

Böhme, Hans; Laaser, Claus-Friedrich; Sichelschmidt, Henning; Soltwedel, Rüdiger

Research Report — Digitized Version

Transport in the Baltic Sea region: Perspectives for the economies in transition

Kieler Sonderpublikationen

Provided in Cooperation with:

Kiel Institute for the World Economy – Leibniz Center for Research on Global Economic Challenges

Suggested Citation: Böhme, Hans; Laaser, Claus-Friedrich; Sichelschmidt, Henning; Soltwedel, Rüdiger (1998) : Transport in the Baltic Sea region: Perspectives for the economies in transition, Kieler Sonderpublikationen, ISBN 3-89456-167-X, Institut für Weltwirtschaft (IfW), Kiel

This Version is available at:

<https://hdl.handle.net/10419/1291>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.

Kieler Sonderpublikationen

Institut für Weltwirtschaft an der Universität Kiel

Hans Böhme · Claus-Friedrich Laaser
Henning Sichelschmidt · Rüdiger Soltwedel

Transport in the Baltic Sea Region:
Perspectives for
the Economies in Transition

843409



Die Deutsche Bibliothek – CIP-Einheitsaufnahme

Transport in the Baltic Sea region : perspectives for the economies
in transition / Institut für Weltwirtschaft an der Universität Kiel. Hans
Böhme ... – Kiel : Inst. für Weltwirtschaft, 1998

(Kieler Sonderpublikationen)

ISBN 3-89456-167-X

© Institut für Weltwirtschaft an der Universität Kiel 1998.

Alle Rechte vorbehalten. Ohne ausdrückliche Genehmigung des Verlages ist es auch nicht gestattet, das Werk oder Teile daraus in irgendeiner Form (Fotokopie, Mikrofilm oder einem anderen Verfahren) zu vervielfältigen oder unter Verwendung elektronischer Systeme zu verarbeiten oder zu verbreiten.

Printed in Germany

ISSN 1434-5013

Preface

The Baltic Sea region has been subject to processes of both disintegration and integration. On the southeastern shore of the Baltic Sea, former CMEA trade relations as well as the traditional system of Soviet socialist division of labour has disintegrated after 1991. With the exception of the Russian Federation's oblasts of Leningrad and Kaliningrad, the transition economies in the Baltic Sea region have turned to the West and are eager to participate in the process of European integration. Poland and Estonia participate in the negotiations for EU enlargement, sooner or later Latvia and Lithuania will follow suit.

Physically, integration is brought about by transport that results from trade and other economic interchange. Hence, trade and further economic development may be hampered by all severe obstacles to transport—in the fields of transport infrastructures, of transport markets, of complementary legal frameworks, or of the daily transport business.

In the present study, the authors analyse the current pattern of transport in the Eastern Baltic Sea region with special reference to the economies in transition, and identify and assess the various obstacles to transport in this region. Based on the empirical findings, the study presents economic policy recommendations and shows potential remedies to overcome such obstacles. Although missing infrastructure links and insufficient capacities are easily visible, the authors hold that "software" problems (arising from regulatory regimes, but in particular from administrative procedures) are more pressing than infrastructure deficiencies and should be addressed with urgency.

The study was commissioned jointly by the Stockholm Chamber of Commerce and the Swedish Transport and Communications Research Board (Kommunikations Forsknings Beredningen, KFB) for the Baltic Sea Business Summit 1998, which was held in Stockholm on January 18–19, 1998. Research work was performed as a joint effort by Hans Böhme, Claus-Friedrich Laaser, Henning Sichelschmidt, and Rüdiger Soltwedel, with Hans Böhme contributing from his vast knowledge of maritime transport in general and in the Baltic Sea region in particular, and with Rüdiger Soltwedel acting as the leader of the research project.

The authors would like to thank officials of the European Conference of Ministers of Transport (ECMT), Paris, the European Bank for Reconstruction and Development (EBRD), London, the European Commission, Direction Générale VII (Transport), Brussels, the European Investment Bank (EIB), Luxembourg, the German Truckers Association (Bundesverband Güterkraftverkehr und Logistik, BGL), Frankfurt/Main, and the German Freight Forwarders Association

(Bundesverband Spedition und Lagerei, BSL), Bonn, for their support in providing the opportunity of background discussions, and statistical offices for providing additional statistical material not otherwise available. Numerous transport and transport-related firms doing business in the region contributed valuable information from their everyday experience. The authors are also grateful for support in obtaining data as well as for additional discussions with Hans Jeppson from the Stockholm Chamber of Commerce and Inge Vierth from KFB.

Within the Kiel Institute, the authors were supported by Ute Heinecke, Maren Höret, and Kirsten Lade, who transformed the manuscript into a printable text version, and by Ursula Fett, who prepared the maps. Ulrich Stark helped with gathering and processing data and information. The final editorial task rested with Frank-Joachim Ballke, Itta Schulte, and Korinna Werner-Schwarz. To all of them the authors owe thanks.

Kiel, July 1998

Horst Siebert

Contents

A. Introduction: Trade and Transport in the Baltic Sea Region	1
B. The Importance of the Transport System for Economic Development	5
I. Different Theoretical Approaches to Describe the Role of Transport in the Economy	5
1. The Aggregate Production Function Approach	6
2. The Microeconomic Cost of Location Approach	9
3. The Institutional or Locational Competition Approach	13
II. Empirical Results.....	14
1. Surveys among Enterprises.....	14
2. The Aschauer Debate.....	14
III. Conclusions	17
C. Transport Patterns in the Eastern Baltic Sea Region	20
I. Aspects of Transport Geography.....	20
II. Existing Infrastructure Facilities	22
1. Sea-Ports and Inland Shipping.....	23
2. Railways	29
3. Road Network	34
4. Airports.....	38
III. Present Transport Patterns.....	39
1. Ports and Shipping Dominating Baltic Sea Traffic.....	39
2. Aspects of Port Competition.....	48
3. Domestic Traffic Flows in Baltic Rim EIT.....	52

IV. Future Prospects for Sea Transport in the Baltic	55
1. Growth and Structural Changes	55
2. The End of "Tax-Free": Distortions of the Ferry System Ahead	59
V. Summary	61
D. Obstacles to a Functioning Transport System in the Baltic Sea EIT	63
I. Definitions	63
II. Political Issues	65
III. Obstacles Associated With the General Legal Framework	68
1. International Treaties	68
2. Market Access	70
3. Property Rights and Privatization	73
4. Price Regulation and Licensing	81
IV. Infra- and Superstructure Hardware Problems	84
1. The Maritime Sector	84
2. Land and Air Transport	93
V. Obstacles To Trade Caused by Software Problems	106
1. Obstacles in Ports and Shipping	106
2. Land and Air Transport	112
VI. Evaluation of Obstacles	125
E. Conclusions and Recommendations: What Can Be Done?	127
I. Strategies to Remove Existing Software Obstacles	127
1. Requirements for Public Policy Action	127
2. Private Strategies to Overcome Obstacles	132
II. A Perspective on Infrastructure Provision in the Baltic Sea Region	135

Annex..... 145

- I. Different Perspectives on Baltic Sea Trade Figures 145
- II. Quality and Reliability of Empirical Data on Transport Flows.... 146
 - 1. Conceptual Statistical Problems..... 146
 - 2. Statistical Problems of a Transitional Nature 158
 - 3. Problems of Using Western Statistics..... 160
 - 4. Concluding Remarks..... 164
- III. Evaluation of the Relative Relevance of Obstacles 166
- IV. Maps and Tables..... 168

References 194

List of Maps and Tables

Map A1 — The Baltic Rim Economies in Transition.....	168
Map A2 — Motorways in Poland and Lithuania.....	169
Table A1 — Per Capita Income and Total GDP in Baltic Rim countries, 1995	170
Table A2 — Rail Networks in Baltic Rim Countries, 1994	170
Table A3 — Road Networks in Baltic Rim Countries, 1995	171
Table A4 — Seaborne Cargo Turnover of All Sea Ports in Estonia, Latvia, Lithuania, Poland, and the Russian Baltic Rim Oblasts, 1980–1996	172
Table A5 — Seaborne Cargoes Unloaded and Loaded in the Ports of Estonia, Latvia, Lithuania, Poland, and the Russian Baltic Rim Oblasts, 1990–1996	173
Table A6 — Seaborne Cargoes Unloaded and Loaded in Estonia ac- cording to Cargo Categories: Total versus Transit Traffic, 1994–1996	174
Table A7 — Seaborne Cargoes Unloaded and Loaded in Latvia according to Cargo Categories, 1990–1996.....	175
Table A8 — Seaborne Cargoes Unloaded and Loaded in Poland accord- ing to Cargo Categories, 1992–1995	176
Table A9 — Cargo Turnover in Polish Sea Ports according to Cargo Categories, 1980–1996	177
Table A10 — Seaborne Cargoes Unloaded in Estonia, Latvia, and Lithuania according to Selected Countries of Loading, 1991–1996	178
Table A11 — Seaborne Cargoes Loaded in Estonia, Latvia, and Lithuania according to Selected Countries of Unloading, 1991–1996 ..	179
Table A12 — Seaborne Cargoes Unloaded and Loaded in Poland ac- cording to Selected Countries of Loading and Unloading, 1980–1996	180
Table A13 — Seaborne Cargoes Unloaded and Loaded in the USSR ac- cording to Selected Countries of Loading and Unloading, 1980–1996	181

Table A14 — Seaborne Cargo Turnover in the Ports of Estonia, Latvia, Lithuania, Poland, and the USSR according to Selected Countries of Origin and Destination, 1988–1996.....	182
Table A15 — Modal Split in Merchandise Traffic of Estonia, 1990–1996 .	183
Table A16 — Modal Split in Domestic Merchandise Traffic of Latvia, 1980–1995	184
Table A17 — Modal Split in Domestic Merchandise Traffic of Lithuania, 1989–1995	185
Table A18 — Modal Split in Domestic Merchandise Traffic of Poland, 1990–1995	186
Table A19 — Modal Split in Domestic Merchandise Traffic of Russia, 1990–1994	187
Table A20 — Total Export and Import Volumes of the States of the Baltic Sea Region, 1980–1995	188
Table A21 — Different Perspectives on Trade in the Baltic Sea Region, 1990 and 1993	189
Table A22 — Intra-Baltic Exports und Imports according to Countries, 1993	190
Table A23 — Intra-Baltic Sea Total Exports and Imports, 1993	191
Table A24 — Intra-Baltic Exports und Imports according to Countries, 1990	192
Table A25 — Intra-Baltic Total Exports und Imports, 1990.....	193

List of Abbreviations

ATC	Air traffic control
BOT	Build-operate-transfer
BSR	Baltic Sea Region
CC	Crete-Corridors
CCET	Centre for Co-operation with the Economies in Transition
CIA	Central Intelligence Agency
CIS	Commonwealth of Independent States
CMEA	Council for Mutual Economic Aid
DBAG	Deutsche Bahn AG
DBR	Deutsche Binnenreederei
EBRD	European Bank for Reconstruction and Development
ECMT	European Conference of Ministers of Transport
EFTA	European Free Trade Association
EIA	Estonian Investment Agency
EIB	European Investment Bank
EIT	Economies in Transition
EPA	Estonian Privatization Agency
ESA	Eesti Statistikaamet (Statistical Office of Estonia)
EU	European Union
EVR	Riigiettevõtte Eesti Raudtee (Estonian Railways)
FSU	Former Soviet Union
GDP	Gross Domestic Product
GDR	German Democratic Republic
GNP	Gross National Product
GUS	Główny Urząd Statystyczny
ICAO	International Civil Aviation Organization
IRF	International Road Federation
IRU	International Road Transport Union
KLASCO	Klaipėda Stevedoring Company
LDS	Lithuanian Department of Statistics
LDZ	Latvijas Dzelzceļš (Latvian Railways)
LG	Lietuvos Geležinkeliai (Lithuanian Railways)
LISCO	Lithuanian Shipping Company
LOT	Polskie Linie Lotnicze (Polish Airlines)
LPG	Liquefied petroleum gas
LRA	Lithuanian Road Administration
LRVSK	Latvijas Republikas Valsts Statistikas Komiteja (State Committee for Statistics of the Republic of Latvia)

MEA	Ministry of Economic Affairs of the Republic of Estonia
MERL	Ministry of Economy, Republic of Latvia
OECD	Organization for Economic Co-operation and Development
PKP	Polskie Koleje Panstwowe (Polish State Railways)
PLO	Polskie Linie Oceaniczne (Polish Ocean Lines)
PPP	Purchasing-power parity
RCP	Riga Commercial Port
SAS	Scandinavian Airlines System
SZD	Sovetskie Zeleznye Dorogi (Soviet Railways)
TEM	Trans-European Motorway
TEN	Trans-European Networks
TEU	Twenty-foot equivalent unit
UIC	Union internationale des chemins de fer
USSR	Union of Socialist Soviet Republics
VAT	Value-added tax
VR	Valtionrautatiet (Finnish Railways)
WEFA	Wharton Economic Forecasting and Analysis

A. Introduction: Trade and Transport in the Baltic Sea Region

The purpose of the present study is threefold: (i) It analyses the pattern of present traffic in the Baltic Sea region—as far as the economies in transition (EIT) on the southeastern shore of the Baltic Sea are concerned—and gives some hints at its future prospects. (ii) It looks at obstacles in transport that might hamper the future development of trade in the region. (iii) Given the crucial importance of an efficiently functioning transport system for the EITs' economic development and for their integration into the international division of labour, the study presents some recommendations concerning potential remedies for observed obstacles.¹

The study focusses on the countries of the Eastern Baltic Sea region, namely the EIT Poland, Estonia, Latvia, Lithuania, and the Russian Federation's oblasts Kaliningrad and Leningrad. This refers to the range from the Odra mouth in the southwest to the Gulf of Finland in the northeast (see Map A1). The Western Baltic Sea countries—European Union's (EU) member states Germany, Denmark, Sweden, and Finland, as well as the European Free Trade Area (EFTA) member Norway²—are included into the analysis only insofar as trade and transport relations between them (as a group) and the EIT are concerned. Viewed from transport relations, the focus lies on international trade and transport between the Eastern Baltic countries and Central and Western Europe plus countries worldwide. This means cargo and passenger traffic flows mainly in east–west direction (and vice versa). Inland traffic of the EIT is only of marginal interest. Baltic Sea transport in the first place refers to *Baltic Sea* transport, hence the focus is on maritime traffic, sea-ports, and port related overland routes although land and air transport are also on the agenda of this study.

Some stylized facts and peculiarities of the Baltic Sea region may underline the relevance and the scope of the study:

¹ Transport is the very accomplishment of trade, economic interchange and the (common) market (Seefeld 1984: 320 f.). Without efficiently functioning transport infrastructures, markets, legal frameworks and additional functions, foreign trade and interregional division of labour cannot take place. Thus, as is the case everywhere in the world, all severe obstacles to transport may hamper trade and further economic development in the Baltic Sea region.

² Also in transport statistics Norway, which geographically is lying ashore of the Skagerrak, is included into the Baltic Sea region: The borderline between Baltic Sea and North Sea is drawn by the line connecting Hanstholm and Lindesnes.

- The Baltic Sea has ever been one of the world's oceans with the busiest transport relations, not only in its western part, but also for east-west traffic even during the Soviet era, when nearly one-third of the former USSR's foreign trade was handled by Baltic ports. The Baltic Sea has served as a link rather than a division line between the countries lying on its shore.
- Accordingly, the trade of the countries around the Baltic Sea among each other and with the rest of the world has ever been more intense than in the rest of the world, although figures that sometimes are referred to in political debate overstate the importance of Baltic Sea trade (see Annex I).
- The Western market economies on the Baltic Rim belong to the richest countries in the world,³ while the EIT on the eastern shore range still among the least wealthy economies (Table A1). Concerning future growth opportunities, the Baltic Sea region sometimes is called a "Blue Banana", one of Europe's growth poles.⁴
- The Baltic Sea region was and currently is subject to processes of both, disintegration and integration. The traditional system of Soviet socialist division of labour, which was based more on issues of mutual chaining together Soviet republics to prevent separative tendencies than on economic criteria (as, e.g., comparative advantages; Laaser and Schrader 1992: 189 f.) disintegrated after 1991 or even collapsed. This also held for former CMEA trade relations, which had tied Poland to the socialist block. From the Western side the Baltic Sea in a certain sense has become an EU inland sea by the two northern EU enlargements of 1972 and 1995. This feature is currently reinforced by the endeavours of most of the EIT on the eastern shore—Poland, Estonia, Latvia, and Lithuania—to apply for EU membership.⁵
- In their transport sectors, the EIT suffer from a heavy legacy of the Soviet system in the past—with infrastructures and transport rolling stocks largely worn-out, delayed maintenance of capacities, under-investment, lacking man-

³ However, the two German regions lying ashore of the Baltic Sea—Schleswig-Holstein and Mecklenburg-Vorpommern—are relative backward regions in intra-German comparison.

⁴ This term is derived from the banana-like shaped range of most advanced growth poles within the European Union that stretches from Central England via France to northern Italy and that often is referred to as "European Banana". The regions of the European Banana are considered to be the most dynamic ones in the EU with respect to economic growth and development (see, e.g., Soltwedel 1997a, 1997b).

⁵ Poland has applied for EU membership in April 1994 and Estonia, Latvia, and Lithuania between October and December 1995 (Kommission 1997e). At the moment, only Poland and Estonia have qualified for being taken into consideration for the first round of access negotiations according to European Commission's rating, while Latvia and Lithuania have to wait for a second round (Kommission 1997a, 1997b, 1997c, 1997d).

agerial human capital and inefficient legal and institutional frameworks and planning processes. An early success of the transformation process in the transport sector will render positive externalities to all other sectors of the newly emerging market economies in Central and Eastern Europe.

