371 | 1.416 | 8.869 |
| | (17.708) | (17.663) | (8.727) |
| Dummy for SLO-HR, 1997 | 1.217 | 1.160 | 8.776 |
| | (7.660) | (7.188) | (8.644) |
| Dummy for SLO-HR, 1998 | 1.038 | 0.986 | 8.628 |
| | (6.514) | (6.108) | (8.469) |
| Dummy for Baltic States, 1993 | 3.552 | 3.474 | 8.602 |
| | (18.139) | (17.574) | (9.360) |
| Dummy for Baltic States, 1994 | 3.038 | 3.004 | 8.250 |
| | (13.159) | (12.956) | (8.941) |
| Dummy for Baltic States, 1995 | 3.004 | 3.034 | 8.353 |
| | (21.035) | (21.216) | (8.991) |
| Dummy for Baltic States, 1996 | 3.032 | 3.057 | 8.469 |
| | (22.313) | (22.207) | (9.128) |
| Dummy for Baltic States, 1997 | 3.144 | 3.095 | 8.666 |
| | (13.596) | (13.525) | (9.315) |
| Dummy for Baltic States, 1998 | 2.862 | 2.801 | 8.555 |
| | (15.848) | (15.393) | (9.041) |
| Dummy for CIS, 1993 | 3.171 | 3.463 | 2.602 |
| | (14.204) | (12.508) | (4.997) |
| Dummy for CIS, 1994 | 3.582 | 3.671 | 2.808 |
| | (17.178) | (18.142) | (5.512) |
| Dummy for CIS, 1995 | 2.262 | 2.385 | 1.978 |
| | (25.480) | (24.536) | (3.793) |
| Dummy for CIS, 1996 | 2.051 | 2.096 | 1.845 |
| | (19.522) | (19.185) | (3.660) |
| Dummy for CIS, 1997 | 1.918 | 1.899 | 1.859 |
| | (9.745) | (9.805) | (3.684) |
| Dummy for CIS, 1998 | 3.229 | 3.541 | 2.937 |
| | (8.893) | (8.393) | (5.417) |

**Notes:** See Table 1. [a] constant not reported, [b] time effects not reported, [c] country effects not reported.

**2008**

| | | |
|---|---|---|
| B01-08 | **Euro-Diplomatie durch gemeinsame „Wirtschaftsregierung“** | *Martin Seidel* |

**2007**

| | | |
|---|---|---|
| B03-07 | **Löhne und Steuern im Systemwettbewerb der Mitgliedstaaten der Europäischen Union** | *Martin Seidel* |
| B02-07 | **Konsolidierung und Reform der Europäischen Union** | *Martin Seidel* |
| B01-07 | **The Ratification of European Treaties - Legal and Constitutional Basis of a European Referendum.** | *Martin Seidel* |

**2006**

| | | |
|---|---|---|
| B03-06 | **Financial Frictions, Capital Reallocation, and Aggregate Fluctuations** | *Jürgen von Hagen, Haiping Zhang* |
| B02-06 | **Financial Openness and Macroeconomic Volatility** | *Jürgen von Hagen, Haiping Zhang* |
| B01-06 | **A Welfare Analysis of Capital Account Liberalization** | *Jürgen von Hagen, Haiping Zhang* |

**2005**

| | | |
|---|---|---|
| B11-05 | **Das Kompetenz- und Entscheidungssystem des Vertrages von Rom im Wandel seiner Funktion und Verfassung** | *Martin Seidel* |
| B10-05 | **Die Schutzklauseln der Beitrittsverträge** | *Martin Seidel* |
| B09-05 | **Measuring Tax Burdens in Europe** | *Guntram B. Wolff* |
| B08-05 | **Remittances as Investment in the Absence of Altruism** | *Gabriel González-König* |
| B07-05 | **Economic Integration in a Multicone World?** | *Christian Volpe Martincus, Jennifer Pédussel Wu* |
| B06-05 | **Banking Sector (Under?)Development in Central and Eastern Europe** | *Jürgen von Hagen, Valeriya Dinger* |
| B05-05 | **Regulatory Standards Can Lead to Predation** | *Stefan Lutz* |
| B04-05 | **Währungspolitik als Sozialpolitik** | *Martin Seidel* |
| B03-05 | **Public Education in an Integrated Europe: Studying to Migrate and Teaching to Stay?** | *Panu Poutvaara* |
| B02-05 | **Voice of the Diaspora: An Analysis of Migrant Voting Behavior** | *Jan Fidrmuc, Orla Doyle* |
| B01-05 | **Macroeconomic Adjustment in the New EU Member States** | *Jürgen von Hagen, Iulia Traistaru* |

