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The Baltic States' Integration into the European Division of Labour

by

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Abstract:

The analysis of Baltic trade statistics and gravity estimates reveal that Estonia, Latvia and Lithuania have rapidly integrated into the international division of labour with a distinct EU focus. The Baltic States have taken a road towards the EU common market which pays particular attention to close trade relations with their immediate neighbours in the Baltic Sea Region. The Baltic Sea obviously serves as a major integrating device for these countries. At the same time the Baltic States, although being no longer integrated into the former intra-Soviet division of labour, have not abandoned their contacts to the Soviet successor states altogether. Accordingly, they still have the potential to serve as a gateway from Europe to the CIS markets.

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1. Introduction*

Responding to systemic transformation in Central and Eastern Europe the European Union (EU) launched the 'Eastern Enlargement' process in the early nineties. By this initiative the EU intended to push forward the process of European integration and to provide incentives for the transformation countries to develop functioning market economies. It was no surprise that the 'pioneer reform countries' Czechoslovakia, Hungary and Poland successfully passed through the several integration stages and were invited to accession negotiations with the EU in 1997. But it could not be expected that Soviet successor states would participate in the integration process beyond trade agreements in the foreseeable future. Nevertheless, the three Baltic States: Estonia, Latvia and Lithuania qualified for further integration steps in record time. Soon after international recognition of their restored independence in the second half of 1991 the Baltic States managed to sign the Europe Agreements in 1995, and Estonia was among the first Eastern European applicant countries invited to accession negotiations in 1997. Latvia and Lithuania caught-up and joined the accession negotiations in 1999. These negotiations were successfully concluded in 2002 so that the Baltic States were among the ten applicant countries joining the EU in May 2004 as full members.

The reason that makes the Baltic States so much different from other Soviet successor states which still do not even dare to consider EU accession seriously is that they may take advantage of their history: Due to their historical experience after their first independence in the 1920s they were much more

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familiar with the basic economic and legal system which nowadays characterizes the EU and its member countries (for details see Laaser and Schrader 1992). The transformation and the Eastern enlargement process in the nineties both brought a dismantling of artificial trade barriers thus paving the road for the Baltic States towards Western Europe via intensified trade relations under a distinct market regime. The intention of this paper is to provide empirical evidence for the reorientation of Baltic trade relations, and to elaborate the determinants of the Baltic States' regional trade flows.

The paper is organised as follows: In section 2, shaping forces of Baltic trade patterns are discussed which may determine the rearrangement of Baltic trade in the course of transformation and integration into the European division of labour. In section 3, an overview on the development of the Baltic regional trade in the decade after independence is given and the lines of economic integration are summarized. In section 4, a gravity analysis is applied to identify the regional centers of Baltic trade integration and the influence of the shaping forces in-depth. Finally, in section 5, conclusions for Baltic trade integration are drawn.

2. Shaping Forces of Baltic Trade Patterns

The rearrangement of Baltic trade relations during the last decade can be attributed to a number of mutually interdependent determinants: the stepwise integration into EU markets, closer ties with other Baltic Sea countries, general globalisation tendencies enhancing trade diversification, and historical path dependencies originating from the time of Soviet occupation and even the pre-war period.

A major shaping force of Baltic trade patterns can presumably be found in the ongoing EU integration: due to the Baltic States' early efforts to integrate eco-

nomically and politically into the EU, anything else but a shift of Baltic trade flows towards EU markets would be a surprise. Countries participating in the same regional arrangement or preferential trade agreement (PTA) tend to trade more with one another than with outsiders. PTA membership can create wholly new trade flows between member countries, but can also cause a substitution of trade with non-member countries by intra-bloc trade.[1] Accordingly, it can be expected that the Baltic trade statistics already mirror a closer economic relationship with the EU by a rapidly growing share of Baltic-EU-trade.

However, an ongoing EU-integration process might interfere with other determinants of both global and local dimension. From a global perspective, the successful transformation process of the Baltic States provides the opportunity to establish new trade links with the fast growing regional blocs in North America and in Asia, although one may suspect this yet being an option for the longer run. On the other hand, the Baltic States' geographical location may suggest an integration pattern of a more local design. Estonia, Latvia and Lithuania are located within the Baltic Sea Region (BSR) forming a bridgehead to the Community of Independent States (CIS). Integration within the BSR traditionally has been particularly close, especially among Scandinavian countries. Due to some cultural and linguistic links to Scandinavia and the dominance of EU countries around the BSR the Baltic States might prefer to focus on this area of integration.

Furthermore, the Baltic integration scenario could be supplemented by a particular East European element: the Baltic States can be expected to profit from their geographic location close to the CIS markets and their former participation

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[1] This is the outcome of the seminal analysis of Viner (1950) who set the fundament of the discussion on welfare effects of PTA's (this discussion is summarized, e.g., in Bhagwati and Panagariya 1996).

in the Soviet division of labour. Taking these aspects into account, history would play a role for Baltic trade patterns which should comprise a significant share of trade with the CIS, especially with Russia.[2]

But if history matters for current trade relations, the Baltic States' history suggests to consider the interwar period as well. Gaining independence from Russia at the end of World War I the Baltic States used the opportunity to integrate into the (Western) European division of labour. Special trade relations with Germany and the United Kingdom developed during that time.[3] Accordingly, the attractiveness of West European markets on the one hand, and historical ties and Baltic insider knowledge on the other hand could foster Baltic regional trade diversification.

3. Emerging Regional Trade Patterns after Independence

In the early nineties, the collapse of the Soviet Union and the central planning system was followed by a short but visible transformation crisis: real GDP decreased by two-digit rates in the Baltic States. But starting in 1995, the Baltic economies recovered and positive growth rates turned up; even the so-called "Russian crisis" of 1998/99 did not have a lasting effect on the economic catching-up process of these countries.[4] Export and import volumes were closely

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[2] Empirical analyses by Eichengreen and Irwin (1996) and Frankel and Rose (2000) reveal that past trade patterns influence current trade flows in a way that historical events cause lasting cost reductions. As a result, a level of trade is realized greater than predicted by the scale of and geographical distance to trading partners' markets, continuing over time. Further evidence of trade hysteresis is given by the model analyses by Baldwin (1988, 1989) and Baldwin and Krugman (1989).

[3] For details see Walter (1937) and Laaser and Schrader (1992).

[4] The Russian currency and financial crisis gained momentum in the second half of 1998 and increasingly affected the real sector of the Russian economy, leading to a break-down in production and foreign trade. Cf., e.g., Gaidar (1999).

correlated with economic growth. Hence, the change of regional trade patterns analysed below took place in a period of growing export and import activities and it is not at all the result of a minimization of trade activities due to the breakdown of the socialist division of labour (European Commission 2003, Eurostat 2003, EBRD 1998).

In 1991, the first year of internationally recognized independence, the trade statistics of the three Baltic States still reflected the era of intra-soviet trade and economic integration in the Baltic Sea's Eastern rim region (Tables 1a, b): Baltic exports as well as imports were still dominated by trade with CIS member states, especially with Russia; foreign trade with EU countries was yet of minor importance. But during the first half of the nineties Baltic trade structures changed entirely when the EU offered the opportunity to integrate into the (Western) European division of labour: Access to the Common Market was granted stepwise, with trade and cooperation agreements as the very first step. In the course of further EU integration, the Baltic States increasingly benefited from the free trade agreements with the EU which opened the Common Market for Baltic exports while at the same time the Baltic States could protectionist measures. Latvia and Lithuania made use of this option of asymmetric openness, only Estonia introduced a free trade regime. As a consequence, the EU-15 countries became the main trading partners of the Baltic States. In this period imports from EU partners even grew faster than Baltic exports to EU markets. Obviously, the Baltic demand for Western European consumer and investment goods met with the efforts of Western enterprises to develop new markets in Eastern Europe while Baltic enterprises lost their intra-soviet "home markets" but still lacked to some degree the ability to compete on Western markets.