- Under the Maastricht treaty—being the relevant European Unions's basic treaty—the European supra-national layer has been assigned with the task of forming and completing Trans-European Networks (TENs) in transport, telecommunications, and energy. Since the December 1994 European Council meeting in Essen this task has been widened with respect to the EIT, which apply for future EU membership in the course of an "Eastern enlargement".

Taking all these components together, it is fair to say that transport in the Eastern part of the Baltic Sea region and its current or future obstacles is a highly relevant topic for research, as improvements in transport can at least help initiate the urgently needed momentum of economic development in the EIT.

Pattern of Analysis of the Report

Chapter B refers to explanations in economic theory to describe the proper role of the transport sector in an economy and to assess its influence on economic growth and development. *Chapter C* is divided into four sections: The first section gives an overview of transport geographical considerations. The second section presents a description on existing transport network facilities in the Baltic Rim EIT, which form the base for transport market operations with and within these countries. The third section presents an analytical picture of current transport flows in the Baltic Sea region with respect to the EIT on its Eastern shore. The fourth section is devoted to a tentative pattern prediction of potential future transport flows from and to the Baltic Rim EIT. With *Chapter D* we look at obstacles to transport operations in the Baltic Rim EIT. We adhere to a pattern of hard- and software obstacles and begin with macro software that forms the legal base of transport operations, followed by hardware obstacles in infra- and supra-structure and micro software obstacles in daily operations. In the closing section of this chapter, our evaluation with respect to relative relevance and time pattern (temporary versus persistent obstacles) is presented. We give our conclusions and policy recommendations with respect to the different categories of obstacles and for future development of transport in the Baltic Sea EIT in *Chapter E*.

Disclaimer

This study uses a bulk of statistical material from different sources, as well as information on observed obstacles from the literature, from information services and from personal interviews. In many instances, although, statistical data or information were not available at all, or could not be provided within the time con-

straint under which this study had to be performed. Statistical material from different sources was sometimes lacking consistency, even if provided by the same institution. Hence, the statistical base for this research project is somewhat shaky. A comprehensive overview on statistical problems is given in Annex II.

In the study the focus is on volumes and structures. An important factor, of course, is the development of transport costs and prices. They may have considerable impact on the volume and growth of cargo, on the modal split between land carriers, or between these and shipping, and also on opportunity costs. No reliable and consistent data, however, were available on price changes. Therefore, the development of transport costs and prices could not be analysed empirically.

B. The Importance of the Transport System for Economic Development

The purpose of this chapter is (i) to assess the relative importance of providing efficiently functioning transport infrastructures and transport markets for economic development, economic welfare and well-being of nations or regions and, on that basis, (ii) to help to assess qualitatively to which extent observable obstacles in transport may hamper welfare in Baltic Rim EIT.

The transport system comprises the infrastructure facilities of the different transport modes, the superstructure of terminals, transfer facilities and rolling stock (the hardware component), the services in using these facilities to link distant locations in unconstrained mobility, and also the institutional user regime for the infrastructure, the market formation on transport service markets, and public transport policy including competition policy (the software component). These components are interdependent modules of a systemic entity, which can work efficiently only if the single modules are built in and made fit according to their respective comparative advantage, complementarities and substitutive relationships.

Economists agree that a functioning transport system is essential for successful economic development. Any spatial division of labour of economic activity that aims at reaping specialization gains from trade and economic interaction needs at least some transport services of various kinds as input.⁶

I. Different Theoretical Approaches to Describe the Role of Transport in the Economy

The focus of the subsequent considerations is on the interrelation between transport and economic growth and development. Hence, we shall look at the long-run efficiency gains from infrastructure due to, e.g., the lowering of transport costs, which are an important part of transaction costs in an economy (Banister

⁶ Transport economists of earlier generations like Predöhl (1958: 10 ff.) define transport as a production process in a wider sense that permeates all stages of production from the earliest input to the dissemination of final consumer goods. Transport enriches production with the spatial component, and the theory of economic development gets a new dimension by the search for a spatial equilibrium and ceases to be a "wonderland of no dimensions" as Isard (1949) has characterized the simple Walrasian equilibrium.

and Berechman 1995: 12). We shall disregard the short-run demand effects that relate to (Keynesian) multiplier and accelerator effects of investment spending on infrastructure facilities and superstructure capacities.

We suggest three approaches to describe the relationship between transport and economic growth:

- (1) the *aggregate production function approach*, which looks at transport infrastructure as public capital being a prerequisite for trade, economic exchange, spatial division of labour, growth and development⁷ and asks for the contribution of transport to growth of a nation or a region (Section B.I.1);⁸
- (2) the *cost of location approach*, which takes transport costs as an important cost factor for production and dissemination of goods influencing the spatial distribution of economic activity (as seen from the micro-level decision-making process) (Section B.I.2);⁹ and
- (3) the *locational (or institutional) competition approach*, which is closely related to the cost of location approach; in the perspective of this approach transport infrastructure facilities and transport markets are locational factors and policy instruments in the process of locational competition between regions for attracting highly mobile capital (Section B.I.3.).

Furthermore, the efficient provision of transport infrastructure and the efficient operation in infrastructure networks have to be analysed with a view towards (i) the deep involvement of the public sector in planning and providing funds for infrastructure investment which is due to certain natural monopoly elements of infrastructure facilities (while this does not necessarily hold for the transport sector as a whole), and (ii) the negative consequences of excessive public regulation of transport markets. Thus, a systemic and synoptic view of transport infrastructure, transport service markets and transport policy, as well as the search for the appropriate borderline between public and private activities are warranted.

1. The Aggregate Production Function Approach

The direct and indirect effects of transport on economic growth are usually discussed with particular reference to the hardware facilities of infrastructure. The

⁷ Growth and development are often used as synonyms in this respect.

⁸ It should be noted that all three approaches can be applied either to nations or to regions within a national economy.

⁹ This approach is referred to as locational theory and is one of the traditional building blocks of spatial economic theory (Bruinsma 1995: 2).

capital stock of transport infrastructure renders services for the private economic agents, above all the potential for mobility and interchange. Transport services raise private productivity and income. Transport infrastructure hardware and its services can be perceived as factors of production in addition to traditional factors such as physical capital, human capital and labour in an aggregate production function setting. The availability of transport services shifts the production possibility curve to a higher level, enhancing the production potential of an economy or a region.¹⁰

Another perspective is to perceive infrastructure and transport as a factor in the aggregate cost function of the economy. The use of infrastructure and transport services may directly lower production costs of private enterprises, what can be labelled "productivity effect". In addition, because of complementary and substitution effects between infrastructure and other inputs, there may occur "factor-demand shift effects", which in turn lower production costs indirectly.¹¹ Both effects can be observed in particular in manufacturing enterprises (World Bank 1994: 15).

In endogenous growth models (see, e.g., Romer 1987) economic growth in a region depends on the degree of specialization in production and the degree of intensity of the spatial division of labour. Final output growth increases with the number of intermediate outputs; thus, infrastructure permitting economic exchange may be interpreted as a device that promotes specialization and trade and can be looked upon as a technology for intensifying the interregional division of labour (Bougheas and Demetriades 1995: 2, 14).

A common feature of these different aspects is that the availability of transport options raises the quality of the remaining private and public capital stock of a location and increases the rate of return on the aggregate capital stock (Gramlich 1994: 1183 ff.).¹² Or to put it negatively: transport sector deficiencies limit the potential for welfare-enhancing growth by (i) restricting the ability to gain from trade, and by (ii) hampering growth of productivity in the rest of the economy. Hence, there is a complementary relationship between investment in transport and private investment, with investment in transport infrastructure raising the aggregate return to private investment (Gwilliam 1997: 259 ff.). These

¹⁰ See, e.g., Aschauer (1990: 13), Busch and Klös (1995: 7 ff.), Pfähler et al. (1995: 73, 79), and Behnke (1997: 15).

¹¹ See Berndt and Hansson (1991), Nadiri and Mamuneas (1991), Conrad and Seitz (1992), and Behnke (1997: 30 ff.).

¹² A microeconomic approach would try to evaluate the rate of return on infrastructure investment directly, doing this on a rather disaggregated level. In most cases, however, econometric analyses of the production function or the cost function type are employed.

approaches¹³ have become known under the label "public capital hypothesis".¹⁴ They are associated with theoretical concepts of infrastructure policy, which were put forward, e.g., by Jochimsen (1966), Mera (1973), Henderson (1974), and Hillman (1978).¹⁵ After 1989 the public capital hypothesis has been intensively discussed in academic circles in the course of the so-called Aschauer debate.¹⁶

Hirschman (1958) used the public capital hypothesis of infrastructure with a view towards developing countries' strategies to stimulate economic growth. He asked whether a balanced or an unbalanced growth strategy would be more promising. In the balanced growth strategy all sectors of an economy grow approximately by the same rate;¹⁷ in the unbalanced growth strategy some sectors grow faster than others. On the one hand, balanced growth renders the advantage that shortages and potentially polarising development processes are avoided while synergy effects between different sectors of an economy can be utilized. The notion of unbalanced growth, on the other hand, is based on the perception that growth processes take place in irregular pushes, and that economic growth is associated with structural change. In fact, Hirschman considered balanced growth as being desirable although hardly attainable under real world conditions so that a constrained unbalanced strategy would be preferable (Giersch 1977: 305 ff.; Krieger-Boden 1995: 43). On that basis Hirschman advocated investment into public capital as a stimulus to speed up the growth process.¹⁸

¹³ The differences between the three approaches rest mainly on the empirical side, whether the relationship is either tested in a growth model with an aggregate production function setting, in a cost-function approach, or in the context of a Romer-model, but not in the basic propositions for the causal relationship.

¹⁴ Giersch (1963) claimed that the endogenous growth potential of a region is determined by the regional endowment with public capital and its rate of capacity utilization. On that basis, Biehl et al. (1975) developed empirically the so-called "Regional Potential Factor Approach" to quantitatively assess the endogenous growth potential. This approach has been broadly used in German regional policy making to help identify the regions in need of further regional aid.

¹⁵ Early traces can be found in Meade (1952). See Pfähler et al. (1995: 79 ff.).

¹⁶ See Section B.II.2 for an appraisal of the Aschauer debate.

¹⁷ Growth rates may differ according to income elasticities. The doctrine of balanced growth in development theory rests on limited access to capital markets and limited domestic and foreign trade market size (Giersch 1977: 305 ff.).

¹⁸ For advanced economies the emphasis is laid on a balanced development of public infrastructure and private capital (Pfähler et al. 1995: 82). See, e.g., the studies by Timm (1969), Vosgerau (1970), Kurihara (1970), Siebert (1972), and Arrow and Kurz (1972).

2. **The Microeconomic Cost of Location Approach**

In this section, we look at the effect of the existence of transport costs on the microeconomic decision-making processes and the ensuing consequences for the pattern of location and the spatial dimension of economic growth.¹⁹ After looking at static theories of location we will have a look on models that take the time dimension into account and, at the end, on accessibility and gravitational models.

Thünen (1875) developed, for an agrarian production system, the first core-periphery-model of economic location that basically took recourse to transportation costs. His model helps to explain differences in agglomeration. Agglomeration decreases with distance from the central town towards the peripheral desert where no kind of profitable agricultural production is possible.

The importance of transport costs for industrial firms was first analysed by *Alfred Weber*. He was concerned with the optimal location of an industrial firm under the constraints of non-ubiquitous raw materials and transport costs for both raw material supplies and final product delivery whereby also agglomeration economies and interregional wage differentials are accounted for (*Weber* 1922).²⁰

In contrast to *Weber* the models of *Walter Christaller* and *August Lösch* are sales-oriented. Both scholars develop hexagon-shaped market networks of production locations that lie in the centre of their respective delivery regions; these in turn are determined by transport costs relative to production costs. If consumers are to be served equally, market networks of production locations have to emerge. Networks of different goods or services overlap and form a complicated spatial structure.^{21, 22}

¹⁹ This section draws mainly on *Krieger-Boden* (1995).

²⁰ Predecessor to *Weber's* analysis was that of *Launhardt* (1882).

²¹ *Christaller* (1933) outlines in his "theory of central location" the determinants of a stable spatial structure based on economies of scale, distance, and transport cost. The minimum borderline of sales networks is determined by production economies of scale while transport costs constitute for the maximum borderline. As the ranges of market networks vary for different goods and services, the degree of central location varies with goods composition, which in turn determines the rank of a location with respect to relative importance. By this a hierarchical pattern of central locations emerges, with those goods and services with the widest ranges being provided in the most centrally located among the locations, a structure that continues with decreasing order.

²² *Lösch* (1939) develops a somewhat similar network of hexagons, but his market network does not prove as hierarchically designed as *Christaller's* ones. Starting from settlements that are equally but discontinuously distributed on the edges of hexagons and that are served by central locations market networks with different ranges can be constructed. The magnitude of these ranges depends on transport costs. If the various market networks overlap in such a way that they have a common centre (the "capi-

Until the 1950s, the locational theories took only the supply of inputs or the demand for output into account. This unsatisfactory partialism was overcome in the development of symbiotic models, which combine both perspectives. The most prominent approach has been that of *Walter Isard* (1956). Isard employs elements of all above-mentioned theories: locational choices of industrial firms according to Weber, footloose economic activities in the context of a Lössch system of central locations and surrounding locations of different settlement densities, and Thünen circles for agricultural production. Furthermore, he considered scale economies in production, localization economies for clusters of firms within the same branches, and aggregate urbanization economies. Transport is introduced as a substitutional production factor in addition to real estate, capital and labour. From the substitutional character of transport he derives, via transformation curves, cost-minimizing locations in which transport and other costs are balanced against each other. The result is a highly complex system of land use, location of the various producing firms, and different agglomerations (Krieger-Boden 1995: 21 ff.).

Much more explicitly than within the above-mentioned static locational theories, the role of transport for influencing the spatial pattern of economic activity has been shaped in the context of the theory of transport as a space-shaping factor that has been developed by *Fritz Voigt*. Voigt (1973a, 1973b) asked for the effects of internal developments in the transport system (comprising transport infrastructure, market formation, technology, economic policy) on the economic and spatial evolutionary process in a country, and on the observable long-run impact on economic structures that could be attributed to these intra-transport developments.²³

In his approach, Voigt combined elements of different general growth theories within a development model that stresses the crucial role of the condition of the transport system on regional economic growth and the pattern of economic activities. Improvements as well as deficiencies in the different parts of the transport system may induce wide-ranging processes of spatial differentiation, which often are hardly irreversible and influence economic growth and production structures of regions for a long time, even if initial conditions have already

tal") and a far-reaching congruity of central locations of lower order, a highly complex order of locations emerges in which all goods are produced in the centre, but where is no continuously decreasing hierarchy of locations of lower order with respect to the number and market range of products. Instead, one finds clusters of high concentration of central locations and areas with low concentration of central locations.

²³ Voigt could be considered the Nestor of German transport economists for decades but academic attention shifted to other schools of transport research. Interestingly, newer approaches for assessing the role of transport in the economy like that of Bruinsma (1995) again refer to Voigt as starting point.

changed again (Bruinsma 1995: 2). Based on his perception of three different functions of transport (transport as a final consumptive service, as an input for any division of labour and market transaction, and as an integrating device for the state and for society), Voigt (1973a: 7 ff.; 1973b: 681 ff.) developed the tool of spatial differentiation caused by transport improvements or deficiencies and arrived at five types of regions: directly affected growth regions, regions affected by secondary income effects, underutilized regions, regions with retarded development and indifferent regions.

In his work, Voigt has elaborated an early notion of path dependency that became prominent in new growth and trade theories. While the traditional theories of trade (Ricardo, Heckscher-Ohlin-Samuelson, product-cycle-hypothesis) are designed rather dimensionless with respect to distance and the means to overcome its separating character,²⁴ a recent contribution to foreign trade theory, namely the so-called new trade theory explicitly considers transport costs and their effects on location. The new trade theory has become associated with Paul Krugman under the heading „geography and trade“. It takes the existence of scale economies in production and of imperfect markets with oligopolistic or even monopolistic elements into account. Krugman (1991a, 1991b) argues that agglomerations of production result from balancing transport costs with economies of scale (dispersion versus concentration of production locations). The concentration of economic activity will result from a high extent of scale economies relative to transport costs, a small share of (equally distributed) rural demand (and production), and a certain threshold of already existing urban agglomerations with concentrated demand potential. If in a dynamic context structural change towards industrialization occurs, concentration may intensify because of a diminishing effect of transport costs, which is reinforced by migration from the countryside to the towns. Once agglomerations have emerged, path dependencies may intensify the concentration of production (Krieger-Boden 1995: 51 f.).

On a less abstract level than that of locational or trade theories, we find the issues of transport and development within regional economics discussed either in the context of accessibility models or with reference to gravitational models. Both approaches are closely related, but have a different analytical perspective. In *accessibility models* the character of transport options as prerequisite for economic development and the division of labour is outlined. As has been put forward by Hansen (1959) the path of the economic development of a region, the spatial structure of production and consumption, local land use and the availability of transport options are closely interrelated. More distant markets offer less opportunities for economic agents to communicate, to trade and to engage in the

²⁴ Already Weber (1922) and again Isard (1949) have pointed to this gap in foreign trade theories (Krieger-Boden 1995: 27).

interregional division of labour. The provision of additional transport options increases the likelihood of economic contacts, and thus enhances the degree of accessibility of a region. This can be due to several factors such as new infrastructure facilities, technological progress in transport, changes in market formation on transport markets, or a new regulatory regime. As contacts are crucial for taking part in the division of labour, it becomes clear that accessibility influences the spatial structure of an economy (Martellato and Nijkamp 1996: 1).