**2004**

| | | |
|---|---|---|
| B33-04 | **The Effects of Transition and Political Instability On Foreign Direct Investment Inflows: Central Europe and the Balkans** | *Josef C. Brada, Ali M. Kutan, Taner M. Yigit* |
| B32-04 | **The Choice of Exchange Rate Regimes in Developing Countries: A Mulitnominal Panal Analysis** | *Jürgen von Hagen, Jizhong Zhou* |
| B31-04 | **Fear of Floating and Fear of Pegging: An Empirical Anaysis of De Facto Exchange Rate Regimes in Developing Countries** | *Jürgen von Hagen, Jizhong Zhou* |
| B30-04 | **Der Vollzug von Gemeinschaftsrecht über die Mitgliedstaaten und seine Rolle für die EU und den Beitrittsprozess** | *Martin Seidel* |
| B29-04 | **Deutschlands Wirtschaft, seine Schulden und die Unzulänglichkeiten der einheitlichen Geldpolitik im Eurosystem** | *Dieter Spethmann, Otto Steiger* |
| B28-04 | **Fiscal Crises in U.S. Cities: Structural and Non-structural Causes** | *Guntram B. Wolff* |
| B27-04 | **Firm Performance and Privatization in Ukraine** | *Galyna Grygorenko, Stefan Lutz* |
| B26-04 | **Analyzing Trade Opening in Ukraine: Effects of a Customs Union with the EU** | *Oksana Harbuzyuk, Stefan Lutz* |
| B25-04 | **Exchange Rate Risk and Convergence to the Euro** | *Lucjan T. Orlowski* |
| B24-04 | **The Endogeneity of Money and the Eurosystem** | *Otto Steiger* |
| B23-04 | **Which Lender of Last Resort for the Eurosystem?** | *Otto Steiger* |
| B22-04 | **Non-Discretonary Monetary Policy: The Answer for Transition Economies?** | *Elham-Mafi Kreft, Steven F. Kreft* |
| B21-04 | **The Effectiveness of Subsidies Revisited: Accounting for Wage and Employment Effects in Business R+D** | *Volker Reinthaler, Guntram B. Wolff* |
| B20-04 | **Money Market Pressure and the Determinants of Banking Crises** | *Jürgen von Hagen, Tai-kuang Ho* |
| B19-04 | **Die Stellung der Europäischen Zentralbank nach dem Verfassungsvertrag** | *Martin Seidel* |