Table 1a: Regional Trade Patterns of the Baltic States: Exports[a]

	Estonia			Latvia			Lithuania		
	1991	1996	2002	1992[g]	1996	2002	1991	1996	2002
(1) **EU Integration**									
EU15	3.7	56.9	68.0	39.9	44.7	60.4	3.0	38.5	49.5
Denmark	0.1	4.0	4.4	0.8	3.7	5.7	0.3	3.2	5.3
Finland	2.3	20.8	24.8	3.7	2.4	2.3	0.3	1.2	1.2
France	0.0	1.3	1.4	1.2	1.3	2.0	0.1	2.0	4.2
Germany	0.2	7.3	9.9	7.9	13.8	15.5	0.6	14.7	10.5
Italy	0.0	1.0	1.1	0.8	1.1	2.2	0.3	3.3	2.8
Sweden	0.5	13.2	15.3	7.5	6.6	10.5	0.3	2.1	4.4
United Kingdom	0.1	3.6	4.8	3.5	11.1	14.6	0.4	3.4	14.1
EU-10-New Members[b]	11.8	15.0	13.7	8.8	13.5	17.3	10.1	16.1	19.6
Poland	0.1	1.3	1.0	2.3	1.4	1.6	0.7	2.8	3.6
EU-27[c]	15.5	72.0	81.7	49.1	58.3	77.8	13.2	54.9	69.2
(2) **Ties with Transformation Countries**									
Baltic States	11.5	13.3	10.9	4.9	11.1	14.4	9.0	12.3	13.6
Estonia	—	—	—	1.3	3.7	6.0	2.3	2.1	3.9
Latvia	7.7	8.2	7.4	—	—	—	6.7	10.2	9.7
Lithuania	3.8	5.2	3.5	3.6	7.4	8.4	—	—	—
CIS	83.3	20.6	5.4	45.0	35.8	10.0	85.9	39.4	17.8
Central and Eastern European Countries[d]	75.3	21.4	7.9	44.2	36.3	12.1	77.9	40.5	21.8
Russia	56.5	14.2	3.4	26.0	22.8	5.9	57.0	21.4	11.3
(3) **Baltic Sea Integration**									
Baltic Sea Region	62.0	75.6	73.0	53.4	62.4	57.5	68.3	58.3	52.4
West[e]	3.8	46.9	57.8	20.2	27.0	35.7	1.6	21.8	23.9
East[f]	58.2	28.7	15.2	33.2	35.3	21.8	66.7	36.5	28.5

[a]Percentage of total exports (special trade for 1996 and 2002). — [b]The 10 new EU member states since May 1st, 2004 are: Cyprus, Czech Republic, Estonia, Hungary, Latvia, Malta, Poland, Slovakia, Slovenia. — [c]EU15, new members plus countries already participating in accession negotiations: Bulgaria, Romania. — [d]Albania, Belarus, Bosnia-Herzegovina, Bulgaria, Croatia, Czech Republic, Hungary, Macedonia, Moldova, Poland, Romania, Russia, Slovakia, Slovenia, Ukraine, Yugoslavia. — [e]Included are Denmark, Finland, Germany, Norway, Sweden. — [f]Included are Estonia, Latvia, Lithuania, Poland, Russia. — [g]Data for the year 1991 are not available in adequate quality.

Source: Statistical Office of Estonia (2002a, 2002b, various issues); Central Statistical Bureau of Latvia (various issues); Statistics Lithuania (2002, various issues); own calculations and compilation.

Table 1b: Regional Trade Patterns of the Baltic States: Imports[a]

	Estonia			Latvia			Lithuania		
	1991	1996	2002	1992[g]	1996	2002	1991	1996	2002
(1) **EU Integration**									
EU15	6.1	68.3	57.8	29.5	49.2	52.9	2.9	42.8	45.2
Denmark	0.1	2.8	2.4	0.8	3.9	3.4	0.0	4.0	3.0
Finland	2.0	31.5	17.1	2.6	9.2	8.0	0.1	3.6	2.3
France	1.4	2.1	2.6	0.9	1.5	2.6	0.6	2.3	3.9
Germany	0.8	10.6	11.2	15.0	13.8	17.2	1.2	16.7	17.2
Italy	0.3	3.4	4.5	0.6	2.7	4.2	0.1	3.8	4.9
Sweden	0.8	8.8	9.5	3.8	7.9	6.4	0.0	3.5	3.4
United Kingdom	0.1	2.9	2.5	0.6	2.8	2.3	0.1	3.5	3.4
EU-10-New Members[b]	12.8	6.2	10.7	12.2	16.7	24.3	8.2	11.2	11.3
Poland	0.5	1.0	2.8	1.3	2.6	5.0	1.4	4.2	4.8
EU-27[c]	19.3	74.6	68.7	42.0	66.2	77.5	11.5	54.3	56.8
(2) **Ties with Transformation Countries**									
Baltic States	11.5	3.6	5.7	9.5	12.0	16.0	6.5	3.2	2.7
Estonia	—	—	—	6.4	5.7	6.2	1.8	1.4	1.1
Latvia	5.1	2.0	2.4	—	—	—	4.7	1.8	1.6
Lithuania	6.4	1.5	3.3	3.1	6.3	9.8	—	—	—
CIS	73.8	14.6	10.4	37.6	25.5	13.1	83.8	34.3	24.9
Central and Eastern European Countries[d]	63.4	16.0	14.9	39.0	29.5	21.5	70.5	41.6	32.6
Russia	46.2	11.2	7.4	27.9	20.2	8.8	49.6	27.8	21.9
(3) **Baltic Sea Integration**									
Baltic Sea Region	62.0	70.3	57.2	60.9	71.0	66.1	58.8	63.7	56.9
West[e]	3.8	54.6	41.4	22.2	36.2	36.2	1.3	28.5	27.5
East[f]	58.2	15.8	15.8	38.6	34.8	29.8	57.5	35.2	29.4

[a]Percentage of total imports (special trade for 1996 and 2002). — [b]The 10 new EU member states since May 1st, 2004 are: Cyprus, Czech Republic, Estonia, Hungary, Latvia, Malta, Poland, Slovakia, Slovenia. — [c]EU15 plus countries already participating in accession negotiations: Bulgaria, Romania. — [d]Albania, Belarus, Bosnia-Herzegovina, Bulgaria, Croatia, Czech Republic, Hungary, Macedonia, Moldova, Poland, Romania, Russia, Slovakia, Slovenia, Ukraine, Yugoslavia. — [e]Included are Denmark, Finland, Germany, Norway, Sweden. — [f]Included are Estonia, Latvia, Lithuania, Poland, Russia. — [g]Data for the year 1991 are not available in adequate quality.

Source: Statistical Office of Estonia (2002a, 2002b, various issues); Central Statistical Bureau of Latvia (various issues); Statistics Lithuania (2002, various issues); own calculations and compilation.

Baltic efforts to integrate into the EU did not mean that these countries became "everybody's darling" as the results of trade integration show. Baltic EU exports and imports have been far from being evenly distributed as the regional decomposition in Tables 1a and 1b reveals: The trade intensity with the more developed Northern EU countries is significantly higher than with the poorer European South. Especially trade with Western Baltic Rim countries — Scandinavia and Germany — became increasingly important for the Baltic States during the nineties. Whereas trade with the group of former socialist countries lost importance, i.e. primarily trade with other former Soviet republics decreased which had dominated Baltic trade relations until 1990 due to the Baltic participation in the intra-soviet division of labour.[5] Anyway, Russia remained one of the major Baltic trading partners.