Accessibility models have been influential for the analysis of regional issues, for example, the relationship between different patterns of urban agglomeration and passenger transport systems, or of intermodal questions, e.g., the welfare effects of specific road or rail network extension projects,²⁵ and of the consequences of transport efficiency enhancing measures and technical progress in transport.²⁶ Concerning network extensions it has become clear that improved accessibility can only be appraised in conjunction with other factors that are decisive for locational choices of enterprises (Bruinsma and Rietveld 1993).²⁷

As another kind of annex to locational theories, the so-called *gravitational approach* can be classified, which has its roots within regional economics. Distance, both real and in economic terms, plays a decisive role in the context of this approach, by which the relative location of a region within the overall network of exchange and trade is to be assessed (see, e.g., Keeble et al. 1981, 1982). It is assumed that the intensity of economic exchange between two regions will be higher, the higher the incomes or population figures of both regions are and the shorter the distance between them is.²⁸ Such intensity refers to trade, to mutual interdependence of production functions, to interregional di-

²⁵ Some examples from a voluminous sample are Dodgson (1974), Vickerman (1987), and Cheshire (1990). In some respect, such studies on the effects of transport investment for the various modes on regional development and accessibility can also be seen as connected with cost-benefit-analyses (Dodgson 1997: 217 f.).

²⁶ This may refer to the efficiency of certain modes, or the transport system in general (Martellato et al. 1995) and even to additional software as it is constituted by user-cost regimes (Emmerink et al. 1994).

²⁷ It is at this point where locational theories that are discussed in this section coincide with the third perspective on transport and economic development—transport as striving factor in competition among locations for mobile capital—which is discussed in Section B.I.3. Accessibility and the availability of transport options play an essential role in the sample of locational factors that may be employed to attract capital.

²⁸ Per capita income or population serve as a proxy for the demand potential (with a bias for intra-industry trade for higher per capita incomes) and for the potential for engaging in the spatial division of labour on the supply side. Distance can either be measured by real distances on existing transport links or, alternatively, by the time being consumed in transport between two regions. Both variables are accounted for all city-pairs within the range of the investigation and the respective products added up.

vision of labour, and to input-output relations. The region for which the sum of the mathematical products of incomes and (inverted) distances reaches a maximum is assumed to be the one that is located closest to the centre of economic activity and that has the highest growth potential. It is evident in the context of the gravitational approach that distance (and thus the performance of the transport system) plays an important role in assessing the growth potential of a region. It should be noted that the gravitational approach refers also to trade barriers. This can be shown when accessibility and economic gravitation between locations are investigated in terms of economic integration, as has been done by Keeble et al. (1982b) for the first enlargements of the European Union (Martellato and Nijkamp 1996: 1). Thus, in some respect, additional obstacles to trade and transport can be analysed with accessibility and gravitational models.

3. The Institutional or Locational Competition Approach

The point of departure for the institutional or locational competition approach is the set of opportunities for the immobile factors of production within a region or a whole economy. The immobile factors of production have to be combined with factors that are highly mobile and can change their location at relatively low transaction costs (mainly capital and highly skilled labour). Because of this complementarity between both kinds of production factors the region and the immobile factors have to compete for the mobile factors, if the intention is to maximize the regional gross domestic product. The tools that can be used for attracting mobile capital are locational factors. These are (cost) characteristics and features that are typical for the region, and that are relevant for the cost-benefit calculation for the locational choice of capital and highly skilled labour. Different cost components may constitute competitive advantages, others disadvantages relative to other regions. It seems clear that accessibility as well as the availability of sufficient transport infrastructure facilities and functioning transport markets are determinants of the competitive potential of a region. Both factors allow the integration of capital, once it has been located in that region, to take part in the interregional and international division of labour (Hoffmeyer et al. 1990: 95 ff.).

II. Empirical Results

1. Surveys among Enterprises

There have been many attempts to grasp the importance of transport infrastructure for economic growth by surveys that have been performed among enterprises that have changed their location or are willing to do so. The enterprises were asked to rank the different locational factors according to their decisiveness with respect to the (potential) relocation. These surveys²⁹ have come up with relatively consistent results: The existence of highly productive infrastructure facilities in transport and telecommunications³⁰ was considered among the most important locational factors. Hence, transport infrastructure has a high relative importance for the attractiveness of a region for highly mobile capital.³¹

2. The Aschauer Debate

In a series of papers, *David Aschauer* (1989a, 1989b, 1989c, 1990) has empirically analysed the so-called public capital hypothesis.³² He claimed that the productivity gap in the US in the 1970s and 1980s was mainly attributable to a serious neglect of investments in maintenance, upgrading, enlarging, and modernization of public infrastructure capacities. This neglect has been portrayed by the notion of "Americas third deficit" (Aschauer 1990). Aschauer has performed empirical investigations by regressing productivity time series as dependent variable on different growth-relevant independent variables, among them several categories of infrastructure facilities (core infrastructure: transport, com-

²⁹ For a synopsis of such surveys see Hoffmeyer et al. (1990: 96 ff.), Busch and Klös (1995: 9 ff.), and Junesch (1996: 36 ff.).

³⁰ As measured by the accessibility of the region in question and thus by transport, communications, and transaction costs for interacting with other regions.

³¹ One should, however, be careful with the interpretation of the results, because (i) different surveys are rarely comparable so that averaging may render insufficient results, and (ii) surveys are always associated with wide-ranging uncertainties due to varying surveying techniques and may even be biased on behalf of the employed surveying technique (Busch and Klös 1995: 11). Econometric analyses seem to be more reliable.

³² As the Aschauer debate has focussed on infrastructure policy in highly developed countries it will be discussed here only briefly because the focus of this report lies on infrastructure policy in rather less developed transformation countries, where a somewhat more intense interrelationship between transport and economic development can be assumed.

munications, public utilities; public buildings: offices, police, fire-brigade, jurisdictional infrastructure; hospitals, parks, universities and schools; military infrastructure) and found high correlations between infrastructure investments and productivity growth, in particular for investments in core infrastructure. Up to 40 to 60 per cent of the productivity gap was attributable to insufficient infrastructure investments according to Aschauer's calculations; marginal productivity of public investments was four times as high as that of private investment (Aschauer 1990: 25). From these findings it was concluded that (i) substantial public spending on infrastructure purposes would speed up productivity growth even in a highly developed country, and (ii) the hypothesis of public investments crowding out private investments would have to be substituted by a "crowding-in" hypothesis at least with respect to core infrastructure investments (Aschauer 1990: 19).

Aschauer's work triggered off quite a few studies that tried either to support or to contradict his rather striking results. After several years of academic debate, results do not appear simple and clearcut. Only two-fifths of all studies rendered significant positive relationships between infrastructure investment and productivity growth, another two-fifths had no significant results at all, and the rest had either implausible positive or negative results because of obvious methodological shortcomings (Pfähler et al. 1996: 95 ff.).^{33, 34}

Against this background, caveats are warranted:³⁵ (i) there is hardly a proportional relationship between infrastructure services to private enterprises and consumers and public capital stocks or between investment expenditures and services, respectively; (ii) the causal relationship between infrastructure investments and growth remains shaky: in fact there were studies that supported causality from infrastructure towards growth, and other studies that concluded just the opposite, namely that high income countries or regions that owe their income levels to other factors can afford a higher infrastructure capital stock; (iii) the relative contribution of various components of core infrastructure (either different

³³ Basically, the effects of infrastructure investment on productivity growth have been investigated either in a production function, a cost function, or a profit function setting, employing either time-series, cross-country, or pooled data (Pfähler et al. 1995: 138 ff.). A somewhat newer approach does not interpret infrastructure as a production or cost factor but, rather, gives it the feature of a technology for enhancing spatial division of labour in the context of a modified Romer model employing cross-country data (Bougheas and Demetriades 1995).

³⁴ Specification errors may be attributed either to the definition and measurement of the various infrastructure categories or to methods for including either monetary or physical values for the infrastructure capital stocks and its enlargements.

³⁵ See Pfähler et al. (1995: 138 ff.; 1996: 103 ff.), Gramlich (1994: 1185 ff.), World Bank (1994: 14 ff.), Munnell (1993: 31 ff.), Holtz-Eakin (1993: 32 ff.), Toen-Gout and van Sinderen (1995: 13 f.), and Bougheas and Demetriades (1995).

kinds of transport or telecommunications) could not be separated sufficiently; (iv) the analyses were performed in a global public spending setting that claimed a high return on any public investment in infrastructure regardless where it would take place and how important existing bottlenecks would be; (v) the analyses only tried to assess the physical capital stock while software solutions for a more rational utilization of existing capacities—like road pricing—remained beyond the scope of investigations; (vi) a major shortcoming of a lot of analyses proved to be that the side of financing of investments was excluded altogether or that the existence of an (unrealistically neutral) lump-sum tax was assumed while the inclusion of realistic financing devices lowered the coefficients substantially at least for mature economies.

The upshot of the Aschauer debate is that results are far from being conclusive, at least for mature industrial economies with a functioning network of transport infrastructure already in place. An overall positive impact of infrastructure investment on productivity growth remained, however, and this held in particular in those cases in which developing economies were included in the sample in the context of cross-country studies (see, e.g., Bougheas and Demetriades 1995). So at least the significance of transport infrastructure investment in developing economies for those countries' further economic development can be backed up by the results of the Aschauer debate (Pfähler et al. 1996: 104).³⁶

This is in line with the results that the World Bank obtained from its aggregate and disaggregate studies on infrastructure policy measures in developing countries. While the share of infrastructure investment in total investment was much higher in developing than in mature industrial countries—with a bias to core infrastructure including transport networks for middle income countries, after basic needs such as water supply and irrigation have been supplied at lower income levels —, there exists a strong coincidence between the availability of infrastructure facilities and per capita gross domestic product. Furthermore, the imputed rates of return for World Bank supported projects in developing countries in transport accounted for 18 per cent between 1974 and 1982 and 21 per cent between 1983 and 1992; this is above the average of all World Bank projects. The rate of return was highest and well above average for highways and ports while rates of return on investment in railroads and airports ranged below average due to overestimated demand and poor performance of publicly

³⁶ The same authors' policy recommendation for concentrating infrastructure investments in mature industrial economies on a mere maintenance of existing facilities cannot be shared, however, because if major bottlenecks arise and hamper spatial exchange and trade, infrastructure loses its linking and thus welfare enhancing feature. A mature economy with major infrastructure bottlenecks that are not cared for is transferred to a former development stage where infrastructure investment again is associated with a high return (Busch and Klös 1995: 25).

owned enterprises. The highest single rates of return could be obtained for widening severe bottlenecks in networks, because this caused substantial network externalities (World Bank 1994: 14 ff.). These results also suggest that transport network investments offer substantial growth opportunities, although they are only a necessary but not a sufficient condition to induce growth on its own.

III. Conclusions

A country's or a region's endowment with transport infrastructure facilities and with efficiently functioning transport markets is a highly important production factor for fostering economic development and growth. In countries such as the EIT any improvement in infrastructure, superstructure and transport market performance will render substantial pay-offs, while for developed industrial countries mainly specific bottlenecks in existing networks that may hamper regional growth should be removed.

Dissenting views prevail among different schools of transport economists upon the question whether the provision of a functioning transport system enhances economic development *per se*, or whether it only *permits* the exploitation of other favourable spatial conditions, natural resources and human capital, thereby jointly working with other locational factors (Verbeke and Debishop 1996: 248 f.). It seems clear, however, that a functioning transport system renders several advantageous functions to an economy, which are not mutually exclusive but may overlap (Button 1982: 246 ff.; Behnke 1997: 5):

- As transport is an important factor input in most kinds of production processes, it permits the spatial distribution of economic activity.
- Transport improvements may directly shift production possibility curves by lowering factor costs, also with respect to capital needs.
- Transport allows factor mobility to work and thus to enhance efficiency.
- It allows a more disaggregated pattern of the division of labour to work with the consequence of exploiting gains from trade.
- It permits wider markets to be served and thus allows the exploitation of large-scale production in many sectors of an economy.
- Transport increases economic welfare by extending the range of products and services available to economic agents, be it private, be it public goods.
- Transport strengthens competitive forces by linking markets with each other, thus eroding local monopoly rents, facilitating structural change, which is a necessary condition for economic growth, and permitting technological progress to unfold its welfare enhancing effects.

The transport system not only serves as link between different locations permitting trade and exchange, but also shapes the spatial structure of production, consumption, and settlement. Although traditional location theories were developed at a time when economic activity was much more dominated by primary or heavy industrial production than it is the case today, transport still plays a vital role for the spatial structure. Traditional transport costs associated with weight have been substituted by transport costs associated with time consumption in linking locations. The share of weight-related transport costs is substantially lower per unit of GDP today, but delays in delivery or congestion costs have gained importance, if one thinks of modern logistic concepts like “just-in-time”-systems, in particular, if real interest rates are high. Structural change towards knowledge-intensive industrial products and services may have changed the modal structure of transport and the different kinds of challenges the transport system is confronted with, but not the overall importance of the transport system for the spatial pattern of economic activity.

Taking the perspective of a region or a country that is subject to locational competition—in fact, any spatial entity beyond the subsistence level is exposed to its pressure—accessibility and the availability of transport options is still one—although not the single—decisive locational factor for attracting mobile capital. This is all the more the case, the higher the share of foreign trade in GDP will be.

Decisions that are taken today concerning the provision or management of infrastructure facilities or concerning the design of the framework for transport market operations may fix a country’s growth trajectory for quite a long time and may create path dependencies that cannot easily be corrected without incurring high transaction costs when it should become clear that initial decisions have been misleading. This notion of path dependency can be found in traditional transport economics and in modern trade theory as well.

One should not forget the systemic character of transport, i.e., the close complementarity between infrastructure, user regimes, regulatory frameworks, and transport operations. Although the transport system as a whole is a limitational factor to economic development, single modules of the system may, to a limited extent, compensate for shortcomings of others, e.g., via modal shifts or the application of innovative management techniques. The scope for compensation is limited, however, where infrastructure facilities cannot perform their proper functions due to a poor state of maintenance, while the application of the most modern and latest vintage of facilities may not render the expected pay-offs, if the framework for complementary software functions, like management or attitude towards market behaviour, is not reformed at the same time. As transport is embedded in a market system, these complementarities may reach up to reliability, contract performance, and what can be called “commercial reputation”.

The hardware component is consistently seen as an indispensable prerequisite for deepening the spatial division of labour. This is what is behind the notion of infrastructure bottlenecks that hamper economic development. These negative effects, although, will be multiplied by inefficient institutions. It is the purpose of institutions to lower transaction costs in economic interaction between individuals, firms, organizations, public bodies, and states. Institutions are to provide clarity, transparency, reliability, foreseeability and stability in rule and decision making. If institutions fail to render these functions, economic interaction cannot function properly and may even be blocked so that hold-up situations can emerge. Such hold-ups are characterized by prohibitively high transaction costs and can make up for the most relevant obstacles to interaction, trade, and, consequently, transport. Hence, relatively poor countries will suffer from transport policy shortcomings (like delayed privatization of, say, port handling agencies, inefficient regimes of user charges) even more than rich countries do. Getting the software, i.e., the institutions, right, is, from this perspective, all the more important for the EIT because it takes such a long time to get rid of hardware bottlenecks.

Summing up, one may conclude that

"...perhaps the most objective position is to say that the role of adequate transport and other infrastructure is now seen by many as being a necessary but not sufficient condition for economic development. In this sense one can think of transport and similar infrastructure as not exerting a primary effect on development but rather as a facilitator which assists and reinforces other, more immediate instruments such as the release of land for construction and the direct provision of new buildings..." (Button et al. 1995: 192).

This view appropriately accounts for the serving role of the transport sector on the one hand and the importance of complementary "software functions" on the other hand—among which in EIT one has to include progress in the transformation process towards a functioning market economy.

C. Transport Patterns in the Eastern Baltic Sea Region

The following chapter is devoted to the present and future transport patterns in the Eastern Baltic Sea region. Section C.I deals with the transport geography in the region. Section C.II presents basic facts on the EIT's present infrastructure equipment. In Section C.III we analyse transport patterns with respect to the EIT, while in Section C.IV we give some considerations on probable future developments of transport flows.

It may be said in advance that the total annual cargo turnover of the ten ports that play a dominant role in the Eastern Baltic coastal range is currently about 140 million tonnes. After the political changes in Eastern Baltic states and a sharp decline of transport in that area in the early transition period, a quick revival has set in, although not in all of these countries. This process has been associated with structural changes in sea transport techniques as well as in overland transport. The long-standing pattern of trades that was characterized by an exchange of raw materials from the East against industrial products has also begun to change. The sea-ports of the Baltic republics are largely dependent on transit traffic, mainly to or from Russian destinations or places in the other CIS countries. The Polish ports have different functions. Trade in the Baltic area will continue to expand in the years to come. It may be expected that the Eastern Baltic trade will be the most dynamic section of the total Baltic trade and transport. Also in the future, Baltic traffic will remain seaborne traffic, especially where it is international transport. Growth rates will be highest for general cargo, which mostly moves in units such as containers and trailers. Seaborne international trade will, with a high degree of probability although not independent from political influence, continue to comprise a large share of transit.

I. Aspects of Transport Geography

The Baltic Sea region can be looked upon as a frequently interconnected economic area where at the end of the 1980s about 300 million tonnes of cargo annually were transported in the maritime sector. This represents nearly 8 per cent of total world seaborne cargo although the Baltic Sea does not account for more than 0.15 per cent of the total surface of the oceans. 180 million tonnes were

shipments to and from ports outside the Baltic Sea (so-called external traffic) (Böhme 1987: 17; 1988a: 383 ff.). The importance of the Baltic Sea for the adjacent EIT can best be demonstrated by the outstanding importance of the Polish ports and maritime industry for Poland's economy since World War II,³⁷ and by the prominent role that Baltic ports played in Soviet seaborne trade as long as the three Baltic republics were integrated into the intra-Soviet division of labour (Buchhofer 1993: 127 f.).

The traditional role of the Baltic ports as CMEA's window to the West has shaped the transport geography in the northern part of the region: Railway lines and roads in the three Baltic republics run east to west rather than north to south, thus serving as links to the major Baltic ports.³⁸ The same holds for the Leningrad oblast with its major connections to Finland in the west and to Moscow in the east. The Kaliningrad oblast, which now is separated from the Russian mainland and which serves mainly as a navy and army post, has its main ties to the east as well. Because of the geographical situation of Poland,³⁹ its land-based links to Western Europe compete more intensively with seaborne trade than in the Baltic republics and in the Russian Baltic Sea oblasts.