| | | |
|---|---|---|
| B18-04 | **Transmission Channels of Business Cycles Synchronization in an Enlarged EMU** | *Iulia Traistaru* |
| B17-04 | **Foreign Exchange Regime, the Real Exchange Rate and Current Account Sustainability: The Case of Turkey** | *Sübidey Togan, Hasan Ersel* |
| B16-04 | **Does It Matter Where Immigrants Work? Traded Goods, Non-traded Goods, and Sector Specific Employment** | *Harry P. Bowen, Jennifer Pédussel Wu* |
| B15-04 | **Do Economic Integration and Fiscal Competition Help to Explain Local Patterns?** | *Christian Volpe Martincus* |
| B14-04 | **Euro Adoption and Maastricht Criteria: Rules or Discretion?** | *Jiri Jonas* |
| B13-04 | **The Role of Electoral and Party Systems in the Development of Fiscal Institutions in the Central and Eastern European Countries** | *Sami Yläoutinen* |
| B12-04 | **Measuring and Explaining Levels of Regional Economic Integration** | *Jennifer Pédussel Wu* |
| B11-04 | **Economic Integration and Location of Manufacturing Activities: Evidence from MERCOSUR** | *Pablo Sanguinetti, Iulia Traistaru, Christian Volpe Martincus* |
| B10-04 | **Economic Integration and Industry Location in Transition Countries** | *Laura Resmini* |
| B09-04 | **Testing Creditor Moral Hazard in Souvereign Bond Markets: A Unified Theoretical Approach and Empirical Evidence** | *Ayse Y. Evrensel, Ali M. Kutan* |
| B08-04 | **European Integration, Productivity Growth and Real Convergence** | *Taner M. Yigit, Ali M. Kutan* |
| B07-04 | **The Contribution of Income, Social Capital, and Institutions to Human Well-being in Africa** | *Mina Baliamoune-Lutz, Stefan H. Lutz* |
| B06-04 | **Rural Urban Inequality in Africa: A Panel Study of the Effects of Trade Liberalization and Financial Deepening** | *Mina Baliamoune-Lutz, Stefan H. Lutz* |
| B05-04 | **Money Rules for the Eurozone Candidate Countries** | *Lucjan T. Orlowski* |
| B04-04 | **Who is in Favor of Enlargement? Determinants of Support for EU Membership in the Candidate Countries' Referenda** | *Orla Doyle, Jan Fidrmuc* |
| B03-04 | **Over- and Underbidding in Central Bank Open Market Operations Conducted as Fixed Rate Tender** | *Ulrich Bindseil* |
| B02-04 | **Total Factor Productivity and Economic Freedom Implications for EU Enlargement** | *Ronald L. Moomaw, Euy Seok Yang* |
| B01-04 | **Die neuen Schutzklauseln der Artikel 38 und 39 des Beitrittsvertrages: Schutz der alten Mitgliedstaaten vor Störungen durch die neuen Mitgliedstaaten** | *Martin Seidel* |
| **2003** | | |
| B29-03 | **Macroeconomic Implications of Low Inflation in the Euro Area** | *Jürgen von Hagen, Boris Hofmann* |
| B28-03 | **The Effects of Transition and Political Instability on Foreign Direct Investment: Central Europe and the Balkans** | *Josef C. Brada, Ali M. Kutan, Taner M. Yigit* |
| B27-03 | **The Performance of the Euribor Futures Market: Efficiency and the Impact of ECB Policy Announcements (Electronic Version of International Finance)** | *Kerstin Bernoth, Juergen von Hagen* |
| B26-03 | **Souvereign Risk Premia in the European Government Bond Market (überarbeitete Version zum Herunterladen)** | *Kerstin Bernoth, Juergen von Hagen, Ludger Schulknecht* |
| B25-03 | **How Flexible are Wages in EU Accession Countries?** | *Anna Iara, Iulia Traistaru* |
| B24-03 | **Monetary Policy Reaction Functions: ECB versus Bundesbank** | *Bernd Hayo, Boris Hofmann* |
| B23-03 | **Economic Integration and Manufacturing Concentration Patterns: Evidence from Mercosur** | *Iulia Traistaru, Christian Volpe Martincus* |
| B22-03 | **Reformzwänge innerhalb der EU angesichts der Osterweiterung** | *Martin Seidel* |
| B21-03 | **Reputation Flows: Contractual Disputes and the Channels for Inter-Firm Communication** | *William Pyle* |
| B20-03 | **Urban Primacy, Gigantism, and International Trade: Evidence from Asia and the Americas** | *Ronald L. Moomaw, Mohammed A. Alwosabi* |
| B19-03 | **An Empirical Analysis of Competing Explanations of Urban Primacy Evidence from Asia and the Americas** | *Ronald L. Moomaw, Mohammed A. Alwosabi* |