Although sharing a lot of common features the development of bilateral trade structures reveals that the Baltic States are not at all a homogeneous group: In the case of Estonia the dominance of trade with EU15 countries is more distinct than it can be observed in the other Baltic States; in this context trade relations with Finland are outstanding which can be for the most part explained by the trade with radio and telecommunication products. Meanwhile, Estonian trade with CIS countries is well below the Baltic average. Latvia's favourite EU15 trading partner is Germany, and furthermore Latvian exports (of mainly "traditional" products) to the UK have reached a striking size. Moreover, intra-Baltic trade is of major importance for Latvia with imports reaching an eye-catching share. Latvia's trade with CIS countries suffered remarkable losses but not as drastic as it can be observed for Estonia. Finally, Lithuania developed strong

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[5] During Soviet occupation, Baltic "foreign" trade was for the most part intra-soviet trade: e.g., in 1989 about 90 per cent of Baltic exports were designed for other Soviet republics, about 80 per cent of Baltic imports had their origin in these countries (Arkadie and Karlsson 1992; PlanEcon 1992).

trade relations with Germany, and, as it is also true for Latvia, the UK became a major destination for Lithuanian exports (of mineral and textile products). In comparison to the other Baltic States trade relations with Scandinavia are weaker while trade relations with CIS countries, especially with Russia and with respect to imports, remained stronger.

Against this background, the transformation process of the Baltic economies required a complete reorganization of production patterns. Baltic industries underwent a far-reaching process of privatisation and structural change. While soviet-type capital- and skill-intensive industries shrank significantly, "traditional", mainly low-value-added industries, such as wood, wearing apparel, furniture and paper, which had already dominated Baltic production patterns in the interwar period[6], recovered importance. It was only Estonia — inter alia due to large-scale foreign direct investments — where new productions in the fields of radio and communication equipments were established besides the reinforcement of traditional industries (see Tables 2 and 3). However, the development of technologically advanced productions remained the exception that did not prove the rule. Corresponding to this kind of structural change the sectoral composition of Baltic trade patterns ran through an adjustment process which gave the impression that the Baltic pre-war patterns of trade specialisation re-emerged (OECD 2000: 179–184).

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6 Cf. Laaser and Schrader (1992: 198–201).

Table 2: Baltic Trade with EU Countries by Most Important Commodity Groups 2002

Rank	Commodity Group	Share of Exports/Imports in per cent
Estonia	**Exports**	
1.	XVI – Machinery and mechanical appliances; electrical equipment	30.4
2.	IX – Wood and articles of wood; cork and articles of cork	17.3
3.	XI – Textiles and textile articles	13.6
4.	XX – Miscellaneous manufactured articles (e.g. furniture)	11.1
5.	XV – Base metals and articles of base metals	6.9
	Volume of Exports in Mill. US-$	*2340.3*
	Imports	
1.	XVI – Machinery and mechanical appliances; electrical equipment	29.3
2.	XVII – Vehicles, aircraft, vessels and associated transport equipment	12.5
3.	XV – Base metals and articles of base metals	10.3
4.	XI – Textiles and textile articles	8.4
5.	VI – Products of the chemical or allied industries	8.3
	Volume of Imports in Mill. US-$	*2781.1*
Latvia	**Exports**	
1.	IX – Wood and articles of wood; cork and articles of cork	47.0
2.	XI – Textiles and textile articles	15.3
3.	XV – Base metals and articles of base metals	13.7
4.	XX – Miscellaneous manufactured articles (e.g. furniture)	7.5
5.	XVI – Machinery and mechanical appliances; electrical equipment	4.2
	Volume of Exports in Mill. US-$	*1379.8*
	Imports	
1.	XVI – Machinery and mechanical appliances; electrical equipment	29.8
2.	XVII – Vehicles, aircraft, vessels and associated transport equipment	12.7
3.	VI – Products of the chemical or allied industries	10.2
4.	XI – Textiles and textile articles	8.9
5.	XV – Base metals and articles of base metals	6.7
	Volume of Imports in Mill. US-$	*2145.7*
Lithuania	**Exports**	
1.	XI – Textiles and textile articles	27.7
2.	V – Mineral products (e.g. crude oil and oil products)	18.7
3.	XVII – Vehicles, aircraft, vessels and associated transport equipment	8.4
4.	XVI – Machinery and mechanical appliances; electrical equipment	8.0
5.	XX – Miscellaneous manufactured articles (e.g. furniture)	7.9
	Volume of Exports in Mill. US-$	*2550.7*
	Imports	
1.	XVII – Vehicles, aircraft, vessels and associated transport equipment	22.7
2.	XVI – Machinery and mechanical appliances; electrical equipment	21.4
3.	XI – Textiles and textile articles	12.3
4.	VI – Products of the chemical or allied industries	10.7
5.	VII – Plastics and articles thereof; rubber and articles thereof	6.8
	Volume of Imports in Mill. US-$	*3350.5*

Source: Statistics Lithuania (2003); own calculations and compilation.

Table 3: Baltic Trade with CIS Countries by Most Important Commodity Groups 2002

Rank	Commodity Group	Share of Exports/Imports in per cent
Estonia	**Exports**	
1.	XVII – Vehicles, aircraft, vessels and associated transport equipment	22.3
2.	IV – Prepared foodstuffs; beverages, spirits and vinegar; tobacco	14.9
3.	VI – Products of the chemical or allied industries	10.4
4.	XVI – Machinery and mechanical appliances; electrical equipment	7.7
5.	XV – Base metals and articles of base metals	7.4
	Volume of Exports in Mill. US-$	*185.5*
	Imports	
1.	V – Mineral products (e.g. crude oil and oil products)	32.4
2.	XV – Base metals and articles of base metals	18.2
3.	IX – Wood and articles of wood; cork and articles of cork	11.7
4.	XVII – Vehicles, aircraft, vessels and associated transport equipment	8.3
5.	VI – Products of the chemical or allied industries	6.5
	Volume of Imports in Mill. US-$	*499.9*
Latvia	**Exports**	
1.	IV – Prepared foodstuffs; beverages, spirits and vinegar; tobacco	24.4
2.	XVI – Machinery and mechanical appliances; electrical equipment	16.4
3.	VI – Products of the chemical or allied industries	15.0
4.	XI – Textiles and textile articles	10.9
5.	IX – Wood and articles of wood; cork and articles of cork	6.0
	Volume of Exports in Mill. US-$	*228.0*
	Imports	
1.	V – Mineral products (e.g. crude oil and oil products)	42.9
2.	XV – Base metals and articles of base metals	17.7
3.	VI – Products of the chemical or allied industries	8.0
4.	IX – Wood and articles of wood; cork and articles of cork	5.7
5.	IV – Prepared foodstuffs; beverages, spirits and vinegar; tobacco	5.6
	Volume of Imports in Mill. US-$	*532.0*
Lithuania	**Exports**	
1.	XVII – Vehicles, aircraft, vessels and associated transport equipment	36.5
2.	V – Mineral products (e.g. crude oil and oil products)	14.0
3.	XVI – Machinery and mechanical appliances; electrical equipment	12.0
4.	IV – Prepared foodstuffs; beverages, spirits and vinegar; tobacco	5.3
5.	I – Live animals; animal products	5.3
	Volume of Exports in Mill. US-$	*918.1*
	Imports	
1.	V – Mineral products (e.g. crude oil and oil products)	71.1
2.	XVI – Machinery and mechanical appliances; electrical equipment	6.2
3.	XV – Base metals and articles of base metals	5.2
4.	VI – Products of the chemical or allied industries	4.1
5.	XVII – Vehicles, aircraft, vessels and associated transport equipment	2.7
	Volume of Imports in Mill. US-$	*1846.9*

Source: Statistics Lithuania (2003); own calculations and compilation.

It can be concluded that during the nineties the Baltic States made significant progress in integrating into the Western European division of labour with a regional center of integration in the Baltic Sea Region (BSR). The extent to which the Baltic States have adjusted their trade patterns to the various determinants mentioned above can be analysed by virtue of gravity estimates. Due to the heterogeneity of trade relations it appears to examine the Baltic States' trade patterns separately by countries.