The sea-ports of the Baltic republics are largely dependent on transit goods. Transit goods are mainly for Russian destinations or places in the other CIS countries, or they originate there. The Polish ports have different functions than the ports of the Kaliningrad–Finland range. They mostly serve the Polish hinterland and some transit countries to the south. Thus, an approximate dividing line can be drawn eastward from the Hela peninsula. To its north, most ports have a gateway function for transit in the east–west direction. This includes the Baltic republics as well as the ports of southern Finland so that there is a highly competitive situation.

In principle, the east–west flows include flows in the north–south direction where these connect countries that formerly belonged to the market economies on the one hand, and to the CMEA bloc on the other. Apart from these flows, which are mainly from and to Poland, the large traffic flows between Scandi-

³⁷ For an assessment of the importance of Polish ports and the maritime industry see Sawiczewska (1993: 138 ff.) and Zurek (1991: 87 ff.).

³⁸ In addition, this main direction of road and rail networks served military and strategic purposes (EBRD 1996: 45). Concerning the road network, however, there exists a direct north–south link between the capitals Tallinn, Riga, and Vilnius, although not designed as four-lane highway but as two-lane primary road (Buchhofer 1993: 127).

³⁹ The Polish surface extends over more than 312,000 square kilometres, and a length of the western border line to Germany of 456 kilometres, of the southwestern border to the Czech Republic of 658 kilometres, and of the southern border to Slovakia of 444 kilometres (CIA 1997d).

navia and Finland, and Central and Western Europe are the greater part of all north-south flows. They make up the other section of the Baltic Sea traffic, which will continue to expand, probably at lower annual rates but in very large volumes in absolute terms. Thus, they will also remain dynamic, and undergo structural changes as before. Some changes can already be seen, attributable to the construction of fixed links across the Danish sea passages, which will open competitive road and rail routes to the ferry lines from the continent to Denmark and Scandinavia (southern Sweden). The construction of a fixed link across the Fehmarn Belt from Germany to Denmark appears feasible only far beyond the year 2000 (presumably only after 2010) although it would be a logical extension of the already high-density "Vogelflug" ferry route. While such new ways may affect existing north-south traffic quite strongly, there is little likelihood that east-west flows will also be influenced, and they will not be discussed in more detail in the present analysis.

II. Existing Infrastructure Facilities

Because of the limited size of the three Baltic republics (and thus of their domestic markets)⁴⁰ the share of foreign trade in total economic transactions will always be higher than in larger countries. This is reinforced by their transit function with respect to Russian seaborne trade. Thus, sufficient transport infrastructure links to the rest of the world and efficient transport systems are essential factors to the future economic well-being of the Baltic republics. Poland, as a relatively large country at the interface between Germany and Belarus and Russia, can take part in the transit function as well, but on continental routes. In addition, Poland has an interest of its own in being closely linked to Western Europe not only via its ports but also across its borderline to Germany. The two Russian Baltic Rim oblasts with their infrastructure links to Central Russia could well enter into competition with the three Baltic republics as transit points (see Section C.III.1.b and C.III.2.a).

⁴⁰ The surface area of the three Baltics amounts to: Estonia 45,100 square kilometres, Latvia 64,600 square kilometres, and Lithuania 65,200 square kilometres. Population figures are for Estonia 1.5 million, Latvia 2.5 million, and Lithuania 3.7 million.

1. Sea-Ports and Inland Shipping

a. Sea-Ports

Estonia

Estonia as the northernmost of the three countries has a differentiated port structure with no less than six ports at its disposal, of which four are managed by the Port of Tallinn state enterprise (CCET 1996: 45 f.; EIA 1997b: 1 f.): (a) *Tallinn City Port* serving as passenger and ro-ro-ferry port to Helsinki and Stockholm on the one hand and as general cargo port with container facilities on the other hand; (b) *Kopli Port* in the west of Tallinn, originally being the home port of the Estonian fishing fleet, which, however, can handle smaller amounts of oil, timber and general cargo in addition to Tallinn City Port;⁴¹ (c) *Muuga Port* on the Muuga bay 12 kilometres east of Tallinn, which went into operation in the second half of the eighties and originally was mainly developed to handle Soviet grain imports;⁴² it is by now the largest port of Estonia and one of the largest in the Baltic republics, being able to handle (besides grain) perishables and refrigerated cargo, oil, coal, fertilisers, timber, cars, and general cargo; (d) the former Soviet naval port of *Paldiski* 55 kilometres west of Tallinn, where peat, timber, gravel, limestone, and metal are transshipped. Cargo throughput of these ports recently was between 10 and 14 million tonnes annually. The other two ports are Kunda, where bulk and general cargo can be handled, and *Pärnu* port in southwestern Estonia for timber and peat exports.⁴³

Estonian ports enjoy the advantage of being situated under favourite topographical conditions with rather easily to navigate port entrances, and of being less constrained by ice-formation during wintertime than the Russian port of St. Petersburg at the eastern end of the Gulf of Finland, and also than the more southern Latvian port of Riga (Buchhofer 1993: 122; Rutz and Laving 1997: 495).⁴⁴ Estonian sources even claim that the port of Muuga has been relatively ice-free since the middle of the eighties (EIA 1995b). What constitutes a major advantage of Muuga for bulk traffic seems to be its capacity to serve rather large

⁴¹ As Kopli is situated amidst the densely populated western suburbs of Tallinn it will lose importance in the future (Rutz and Laving 1997: 495 f.).

⁴² Muuga is equipped with grain turnover superstructure and with storage capacities for 350,000 tonnes of grain (Rutz and Laving 1997: 495 f.).

⁴³ Besides the ports mentioned there exist some quite smaller ones, which serve mainly local transport purposes between Estonia and its islands (CCET 1996: 45).

⁴⁴ This does not hold for Pärnu, however, which shares with Riga the location on the shore of the Gulf of Riga with its substantially less saliferous water with the consequence of a distinctly longer lasting ice-formation.

vessels up to a length of 280 metres, beam of 40 metres, a draught of 16.5 metres at the berths⁴⁵ and 150,000 tdw.⁴⁶ With the exception of Kopli (due to its location amidst suburbs) and Pärnu (due to the missing rail link) the Estonian ports, in particular Muuga, are fairly well linked to their hinterland by rail and road although further improvement, among others the extension of the marshalling-yard, is planned at Muuga (EIA 1997b).

Latvia

In Latvia the port infrastructure consists mainly of three international ports. Besides the general cargo, container and ferry port of the capital *Riga*⁴⁷ at the southern end of the Gulf of Riga, the largest port of the three Baltic republics with respect to actual throughput and throughput capacities is situated in Latvia. This is *Ventspils* on the northern shore of Coursland (Kurzeme), which handles about 35 million tonnes annually, which is nearly 75 per cent of total seaborne trade of Latvia, including transit trade from and to Russia (MERL 1995: 48 f.). The overwhelming share consists of crude oil and refined oil products exported by Russia. The port of Ventspils originally has been designed for, and has nearly totally specialized on, handling this kind of cargo; Ventspils is the terminal of a crude oil pipeline from Siberia. Since 1993 the former Soviet naval port of *Liepaja*, also on the coast of Coursland, has been opened to civil cargo shipping. Liepaja, however, is of minor importance compared with Ventspils and Riga, but it has a major potential for future upgrading (Assmann 1996). The admissible draught in Latvian ports is similar to that in most ports in Estonia: 9.7 metres in Riga and 11.5 metres in Ventspils (Buchhofer 1993: 128). Ventspils and Liepaja are less impaired by ice-formation than Riga.

Lithuania

Lithuania has only one port, namely *Klaipeda* at the entrance of Coursland Bay (Gentvilas 1996). Although not being the largest port in the Baltics,⁴⁸ however,

⁴⁵ The natural depth of the port entrance is 18.5 metres.

⁴⁶ The maximum draught of ships serving the other ports is 10.5 metres for Tallinn City Port, 9 metres for Kopli Port, 9.5 metres for Paldiski Port, 8.5 metres for Kunda Port and 5 metres for Pärnu Port (CCET 1996: 45 f.; EIA 1997b; Port of Tallinn 1997a). See also Rutz and Laving (1997: 496), who, however, report some lower figures for Muuga (18 metres), Tallinn City Port (8.6 metres), and for Paldiski (9 metres).

⁴⁷ The Port of Riga is the largest in the Baltics with respect to container handling facilities (Assmann 1996).

⁴⁸ According to different sources the throughput capacity is said to account for 15–20 million tonnes per annum ("Litauens offenes Tor zur Welt: Die Hafenstadt Klaipeda wieder im Aufschwung", *Neue Zürcher Zeitung* of 31 August 1996; "Ölterminal kommt voran: Bankenkrise stört Arbeiten im litauischen Klaipeda", *Nachrichten für*

Klaipeda is important not only for Lithuania itself but also for the whole Baltic region. It is only Klaipeda with its southernmost location in the three Baltic republics that can be characterized as really nearly ice-free during wintertime, and it is Klaipeda which can claim to have the shortest distances from Western European ports.⁴⁹ The port is able to accommodate vessels of a length up to 200 metres with a maximum draught of 10.5 metres (Hidrosfera Ltd. 1997: 1).⁵⁰ It can handle general and various bulk cargoes, ro-ro and ferry services,⁵¹ and also petroleum shipments. During the last years the actual cargo throughput amounted to 12.5–15 million tonnes per year (Gentvilas 1996) of which some 80 per cent are transit shipments. The port is connected with its hinterland by rail and road. The road to Kaunas and Vilnius, with transborder connections to Minsk and Moscow, is one of the two genuine motorway links over a long distance in the three Baltic republics.

Russian Baltic Rim Oblasts

Both Leningrad oblast (with its capital St. Petersburg) and Kaliningrad oblast are equipped with significant port infrastructure. St. Petersburg, however, is subject to relatively long-lasting ice-formation compared with the ports of the Baltic republics (Buchhofer 1993: 123), while Kaliningrad (in conjunction with the Russian naval base Baltiysk) is impaired in its development opportunities by its now extritorial location, and the concentration of military forces, which have been re-deployed from the former German Democratic Republic, Poland and the Baltic republics (Dörrenbacher 1994: 38).

In the Leningrad oblast there are at present three maritime ports:⁵² *St. Petersburg*, *Vyborg*, and *Vysozkij*. The ports enjoy the advantage of sufficient depth and direct hinterland links to Moscow and the Russian mainland, in particular by rail. The decline in turnover after 1990 reflected not only the rapidly deteriorating situation of the Russian economy as a whole but also inefficient port

Außenhandel of 17 September 1996). Klaipeda Port Authority itself claims of being able to handle around 20 million tonnes per annum (Hidrosfera Ltd. 1997: 1). Such figures, however, are in any case highly tentative.

⁴⁹ The duration of a voyage between Mukran/Rügen and Klaipeda totals to 22 hours while it takes 38 and 44 hours from Mukran to reach Riga and Tallinn, respectively (Buchhofer 1993: 129).

⁵⁰ Compared with the sixties the maximum draught has deepened a bit from 9.75 metres (Buchhofer 1993: 129) so that Klaipeda actually does not exhibit a disadvantage vis-à-vis the more northernward situated Baltic ports.

⁵¹ Ferry and ro-ro-links are reported for Kiel, Mukran, Copenhagen, Stockholm, Aarhus, and container lines to Rotterdam, Felixstowe, Copenhagen, Fredericia, Bremerhaven, Hamburg and Gdynia (Hidrosfera Ltd. 1997: 1).

⁵² Four other ports serve mainly purposes of inland shipping (Bolz and Polkowski 1993: 53). See the relevant paragraph below.

management, infra- and superstructure deficiencies and the growing competition of the Finnish and the Baltic republics' ports, in particular Muuga/Estonia.

Being practically ice-free and located southwestward of the Baltic republics' ports, thus providing shorter voyages to Western Europe,⁵³ the port of *Kaliningrad*⁵⁴ might play a role in acquiring a part of transit cargoes from and to southern Russia, Belarus and Ukraine.⁵⁵ But this perspective is impaired by hardware constraints (inferior infra- and superstructure⁵⁶ as well as insufficient hinterland links, which, in addition, pass through densely populated city areas) and problems of transit traffic through Lithuania, as well as a reported rivalry between military and civil utilization of capacities.⁵⁷ There is few further information available on the existing facilities in Kaliningrad port. What seems clear, however, is the fact that the port and its land-based links would need re-construction on a large scale if it were to gain some importance in the Baltic Sea maritime traffic. Because of the well-known severe financial constraints in Russia, Kaliningrad and St. Petersburg compete for only very limited investment funds. Not surprisingly, the administration of St. Petersburg opposes any plan to invest in Kaliningrad's port and would absorb available funds for the construction of ports in the Leningrad oblast (Reymann 1993: 34 ff.).

Poland

Poland's port infrastructure consists mainly of four ports of international significance: Szczecin and its out-port Swinoujscie in the northwest, and Gdansk and

⁵³ The distance between Kaliningrad and the Russian mainland is with 600–650 kilometres nearly the same as between Kaliningrad and Stralsund (Wein 1994: 106). As the distance by sea to the next Russian port of St. Petersburg is about 1,100 kilometres, Kaliningrad has a rather remote location with respect to Russia. It is, however, accepted by the few Western investors because of its relative vicinity to Western European ports (Dörrenbächer 1994: 27 f., 38).

⁵⁴ Up to early 1991, the Kaliningrad oblast was a forbidden zone to foreigners (Dörrenbächer 1994: 27).

⁵⁵ To some extent there is already civil goods traffic that is turned over in the civil part of Kaliningrad port and is partly transferred to adjacent regions (Reymann 1993: 36 f.; Wein 1994: 107).

⁵⁶ Concerning the sea canal across the bay, which connects Kaliningrad with the open sea, only inconsistent information is available: While Reymann (1993: 36) relying on Russian sources reports of impairments by quite low sea level and one-way traffic, Wein (1994: 107) speaks of a maximum draught of 12 metres — the recorded canal breadth of 47.5 metres indeed seems quite low. According to the latter source, the port has cays of a length of 1,500 metres and covers a total area of 250 hectares.

⁵⁷ Reymann (1993: 36 f.) even reports of persistent opposition of the Russian Navy against a projected construction of new port facilities—be they financed by whatever source—which might include some navy facilities in Baltiysk.

nearby Gdynia in the central north.⁵⁸ Gdansk North Port is one of the deepest in the total Baltic Sea being able to accommodate vessels up to 150,000 tdw; it can mainly handle dry and liquid bulk cargo. Both Gdansk City Port and Gdynia, where Poland's only modern container terminal is operating, can be called at by vessels of 25,000 tdw. Of the two western Polish ports, Swinoujscie is situated directly on the Baltic shore and accommodates vessels of up to 60,000 tdw. This port mainly handles drybulk cargoes but is diversifying its cargo base. Szczecin upstream of Odra river can be served by vessels up to 15,000 tdw, and it also handles mainly bulk cargoes. However, in all ports with the exception of Szczecin, ferry and ro-ro services are operating as well (Sawiczewska 1993: 140 f.; World Bank 1997a: 1).

b. *Inland Shipping*

Inland shipping and the corresponding infrastructure are nearly non-existent in the three *Baltic republics* due to limited options of navigable rivers.⁵⁹ Only the Narva River, which connects the Peipsijärv northward with the Gulf of Finland (Estonia), the Daugava (Latvia) and the Nemunas (Lithuania), both flowing from the east towards the central Baltic Sea, could serve some additional local traffic purposes but do not account for noticeable traffic volumes: According to national statistical offices inland shipping accounted for no more than 0.7 per cent of transported tonnage (0.1 per cent of cargo transport performance) in 1994 in Estonia and 0.3 per cent of tonnage (0.2 per cent of transport performance) in 1993 in Lithuania (Schrader and Laaser 1997: 59, 68, 75).⁶⁰ Thus, the respective figures are ignored in the national modal split tables as discussed in Section C.III.3.

The situation in *Poland* is different: From a geographical point of view, inland shipping could play at least a moderate role in feeding the sea-ports from their hinterland, as two large rivers—the Odra and the Vistula—theoretically could provide connections between ports and certain mainland locations. In addition, there exists a limited network of canals linking the rivers that can accommodate inland vessels of over 400 tonnes. The total length of navigable water-

⁵⁸ These four ports account for 95 per cent of Polish seaborne trade (World Bank 1997a: 2).

⁵⁹ Official statistics account for 520 kilometres navigable waterways for Estonia, 347 kilometres for Latvia, and 788 kilometres for Lithuania (ESA *Statistika aastaraamat* (1995); LRVSK *Statistical Yearbook of Latvia* (1995); LDS *Lithuania's Statistics Yearbook* (1995)), but they do not indicate any qualifying figure with respect to capacity.