| | | |
|---|---|---|
| B18-03 | **The Effects of Regional and Industry-Wide FDI Spillovers on Export of Ukrainian Firms** | *Stefan H. Lutz, Oleksandr Talavera, Sang-Min Park* |
| B17-03 | **Determinants of Inter-Regional Migration in the Baltic States** | *Mihails Hazans* |
| B16-03 | **South-East Europe: Economic Performance, Perspectives, and Policy Challenges** | *Iulia Traistaru, Jürgen von Hagen* |
| B15-03 | **Employed and Unemployed Search: The Marginal Willingness to Pay for Attributes in Lithuania, the US and the Netherlands** | *Jos van Ommeren, Mihails Hazans* |
| B14-03 | **FCIs and Economic Activity: Some International Evidence** | *Charles Goodhart, Boris Hofmann* |
| B13-03 | **The IS Curve and the Transmission of Monetary Policy: Is there a Puzzle?** | *Charles Goodhart, Boris Hofmann* |
| B12-03 | **What Makes Regions in Eastern Europe Catching Up? The Role of Foreign Investment, Human Resources, and Geography** | *Gabriele Tondl, Goran Vuksic* |
| B11-03 | **Die Weisungs- und Herrschaftsmacht der Europäischen Zentralbank im europäischen System der Zentralbanken - eine rechtliche Analyse** | *Martin Seidel* |
| B10-03 | **Foreign Direct Investment and Perceptions of Vulnerability to Foreign Exchange Crises: Evidence from Transition Economies** | *Josef C. Brada, Vladimír Tomsík* |
| B09-03 | **The European Central Bank and the Eurosystem: An Analysis of the Missing Central Monetary Institution in European Monetary Union** | *Gunnar Heinsohn, Otto Steiger* |
| B08-03 | **The Determination of Capital Controls: Which Role Do Exchange Rate Regimes Play?** | *Jürgen von Hagen, Jizhong Zhou* |
| B07-03 | **Nach Nizza und Stockholm: Stand des Binnenmarktes und Prioritäten für die Zukunft** | *Martin Seidel* |
| B06-03 | **Fiscal Discipline and Growth in Euroland. Experiences with the Stability and Growth Pact** | *Jürgen von Hagen* |
| B05-03 | **Reconsidering the Evidence: Are Eurozone Business Cycles Converging?** | *Michael Massmann, James Mitchell* |
| B04-03 | **Do Ukrainian Firms Benefit from FDI?** | *Stefan H. Lutz, Oleksandr Talavera* |
| B03-03 | **Europäische Steuerkoordination und die Schweiz** | *Stefan H. Lutz* |
| B02-03 | **Commuting in the Baltic States: Patterns, Determinants, and Gains** | *Mihails Hazans* |
| B01-03 | **Die Wirtschafts- und Währungsunion im rechtlichen und politischen Gefüge der Europäischen Union** | *Martin Seidel* |
| **2002** | | |
| B30-02 | **An Adverse Selection Model of Optimal Unemployment Assurance** | *Marcus Hagedorn, Ashok Kaul, Tim Mennel* |
| B29B-02 | **Trade Agreements as Self-protection** | *Jennifer Pédussel Wu* |
| B29A-02 | **Growth and Business Cycles with Imperfect Credit Markets** | *Debajyoti Chakrabarty* |
| B28-02 | **Inequality, Politics and Economic Growth** | *Debajyoti Chakrabarty* |
| B27-02 | **Poverty Traps and Growth in a Model of Endogenous Time Preference** | *Debajyoti Chakrabarty* |
| B26-02 | **Monetary Convergence and Risk Premiums in the EU Candidate Countries** | *Lucjan T. Orlowski* |
| B25-02 | **Trade Policy: *Institutional* Vs. *Economic* Factors** | *Stefan Lutz* |
| B24-02 | **The Effects of Quotas on Vertical Intra-industry Trade** | *Stefan Lutz* |
| B23-02 | **Legal Aspects of European Economic and Monetary Union** | *Martin Seidel* |
| B22-02 | **Der Staat als *Lender of Last Resort* - oder: Die Achillesverse des Eurosystems** | *Otto Steiger* |
| B21-02 | **Nominal and Real Stochastic Convergence Within the Transition Economies and to the European Union: Evidence from Panel Data** | *Ali M. Kutan, Taner M. Yigit* |
| B20-02 | **The Impact of News, Oil Prices, and International Spillovers on Russian Fincancial Markets** | *Bernd Hayo, Ali M. Kutan* |