4. A Gravity Model to Explain Baltic Trade Relations

Gravity models are often used in trade and integration analyses to assess the shaping forces of international trade flows. Gravity models assume that gravitational forces to undertake economic interaction stem from high per-capita-incomes and aggregate incomes or population figures of trading partners, because these features promise high revenues from business deals with numerous well funded clients. But transaction costs which may vary with distance can be expected to impede the impact of the gravitational forces on the intensity of trade relations. Gravity models allow for testing the impact of various forms of distance: among them are not only real geographical distances measured either by space or time, but also „virtual distances" as exerted by tariff- or non-tariff-trade barriers, different languages, diversities in business cultures, traditions or economic systems.[7] In technical terms, trade volumes are regressed on income, population and distance, with coefficients for the former variables normally being positive and negative for real or virtual distances. Empirical studies unanimously confirm that distance still matters in global trading and that by lowering real or virtual distance barriers the mutual integration of markets

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[7] These various real and virtual distances are referred to as "trade costs" in the pertinent literature (cf. Carrere and Schiff 2004, Anderson and van Wincoop 2004).

intensifies.[8] Even the rapid decline of information and telecommunication costs did not result in a "death of distance" (Ghemawat 2001: 138).

Dating back to Linder (1961), Tinbergen (1962) and Linnemann (1966) gravity models are a widely applied empirical tool in international economics when the relative impact of determinants of bilateral international trade flows is to be analysed. In the past, some researchers have claimed that the application of the gravity model to economic interaction and trade would be without any foundation from trade theory, but this view no longer holds. In a number of contributions it is argued that the standard gravity equation is consistent with several trade models: Bergstrand (1985) derived a generalized gravity equation from a reduced general equilibrium model of world trade with nationally differentiated products. Later he introduced an extended model with two differentiated-product industries which use labour and capital; again a generalized gravity equation was derived and its consistency with Heckscher-Ohlin-models and models with monopolistic competition was illustrated (Bergstrand 1989). Anderson (1979) and Deardorff (1995; 1998) found the gravity model to be consistent with a wide range of trade models including the Heckscher-Ohlin-model, either with frictionless or with impeded trade, although the successful standard log-linear gravity equation is not directly derivable from the respective trade models (Anderson and van Wincoop, 2004: 18). Feenstra, Markusen and Rose (1998) also showed that the simple gravity equation is nevertheless consistent with several theoretical models of trade; from different trade models a gravity-type

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[8] Browsing through recent integration literature reveals a great variety of applications of different specifications of the gravity model to issues of integration and disintegration. A random choice may be given by the works of Baldwin (1994), Bayoumi and Eichengreen (1995), Eichengreen and Irwin (1996), Abraham et al. (1997), Soloaga and Winters (1999), Djankov and Freund (2000), Fidrmuc and Fidrmuc (2000), Greenaway and Milner (2002), and Anderson and van Wincoop (2004). Carrere and Schiff (2004) follow a somewhat different approach in calculating the sample average distance of transport for exports of a country group.

equation can arise, thereby the coefficient estimates depend on the respective types of goods which are traded. Evenett and Keller (1998) analysed to what extent the Heckscher-Ohlin-theory and the increasing returns trade theory account for the empirical success of the gravity equation. They showed that both models predict the gravity equation, and that models of imperfect product specialisation better explain the variation of trade flows than perfect product specialisation models.

4.1 Gravity Model Specification and Data Set

Gravity models for the BSR have been put forward in particular by Cornett and Iversen (1998), Byers et al. (2000), Löhnig (2001), Hacker and Johansson (2001), Hacker and Einarsson (2003), and Laaser and Schrader (2003a, b). Cornett and Iversen (1998) try to predict future trade in the Baltic Rim by relying on the complete sample of bilateral trade relations between the European Union and Central and Eastern European accession candidates. They control for different phases of integration in order to differentiate between various forms of trade barriers typical for the different forms of bilateral trade links. Byers et al. (2000) estimate hypothetical coefficients from recent trade data of the Scandinavian countries in order to predict future trade volumes and country shares of the Baltic countries. They argue that in historical comparison many similarities exist between Scandinavian and Baltic countries in the interwar-period, including trade patterns and income levels. Löhnig (2001), Hacker and Johansson (2001), and Hacker and Einarsson (2003) follow a similar approach as Cornett and Iversen (1998). In a first step they calculate a standard pattern of trade relations for Europe as a whole including some or all transformation countries. In the second step they predict the trade flows of the involved accession countries and compare them with actual flows. All these studies explain trade in the BSR by the trading partners' attractiveness (incomes and popula-

tion), proximity and PTA's, and find reasons for deviations from the general pattern, such as particularly close integration tendencies on the Baltic Rim (cf., e.g., Hacker and Johansson 2001: 80-82).

The Gravity Model

Our gravity model follows a somewhat different approach. It tries to explain the Baltic countries' trade patterns — exports and import structures — in the middle of the 1990s as well as for the most recent data in the field of tension between their efforts to integrate into the European Union Common Market and their role as bridgeheads for CIS trade. In this context, the impact of specific features of the Baltic States' virtual distance from their neighbours is examined by our gravity model:

— Firstly, the Baltic States progress to integrate into the European Union is evident due to their early participation in accession negotiations in 1997 resp. 1999. Since all three countries lowered their institutional trade barriers and developed rather liberal trade regimes vis-à-vis the EU, the virtual distance to EU members was reduced significantly.[9]

— Secondly, the integrative impact of particularly close trade relations, i.e. short virtual distances, in the BSR has to be accounted for and to be confronted with the consequences of EU integration.

— Thirdly, although trade relations with the CIS lost importance, old business ties and knowledge of markets and business cultures may qualify the Baltic States for still more than negligible trade contacts with the Eastern

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[9] To estimate the trade effects of PTAs the standard equation of a gravity model is supplemented by at least one dummy variable for PTA participation. This approach is applied in, e.g., Soloaga and Winters (1999), Eichengreen and Irwin (1996), Frankel, Stein and Wei (1995), or Hamilton and Winters (1992).

Europe — thus forming a bridge to the CIS. Accordingly, another subject of the gravity analysis is to assess the field of tension between "going westward" and "keeping tied to the East". [10]

The model specification follows conventional paths in the empirical literature. Dependent variable are logs of trade flows T_{tij}, either imports M_{tij} or exports X_{tij}, of each of the Baltic countries:

$$\ln T_{tij} = Const + \beta_1 \ln GDP_{tj} + \beta_2 \ln PCI_{tj} + \beta_3 \ln DIST_{ij} + \delta_k \, DUM_k + \ldots + \varepsilon.$$

with subscript t indicating the year of observation, i either Estonia, Latvia, or Lithuania, j the respective bilateral trading partner, k the enumerative index of dummies, and ε is representing the error term.

The independent variables cover logs of the Baltic countries' trade partners' gross domestic products and per-capita-incomes ($GDP_{tj,}$ $PCI_{tj,}$) as gravitational forces,[11] and the real distance $DIST_{ij}$ between the Baltic capitals and the capitals or economic centers of the trading partners as impeding transportation costs factor. Moreover, up to six dummy variables (k = 1…6) are included to control

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[10] In doing so, both the findings of Eichengreen and Irwin (1996) that historical trade relations may have lasting effects as well as the hypothesis of Beenstock (1991) that transformation in Eastern Europe may help to restore former development and integration patterns which had been cut off during the period of Soviet hegemony, will be considered adequately. Beenstock's hypothesis is more or less supported by the approach of Byers et al. (2000) who suggest that without Soviet occupation the Baltic States might have followed a similar path of integration as Scandinavia.