⁶⁰ There were no figures available for Latvia although the Statistical Yearbook records a (limited) number of inland vessels.

ways is reported to be 4,000 kilometres, of which, however, only 1,700 kilometres are used regularly. This reflects a situation which differs substantially from the potential, a view which is supported by transport figures: According to various Polish sources, inland shipping did not account for more than 0.3 per cent of total domestic transport performance, the share of shippers' expenditures for transport services from 1970–1990 fluctuated between 0.3 and 2.2 per cent of the total goods transport account, and the share of cargoes that were transported by inland shipping to and from the Polish sea-ports is recorded as 1 per cent for Gdansk and Gdynia and 3 per cent for Szczecin. The underlying reasons are threefold: (i) natural reasons: although being a rather flat country with the exception of the extreme south, Poland suffers from unfavourable conditions for inland shipping because of a water deficit; (ii) locational reasons: main economic activities were located alongside railway lines but not adjacent to rivers or canals; (iii) insufficient infrastructure hardware due to political reasons: after World War II, the communists forbade private ownership of vessels to prevent people from escaping with the consequence that both river fleets and inland ports nearly disappeared in the 1950s. Because waterway and port maintenance have been neglected on a large scale since that time, only a small part of theoretically navigable rivers and canals can be utilized.⁶¹

A totally different situation can be found in the Leningrad oblast. Traditionally, inland shipping has played a major role in the Soviet and now CIS transport system (Suchorzewski 1994: 75) with important and well-developed inland waterways connecting the Baltic Sea with the Russian mainland and even with the Caspian and the Black Sea. Furthermore, the Baltic–White Sea Canal allows inland shipping from Lake Onega to the White Sea-ports. A large part of the Russian canal network can be used even by combined sea/river vessels (Eschke 1995: 67 f.; Schwanitz 1997: 27). Thus, the port of St. Petersburg is located at an important interface between maritime and inland shipping in Russia. This is not only reflected by the cargo throughput in St. Petersburg inland port of 16.7 million tonnes in 1992 (more than one-and-a-half that of St. Petersburg sea-port),⁶² but also by the fact that Russia disposes of a fleet of more than 270 sea/river vessels with 760,000 tdw and Western Europe of more than 450 vessels with 930,000 tdw, which could be employed in combined sea/inland shipping from the Baltic Sea to Russia (Eschke 1995: 68).

⁶¹ See Sawiczewska (1993: 141), Suchorzewski (1994: 75), and Ruploh (1995: 91). Ruploh refers to the fact that the Odra cannot be used by combined sea/inland vessels south of Szczecin.

⁶² 13.5 million tonnes of this throughput, however, consist of building materials (Bolz and Polkowski 1993: 53).

2. Railways

In the three Baltic republics national railway companies have taken over tracks, rolling stock and operations from the former Soviet state railways (SZD),⁶³ and they have been established as SZD's legal successors with respect to the individual national territories (Schrader and Laaser 1997: 58 ff., 65 f., 73). Technically, they remain, however, part of the Russian network insofar as they are operating on Russian wide gauge of 1,520 millimetres.⁶⁴ Thus, on the one hand, Baltic railways are well-equipped for transit traffic between Russia and the Baltic ports,⁶⁵ a task which they have dominated for decades⁶⁶ and for which the main railway lines were constructed for. On the other hand, they face the need to re-gauge rolling stock or to reload as far as southbound transports to and from Poland are concerned,⁶⁷ because Polish state railways (PKP) are already operating on Central European standard gauge of 1,435 millimetres. Common feature of the railways in the Baltic republics is the legacy of former SZD's worn out tracks, the out-dated signalling devices and the ready to scrap rolling stock whereby investments have almost been neglected since the early 1980s.⁶⁸ The same holds for the Russian railways as a whole (Holt 1993: 73); no information was available on the situation in the Leningrad and Kaliningrad oblasts. Because of its former vital role in the modal split—in particular for heavy bulk shipments—and neglected or inefficient investments during the 1970s and the 1980s (Taylor 1993: 109, 118 ff.) Polish state railways PKP encounters much the same problems concerning infra- and superstructure quality like all former CMEA railways (Burnewicz and Bak 1997: 121).

⁶³ They were part of the so-called Baltic Railway (Pribaltiyskaya Railway) with its headquarter in Riga, one of 32 railway administrations in the former Soviet Union (EVR 1996: 4).

⁶⁴ Originally the Russian gauge has been 1,524 millimetres (5') but has been narrowed slightly because of technical reasons.

⁶⁵ The same holds for the competing Baltic–Russia transport corridor from and to Finnish ports; also Finnish railways (VR) are operating on Russian wide gauge.

⁶⁶ In the late Soviet era about 43 million tonnes of cargo were handled annually between Russia and all Baltic ports according to EVR (1996: 2). However, according to Bronstein (1997: 1), the figure for 1990 was 47 million tonnes, and according to Peters (1993: 267) even 55 million tonnes.

⁶⁷ This may be one of the reasons for southbound transit goods traffic from Estonia being almost non-existent (MEA 1994: 2).

⁶⁸ See Burger and Lenzner (1996: 79 ff.), Bolz and Polkowski (1996: 139 ff.), and Boroch (1996: 97 ff.).

Estonia

The rail network in Estonia, which is operated by the public railway company "Riigiettevõtte Eesti Raudtee" (EVR), consists of 1,127 kilometres of public railway lines (EVR 1997),⁶⁹ of which 132 kilometres are electrified and 108 kilometres are double track lines. Main lines are running east-west from the border station to Russia, Narva, which handles transit traffic from and to St. Petersburg, to Tallinn and further to Paldiski and Haapsalu. Another main line branches off the Narva–Tallinn line in Tapa running southeastward to Tartu and further to Latvia on the one hand and to Russia (Moscow) on the other. Only the Tallinn–Tapa line is equipped with double track (Burger and Lenzner 1996: 79), while the electrified sections of the network are confined to the Tallinn commuter rail system (EVR 1996: 4; Schrader and Laaser 1997: 58). The rail track density with 23 kilometres/1,000 square kilometres and 0.7 kilometres/1,000 inhabitants is below the figures for Western Europe but roughly equals that of Sweden, Finland and the USA (CCET 1996: 44; see also Table A2). The Estonian railways serve mainly as port-hinterland-links in merchandise transit traffic from and to Russia. In total, EVR handles the bulk of transit traffic through Estonia. The quality of the infrastructure and the rolling stock seems critical.⁷⁰ About 50 per cent of the network including the Narva–Tallinn main line are worn-out and in urgent need of repair; the same holds for the rolling stock.⁷¹

Latvia

As in Estonia, railways in Latvia mainly serve as port hinterland links, with (1994) 73 per cent of its merchandise transports (tonnage) being transit traffic (MERL 1995: 50; Bolz and Polkowski 1996: 141). The Latvian rail network is operated by the national railway company "Latvijas Dzelzceļš" (LDZ). Of its

⁶⁹ Other sources report somewhat different figures: EIA (1997a: 1) 1,021 kilometres for 1996, UIC (1996a, 1996b), ESA *Statistika aastaraamat* (1995), ESA *Transport side* (1995), EIA (1995a: 1); and Burger and Lenzner (1996: 79) 1,024 kilometres. The difference may be due to an inclusion of the Kunda port link and the Musta oil shale factory link by EVR (1997). In addition, there are some 800 kilometres of private branch lines (EIA 1997a: 1).

⁷⁰ According to Burger and Lenzner (1996: 80), in the past the Estonian and the Lithuanian network exceptionally suffered from underinvestment because of a concentration of the limited funds to projects in Latvia, where the former Soviet Baltic rail branch administration of Pribaltijskaja railways had its headquarters.

⁷¹ Since 1995 there seems to be a slight improvement in Estonia due to increased maintenance works being promoted by an Estonian–German joint venture and funded by loans from the EU PHARE programme, EBRD and European Investment Bank, providing investment opportunities for upgrading the Tallinn–Narva line, rebuilding and upgrading border stations in Narva and reorganizing EVR (EVR 1996: 5; "Deutsche reparieren Estlands Eisenbahn", *Nachrichten für Außenhandel* of 9 September 1996).

total length of 2,413 kilometres, 11.2 per cent are electrified, which are concentrated on the Riga commuter traffic. The network resembles a hub-and-spoke-system, with Riga as the hub. The main lines run from east to west, as in Estonia linking the Russian and Belarussian border with Riga and the Courland ports of Ventspils and Liepaja. Northbound links run to Tartu and Tallinn in Estonia, while two lines connect the country with Lithuania. The network density is higher in Latvia than in Estonia, reaching 37 kilometres/1,000 square kilometres and 1.0 kilometres/1,000 inhabitants (Table A2). The quality of infrastructure facilities in Latvia seems to be in the same bad condition as in Estonia. Because of the neglect of maintenance and investments during the seventies and eighties, tracks, signalling devices and rolling stock are largely worn out (MERL 1995: 50).⁷²

Lithuania

The Lithuanian rail network has been operated since 1991 by "Lietuvos Gelezinkeliai" (LG), the state rail enterprise, which has been transformed into a public joint stock company in 1995.⁷³ The public Lithuanian network consists of 2,002 kilometres of lines,⁷⁴ of which 6.1 per cent are electrified and 28 per cent equipped with double track, the latter mainly on the Belarus-Kaliningrad oblast link via Vilnius and Kaunas. Another main line is also running in east-western direction from Vilnius and Kaunas to Klaipeda providing the port's hinterland link. Two lines run towards Latvia, while two southbound lines lead towards Belarus and towards Poland. The last one has recently been reopened in order to provide a direct link with Poland without passing over Belarus territory (Schrader and Laaser 1997: 73; Boroch 1996: 98). It is necessary, however, to re-gauge rolling stock or reload cargo crossing the border because of the gauge discrepancies.⁷⁵ The network density with respect to an area of 31 kilometres/1,000 square kilometres ranges between those of Latvia and Estonia, while the density figure with respect to population of 0.5 kilometres/1,000 in-

⁷² Bolz and Polkowski (1996: 139) tell of a locomotive and carriage fleet that can be utilized only to 30–50 per cent of the existing stock or even less.

⁷³ Boroch (1996: 101) tells of only 90 per cent being state property, while the rest is said to be owned by employees.

⁷⁴ In addition, there exist some 930 kilometres of lines belonging to industrial enterprises (LDS *Lithuania's Statistics Yearbook* (1994: 171)).

⁷⁵ There are only 22 kilometres of standard gauge railway lines available in Lithuania that serve such transfer purposes (Boroch 1996: 98). It is planned to extend the standard gauge rails to Kaunas and to build a turnover terminal in Kaunas (Girnius and Leontjeva 1996; Boroch 1996: 108). However, financial resources for this project are not available at the moment because international financial organizations tend to be sceptical with respect to the net benefits of the project (informations provided by EIB).

habitants lies below those of both Baltic neighbouring countries (Table A2). With respect to the transit of seaborne merchandise traffic to and from Klaipeda, LG arrives at a figure of 85 per cent (Linderfalk 1996c: 12). Network and rolling stock quality has suffered from neglected investment since the early 1980s. In addition, major differences seem to exist in track quality between those lines that have served as transit links to Russia and Belarus and others that have served mainly domestic traffic (Boroch 1996: 98 ff.).⁷⁶

Russian Baltic Rim oblasts

It should be noted in advance that there are only few sources available for infrastructure networks in the Russian Baltic oblasts. Most information is only available for Russia as a whole.⁷⁷

Leningrad oblast is served by "October Railways", which is the largest among Russian regional railway administrations,⁷⁸ while the operating entity in the Kaliningrad oblast, which has been founded in 1992 is independent. One of the main lines of October Railways is the line linking St. Petersburg with Moscow, equally important is the westbound line via Vyborg towards Finland and its ports. The intra-Russian line to Moscow is going to be upgraded and modernized (Bolz and Polkowski 1993: 51). Kaliningrad oblast railways link the exterritorial oblast northeast- and eastbound with Lithuania, while three links with Poland have been opened.

There are neither density figures⁷⁹ nor detailed information on the track quality and on the performance of railways in Leningrad and Kaliningrad oblasts available. However, there are no hints that the situation in these oblasts might be more favourable than in Russia as a whole, or on the October Railways in general. Carriage and locomotive management is trailing behind Western stan-

⁷⁶ Reconstruction, in particular of the east-west link from the border towards Klaipeda port, has recently begun, supported by EBRD loans (EBRD 1997c: 3).

⁷⁷ This section rests mainly on information provided by the World Bank study of Holt (1993: 59 ff.).

⁷⁸ Independent railways were created in the single CIS republics after the dissolution of the USSR. In Russia, 19 regional railway entities have been operating regional rail monopolies as an integrated system under the supervision of the Russian Ministry of Railways since 1992 (Holt 1993: 59 f.). October railways, one of the 19 railways, being responsible for parts of northern, northwestern and parts of central Russian planning regions (Holt 1993: 196) operated a network of more than 10,000 kilometres (11.9 per cent of Russia in total) and handled 161 billion tonne kilometres (6.4 per cent of Russia) and 43 billion person kilometres (15.6 per cent of Russia) in 1990 (Holt 1993: 60).

⁷⁹ Differently from Belarus, Ukraine or Turkmenistan, Russia is not member of the Union Internationale des Chemins de fer (UIC). Thus, UIC statistics do not include data on Russian railways.

dards (carriage tracking systems are lacking altogether); container traffic is at a low development level; the physical state of infrastructure is poor and has been substantially deteriorating since the eighties due to financial and managerial constraints; the rolling stock exhibits serious defects and suffers from rising disrepair (this holds, in particular for October Railways); environmental standards are low; equipment technology is outdated, although existing equipment is said to be heavy duty and robust with respect to extreme climates (Holt 1993: 72 ff.).

Poland

The European standard gauge network of the Polish state railways (PKP) comprises of roughly 24,300 kilometres, of which 48 per cent are electrified and 37 per cent are equipped with double track (UIC 1996b: 20 f.). Network density in Poland amounts to 75 kilometres/1,000 square kilometres and thus is high compared with the other Baltic Rim countries⁸⁰ with the exception of Germany; with respect to population, the density figure of 0.6 kilometres/1,000 inhabitants lies in the lower third of the Baltic Rim sample (Table A2), but is still higher than the EU average (Carbajo and Fries 1997: 12 f.). Within Poland, voivodships on the Baltic Sea shore seem fairly well-equipped with rail infrastructure in the immediate neighbourhood of the ports,⁸¹ thus indicating the prominent role of railways in hinterland traffic.⁸²

The electrified part of the network handles the bulk of rail freight and passenger traffic. At the beginning of the nineties some 80 per cent of freight and 55 per cent of passenger traffic were moved on these routes (Taylor 1993: 109). While PKP is considered to be by and large well-equipped to handle bulk, cargo which has been its domain in the past, its weakness lies in insufficient modern forms of cargo transport like container and combined traffic (Sawiczewska 1993: 141).

In general, the Polish rail network suffers from similar constraints, as other former CMEA railways do: (i) Technical conditions of tracks, bridges and other facilities are unsatisfactory due to heavy bulk traffic duties in the past while maintenance has been largely delayed; in addition, the share of double track and electrified lines reported above is considered to be below modern standards; (ii) signalling devices and traffic control systems are outdated; (iii) terminals and

⁸⁰ This holds also in comparison to the rest of the world (Suchorzewski 1994: 72).

⁸¹ This holds for Szczecin, Gdansk, and Elblag, while rural voivodships Koszalin and Slupsk in between, which have no ports, range in the lower part of the sample of all voivodships (Potrykowski 1985: 276 f.).

⁸² PKP's share of delivering bulk cargo to the ports has amounted up to 85 per cent (Sawiczewska 1993: 141). This is not to say, however, that Polish port hinterland links are sufficient. Just the opposite holds (see Section D.IV.2).

equipment for modern forms of transport like container and multimodal traffic are widely lacking; (iv) the internal communications system is underdeveloped; (v) the quality of rolling stock is low; (vi) operational efficiency is low, the same holds for the quality of services (Suchorzewski 1994: 72 f.; Burnewicz and Bak 1997: 121).

3. Road Network

Compared with Russia or other CIS states the road network in the three Baltic republics is in a more favourable state with respect to density and to quality of surfaces; this was already the case in the Soviet era (Foders et al. 1991: 127 f.). In relation to the Western Baltic Rim countries, however, both densities and qualities are well below the levels one is acquainted with in mature market economies (Table A3; Arkadie and Karlsson 1992: 304 ff.).

Estonia

The total length of the road network in Estonia is around 30,000 kilometres, of which 50 per cent are non-public roads on the estate of agricultural farms, forest districts, and industrial enterprises. The public network of 15,000 kilometres, of which 54 per cent are paved according to the standards of the IRF statistics, contains 65 kilometres (or less than 0.5 per cent) of roads of nearly motorway characteristics near Tallinn. The road density per area of 332 kilometres/1,000 square kilometres is similar to that in northern Scandinavia but lower than in Denmark and Germany (Table A3) while the figure for density with respect to population of 9.9 kilometres/1,000 inhabitants is lower than in Scandinavia but higher than in Germany. The quality of surfaces does not reach the Scandinavian level; bridges and other complementary devices are in need of repair; furthermore, the maximum axle load is confined to 5–6.5 tonnes in contrast to 10–13 tonnes in Western Europe, thus constraining the use of heavier trucks.⁸³ Because of financial constraints only the most urgent repairs can be initiated (MEA 1994).

Latvia

According to national statistical sources (LRVSK *Statistical Yearbook of Latvia* (1995: 255); LRVSK 1996: 79 ff.) the public road network of Latvia consists of 20,400 kilometres (1995), of which 18,800 kilometres are said to be "hard roads". However, only 7,800 kilometres (38.3 per cent) have improved surfaces

⁸³ See Schrader and Laaser (1997: 60 f.), CCET (1996: 45), IRF (1995: 22 ff.), Buchhofer (1993: 127), and Strunskis (1991).

according to Western standards (concrete or bituminous surfaces) (Table A3), the rest of hard roads consists of gravel roads without any binders (LRVSK 1996: 80). There exist still no motorway-like roads in Latvia.⁸⁴ Thus, public network density equals 316 kilometres/1,000 square kilometres for all roads, but only 121 for improved roads, or 8.0 kilometres/1,000 inhabitants, figures that are by and large comparable with those of Estonia.⁸⁵

Although assessed from a mere quantitative point of view the Latvian road network is considered adequate even meeting future demand (World Bank 1997c: 2), qualitative constraints with respect to axle load apply to Latvian roads as well as for Estonia and Lithuania (Buchhofer 1993: 127; World Bank 1997c: 2). In addition, investments and maintenance have been delayed during the Soviet era, and design standards, material quality, and construction technologies in general were poorly developed, a constraint that cannot easily be removed due to fiscal constraints. In 1995, the state of roads with high traffic density was considered worse than in Estonia and Lithuania: According to the Ministry of Economics, 35 per cent of those roads were in poor condition (including bridges) while the same figures for Estonia and Lithuania equal 10 and 15 per cent, respectively (MERL 1995: 48).⁸⁶ Because of a deteriorating physical state of Latvian roads which is reflected in high accident figures, World Bank loans and technical support programmes have been launched to improve both the technical and physical state of infrastructure and the managerial and engineering quality of road maintenance.