| | | |
|---|---|---|
| B19-02 | **East Germany: Transition with Unification, Experiments and Experiences** | *Jürgen von Hagen, Rolf R. Strauch, Guntram B. Wolff* |
| B18-02 | **Regional Specialization and Employment Dynamics in Transition Countries** | *Iulia Traistaru, Guntram B. Wolff* |
| B17-02 | **Specialization and Growth Patterns in Border Regions of Accession Countries** | *Laura Resmini* |
| B16-02 | **Regional Specialization and Concentration of Industrial Activity in Accession Countries** | *Iulia Traistaru, Peter Nijkamp, Simonetta Longhi* |
| B15-02 | **Does Broad Money Matter for Interest Rate Policy?** | *Matthias Brückner, Andreas Schaber* |
| B14-02 | **The Long and Short of It: Global Liberalization, Poverty and Inequality** | *Christian E. Weller, Adam Hersch* |
| B13-02 | **De Facto and Official Exchange Rate Regimes in Transition Economies** | *Jürgen von Hagen, Jizhong Zhou* |
| B12-02 | **Argentina: The Anatomy of A Crisis** | *Jiri Jonas* |
| B11-02 | **The Eurosystem and the Art of Central Banking** | *Gunnar Heinsohn, Otto Steiger* |
| B10-02 | **National Origins of European Law: Towards an Autonomous System of European Law?** | *Martin Seidel* |
| B09-02 | **Monetary Policy in the Euro Area - Lessons from the First Years** | *Volker Clausen, Bernd Hayo* |
| B08-02 | **Has the Link Between the Spot and Forward Exchange Rates Broken Down? Evidence From Rolling Cointegration Tests** | *Ali M. Kutan, Su Zhou* |
| B07-02 | **Perspektiven der Erweiterung der Europäischen Union** | *Martin Seidel* |
| B06-02 | **Is There Asymmetry in Forward Exchange Rate Bias? Multi-Country Evidence** | *Su Zhou, Ali M. Kutan* |
| B05-02 | **Real and Monetary Convergence Within the European Union and Between the European Union and Candidate Countries: A Rolling Cointegration Approach** | *Josef C. Brada, Ali M. Kutan, Su Zhou* |
| B04-02 | **Asymmetric Monetary Policy Effects in EMU** | *Volker Clausen, Bernd Hayo* |
| B03-02 | **The Choice of Exchange Rate Regimes: An Empirical Analysis for Transition Economies** | *Jürgen von Hagen, Jizhong Zhou* |
| B02-02 | **The Euro System and the Federal Reserve System Compared: Facts and Challenges** | *Karlheinz Ruckriegel, Franz Seitz* |
| B01-02 | **Does Inflation Targeting Matter?** | *Manfred J. M. Neumann, Jürgen von Hagen* |
| **2001** | | |
| B29-01 | **Is Kazakhstan Vulnerable to the Dutch Disease?** | *Karlygash Kuralbayeva, Ali M. Kutan, Michael L. Wyzan* |
| B28-01 | **Political Economy of the Nice Treaty: Rebalancing the EU Council. The Future of European Agricultural Policies** | *Deutsch-Französisches Wirtschaftspolitisches Forum* |
| B27-01 | **Investor Panic, IMF Actions, and Emerging Stock Market Returns and Volatility: A Panel Investigation** | *Bernd Hayo, Ali M. Kutan* |
| B26-01 | **Regional Effects of Terrorism on Tourism: Evidence from Three Mediterranean Countries** | *Konstantinos Drakos, Ali M. Kutan* |
| B25-01 | **Monetary Convergence of the EU Candidates to the Euro: A Theoretical Framework and Policy Implications** | *Lucjan T. Orlowski* |
| B24-01 | **Disintegration and Trade** | *Jarko and Jan Fidrmuc* |
| B23-01 | **Migration and Adjustment to Shocks in Transition Economies** | *Jan Fidrmuc* |
| B22-01 | **Strategic Delegation and International Capital Taxation** | *Matthias Brückner* |
| B21-01 | **Balkan and Mediterranean Candidates for European Union Membership: The Convergence of Their Monetary Policy With That of the Europaen Central Bank** | *Josef C. Brada, Ali M. Kutan* |
| B20-01 | **An Empirical Inquiry of the Efficiency of Intergovernmental Transfers for Water Projects Based on the WRDA Data** | *Anna Rubinchik-Pessach* |
| B19-01 | **Detrending and the Money-Output Link: International Evidence** | *R.W. Hafer, Ali M. Kutan* |