[11] The results of the descriptive analysis in section 2 (see also table 1) suggest that significant differences can be found between the trade patterns of Estonia, Latvia, and Lithuania. Hence, the gravity equations of the three Baltic States have been estimated separately for the three countries and the respective years in order to account for these differences. As a consequence, GDP and GDP per capita of the Baltic States (GDP_{ti} and PCI_{ti}) normally being included in the estimating equation due to gravitational forces on part of reporting countries, had to be skipped here. Given the small size of the three Baltic countries, this procedure appears to produce no substantial distortion of the results.

for different kinds of virtual distances or proximities (e.g. common border[12], EU agreements and other trade agreements) (see also Box 1).

The choice of the dummy variables reflects the specific situation of the three Baltic countries with respect to the different dimensions of distance:

— *INTRABALT* can be expected to capture (i) the impact of the common border, (ii) the common past within the former Soviet type of division of labour, and (iii) the early free trade agreements between Estonia, Latvia, and Lithuania.

— With *CIS* the hypothetical path dependency in trade relations of Estonia, Latvia, and Lithuania with the former Soviet Union, i.e. the CIS, is depicted.

— *EU15* in equation 1 represents the potential effects of the Europe Agreements which should have strengthen Baltic trade with Western Europe; an *EFTA*-dummy controls for trade relation with non EU-members in the European Economic Area (EEA).

[12] A common border normally facilitates trade, because trade between neighbours is less impeded by transaction costs if no transit via third countries with additional bureaucratic procedures is required (Fidrmuc and Fidrmuc 2000: 4). The common border dummy usually is referred to as „contiguity variable“.

Box 1: The Gravity Model: Explanations of Variables and Equations

Variables	
GDP_j	GDP of trading partners
PCI_j	GDP per capita of trading partners
$DIST_{ij}$	Distance "as the crow flies" between Estonia, Latvia or Lithuania and the capital of the respective bilateral trading partner
INTRABALT	Dummy variable, = 1, if bilateral trade flow is between Estonia, Latvia, and Lithuania, = 0, if not
CIS	Dummy variable, = 1, if trading partner is member of the Commonwealth of Independent States, i.e. is either Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyz Republic, Moldova, Russia, Tajikistan, Turkmenistan, Ukraine, or Uzbekistan, = 0, if not
EU15	Dummy variable, = 1, if trading partner is member of EU15, = 0, if not
EFTA	Dummy variable, = 1, if trading partner is member of the EFTA, i.e. Norway, Iceland, Switzerland or Liechtenstein, = 0, if not
SCAND	Dummy variable, =1, if trading partner is either Denmark, Norway, Sweden or Finland, = 0, if not
HUBPORT	Dummy variable, = 1, if trading partner is either Belgium, the Netherlands, Germany, or the United Kingdom, = 0, if not
RESTEU	Dummy variable, = 1, if trading partner is member of EU15, but not already covered by SCAND or HUBPORT, = 0, if not
OTHNEW	Dummy variable, = 1, if trading partner is new EU member from Central and Eastern Europe (excluding Estonia, Latvia, and Lithuania), i.e. is Cyprus, Czech Republic, Hungary, Malta, Poland, Slovakia, or Slovenia, or pending EU membership applicant, i.e. Bulgaria, or Romania = 0, if not
Equations	
Equation 1	= integration into the entire EU $\ln T_{tij} = Const + \beta_1 \ln GDP_{tj} + \beta_2 \ln PCI_{tj} + \beta_3 \ln DIST_{ij} + \delta_1 INTRABALT + \delta_2 CIS + \delta_3 EU15 + \delta_4 OTHNEW + \delta_5 EFTA + \varepsilon.$
Equation 2	= integration into disaggregated Baltic Sea Region $\ln T_{tij} = Const + \beta_1 \ln GDP_{tj} + \beta_2 \ln PCI_{tj} + \beta_3 \ln DIST_{ij} + \delta_1 INTRABALT + \delta_2 CIS + \delta_8 SCAND + \delta_9 HUBPORT + \delta_7 RESTEU + \delta_4 OTHNEW + \varepsilon.$

— The two dummies such as *SCAND* (for Scandinavia) and *HUBPORT* (for Belgium, the Netherlands, Germany and the UK) refer to the location of a trading partner either in the Western BSR or the adjacent North Sea Region.[13] These variables represent specific contiguity dummies because trade in the BSR has ever been different from trade in other regions. The Baltic Sea as an intensely utilized device which substantially saves transport costs should have a special impact on regional integration (see Böhme et al. 1998). By these specific contiguity variables applied in equation 2 the intensity of the regional integrative potential of the Western Baltic Sea neighbours is tested. With respect to *HUBPORT*, it can be argued that Germany, Netherlands and Belgium host the main North-Sea hub-ports which link the highly developed coastal shipping ("feeder") network in the BSR with intercontinental shipping lines, i.e. with world markets.[14] In addition, Germany was one of the main trading partners of the Baltic States in the interwar period.[15] As the other dominating trading partner in the interwar period, the United Kingdom is included in the *HUBPORT* dummy as well. Hence, *HUBPORT* represents a part of an extended Western BSR following transport-geographic and historical explanations.

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[13] "Western" BSR in this context should be interpreted as "traditionally market-oriented", and not solely in a geographical sense.

[14] Since the political turnabout in Eastern Europe the pattern of maritime services in the Eastern Baltic Sea has changed considerably. Direct liner services between former COMECON ports and the rest of the world have been substituted more and more by transhipment of containerised cargo ("feeder services") via North Sea ports, i.e. Hamburg and Bremen/Bremerhaven in Germany and their Benelux counterparts in the so-called ARA-range: Amsterdam, Rotterdam, Antwerp. Cf. Böhme et al. (1998: pp. 51).

[15] For details see Laaser and Schrader (1992).

— Due to specific trade networks in the BSR trade relations with more distant EU-members should be less important. To control for this effect, *RESTEU* was added to equation 2: It comprises all trade flows with those EU-members which are not already included in the *SCAND* or *HUBPORT* series.

— Finally, trade agreements between the various EU applicant countries were spreading out rapidly during the 1990s. In particular, some momentum should be expected for the intra-applicant trade from the Europe agreements and the ongoing institutional integration in the course of accession. To capture this effect the dummy *OTHNEW* was added to both equations.

In contrast to other gravity model estimates, especially those covering entire world trade relations, no language dummy was included to control for transactions costs savings due to the use of widely spoken foreign languages. Significant linguistic similarities between the Baltic countries and their neighbours only exist for Estonia and Finland. However, it is impossible to separate this language effect from other proximities to Finland, such as the common seaborne border. After all, being small countries the Baltic States have to use international trading languages, i.e. especially English or, to a lesser extent Russian. These effects, however, are already covered by *SCAND, HUBPORT* and *CIS*.

The estimates have been processed in two subsequent steps beginning with the basic equation 1 which refers to the *EU15* and *EFTA* dummies testing the hypothesis that trade relations with all EU or EEA members are equally important. In the second step, these dummies were substituted by *SCAND*, *HUBPORT* and *RESTEU* in equation 2, testing the alternative hypothesis that the integration of the Baltic countries has a more regional focus in the BSR.

The Data Set

Trade data following the "special trade"-concept[16] were provided by the three national statistical offices. The level of regional coverage was high: for all three countries, at least 98 per cent. GDP and GDP-per-capita data have been taken from The World Bank Economic Indicators (World Bank 2002a, 2003). The data on GDP is in current US dollar and current exchange rates which better proxy export-supply and import-demand potential of a country than purchasing power parity (PPP)-based figures. In so doing, we follow Gros and Gonciarz (1996: 716) who argue that trade potentials should be estimated on the base of the international value of goods and services a country produces, not on the people's purchasing power within their own country. Or as the OECD (2004) puts it, PPPs are valued at domestic market prices and are calculated using expenditure weights that reflect domestic demand — accordingly, PPP-based GDP data does not adequately reflect the potential international purchasing power relevant for gravity estimates.[17]

For the distance matrix the "Indo.com Distance Calculator" was used which provides a fast and comprehensive tool to calculate distances for a great variety of towns and locations worldwide or, alternatively, for exact latitudes and longitudes of any place in the world.