Lithuania

According to official Lithuanian statistical sources (LDS *Lithuania's Statistics Yearbook* (1994: 171)) Lithuania's public road network amounts to 21,120 kilometres of roads (Table A3), all of which are said to be paved roads. From data

⁸⁴ The whole network is made up by 1,603 kilometres of main roads, 5,421 kilometres of class I roads, and 13,378 kilometres of secondary roads. The main roads and the class I roads are qualified as 7,024 kilometres of highways according to International Road Federation standards (IRF 1996: 26).

⁸⁵ If the figures officially published by the International Road Federation concerning Latvian road networks are taken literally, Latvia would have a network of more than 60,000 kilometres of roads, twice as large as that of Estonia, although the country's area is only a little less than one and a half of that of Estonia. Network densities would amount to above 1,000 kilometres/1,000 square kilometres (three times that of Estonia) and 23.7 kilometres/1,000 inhabitants (two and half the figure of Estonia). The difference to the figures published by the LRVSK (1996: 79 ff.) can be explained by the inclusion of non-public roads in the data as transferred to IRF, because highway and secondary roads figures of IRF add up to the public network figure of LRVSK.

⁸⁶ The figure is backed up in recent World Bank publications on support programmes for Latvia (World Bank 1997c: 2).

provided by the Lithuanian Road Administration one can infer, however, that in this figure non-improved gravel roads are included so that the share of roads according to Western standards is much lower: 51 per cent are of improved surface; the difference is made up mainly by regional roads, of which only 36 per cent are improved roads (LRA 1997).⁸⁷ Density figures amount to 324 kilometres/1,000 square kilometres—comparable to the situation in Estonia and Latvia—and 5.7 kilometres/1,000 inhabitants.

In general, Lithuanian road network capacities are considered well-developed with respect to network length and density (World Bank 1997b: 1). What constitutes a favourable feature of Lithuanian road network is the existence of two genuine motorways of a total length of about 400 kilometres,⁸⁸ one connecting Klaipeda port with Kaunas and the capital Vilnius, the other Vilnius northward with Ukmergė.⁸⁹

The physical state of roads, in particular of secondary ones, however, is as poor as is the case in the other two Baltic republics; axle load constraints apply also for Lithuania.⁹⁰ Available funds for maintenance and repair were limited already in the Soviet era. They dropped substantially in the early transition period and are now only slowly rising. The repair of bridges, of improved and of gravel surfaces has increased in the last years but the same holds for the backlog of pending projects (LRA 1997).

Russian Baltic Rim oblasts

There are no detailed data available concerning the road network in the Leningrad and Kaliningrad oblasts. However, the situation in both districts is probably comparable to the Russian average. For Russia as a whole published data are inconsistent. According to the World Bank study of Holt (1993: 107 ff.), which rests on Russian sources and whose figures are by and large comparable to those of former USSR statistics (Foders et al. 1991: 122 ff.), Russia's public road network consisted in 1995 of only 453,000 kilometres of roads, of which 38,700

87 In addition, there are some 35,000–40,000 kilometres of "other roads" that are classified by LDS *Lithuania's Statistics Yearbook* (1994: 171) as local and urban roads. It does not come clear, however, whether these are public, semi-public or constrained roads, because statistical data qualify the 21,120 kilometres mentioned before as "public roads". Also LRA (1997) does not mention this type of roads. With "other roads" included, density figures would be three times as large.

88 The 65 kilometres of Estonian motorway-like roads form more or less arterial roads of Tallinn city.

89 This motorway originally was intended to link Vilnius with Riga (Arkadie and Karlsson 1992: 305; Buchhofer 1993: 127) but has remained torso until now.

90 See Arkadie and Karlsson (1992: 304), Buchhofer (1993: 127), and Girnius and Leontjeva (1995).

kilometres (9 per cent) are classified as federal roads (Table A3). 97 per cent of federal roads are said to be paved, as well as 47 per cent of the 414,000 kilometres of regional roads.⁹¹ The same caveats concerning the inclusion of gravel roads in the paved sample as in the Baltic republics apply for Russia.

The quality of the network is poor. There exist only 2,600 kilometres of four-lane (or more) roads. Funding for road maintenance has been low and has further decreased substantially for many years so that the physical state of roads has been deteriorating progressively: 38 per cent of the federal network were in poor to dangerous condition, further 25 per cent were only in fair condition and required repair in 1992. Even roads qualified as being in good condition are exhibiting quality deficiencies because of high roughness. For regional roads the situation is considered even worse. More than a quarter of all bridges of the federal network (and a third of those of the whole public network) are in bad condition; even collapses are not unusual. Design standards do not comply to superior levels. The major share of the network is constructed for only 6.5 tonnes axle loads. Numerous railway crossings, narrow bridges, lacking by-passes add up to poor quality records. Furthermore, paving quality is bad because of out-dated equipment, low quality asphalt and cement, and inefficient organization. The backlog of unfinished rehabilitation projects is increasing. Thus accident ratios are high compared with Western countries.⁹²

Poland

Poland's road network of a total of 372,400 kilometres can be considered as underdeveloped for a densely populated large country. Network densities of roughly 1,150 kilometres/1,000 square kilometres and 9.7 kilometres/1,000 inhabitants range only slightly below European and Baltic Rim average figures (Table A3). However, the share of improved roads does not exceed two-thirds, and motorway capacities are largely non-existent. There are only some 257 kilometres (0.07 per cent) which, in addition, are dispersed over the country (Taylor 1993: 123 f.).⁹³ Most trunk roads, national as well as international, do not have access control and are used by mixed traffic (e.g., agricultural vehicles). Design

⁹¹ In addition, there exist roundabout 450,000 kilometres of non-public enterprise and agricultural roads and, eventually, 700,000 kilometres of access paths to farms and forests. The IRF data (IRF 1996) tell of a total of 949,000 kilometres of Russian road network and seem to include the non-public roads under the heading of "secondary roads". Furthermore, they give the impression of a sharp increase in the category of primary roads from 1991 to 1995, which seems rather unreliable.

⁹² See World Bank (1996a: 1 f.), Holt (1993: 107 ff.), and Foders et al. (1991: 127 f.).

⁹³ Even Lithuania disposes of more motorway capacities than Poland.

standards, riding quality and maximum axle loads⁹⁴ are generally below Western standards; elevated crossings of railway lines are largely missing; service facilities are underdeveloped. Correspondingly, accident ratios are substantially higher than in Western countries (Suchorzewski 1994: 73 f.; Burnewicz and Bak 1997: 120 f.).

World Bank support programmes have been enacted since 1993, not only to improve road repair, upgrading, resurfacing, reconstructing bridges, constructing bypasses for congested cities, which are largely missing, but also to change institutions responsible for maintenance and to enhance infrastructure policy formation (World Bank 1997d: 1 f.). Special attention is given to port access roads to facilitate the usage of ro-ro techniques as port access provides serious problems (World Bank 1997a: 1 f.). Furthermore, in the light of expected EU accession, Poland has enacted ambitious road construction programmes, which mainly aim at (i) constructing a motorway and expressway network for enhancing the accessibility of agglomerations and for better connecting the country to the networks of neighbouring countries, and (ii) adapting road standards to those of EU members.⁹⁵ In view of the limited standard of the existing network, however, financial resources needed for only slight progress are substantial.

4. Airports

Each of the *three Baltic countries* has an international airport in its capital with runways designed for larger aircrafts,⁹⁶ which provides international links to various hubs mainly in Europe (Schrader and Laaser 1997: 61, 69, 74 f.). Financed by foreign loans of EBRD and EIB the airports of Tallinn, of Riga and of Vilnius have been redesigned and upgraded with respect to runways, taxiways, and lighting, and equipped with modern air traffic control devices; the construction of new terminals with higher capacity is envisaged (CCET 1996: 46; EBRD 1997a: 3; EBRD 1997b: 3; EBRD 1997d).

St. Petersburg is equipped with a domestic airport from which intra-Russian flights are dispatched and with an international airport (Pulkovo I and II). Both airports are able to serve much more than regional purposes, because the interna-

⁹⁴ Only small portions of the network (national highways) are designed for axle loads of 10 tonnes, the rest only for 8 tonnes and below (IRF 1996: 272; Suchorzewski 1994: 97).

⁹⁵ For a comprehensive description see Teichmann et al. (1995: 41 ff.) and Burnewicz and Bak (1997: 122).

⁹⁶ Maximum runway length does not exceed 3,047 metres, however. Besides these central airports there are some further airports of minor importance in each country (CIA 1997a, 1997b, 1997c; CCET 1996: 46).

tional airport is one of the six Russian airports that is graded ICAO II (which is the highest category; Holt 1993). Meanwhile even *Kaliningrad* with its airport Chabrowo (mainly a military airport without any amenities for passengers) is integrated into the international air traffic network.⁹⁷

The airport network in *Poland* is not very dense according to Polish sources, and unevenly distributed over the country. The countries' network is five times smaller than the French (Burnewicz and Bak 1997: 121). Two airports (Warsaw and Cracow) are recorded to have runways longer than 3,000 metres, and 30 airports have runways in the range of 2,400–3,000 metres (CIA 1997d: 6).

III. Present Transport Patterns

1. Ports and Shipping Dominating Baltic Sea Traffic

The following statistical analysis of traffic flows in the Baltic region is, especially with respect to the former Soviet republics, subject to limitations of the available traffic data. This mainly applies to the years before the Soviet Union was dissolved and the Baltic States regained independence; up to 1991, traffic figures were published only occasionally, and details as to the cargo structures are mostly missing.

The transport sector of the Baltic countries is dominated by water transport, whose share in total tonne kilometres performed is about three-quarters in Latvia (1995), more than four-fifths in Estonia (1996), and even in Poland, where distances in road or rail traffic are much longer than in the small Baltic countries, sea transport accounts for more than half of total tonne kilometres performed (1994).⁹⁸ The efficacy of a water transport system is for a large part dependent on well-functioning ports. The following section mainly analyses port through-

⁹⁷ Besides intra-Russian connections, Kaliningrad airport provides two international flight pairs to Copenhagen (four times a week) and Hamburg (twice a week) (UAB VIYP 1997).

⁹⁸ As these shares are derived on a tonne kilometres basis, the results are strongly influenced by the fact that the share of one country's sea transport is measured by all tonne kilometres performed by ships of that country worldwide (irrespective of the origin and destination of the cargo). This is a clear difference especially from the railway sector, where transport services by a country's railways are confined to the geographical area of that country. (Shares on a mere tonnage basis, irrespective of the distance the cargo is carried, however, would greatly underestimate the market share of all types of carriage apart from road carriage with its myriad of short-distance consignments.)

put and sea transport flows, but later on the question of modal split in hinterland traffic is also taken into consideration.

For the purpose of this analysis, a total of ten ports have been selected. These are, from west to north: Szczecin/Swinoujscie, Gdynia, Gdansk (Poland), Kalinin-grad (Russia), Klaipeda (Lithuania), Liepaja, Ventspils, Riga (Latvia), Tallinn including Muuga and Paldiski (Estonia), St. Petersburg (Russia). They will subsequently be called "the ports". In addition, there is a number of small ports, which can, however, be dismissed because they are not important for international Baltic traffic.

a. Cargo Throughput in Major Baltic Ports

Looking first to the overall seaborne goods traffic of the ports it can be seen that (Table A4)

- total cargo turnover diminished from a level of 135 million tonnes, which had been reached at the end of the 1980s, just before the great political changes took place, to 110 million tonnes in 1992, but afterwards climbed again steadily to more than 140 million tonnes in 1996, which is about 7 per cent more than at the beginning of the reference period,
- the upswing in the course of the 1990s was most accentuated in the two Russian ports, where cargo turnover almost doubled compared with 1988, whereas, on the other extreme, in 1996 Klaipeda handled no more than 70 per cent of the cargo that passed through the port in 1988,
- significant traffic increases could also be observed in Estonia,
- the ports of Latvia had in 1996 about 6 per cent more throughput than in 1988, notwithstanding an intermediate period in the early 1990s, when cargo volumes had fallen sharply,
- the Polish ports handled around 50 million tonnes in most of the years of the reference period, the exception being 1991 and 1992 with significantly lower results.

Among the individual ports (Table A5) Ventspils has by far the highest throughput, more than 35 million tonnes in 1996. It is followed by five ports or port groupings, Szczecin/Swinoujscie, Gdansk, Klaipeda, the Tallinn ports, and St. Petersburg, each of which has an annual cargo turnover in the range of 15–20 million tonnes. The ports of Riga and Gdynia handle 7–8 million tonnes annually. The smallest ports are Kaliningrad and Liepaja with 5 million and 2 million tonnes per year, respectively. These two, being former Soviet naval bases, are currently revitalizing their business in civilian port services, for which these ports had been closed until the beginning of the 1990s.

The ports are mainly used in the outbound direction of the Baltic and East European states' trade. In 1995, the relation of outbound to inbound cargo quantities varied, in most cases, between around 2:1 and 4:1, exceptions being Liepaja (6.5:1), and especially Ventspils, where import cargo is negligible compared with the export, which is about 70 times more and consists mostly of crude oil supplied by the pipeline.

Looking at the development of the total turnover (both directions) of the individual ports during the 1990s, the following tendencies can be discerned:

- U-shaped (a marked decrease in the aftermath of the political turnaround, followed by a more or less pronounced resurgence): Riga, Ventspils, Kaliningrad;
- upward tendency, although not without interruption, during the whole reference period: Tallinn ports;
- significant decrease until 1992, and no clear tendency thereafter: Klaipeda;
- up and down throughout the 1990s, no discernible trend: Polish ports.

In a comparison of all ports on the Baltic Sea including those in the Western countries, the analysed ports are among the largest ones, as far as the mere quantities of cargo throughput are looked upon. This is illustrated by the fact that, if ports on the Baltic Sea are arranged according to their (seaborne) cargo throughput, six out of the first nine ports, which all handled at least 14 million tonnes in 1996, are situated in one of the three Baltic States, in Poland or in the two Russian Baltic rim oblasts. In comparing their traffic results with those of, e.g., Lübeck, Helsingborg or Trelleborg one must, however, strictly keep in mind the wide differences in their cargo structures: the latter ports are mainly specialized in handling ro-ro traffic, which is moving between Scandinavia and the European continent and consists mainly of manufactured and semi-manufactured products, while the Baltic ports have other cargo structures. The main lines of development of these structures in recent years are analysed in the following paragraphs.

b. Geographical and Commodity Structures of Transport Flows

Up to the end of the 1980s, the cargo structures of the former CMEA countries' Baltic ports were dominated by a relatively small number of liquid or dry bulk commodities. The main traffic flows were (1988 data):

- liquid bulk commodities (crude oil and oil products) exported from the former USSR via Ventspils (31 million tonnes) and Klaipeda⁹⁹ (10 million tonnes),

⁹⁹ Liquid bulk cargo sent from Klaipeda is mainly petroleum products from the Makachkala refinery, which is itself fed from Russian crude sources (Hayter 1993: 296).

- coal exported from Poland via Gdansk (7.6 million tonnes), Gdynia (2.1 million tonnes) and Szczecin (about 7 million tonnes),
- grain imported via several ports, mainly Leningrad (5 million), Novotallinskij (now Muuga; 5 million tonnes), Riga (3 million tonnes) and Klaipeda (2 million tonnes), but also through the Polish ports of Gdansk, Gdynia and Szczecin, which in 1988 imported a maximum¹⁰⁰ of about 4 million tonnes of grain,
- Gdynia and Szczecin also handled nearly 6 million tonnes of ore, presumably almost exclusively imports.

These few cargo categories made up for just over two-thirds of the whole throughput in the Baltic ports of the former USSR, and somewhat more than one half of the Polish ports' turnover in 1988. Most of the remaining cargo consisted of other dry bulk commodities such as fertilizers. General and container cargo, which contain the majority of manufactured goods, amounted to 11 million tonnes (13 per cent of whole throughput) in the former Soviet and nearly 8 million (15 per cent) in the Polish ports.¹⁰¹ These figures do not contain the ferry traffic at Klaipeda (to and from Mukran/German Democratic Republic) which was 4.5 million tonnes in 1988, i.e., 5 per cent of all USSR Baltic ports but a good fifth of Klaipeda's throughput in that year.¹⁰²

In the last years before the demise of the Socialist economic system and the CMEA, the transport flows into and out of the ports still reflected the traditional pattern of exchange "raw materials from the East against manufactured articles from the West".¹⁰³ In the ports of the former Soviet republics of Estonia, Latvia and Lithuania cargo volumes and structures were strongly influenced by the fact that the latter's industrial and commercial trade linkages were overwhelmingly oriented towards Russia and the Ukraine and not towards Western Europe or Scandinavia and other Baltic countries (Hayter 1993: 296).

¹⁰⁰ For several years, especially until 1991, exact figures on traffic in Polish ports are available with respect to the sum of in- and outbound traffic only.

¹⁰¹ Calculated from Böhme and Sichelschmidt (1990: 141, 144).

¹⁰² A disaggregation of the whole dry cargo into the three broad categories "dry bulk cargo", "general" (i.e., non-bulk, non-container) cargo and "container cargo" can be given for Soviet ports in 1990: St. Petersburg 7.1/2.9/0.9, Tallinn 2.4/0.7/0.2, Novotallinskij (now Muuga) 4.8/0.2/--, Riga 4.6/0.8/0.7, Klaipeda 2.0/6.4/-- million tonnes (Peters 1993: 290).

¹⁰³ In spite of this general pattern of exchange the substantial imports of dry bulk (mostly agricultural) cargoes to the USSR and later to Russia should not be overlooked. In 1992, dry bulk commodities represented the most important category of the import (and cabotage) trades of the Russian Federation, the principal commodity being grain with a share of 44 per cent in international dry bulk trade (Peters 1993: 266).