| | | |
|---|---|---|
| B18-01 | **Monetary Policy in Unknown Territory. The European Central Bank in the Early Years** | *Jürgen von Hagen, Matthias Brückner* |
| B17-01 | **Executive Authority, the Personal Vote, and Budget Discipline in Latin American and Carribean Countries** | *Mark Hallerberg, Patrick Marier* |
| B16-01 | **Sources of Inflation and Output Fluctuations in Poland and Hungary: Implications for Full Membership in the European Union** | *Selahattin Dibooglu, Ali M. Kutan* |
| B15-01 | **Programs Without Alternative: Public Pensions in the OECD** | *Christian E. Weller* |
| B14-01 | **Formal Fiscal Restraints and Budget Processes As Solutions to a Deficit and Spending Bias in Public Finances - U.S. Experience and Possible Lessons for EMU** | *Rolf R. Strauch, Jürgen von Hagen* |
| B13-01 | **German Public Finances: Recent Experiences and Future Challenges** | *Jürgen von Hagen, Rolf R. Strauch* |
| B12-01 | **The Impact of Eastern Enlargement On EU-Labour Markets. Pensions Reform Between Economic and Political Problems** | *Deutsch-Französisches Wirtschaftspolitisches Forum* |
| B11-01 | **Inflationary Performance in a Monetary Union With Large Wage Setters** | *Lilia Cavallar* |
| B10-01 | **Integration of the Baltic States into the EU and Institutions of Fiscal Convergence: A Critical Evaluation of Key Issues and Empirical Evidence** | *Ali M. Kutan, Niina Pautola-Mol* |
| B09-01 | **Democracy in Transition Economies: Grease or Sand in the Wheels of Growth?** | *Jan Fidrmuc* |
| B08-01 | **The Functioning of Economic Policy Coordination** | *Jürgen von Hagen, Susanne Mundschenk* |
| B07-01 | **The Convergence of Monetary Policy Between Candidate Countries and the European Union** | *Josef C. Brada, Ali M. Kutan* |
| B06-01 | **Opposites Attract: The Case of Greek and Turkish Financial Markets** | *Konstantinos Drakos, Ali M. Kutan* |
| B05-01 | **Trade Rules and Global Governance: A Long Term Agenda. The Future of Banking.** | *Deutsch-Französisches Wirtschaftspolitisches Forum* |
| B04-01 | **The Determination of Unemployment Benefits** | *Rafael di Tella, Robert J. MacCulloch* |
| B03-01 | **Preferences Over Inflation and Unemployment: Evidence from Surveys of Happiness** | *Rafael di Tella, Robert J. MacCulloch, Andrew J. Oswald* |
| B02-01 | **The Konstanz Seminar on Monetary Theory and Policy at Thirty** | *Michele Fratianni, Jürgen von Hagen* |
| B01-01 | **Divided Boards: Partisanship Through Delegated Monetary Policy** | *Etienne Farvaque, Gael Lagadec* |

**2000**

| | | |
|---|---|---|
| B20-00 | **Breakin-up a Nation, From the Inside** | *Etienne Farvaque* |
| B19-00 | **Income Dynamics and Stability in the Transition Process, general Reflections applied to the Czech Republic** | *Jens Hölscher* |
| B18-00 | **Budget Processes: Theory and Experimental Evidence** | *Karl-Martin Ehrhart, Roy Gardner, Jürgen von Hagen, Claudia Keser* |
| B17-00 | **Rückführung der Landwirtschaftspolitik in die Verantwortung der Mitgliedsstaaten? - Rechts- und Verfassungsfragen des Gemeinschaftsrechts** | *Martin Seidel* |
| B16-00 | **The European Central Bank: Independence and Accountability** | *Christa Randzio-Plath, Tomasso Padoa-Schioppa* |
| B15-00 | **Regional Risk Sharing and Redistribution in the German Federation** | *Jürgen von Hagen, Ralf Hepp* |
| B14-00 | **Sources of Real Exchange Rate Fluctuations in Transition Economies: The Case of Poland and Hungary** | *Selahattin Dibooglu, Ali M. Kutan* |
| B13-00 | **Back to the Future: The Growth Prospects of Transition Economies Reconsidered** | *Nauro F. Campos* |