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16 Special trade is defined by the statistical offices of the Baltic States in accordance with the definition by EUROSTAT (e.g. Statistics Lithuania 2003).

17 Nevertheless, the use of PPPs appears to be justified if a market exchange rate does not exist as it was the case for the centrally planned economies before 1989 (see Baldwin 1994). The use of PPP based data for a gravity analysis of Baltic trade in the second half of the nineties may still be acceptable, because PPP corrected levels avoid misinterpretations due to the ongoing transformation process (Partanen 1998: 11–12, Partanen and Hirvensalo 1999: 9–10). But in view of the integration progress, the use of GDPs at increasingly less distorted market exchange rates, mirroring international purchasing power, appears to gain in significance and is now more convincing.

Two years were selected: 1996 as a year with already more or less reliable and comparable data in sufficient regional disaggregation, and 2002 as the most recent year with available data. This selection also avoids the distortions by the so-called "Russian crisis".

4.2 Regression Results

The gravity model estimates for both equations and for 1996 and 2002 have been estimated separately for Estonia, Latvia, and Lithuania to cover obvious singularities in the integration pattern of the three countries. The results reveal that Baltic trade flows have conspicuously adjusted to the gravitational forces of the Common Market of the EU in the course of transformation and integration during the first decade of restored independence, but with significant differences between estimates for the import and the export side, and with different relative impact of the various shaping forces for the three Baltic States.

In general, all equations have a strong F-record below the 1 per cent error level. The adjusted R^2, ranging from 0.55 in 1996 to 0.73 in 2002, but mostly close to 0.70, appears to be sufficient compared to standard gravity regressions and given the fact that the data set covers all trading partners, including some polar cases to draw a complete picture.

EU-wide Integration and Far-reaching Baltic Similarities on the Import Side

Looking at the three Baltic States' *imports* (Tables 4–6), it can be observed that the coefficients of the trading partners' GDP_j have the expected positive sign and prove to be highly significant at the 1 per cent error level.

Table 4: Results of OLS Gravity Estimates for Estonian Imports 1996 and 2002

	1996				2002			
	Equation 1		Equation 2		Equation 1		Equation 2	
	Coeffi-cient	t-Value	Coeffi-cient	t-Value	Coeffi-cient	t-Value	Coeffi-cient	t-Value
C	–12.05	–2.67***	–14.04	–3.35***	–18.31	–5.21***	–19.33	–5.47***
ln(GDP_j)	0.88	8.44***	0.88	8.55***	1.20	10.39***	1.19	10.20***
ln(PCI_j)	0.35	1.93*	0.40	2.28**	–0.14	–0.67	–0.07	–0.35
ln($DIST_{ij}$)	0.01	0.02	0.20	0.50	–0.40	–1.41	–0.30	–1.07
INTRABALT	7.16	5.30***	7.64	6.06***	5.87	6.31***	6.03	6.65***
CIS	4.45	5.36***	4.66	5.69***	3.38	5.73***	3.48	5.85***
EU15	2.61	3.27***	–	–	2.01	2.78***	–	–
SCAND	–	–	4.70	3.29***	–	–	3.31	3.01***
HUBPORT	–	–	2.81	3.68***	–	–	1.76	2.32**
RESTEU	–	–	1.74	2.58**	–	–	1.40	2.23**
OTHNEW	2.38	2.32**	2.56	2.52**	2.62	3.99***	2.63	4.16***
EFTA	2.49	2.79***	–	–	2.18	2.57**	–	–
$\overline{R^2}$	0.68		0.68		0.67		0.67	
F-Value	36.14***		32.67***		30.46***		26.81***	
n	135		135		117		117	

*** = significant at 1 p.c. error level, ** = at 5 p.c., * = at 10 p.c.

Source: As Table 2.

Table 5: Results of OLS Gravity Estimates for Latvian Imports 1996 and 2002

	1996				2002			
	Equation 1		Equation 2		Equation 1		Equation 2	
	Coeffi-cient	t-Value	Coeffi-cient	t-Value	Coeffi-cient	t-Value	Coeffi-cient	t-Value
C	–9.12	–2.59**	–9.28	–2.57**	–13.49	–3.10***	–12.76	–2.79***
ln(GDP_j)	0.76	7.09***	0.74	7.03***	1.00	6.61***	0.97	6.25***
ln(PCI_j)	0.22	1.20	0.29	1.64	0.15	0.71	0.25	1.28
ln($DIST_{ij}$)	–0.71	–2.47**	–0.70	–2.29**	–0.76	–2.22**	–0.84	–2.32**
INTRABALT	6.08	5.90***	6.04	5.75***	6.29	5.02***	5.83	4.52***
CIS	3.69	5.56***	3.72	5.52***	3.27	3.86***	3.17	3.62***
EU15	2.05	3.00***	–	–	2.20	2.70***	–	–
SCAND	–	–	2.99	3.26***	–	–	2.41	2.14**
HUBPORT	–	–	2.51	4.01***	–	–	1.91	2.22**
RESTEU	–	–	1.10	1.76*	–	–	1.41	2.03**
OTHNEW	2.72	3.80***	2.64	3.73***	2.54	2.87***	2.22	2.50**
EFTA	2.20	3.09***	–	–	2.63	2.82***	–	–
$\overline{R^2}$	0.69		0.69		0.67		0.66	
F-Value	33.22***		29.57***		28.86***		24.53***	
n	115		115		111		111	

*** = significant at 1 p.c. error level, ** = at 5 p.c., * = at 10 p.c.

Source: As Table 2.

Table 6: Results of OLS Gravity Estimates for Lithuanian Imports 1996 and 2002

	1996				2002			
	Equation 1		Equation 2		Equation 1		Equation 2	
	Coeffi-cient	t-Value	Coeffi-cient	t- Value	Coeffi-cient	t- Value	Coeffi-cient	t- Value
C	–15.52	–5.45***	–15.49	–5.43***	–13.30	–3.98***	–13.03	–3.82***
ln(GDP_j)	0.85	8.92***	0.84	8.82***	0.79	6.53***	0.77	6.30***
ln(PCI_j)	0.26	1.66*	0.32	2.13**	0.20	1.16	0.27	1.63
ln($DIST_{ij}$)	–0.15	–0.53	–0.15	–0.55	–0.03	–0.10	–0.07	–0.25
INTRABALT	6.43	7.46***	6.33	7.48***	5.35	6.19***	5.11	6.01***
CIS	4.09	5.70***	4.08	5.65***	2.66	3.95***	2.60	3.82***
EU15	2.13	3.00***	–	–	2.19	3.23***	–	–
SCAND	–	–	3.03	3.49***	–	–	2.76	3.50***
HUBPORT	–	–	2.37	3.49***	–	–	2.23	3.21***
RESTEU	–	–	1.23	2.02**	–	–	1.42	2.45**
OTHNEW	3.14	3.82***	3.03	3.72***	3.13	4.67***	2.93	4.53***
EFTA	2.04	2.81***	–	–	2.35	3.18***	–	–
$\overline{R^2}$	0.68		0.68		0.61		0.60	
F-Value	34.11***		30.34***		25.10***		21.81***	
n	126		126		125		125	

*** = significant at 1 p.c. error level, ** = at 5 p.c., * = at 10 p.c.

Source: As Table 2.

In contrast, the coefficients of PCI_j fail to be significant for Latvia in 1996 and throughout all three countries in 2002, showing even an unexpected negative sign for Estonia. As this elasticity mirrors the income elasticity of Baltic import demand, the conclusion can be drawn that the Baltic States are still importing more standardized commodities rather than sophisticated high-tech products. At their present stage of development, their ability to absorb high-tech products appears to be still limited. Moreover, the notion of standardized imports is consistent with the Baltic States emerging role as location for workbench productions of industries with a demand for standardized intermediate products (cf. section 3 and Table 2).