The Baltic ports handled (1990) 30 per cent of Russia's international seatriade of 182 million tonnes; this share ranked second among the country's four coast lines.¹⁰⁴ In the aftermath of the political changes and during the transition to a market-oriented economic system the traditional traffic pattern has undergone significant changes; certain traffic flows have been strongly reduced or even disrupted, others have been extended or newly established. In still other cases the amount of cargo more or less decreased in the early 1990s, but afterwards recovered.

A falling cargo volume was recorded especially for grain imports via Latvian and Estonian ports. This traffic, whose ultimate destination mostly was the Russian Federation, had shrunk from a level of about 8 million tonnes at the end of the 1980s to about 0.5 million tonnes in 1995. In the following year, however, it showed tendencies of recovery at least in Estonian ports (Tables A6 and A7). In St. Petersburg grain imports likewise seem to have shrunk; as a share of total turnover, they fell from 65 per cent in 1985 and 47 per cent in 1990 to a mere 3 per cent in 1995 (Lebedev 1996: 45). The transport volumes of some other agricultural or forest products—which traditionally had been of minor importance—were also diminishing; for example, in 1996 only 186,000 tonnes of bulk sugar were unloaded in the Latvian ports, only about two-fifths of their level at the beginning of the decade. In Polish ports, the throughput of timber followed a falling trend, which had already started in the second half of the eighties (Table A8 and A9). Another example of shrinking traffic, although from a short reference period, is the sharp decrease of seaborne imports of metals as well as machinery and other equipment in Estonia in 1996 over 1994 (Table A6).

Most prominent among those traffic flows that followed a U-shaped line of development, i.e., decreased and recovered in the course of the 1990s, is the export of crude oil and oil products from Ventspils. Overall, these Russian exports, which are now transit cargo through Latvia, shrank from 31 million tonnes in 1988 to 17 million in 1992 and then climbed again by about two-thirds towards the middle of the decade. A similar trend was observed with several cargo flows through Polish ports (Table A9), namely:

- Coal traffic (almost exclusively outbound) had already declined in the second half of the 1980s; it reached a minimum of 11–12 million tonnes in each 1991 and 1992, and, in subsequent years, amounted to about 17 million tonnes annually (1994 with more than 21 million tonnes being an exception).
- Cereals (both directions) fell from 1989 by nearly four-fifths to 1 million tonnes in 1994 and climbed again to 3.5 million tonnes two years later.

¹⁰⁴ The shares of the other coastlines were: Asov and Black Seas 49 per cent, Pacific Rim 13 per cent, Arctic Rim 5 per cent, Caspian Sea 3 per cent (Peters 1993: 267).

- Ore (imports) decreased to a minimum of 1.85 million tonnes in 1993, but afterwards roughly doubled again until 1996.

A renewed and more or less stable upward tendency of the transferred cargo throughout the relevant reference period could be identified in certain traffic flows to and from Latvia (reference period: 1990–1996) and Estonia (1994–1996), namely:

- loaded: timber, chemicals and fertilizers from both countries, metals¹⁰⁵ and building materials from Latvia, petroleum products, container and trailer cargo from Estonia;
- unloaded: foodstuffs (including beverages and tobacco), petroleum products as well as container and trailer cargo (all to Estonia), liquid bulks and general cargo¹⁰⁶ incoming to Latvia.

Among the changes in the composition of cargoes that began after 1991 in most Baltic ports, the increase of imports from Western Europe, North America and the Far East of industrial consumer goods and high-quality food and beverages are most conspicuous, together with bananas and citrus fruit, which showed rapid, strong expansion. Reefer vessels are meanwhile frequent callers, which means that special facilities for fruit storage are required in the ports. In Latvian ports, the unloaded quantity of perishables (included in general cargo) doubled in 1996 (240,000 tonnes) over the previous year.

With respect to traffic flows on a country-to-country basis, available data¹⁰⁷ reveal a dynamic upward development of the following flows since 1992:

- incoming traffic to Estonia from Finland and Germany, and also (although of minor importance in absolute terms) from Denmark (Table A10),

¹⁰⁵ In Table A7, metals are for statistical purposes combined with scrap, which, however, in 1996 made up for only a small part (3 per cent) of the total.

¹⁰⁶ It must be noted, however, that in the Table A7, concerning Latvia, what is called “general cargo” is simply a statistical residual (traffic of all dry cargoes minus that of the nine enumerated categories of such cargo). As container, trailer and other unitized cargo is often—irrespective of its real nature, which may be, e.g., “machinery”—not registered under the adequate cargo category, it cannot be excluded that the observed widening of the said discrepancy partly is not real, but merely reflects a shift of some cargo from “traditional” to container or other “new” traffic modes. The actual share of the “new” modes in total “general cargo” can be calculated only for the years 1995 and 1996: it is 72 per cent and 61 per cent in incoming traffic, and 47 per cent (container only) and 50 per cent in outgoing traffic (Table A7).

¹⁰⁷ These data are mostly derived from statistical sources of the analysed countries’ North and West European trade partners. It should be noted however that statistical data have not been included for Sweden because of insufficient disaggregation with respect to Baltic Rim countries not belonging either to the EU or the EFTA.

- outgoing traffic from Estonia to Finland, Denmark, Germany, the Netherlands, and (at least until 1994) Belgium (Table A11),
- incoming traffic to Latvia from Finland and Denmark (Table A10),
- outgoing traffic from Latvia to Germany (Table A11).

In Estonia, the economic interdependence with Finland is rapidly increasing. Transports from Finland to Estonia amounted to 1.1 million tonnes in 1996, nearly five times the level of 1992. The quantity of goods loaded in Estonia for Finland followed a less dynamic pattern of growth. It expanded by four fifths over 1992 to 1.9 million tonnes in 1995, but in the following year it was down again by one quarter.

Apart from the above-mentioned, clearly expansive traffic flows there are several others that in earlier years had decreased, because of special factors like the gradual disappearance of grain imports from North Sea or overseas ports for Russian destinations, or the temporary diminishing of oil exports via Ventspils. These flows showed distinct signs of recovery during the last two or three years of the observation period (the whole time series thus appearing "U-shaped"):

- Russia: incoming traffic from Finland, Norway and Denmark, outgoing traffic to the Netherlands and Norway;
- Estonia: incoming traffic from the Netherlands;
- Latvia: incoming traffic from Germany and the Netherlands, outgoing traffic to the Netherlands;
- Lithuania: incoming traffic from Denmark and the Netherlands.

For the majority of the remaining traffic flows shown in Tables A10–A13,¹⁰⁸ there is—at least in the course of the 1990s—no clear tendency to be seen in either upward or downward direction. Very few of these analysed country-to-country flows seem to reveal a decrease. This holds for traffic from Lithuania to Finland, Germany and the Netherlands, each in the period 1993–1996, and from Poland to Germany (1990–1996).

From all this it can be derived that, at least in Estonia and Latvia, there is a tendency to restore traditional patterns of economic exchange with Scandinavia and Western Europe, which had been interrupted during the years of Soviet annexation, or to establish entirely new trades. The re-integration into the European division of labour is already taking place, most pronounced in Estonia (Laaser and Schrader 1992; Schrader and Laaser 1994, 1997).

¹⁰⁸ An overview of the total seaborne cargo turnover in the Eastern Baltic ports according to selected countries of origin and destination is given in Table A14.

One of the surprising facts of current Baltic traffic is reported concerning the ro-ro line that connects the ports of Tallinn and Kiel. The greater part of the total cargo carried by this line consists of general cargo—goods that are either produced in Estonia, or are carried eastbound for Estonian consignees. It appears that this is a case of value-adding in Estonian factories that resembles the examples set by Singapore and Hong Kong. Similar observations have been made on lines running to St. Petersburg.

c. Ferry and Passenger Shipping

In the cargo sector, container and ro-ro cargo ships marked the advent of non-socialist shipping in the Baltic CMEA countries. Since their introduction around 1960, ferries have become one of the mainstays of market-oriented Baltic shipping. After 1991 an almost entirely new market segment developed when ferry services were established with ports of the Eastern Baltic. From the beginning of this new phase of their history, these ships have tended mainly towards the passenger business over the short routes between Estonia and, more limited, Latvia on the one hand, and Finland or Sweden on the other. These new connections developed very high growth rates that can almost be compared with the Stockholm–Finland routes with their 10 million passenger movements per year.

At present the main ferry or passenger ports are Tallinn and Riga while the Lithuanian port of Klaipeda has hardly been able to participate in the new boom, presumably because there are no port cities comparable to the Estonian and Latvian capitals. Also, the sea distances are longer, and thus less attractive for the shipping companies. No permanent lines have developed to/from the Russian Baltic ports although for some limited time a service was operating between Kiel and St. Petersburg via the Swedish port of Nynäshamn.

The total number of ferry/passenger routes, while fluctuating over time, has grown considerably. This refers, in particular, to the only about 100 kilometres long Helsinki–Tallinn line, where at present five ferry lines offer a large number of daily sailings in both directions. These are supplemented by one or two lines running between Tallinn and Stockholm with at least one sailing per day in each direction. Riga's connections with Sweden have developed less steadily, one of the reasons being port dues that the operators considered far too high so that lines were soon given up again. There are now two regular lines. More sailings, with very limited passenger facilities, connect the port of Liepaja with Karlskrona and Rostock. Some passenger traffic has developed on the Klaipeda–Mukran, Klaipeda–Kiel, and Klaipeda–Ahus routes, where ships accommodating about 120–130 passengers per sailing are running in regular cargo services.

Passenger movements have reached surprisingly high figures, which compare well with those of numerous traditional “Western” lines. According to the avail-

able statistics, passenger traffic in Estonian ports—which largely means Tallinn City Port—has risen rapidly. From 1993 to 1996, the number of passengers coming from abroad doubled. The greater part of this increase was provided by visitors from Finland, whose share in total arrivals rose, at the same time, from 86 to almost 94 per cent. As most voyages were undertaken for tax-free buying and on-board consumption, with passengers returning soon, the number of departures was almost as high. Total passenger traffic in Tallinn port amounted to almost 5 million persons in 1997. A much lower number of passengers is recorded by Lithuania. The total to and from this country's single port, Klaipeda, can be estimated at around 25,000 persons using the ferry lines from Klaipeda to Kiel and, from mid-1997, to Åhus in Skåne. Although an upward trend has been registered,¹⁰⁹ it is clearly visible that the comparatively long voyage offers fewer attractions to travellers than the other routes, especially as tax-free shopping can be made much easier from Germany on the shorter runs to Denmark. Efforts are, however, being made to develop new incentives for passengers, and thus raise the number of bookings on these lines.¹¹⁰ Immediately after 1991, passenger traffic was taken up also between Sweden and Latvia. Already in 1992 about 70,000 persons were registered in the port of Riga. Figures declined sharply in the following year and further to only 13,000 persons in 1994 (Tesch 1996: 69). It could not be ascertained whether there was any traffic after that year. If so, passenger numbers would most probably be similarly small.

Passenger figures were much higher in comparison at Polish ports, where a total of 860,000 was observed in 1995 (no more recent figures were available). The lion's share fell to the port of Swinoujście (84 per cent), due to its ferry lines to southern Sweden. The second place was occupied by Gdynia with approximately 95,000 passengers, or 11 per cent of the total, while the rest were arrivals or departures from the port of Gdansk.

The figures include not only ferry services but also cruise vessels, which play a considerable role in the Baltic during the summer months. These ships call also at St. Petersburg, and at Polish ports (Gdansk). Poland has, for many years also during the CMEA period, in addition operated regular ferry services including a railway ferry to southern Sweden, viz Swinoujście–Ystad, Gdynia–Karlskrona.¹¹¹ At present, such lines exist also between Swinoujście and Malmö/

¹⁰⁹ The number of passengers arriving or leaving by sea was given as 15,900 and 25,600, respectively, for 1993 and 1994 (LDS *Lithuania's Statistics Yearbook* (1995: 328 [Table 20.12])).

¹¹⁰ The role of visa requirements will be mentioned later on (Chapter D).

¹¹¹ The development of the Polish ferry companies, from the start of their first route between Swinoujście and Trelleborg, is described by Miotke-Dziegiel and Zurek (1996: 91 ff.). See also Toy and Roe (1997) and the regular reporting on Baltic ferry

Copenhagen and Gdansk–Oxelösund. Of special interest is a service which was opened in July 1996 between Swinoujscie and Aabenraa (Denmark), and offers an opportunity for truckers to avoid long delays at the German–Polish border, and the problems encountered on overcrowded Polish roads.¹¹² The longest ferry route served by Polish ships, from Gdansk to Helsinki, was abandoned in 1995.

A side effect of the growth of passenger ferry traffic mainly in the Estonian port has been the requirement of customs-built passenger facilities. In Tallinn there are now four terminal buildings in the City Port, which were largely built after the independence of the country. Similarly, additional construction is underway or in the planning stage in other ports. Dedicated facilities are also available in St. Petersburg (also used for ro-ro goods) and Riga. These were already built in the Soviet era.

In addition to these “ferry lines” in their historical definition, there are various ro-ro cargo lines that often have a few berths for drivers but are in fact regular liner services in which ferry-type (although cargo-only) ships operate, often on a narrow turn-round timetable. It should be noted that rail-ferry services are running out of Swinoujscie and Klaipeda, to Ystad and Mukran, respectively. While the first connects the standard European gauge networks on the Continent and in Scandinavia, the second is built to the Russian/East European broad gauge, with transloading or re-gauging installations available at Mukran. In this context, it may also be pointed to the rail-ferry service between Lübeck–Travemünde and Hanko (in future to be shifted to Turku),¹¹³ which includes facilities in Finland for changing the bogies so that the rail carriages carried could in principle run through to destinations in Russia or any CIS countries (the Railship company has, however, so far kept back from having its rolling stock sent into this area).

2. Aspects of Port Competition

From the preceding analysis of goods flows and port turnover some conclusions can be drawn that refer to the functions of the ports and to sea connections which have developed after the end of the Soviet Union.

shipping in *Svensk Sjöfarts Tidning*, various volumes and numbers (e.g., “Nordisk Färjesjöfart” special in No. 45/1996).

112 “Mit Ro-Ro-Dienst Grenzstaos umgehen: Polferries startet neue Verbindung Dänemark–Polen”, *Deutsche Verkehrs-Zeitung* of 2 July 1996: 15.

113 “Railship-Verkehr Travemünde–Finnland: Turku wird Haupthafen”, *Deutsche Verkehrs-Zeitung* of 11 September 1997: 12; “Finncarriers-Poseidon Railship Services steht 1998 vor Neuorientierung im Finnland-Verkehr: Verlegung nach Turku bringt Synergieeffekte”, *Deutsche Verkehrs-Zeitung* of 13 December 1997: 16.

a. *Port Functions in the Eastern Baltic Area*

The chain of Baltic sea-ports that are the object of analysis here, can be split into two "ranges". They have different functions which have decisive influence on their competitive situation.

- The first of the two ranges comprises the Polish sea-ports. These ports mainly serve Polish foreign trade, the share of transit goods having been quite small so far.¹¹⁴ Nevertheless, the hinterland of this group of ports extends southward to the former CSSR, to Austria, Hungary, and also to southeast European countries. Transit traffic with Russia and Belarus appears to be very limited. Bulk trades that had risen considerably after 1970 during the period when Poland was a member of the CMEA (imports of crude oil, iron ore, coal exports) have decreased again but still underline the close relationships between the ports and their Polish hinterland.
- The second range covers the coast from Kaliningrad in the south through to St. Petersburg in the north, more specifically also including Vyborg port, and even various ports in southern Finland. A conspicuous element of the turnover patterns of most of the ports making up this range is the very high share of transit cargo, which also shows their role for—and at the same time their dependence on—Russian foreign trade.

During the Soviet era, the sea-ports of the three Baltic republics were built up to a much larger capacity than they had before the Second World War. This included a considerable degree of specialization, which reflected the general propensity of the system of planned economy to highly concentrate industrial branches at often very few, even single, locations with corresponding specialization of production. At the same time, an overwhelmingly large proportion of total cargo turnover of these ports was for other Soviet republics, sometimes with less than 10 per cent for the Baltic Soviet republics themselves.

As a consequence of the growing trade with "Western" Baltic countries including Central and Western Europe, there has meanwhile been a certain re-orientation of the cargo flows that pass the ports. Nevertheless, the dependence on transit cargo to and from Russia and the CIS countries still remains—and is likely to remain in future—a dominant feature of the ports, which makes them vulnerable to abrupt changes in the direction of the flows, especially if they are politically inspired (Hayter 1993: 296).¹¹⁵ This also means that a competitive

¹¹⁴ For details of transit traffic in Poland see Miecznikowski (1995, 1997).

¹¹⁵ The share of Russian transit goods in total cargo turnover is estimated to be 63 per cent for all Estonian ports, and 85 per cent for Riga. The foremost transit cargo is oil from Russia, crude oil as well as oil products. The latter have a particularly large

situation prevails among most of the Eastern Baltic ports, as will be shown in the next section.

There exists widespread competition for transit cargo, both among the ports of the three Baltic republics and between their group and the ports in Russia. But all these ports also compete for Russian cargo with the ports in Finland. At present there are also attempts to improve the rail connections of Finnish ports on the Gulf of Bothnia, for example Oulu, in order to acquire such transit to and from northern Russia, at the expense of the ports of Murmansk and Arkhangelsk. The hinterland from which transit cargo is shipped via the Baltic ports is, however, much larger than can be gleaned from these details. For instance, it includes extremely long oil-product movements from the Caucasus as well as cotton exports from Uzbekistan.