| | | |
|---|---|---|
| B12-00 | **Rechtsetzung und Rechtsangleichung als Folge der Einheitlichen Europäischen Währung** | *Martin Seidel* |
| B11-00 | **A Dynamic Approach to Inflation Targeting in Transition Economies** | *Lucjan T. Orlowski* |
| B10-00 | **The Importance of Domestic Political Institutions: Why and How Belgium Qualified for EMU** | *Marc Hallerberg* |
| B09-00 | **Rational Institutions Yield Hysteresis** | *Rafael Di Tella, Robert MacCulloch* |
| B08-00 | **The Effectiveness of Self-Protection Policies for Safeguarding Emerging Market Economies from Crises** | *Kenneth Kletzer* |
| B07-00 | **Financial Supervision and Policy Coordination in The EMU** | *Deutsch-Französisches Wirtschaftspolitisches Forum* |
| B06-00 | **The Demand for Money in Austria** | *Bernd Hayo* |
| B05-00 | **Liberalization, Democracy and Economic Performance during Transition** | *Jan Fidrmuc* |
| B04-00 | **A New Political Culture in The EU - Democratic Accountability of the ECB** | *Christa Randzio-Plath* |
| B03-00 | **Integration, Disintegration and Trade in Europe: Evolution of Trade Relations during the 1990's** | *Jarko Fidrmuc, Jan Fidrmuc* |
| B02-00 | **Inflation Bias and Productivity Shocks in Transition Economies: The Case of the Czech Republic** | *Josef C. Barda, Arthur E. King, Ali M. Kutan* |
| B01-00 | **Monetary Union and Fiscal Federalism** | *Kenneth Kletzer, Jürgen von Hagen* |
| **1999** | | |
| B26-99 | **Skills, Labour Costs, and Vertically Differentiated Industries: A General Equilibrium Analysis** | *Stefan Lutz, Alessandro Turrini* |
| B25-99 | **Micro and Macro Determinants of Public Support for Market Reforms in Eastern Europe** | *Bernd Hayo* |
| B24-99 | **What Makes a Revolution?** | *Robert MacCulloch* |
| B23-99 | **Informal Family Insurance and the Design of the Welfare State** | *Rafael Di Tella, Robert MacCulloch* |
| B22-99 | **Partisan Social Happiness** | *Rafael Di Tella, Robert MacCulloch* |
| B21-99 | **The End of Moderate Inflation in Three Transition Economies?** | *Josef C. Brada, Ali M. Kutan* |
| B20-99 | **Subnational Government Bailouts in Germany** | *Helmut Seitz* |
| B19-99 | **The Evolution of Monetary Policy in Transition Economies** | *Ali M. Kutan, Josef C. Brada* |
| B18-99 | **Why are Eastern Europe's Banks not failing when everybody else's are?** | *Christian E. Weller, Bernard Morzuch* |
| B17-99 | **Stability of Monetary Unions: Lessons from the Break-Up of Czechoslovakia** | *Jan Fidrmuc, Julius Horvath and Jarko Fidrmuc* |
| B16-99 | **Multinational Banks and Development Finance** | *Christian E.Weller and Mark J. Scher* |
| B15-99 | **Financial Crises after Financial Liberalization: Exceptional Circumstances or Structural Weakness?** | *Christian E. Weller* |
| B14-99 | **Industry Effects of Monetary Policy in Germany** | *Bernd Hayo and Birgit Uhlenbrock* |
| B13-99 | **Fiancial Fragility or What Went Right and What Could Go Wrong in Central European Banking?** | *Christian E. Weller and Jürgen von Hagen* |
| B12 -99 | **Size Distortions of Tests of the Null Hypothesis of Stationarity: Evidence and Implications for Applied Work** | *Mehmet Caner and Lutz Kilian* |
| B11-99 | **Financial Supervision and Policy Coordination in the EMU** | *Deutsch-Französisches Wirtschaftspolitisches Forum* |
| B10-99 | **Financial Liberalization, Multinational Banks and Credit Supply: The Case of Poland** | *Christian Weller* |
| B09-99 | **Monetary Policy, Parameter Uncertainty and Optimal Learning** | *Volker Wieland* |
| B08-99 | **The Connection between more Multinational Banks and less Real Credit in Transition Economies** | *Christian Weller* |