Although the distance variable $DIST_{ij}$ fails to be significant for Estonia and Lithuania, these results are consistent with the supposed process of Baltic integration into the European and international division of labour: Baltic imports are increasingly coming from nearby countries controlled by various contiguity dummies or from countries located all over the world, including distant developing and less developed countries. In other words, the distance variable cannot be expected to be highly relevant for Baltic imports.

Turning to the contiguity dummies, the *INTRABALT* dummy for intra-Baltic trade relations exhibits an extremely high coefficient of 5 to more than 7 at a high significance level and is rather consistent over time, thus indicating still close ties between these countries. Estonia, Latvia and Lithuania are forming a small integration zone by themselves, although they do not miss any opportunity in the political arena to point out their regional distinctions.

Moreover, also the *CIS* dummy has a high coefficient in the range of 2.7 to above 4 which displays traces of the former Soviet division of labour in the Baltic countries' import patterns; in this respect imports of mineral products, mainly crude oil, are of major importance – especially for Lithuania where these imports with a share of 71 per cent of pertinent flows in 2002 dominate the Lithuanian-Russian import relations.[18]

[18] For details see Table 3.

Another similarity of the Baltic countries' import structures is that the quality of estimates in both equations does not differ, neither for any country, nor for any year (see Tables 4–6) — both specifications render comparable results. The *EU15* dummy, representing the whole EU, always exhibits a highly significant elasticity (of 2.0 to 2.6) in equation 1, and *RESTEU*, covering the most distant member states in equation 2, is significant at the 5 per cent error level in five of six cases; furthermore, the other new members (*OTHNEW*) increasingly play a vital role in Baltic import relations. Nevertheless, the highly significant coefficients of the Baltic Sea Region-dummies (*SCAND* and *HUBPORT*) have higher values than *RESTEU*, indicating closer links to BSR neighbours than to more distant member states. Thus, the Baltic Sea — and even more the Baltic/North Sea maritime feeder system and the links to the UK — must be regarded as a less hampering barrier than an ordinary land border.[19] Even though, the combined findings for the observation periods indicate that Estonia, Latvia, and Lithuania are now highly integrated into the *entire EU* at least with respect to imports; the same is true for the whole European Economic Area including the remaining EFTA members.

Baltic Differences on the Export Side

In contrast to the homogeneity on the import side, the gravity estimates draw a different picture for Baltic exports (Tables 7–9). It derives its main features from different development paths in Estonia, Latvia, and Lithuania in the course of transformation, their choice of trading partners and their regional patterns of integration. In general, the export equations are significant. The market size of trading partners (GDP_j) exercises a moderate but distinct gravitational force on

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[19] According to empirical results referred to in Venables (2001: 12) transport on overland routes is on average seven times more expensive than on sea routes. In the particular case of the Baltic Sea Region, maritime transport plays an outstanding role (for details see Böhme et al. 1998).

Baltic export flows with highly significant elasticities in the range of 0.4 to 0.8. The coefficient of PCI_j is not significantly different from zero in 1996; for 2002, Estonia exhibits a weakly significant PCI_j coefficient in equation 2 and Latvia a moderately significant one, but the size of the coefficient remains rather low. This result corroborates the classification of the Baltic States currently being the location of overwhelmingly traditional industries manufacturing commodities which meet a demand with moderate income elasticities of their trading partners (see OECD 2000: 179–184).

Table 7: Results of OLS Gravity Estimates for Estonian Exports 1996 and 2002

	1996				2002			
	Equation 1		Equation 2)		Equation 1		Equation 2	
	Coeffi-cient	t-Value	Coeffi-cient	t-Value	Coeffi-cient	t-Value	Coeffi-cient	t-Value
C	10.68	2.98***	10.03	2.49**	–0.54	–0.16	–1.36	–0.36
ln(GDP_j)	0.41	3.76***	0.39	3.65***	0.55	4.12***	0.54	4.10***
ln(PCI_j)	0.10	0.46	0.16	0.76	0.27	1.48	0.32	1.85*
ln($DIST_{ij}$)	–1.09	–3.92***	–1.01	–3.02***	–1.04	–3.81***	–0.95	–2.94***
INTRABALT	4.41	5.17***	4.57	4.62***	3.86	4.74***	4.05	4.41***
CIS	2.88	4.54***	2.98	4.44***	0.82	1.21	0.92	1.30
EU15	2.02	2.47**	–	–	1.41	2.32**	–	–
SCAND	–	–	2.85	2.53**	–	–	2.40	2.59**
HUBPORT	–	–	3.08	4.11***	–	–	2.10	3.43***
RESTEU	–	–	1.08	1.52	–	–	0.71	1.37
OTHNEW	0.65	0.84	0.68	0.86	0.65	1.02	0.70	1.08
EFTA	1.94	2.48**	–	–	1.62	2.49**	–	–
$\overline{R^2}$	0.56		0.56		0.59		0.59	
F-Value	18.02***		16.36***		22.52***		20.23***	
n	109		109		120		120	

*** = significant at 1 p.c. error level, ** = at 5 p.c., * = at 10 p.c.

Source: As Table 1; World Bank (2003, 2004); Bali Indonesia Travel Portal. — Own Calculations.

Table 8: Results of OLS Gravity Estimates for Latvian Exports 1996 and 2002

	1996				2002			
	Equation 1		Equation 2		Equation 1		Equation 2	
	Coeffi-cient	t-Value	Coeffi-cient	t-Value	Coeffi-cient	t-Value	Coeffi-cient	t-Value
C	6.22	1.51	6.33	1.45	–2.01	–0.60	–1.90	–0.53
ln(GDP_j)	0.47	3.34***	0.44	3.43***	0.58	6.05***	0.57	5.95***
ln(PCI_j)	–0.02	–0.09	0.03	0.12	0.38	2.22**	0.42	2.56**
ln($DIST_{ij}$)	–1.41	–4.86***	–1.37	–4.40***	–1.11	–4.33***	–1.12	–4.00***
INTRABALT	2.52	2.34**	2.53	2.26**	3.72	4.39***	3.63	3.97***
CIS	2.49	3.71***	2.51	3.63***	2.50	4.26***	2.49	4.09***
EU15	0.84	0.98	–	–	1.12	1.76*	–	–
SCAND	–	–	1.23	1.33	–	–	1.37	1.69*
HUBPORT	–	–	2.41	3.39***	–	–	2.04	3.37***
RESTEU	–	–	–0.23	–0.24	–	–	0.31	0.45
OTHNEW	0.15	0.21	0.12	0.18	0.68	1.18	0.61	1.03
EFTA	0.96	1.11	–	–	1.21	1.34	–	–
$\overline{R^2}$	0.55		0.57		0.65		0.65	
F-Value	15.26***		14.71***		28.94***		26.02***	
n	95		95		120		120	

*** = significant at 1 p.c. error level, ** = at 5 p.c., * = at 10 p.c.

Source: As Table 2.

Table 9: Results of OLS Gravity Estimates for Lithuanian Exports 1996 and 2002

	1996				2002			
	Equation 1		Equation 2		Equation 1		Equation 2	
	Coeffi-cient	t-Value	Coeffi-cient	t-Value	Coeffi-cient	t-Value	Coeffi-cient	t-Value
C	–8.72	–2.10**	–7.78	–1.81*	–4.06	–1.41	–3.69	–1.26
ln(GDP_j)	0.80	6.96***	0.77	6.86***	0.65	4.98***	0.62	4.88***
ln(PCI_j)	–0.19	–0.90	–0.07	–0.35	0.08	0.49	0.16	1.02
ln($DIST_{ij}$)	–0.53	–1.63	–0.65	–1.90*	–0.73	–3.11***	–0.75	–2.99***
INTRABALT	7.21	6.40***	6.75	5.79***	5.55	8.34***	5.34	7.57***
CIS	5.36	8.14***	5.23	7.71***	3.33	7.31***	3.28	6.93***
EU15	3.60	4.37***	–	–	2.32	4.04***	–	–
SCAND	–	–	3.44	3.54***	–	–	2.82	4.15***
HUBPORT	–	–	3.65	4.89***	–	–	3.06	5.27***
RESTEU	–	–	2.72	2.75***	–	–	1.35	2.20**
OTHNEW	2.60	3.16***	2.24	2.64***	1.64	2.14**	1.46	1.86*
EFTA	3.21	3.95***	–	–	2.57	4.02***	–	–
$\overline{R^2}$	0.69		0.68		0.69		0.69	
F- Value	30.57***		25.63***		36.52***		32.31***	
n	107		107		127		127	

*** = significant at 1 p.c. error level, ** = at 5 p.c., * = at 10 p.c.

Source: As Table 2.

In contrast to the import side, the distance variable $DIST_{ij}$ exhibits a highly significant value for all three countries, oscillating between –0.5 and –1.4. The significance of the distance variable on the export side meets with expectations derived from the state of economic development in the Baltic States: while they import sophisticated products from technologically advanced countries around the world, their export commodities still have some competitiveness on world markets, with the exception of outsourced workbench production for Western European manufacturers.[20]

As a matter of course, the intense mutual integration of Estonia, Latvia and Lithuania is corroborated in the export equations by extremely high coefficients for *INTRABALT*. But two strikingly different results for the contiguity dummies compared to the import side can be discerned: The *first difference* is the distinct decrease in size and significance of the *CIS* coefficient for Estonia in both equations, for Lithuania with respect to size and only in the Latvian case the CIS-dummy remained stable; i.e. historical ties with the CIS lost importance for Estonia and, to a lesser extent, for Lithuania (Tables 7–9). This westward turn in export flows was partly a consequence of the Russian crisis of 1999, with a wide collapse of Russian markets an a break-down of traditional trade links — Baltic exporters faced the challenge to develop new markets. But even before that crisis Estonia loosened its ties with the former Soviet trade partners, especially

[20] E.g., in Estonia the sharp increase of market penetration in electronic products and machinery in 2000 is largely a reflection of the assembly subcontracting operations of Scandinavian telecommunications equipment producers, as well as comparable structures in machinery manufacturing (cf. Gerigk and Ernits 2003: 11–16). A similar situation applies to Lithuania where an increase of exports came along with rising imports thus having only a minor impact on national value added. For details cf. Burgess et al. (2003).

with non-European CIS-members,[21] and made a significant step towards integration into the Western European division of labour — just as it was the case in the 1920s and 1930s. Lithuania, on the other side, did not cut off its ties to the East and remained engaged in CIS markets after the Russian crisis to a certain extent not the least due to its links in the energy sector (cf. Table 3). The ostensible stability of the *CIS*-dummy for Latvia in 1996 and 2002 hides a different development in between: Until 2001, Latvia seemed to follow the Estonian reorientation of trade towards Western Europe. But obviously, the aftermath of the Russian crisis of 1998/99 disappeared in 2002 and Latvia restored its former ties to the CIS.[22]

The *second difference* for the contiguity dummies compared with the import estimates is the strong regional center of gravity in the BSR in particular for Estonian exports. For Latvia this is true especially for the countries represented by *HUBPORT*, while *SCAND* is insignificant in 1996 and weakly significant in 2002. The *EU15* dummy in equation 1 is of smaller size and less significant than the dummies *SCAND* and *HUBPORT* representing the BSR and the adjacent North-Sea-Region in equation 2 for both countries. Correspondingly, the *RESTEU* dummy in equation 2 is insignificant throughout the whole period (Tables 7 and 8). Moreover, the other new members' attractiveness (*OTHNEW*) for Estonia and Latvia is not significantly different from zero. This means that Estonia and, less so, Latvia follow an integration path into the EU but primarily via their direct neighbours on the Baltic Rim and/or the adjacent North Sea Rim

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[21] Two additional sets of calculations not reported here were run in order to detect a specific source of this turn of Estonia. A dummy containing Russia, Belarus and Ukraine (thus cutting off the successors of the former Asian Soviet Republics) and three individual dummies for Russia, Belarus and Ukraine still produced significant coefficients. That means that the decline of the former Soviet links appears to be concentrated on the more distant members of the CIS.

[22] Cf. Laaser and Schrader (2003b) for 2001 regression estimates.

with different cores of their common regional center of gravity: for Estonia the core appears to be located in Scandinavia, for Latvia in Germany, the Benelux states and the United Kingdom.

The picture is still slightly different for Lithuania: To be sure, the *SCAND* and *HUBPORT* dummies exhibit even higher values than those of Estonia and Latvia, and are highly significant as well, with *HUBPORT*, i.e. Western Europe, being the relative core of Lithuania's regional integration. But in contrast to the Baltic neighbour states, the *EU15* dummy in the basic export equation 1 has a distinctly greater size and higher level of significance (Table 9). Hence, Lithuania is more evenly integrated into the entire EU by its export activities than Estonia and Latvia. Likewise, the other new members and the still pending candidates (*OTHNEW*) also play a noticeable role in Lithuania's export pattern.

5. Conclusions

The analysis of Baltic trade statistics and the results of the gravity estimates reveal that Estonia, Latvia and Lithuania have rapidly integrated into the international division of labour with a distinct EU focus. The Baltic States have taken a road towards the EU common market which pays particular attention to close trade relations with their immediate neighbours in the BSR. The Baltic Sea, as an inland sea of the EU, obviously serves as a major integrating device for Estonia, Latvia and Lithuania. The BSR forms a distinct center of gravity for Baltic exports, most prominently for those of Estonia. Latvia and Lithuania share this feature but have also established closer trade relations with other Western European countries. But notwithstanding these differences between the three Baltic countries the integration path from the Eastern Rim of the Baltic Sea towards Brussels is running via Helsinki, Stockholm, Copenhagen and Berlin.

At the same time the Baltic States, although being no longer integrated into the former intra-Soviet division of labour, have not abandoned their contacts to the Soviet successor states altogether. Accordingly, they still have the potential to form a gateway from Europe to the CIS markets. It is evident that the involuntary integration into the Soviet system has left its traces in Baltic trade patterns and at the same time offers the opportunity to serve as a bridge between East and West.

The still existing links to CIS markets are not the only historical determinants of Baltic trade flows. Historical aspects are also relevant for the strong Westward shift of trade relations. It reminds of the period soon after World War I when the Baltic States had become independent from Russia and started to establish intense trade relations with Western Europe which aimed at economic as well as political integration. In this respect, Baltic EU integration may be interpreted both as a reintegration into regional markets to which a historical affinity exists and as an anchor for political stability. Moreover, the sectoral pattern of trade flows renders the impression that the Baltic States are going to recapture the role of producers offering commodities for which they were known in the interwar period. Hence, history appears to matter also in this respect.

With no doubt, the integration into the European division of labour already posed the challenge of fundamental structural change for the Estonian, Latvian and Lithuanian economies. It meant the loss of a good part of soviet-type industries which lacked the degree of competitiveness necessary to survive on free markets. However, they received some compensation for the adjustment pains they suffered: The dynamic process of Baltic trade integration into the Common Market provides evidence that Estonia, Latvia and Lithuania are finding their place in Europe. These lines of development are in accordance with the ideas by Krugman and Venables (1996) who argue that peripheral countries

are not necessarily the losers of economic integration. Following their line of thought, the reduction of transaction costs (transport, trade barriers) due to political and economic integration would not solely foster concentration processes in central regions but might also offer incentives to shift production to peripheral countries with a low-wage, well-educated work-force. Thus, a competitive labour endowment combined with lowered transaction costs could be the decisive advantage for a peripheral location of production such as the Baltic States.

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