| | | |
|---|---|---|
| B07-99 | **Comovement and Catch-up in Productivity across Sectors: Evidence from the OECD** | *Christopher M. Cornwell and Jens-Uwe Wächter* |
| B06-99 | **Productivity Convergence and Economic Growth: A Frontier Production Function Approach** | *Christopher M. Cornwell and Jens-Uwe Wächter* |
| B05-99 | **Tumbling Giant: Germany's Experience with the Maastricht Fiscal Criteria** | *Jürgen von Hagen and Rolf Strauch* |
| B04-99 | **The Finance-Investment Link in a Transition Economy: Evidence for Poland from Panel Data** | *Christian Weller* |
| B03-99 | **The Macroeconomics of Happiness** | *Rafael Di Tella, Robert MacCulloch and Andrew J. Oswald* |
| B02-99 | **The Consequences of Labour Market Flexibility: Panel Evidence Based on Survey Data** | *Rafael Di Tella and Robert MacCulloch* |
| B01-99 | **The Excess Volatility of Foreign Exchange Rates: Statistical Puzzle or Theoretical Artifact?** | *Robert B.H. Hauswald* |
| **1998** | | |
| B16-98 | **Labour Market + Tax Policy in the EMU** | *Deutsch-Französisches Wirtschaftspolitisches Forum* |
| B15-98 | **Can Taxing Foreign Competition Harm the Domestic Industry?** | *Stefan Lutz* |
| B14-98 | **Free Trade and Arms Races: Some Thoughts Regarding EU-Russian Trade** | *Rafael Reuveny and John Maxwell* |
| B13-98 | **Fiscal Policy and Intranational Risk-Sharing** | *Jürgen von Hagen* |
| B12-98 | **Price Stability and Monetary Policy Effectiveness when Nominal Interest Rates are Bounded at Zero** | *Athanasios Orphanides and Volker Wieland* |
| B11A-98 | **Die Bewertung der "dauerhaft tragbaren öffentlichen Finanzlage"der EU Mitgliedstaaten beim Übergang zur dritten Stufe der EWWU** | *Rolf Strauch* |
| B11-98 | **Exchange Rate Regimes in the Transition Economies: Case Study of the Czech Republic: 1990-1997** | *Julius Horvath and Jiri Jonas* |
| B10-98 | **Der Wettbewerb der Rechts- und politischen Systeme in der Europäischen Union** | *Martin Seidel* |
| B09-98 | **U.S. Monetary Policy and Monetary Policy and the ESCB** | *Robert L. Hetzel* |
| B08-98 | **Money-Output Granger Causality Revisited: An Empirical Analysis of EU Countries (überarbeitete Version zum Herunterladen)** | *Bernd Hayo* |
| B07-98 | **Designing Voluntary Environmental Agreements in Europe: Some Lessons from the U.S. EPA's 33/50 Program** | *John W. Maxwell* |
| B06-98 | **Monetary Union, Asymmetric Productivity Shocks and Fiscal Insurance: an Analytical Discussion of Welfare Issues** | *Kenneth Kletzer* |
| B05-98 | **Estimating a European Demand for Money (überarbeitete Version zum Herunterladen)** | *Bernd Hayo* |
| B04-98 | **The EMU's Exchange Rate Policy** | *Deutsch-Französisches Wirtschaftspolitisches Forum* |
| B03-98 | **Central Bank Policy in a More Perfect Financial System** | *Jürgen von Hagen / Ingo Fender* |
| B02-98 | **Trade with Low-Wage Countries and Wage Inequality** | *Jaleel Ahmad* |
| B01-98 | **Budgeting Institutions for Aggregate Fiscal Discipline** | *Jürgen von Hagen* |
| **1997** | | |
| B04-97 | **Macroeconomic Stabilization with a Common Currency: Does European Monetary Unification Create a Need for Fiscal Insurance or Federalism?** | *Kenneth Kletzer* |
| B-03-97 | **Liberalising European Markets for Energy and Telecommunications: Some Lessons from the US Electric Utility Industry** | *Tom Lyon / John Mayo* |
| B02-97 | **Employment and EMU** | *Deutsch-Französisches Wirtschaftspolitisches Forum* |
| B01-97 | **A Stability Pact for Europe** | *(a Forum organized by ZEI)* |

ISSN 1436 - 6053

Zentrum für Europäische Integrationsforschung
Center for European Integration Studies
Rheinische Friedrich-Wilhelms-Universität Bonn

Walter-Flex-Strasse 3
D-53113 Bonn
Germany

Tel.: +49-228-73-1732
Fax: +49-228-73-1809
www.zei.de