The composition of transit flows can be given in more detail for Estonia. The exports coming from Russia and other CIS countries are mainly oil (products), other mineral products, coal and grain. Iron alloys come from Kazakhstan, fertilizers and non-ferrous metals from Uzbekistan while coal is exported from Russia and from Kazakhstan. In the opposite direction, food and industrial products are prominent, often in containers (such as foodstuff, household appliances, alcohol, and tobacco), their destinations mainly being Russia and also Uzbekistan (Reiman 1997).¹¹⁶

The most advantageous geographical position among the competing ports is held by Riga, which in addition is at present best equipped for container traffic. The cumulative distances from a number of selected places of origin or destination in the hinterland of all ports of the St. Petersburg–Kaliningrad range add up to a minimum from Riga (Assmann 1997).

As regards the role of the depth of water that is available in the individual ports, for their competitive position the limitations must be kept in mind that are presented by the Danish straits. No ships drawing more than 50' (15.2 metres) of water can enter the Baltic fully laden. This corresponds to a maximum of approximately 150,000 dwt (cape size). Ships of this size are rarely employed to carry bulk goods other than crude oil and "major" dry bulk goods, mostly iron ore and coal. At present, the corresponding depth is available only in the North Port of Gdansk, and in Muuga. The large cargo lots that are required will, however, in

share in the overall transit volume in Estonia, 65 per cent in 1996, where they had grown sevenfold from 1993. For these and other details see Laving (1997). Almost one-third of all Russian oil exports passes through Ventspils port ("Entwicklung in den baltischen Häfen: Ein bedeutender Faktor für die russischen Transitverkehre", *Deutsche Verkehrs-Zeitung* of 6 November 1997: 9).

¹¹⁶ This transit traffic structure can also be assumed to be fairly typical of the other Baltic countries. In Lithuania (Klaipeda) a large proportion of total transit cargo are metal exports from Russia (Magnitogorsk steelworks), while imports are to a large part made up of consumer goods for Russia and the CIS countries.

any case work towards a very limited number of ports. It can hardly be expected that such vessels will be in greater demand for carrying full loads to or from any one of the Baltic ports.

In Baltic traffic in its narrower definition much lower depth is sufficient. Even although ship sizes have grown considerably over time, container and ro-ro vessels in general do not draw more than about 6–7 metres. These form the greater part of ships carrying general cargo in the Baltic.¹¹⁷

b. Sea Connections prior to and since the Political Turnabout

Up to the political changes, maritime transport of the CMEA countries, especially with Western countries, was subject to far-reaching regulation.¹¹⁸ It was usually based upon 50:50 bilateral treaties. In the Baltic area, the number of direct, and regular, services between ports of the two political blocks was small. Overseas liner shipping of the CMEA countries was dominated by direct lines from their Baltic ports although there were a few exceptions, which became more important only in the latter half of the 1980s. From this pattern, which contrasted sharply with the gradual shift from direct liner services to transshipment via North Sea ports that had developed in the “Western” part of the Baltic, resulted another feature of the socialist maritime economy. As cargo turnover of most ports usually comprised all types of cargo, the degree of specialization was, accordingly, much lower than in the West. The rapid advances of maritime transport technology, which were behind the changes in the Western part of Baltic traffic (container, ro-ro shipping and similar ship types), were only hesitatingly introduced into the Eastern fleets, for reasons such as cargo composition, insufficient infrastructure in the overseas socialist partner countries, insufficient finance for necessary investment.

From the early nineties, the structure of this part of total Baltic traffic has undergone rapid change. Most importantly, numerous shipping companies (on either side of the former dividing line) engaged in regular services, both between Baltic ports as “internal” Baltic traffic and also between Baltic ports to ports outside that area as “external” traffic. Also, many ports tried to attract such services. Further change was brought to the established pattern of Baltic traffic when the direct lines connecting CMEA ports with overseas places were replaced by feeder services to/from ports of the Antwerp/Hamburg range, thus reflecting the

¹¹⁷ There are exceptions mainly in the forest products sector, where quite large ships are now employed, but these usually run from special facilities owned by the relevant industries.

¹¹⁸ For details of the Soviet maritime economy see, inter alia, Böhme and Buck (1976) and Schelzel et al. (1974).

earlier developments in the liner trades of the Scandinavian countries. At the same time, average ship sizes in the former CMEA ports have decreased.

As this process is still underway, it is as yet not possible to draw a final picture of Baltic traffic. However, the number of ports that can be used has risen somewhat because places that were reserved for CMEA ships, or closed to any civil vessels, are now open. Thus, additional port capacities have become available, if only to a limited extent.

Currently, a considerable number of regular liner services are in operation between the Continent and Scandinavia on the one hand and Poland, Russia and the Baltic countries on the other. These are routes with high, often daily, frequencies. Further sailings are supplied by the ferry services mentioned above. Large-scale passenger traffic is confined to lines between Sweden or Finland and Tallinn or Riga, after several unsuccessful attempts were made to call at St. Petersburg as well. It was interesting therefore to observe, in 1995, two Russian (rail) ferries operating between the Siberian mainland and Sakhalin Island, to be withdrawn and moved to the Baltic in order to serve a new connection between St. Petersburg and Kaliningrad, the aim of which was to avoid transport through the Baltic republics and/or Belarus.¹¹⁹

The earlier cargo and traffic patterns in the Baltic area have grown with surprising speed. This holds especially for the cargoes shipped by the new liner services, and consisting mainly of general cargo, i.e., industrial products. Such goods are meanwhile imported to some considerable extent by the East European countries, including Russia and other CIS countries. In the westbound direction, however, little has changed, with mineral oil and oil products, other raw materials and forest products still being the greater share of all exports.

3. Domestic Traffic Flows in Baltic Rim EIT

The available data (Tables A15–A19)¹²⁰ indicate that (i) compared with the pre-transition period rail freight traffic with respect to transported tonnage has

¹¹⁹ See "In die Ostsee verlegt", *Kieler Nachrichten* of 24 October 1995: 21. No further details could be found on this intention; on 6 November 1997, however, the "Sakhalin 8" was reported as having left Kaliningrad for Lübeck (*Lloyd's List* of 12 November 1997: 8). The two ships were scheduled for some conversion work from late 1997 onwards ("Fähren-Ticker: 'Sakhalin 9'-Umbau", *Schiffahrt International* 48 (1997) 10: 15).

¹²⁰ It should be noted that modal split statistics for the Baltic Rim EIT in some cases have been corrected for maritime transports of domestic ships that are included in domestic modal split regardless of the fact that these transports may take place all over the world's seas. For Latvia also pipeline transports which only account for Russian oil exports have been left out of consideration.

shrunk considerably;¹²¹ (ii) the decrease of road haulage tonnage was even more pronounced.¹²² The trend in road transport runs counter to the development reported by EBRD (1996) and Carbajo and Fries (1997), who found sharply declining rail tonnages, but roughly stable road tonnages. The difference may be explainable by the supposed difficulties faced by national statistical offices in collecting data from more and more privatized or newly established road transport firms. Taking both modes together, however, the decline of tonnage reflects the downturn of economic activity as well as the disintegration of the former Soviet socialist division of labour.

Concerning tonne-kilometric transport performance, the reported decline in most of the countries was smaller than that of tonnage in particular for road, in some cases also for rail. (i) Rail transport performance¹²³ in Latvia amounted, in 1995, to only half the figure of 1990, in Lithuania (also in 1995) to two-fifth of 1990. In Poland the decline between 1990 and 1995 was 17 per cent, while no figures were available for Russia. This trend would imply distinctly higher transport distances for Latvia. Since Latvia's railways serve mainly as transit hinterland links of the countries' ports with rather stable transport relations like the other two Baltic republics,¹²⁴ it remains open how reliable the published

¹²¹ In Latvia, the tonnage in rail freight in 1995 was one-third of the tonnage of 1990, in Lithuania in 1995 one-third of that of 1990 as well, and in Russia 1994 half of that of 1990, while in Poland the decline of minus 25 per cent was less pronounced. There were no figures available for rail freight tonnage and performance in Estonia prior to 1993 (Table A15). Since then tonnage has shown an upward tendency, while performance follows the "U-shape". However, there is a striking difference in reported figures for rail transport tonnage in Estonia between the railway company EVR and the statistical office ESA. While Burger and Lenzner (1996: 80), who used EVR data and EVR (1996: 8) itself, published figures for transported tonnage of 1992: 20 million tonnes, 1993: 24.2 million tonnes, 1994: 22.6 million tonnes, 1995: 23.7 million tonnes, the Estonian statistical office (ESA *Statistika aastaraamat* (1995, 1996); ESA *Transport side* (1995, 1996)) published figures that are nearly two times as high: 1993: 41.8 million tonnes, 1994: 40.0 million tonnes, 1995: 41.2 million tonnes, 1996: 44.6 million tonnes. Presumably, the differences may be explainable by the inclusion or exclusion of tare weights of carriages. In Table A15 ESA figures have been employed.

¹²² In Estonia in 1996, road haulage tonnage was only one-seventh of the tonnage of 1990, in Latvia in 1995 it was just one-eighth of that of 1990, in Lithuania in 1995 it reached three-seventh of that of 1990, in Russia in 1994 the figure was one-fifth of that of 1990, while in Poland the decline of minus 20 per cent was much smaller again.

¹²³ Again, no comparison with pre-transition rail freight performance can be made for Estonia.

¹²⁴ For Estonia, EVR (1996: 4) states that freight operations serving the ports continue to be the dominant source of revenue for EVR. Taking the own statistical database of EVR, roughly 41 per cent of transported tonnage would be transit freight. (However, EVR publishes tonnage figures that are only half of those that are published by the

statistics are. (ii) In road transport the figures for Estonia in 1996 were only 10 per cent lower than in 1990, and more than 80 per cent higher than in 1993 when the U-shaped transition curve of economic activity nearly reached its minimum.¹²⁵ Latvian statistics for 1995 report a decline of road transport performance to one-third of the 1990 figure, while a slight improvement vis-à-vis 1993 took place. In contrast to this, Lithuanian road transport performance in 1995 amounted to roughly three-quarters of that of 1990, but did not exhibit any stable upswing. For Poland, where road transport statistics include both commercial transport and industrial carriage, even a sharp increase vis-à-vis 1990 (26 per cent) is reported.

From Estonian figures (Table A15) it can be concluded that border-crossing transports to and from foreign markets have contributed most to the recent upswing of road transport. Estonian road transport statistics are distinguishing explicitly between domestic and international transports of domestic firms, and while the latter are booming, purely domestic transports show similar trends as the figures for Latvia and Lithuania.¹²⁶ For Poland similar conclusions—although to a more limited extent because of the size of the country—seem justified. Both the relative development of transport tonnage and performance indicate that transport distances have become substantially longer in Polish road transport. This may reflect the fact that Polish hauliers are gaining ground not only in domestic markets but also in cross-border transports.

Taking into account the various caveats that were given in the paragraphs above one can already discern by and large a moderate to distinct modal shift from rail to road. In Poland (Table A18), road transport is already substituting rail transport significantly, with a share in tonne-kilometric performance of 42 per cent in 1995. This is a rise of 10 percentage points over 1990, while the rail share declined correspondingly. In addition, it becomes clear (as has already been argued in Section C.II) that inland shipping is negligible in Poland. For Lithuania (Table A17) a modal shift of 12 percentage points from rail to road

statistical office so that it is unclear which figures are reliable.) In Latvia in 1994 roughly 73 per cent of LDZ's merchandise transport tonnage was transit traffic (MERL 1995: 50; Bolz and Polkowski 1996: 141), in Lithuania transit of seaborne merchandise traffic to and from Klaipeda accounted in 1995 for 85 per cent of LG's tonnage (Linderfalk 1996c: 12).

¹²⁵ In Estonia in 1994 real GDP still declined slightly, but has increased distinctly since 1995 (Schrader and Laaser 1997: 3).

¹²⁶ It is not clear, however, whether Latvian and Lithuanian statistics include border-crossing transports as well or not. Given the reported success of Latvian and Lithuanian hauliers on the Russian road transport market—they are already subject to protective regulatory constraints—one should suppose that also for these two countries the reported trends should hold whether these are included in the statistics or not.

seems to have taken place, while in Estonia (Table A15) the purely domestic modal split remained rather stable, and the shift to road transport in cross-border transport is due to the sharply longer hauls beyond the borderline. For Latvia (Table A16) even a shift to rail transports is reported. In Russian transport (Table A19) the rail share in tonnage (common carrier and industrial carriage) remained rather stable while road transport even declined. Although no figures were available for Russian transport performance one can infer from geographical and climatic aspects that railways will continue to play the dominant role in Russia.

IV. Future Prospects for Sea Transport in the Baltic

1. Growth and Structural Changes

As regards future developments, it is not yet possible to make forecasts of the volumes and structures of Russian foreign trade that are sufficiently well-founded and could be expected to offer reliable data. This refers, in the first place, to the speed of the expected revival of the Russian economy, which is largely dependent upon a rapid and successful process of transformation towards a market system (EBRD 1996, 1997e).

With this general caveat in mind, some tentative statements can be made concerning the basic lines along which traffic in the Baltic region will presumably develop.

Traffic volumes in the Baltic region are expected to continue their strong growth well into the next decade(s).¹²⁷ Transit volumes—or rather cargo volumes that are available, in principle, for transit carriage through Baltic countries—can likewise be presumed to expand considerably. It depends, however, largely on Russian port policy whether the transit ways will actually be used, or whether the cargo will be “nationalized”, i.e., directed via Russian ports.

As regards Russian seaborne trade, total cargo turnover in Soviet sea-ports stood at 182 million tonnes in 1990, of which 55 million tonnes were handled in

¹²⁷ Forecasts have been made by a number of sources that usually do not indicate the details of their calculations. It seems that it would be appropriate to assume an average annual growth rate of approximately 3–5 per cent for all Eastern Baltic traffic, which would, however, include considerable margins for individual cargoes, ports, countries, etc., and must thus be interpreted with some reservation.

the Baltic ports (Peters 1993: 267 [Table 5]);¹²⁸ it has been forecast that the total will rise to 250 million tonnes in the year 2000 in the “ports servicing Russian ships” (Bronstein 1997).

Changing Cargo Structures Caused by the Division of Labour

With an increasing division of labour between the Baltic countries and Western Europe, the cargo structure will show similar changes as those which could be observed in the ports of Schleswig-Holstein and Scandinavia during the last four decades, and which are going on at present in the German Baltic ports of Mecklenburg-Vorpommern (mainly Rostock). The general tendency will most probably be a move away from traditional bulk goods, towards general cargo including “minor bulk goods”. At least the general cargo proper will be carried in containers or as ro-ro cargoes.

Nevertheless, it is to be expected that for a considerable length of time, bulk goods will continue to dominate the export flows from Russia and other CIS countries. This will, at the same time, be the decisive factor governing the cargo composition in the Baltic ports that are used for transit purposes. Similarly, a significant part of Polish seaborne exports are coal shipments to a variety of countries. Industrial goods (general cargo) exchanged between the southern part of Russia or, e.g., Ukraina, and Central and Western Europe will most probably continue to be carried overland by road and rail through Poland, considering the large detours that would have to be made to and from the sea-ports on either side of the total haul.

For some time, the main types of cargo carried in the export trades from Russia—and thus also from the Baltic republics—will continue to be crude oil and oil products, timber, coal (also from Poland), fertilizers, forest products with rising unit values, e.g., pulp, paper, etc). Although imports of higher-value agricultural and industrial goods are increasing, their total volume is, by their nature, comparatively low and will not yet be sufficient to produce a large-scale shift (their share of trade values is much higher and will increase).

The structural changes of cargo composition have already been greater in Russian import than in export trade. For example, in 1990 the balance of exports to imports was 3.9:1 but had changed to 3.0:1 in 1992 when the share of general cargo in exports was 12.5 per cent, in imports 24.6 per cent (Peters 1993: 266).¹²⁹ The figures refer to total Russian foreign trade cargo volumes but can presumably be taken as indicative also of Russian Baltic traffic. In the past few years, and still at present, the main driving force behind the shift towards a

¹²⁸ In contrast, according to Bronstein (1997: 1), the turnover in 1990 was 191 million tonnes, of which 47 million tonnes were handled in the Baltic ports.

¹²⁹ Information taken from Russian material.

higher share of imports has been the increasing consumption of industrial products and also of high-quality food. The imports of investment goods will play an increasing role in the future, subject to the availability of finance. The same observations and expectations are also pertinent to the other Eastern Baltic states, although in the case of Poland, a large proportion mainly of imports is carried overland.

These developments will be paralleled by accelerating growth of general cargo traffic in the North European trades, and also in the (container) liner services between Eastern Baltic ports and overseas via transshipment in a North Sea port (feeder traffic).

The speed of the growth in general cargo traffic, and the structural changes incurred, depend on an emerging industrial division of labour especially between the Baltic Rim and Central/Western Europe but also with other parts of the world. It seems reasonable to expect that in the long run, the volume of industrial cargoes will grow strongly if there is a sustained recovery of industry in the East. From this it may be concluded that the general cargo sector of Baltic maritime traffic will show the highest growth rates.

Port Choice Influenced by Politics

The port choice in the Baltic trades will presumably continue to be politically influenced. The volume of transit cargo to or from the CIS countries will remain dependent on their economic and foreign trade developments, the availability of foreign exchange, and similar causes. The greater the extent is to which shippers may found their choice on rational economic criteria, the more the Baltic ports should be able to strengthen their position in transit traffic. This means, however, that shippers particularly in Russia must be able to acquire foreign exchange with relative ease.

The Polish ports will continue to serve mainly the requirements of Polish foreign trade, supplemented by transit for countries in the wider southern hinterland. This rather conservative expectation is, *inter alia*, founded on the fact that overland transport to and from Russia is quite severely hampered by the problems of road transport but also by the differing railway gauges in Poland and in Russia, which make through-services crossing the border impossible (or require the change of bogies, if technically possible; see Section D.IV.2). The view, which has been put forward, that Polish ports might also serve as transit points for the Baltic countries because of insufficient transfer facilities in the ports of these countries would, however, in the light of the recent extension of such facilities especially for ro-ro and container cargoes no longer seem realistic (Misztal 1996: 120 ff.).

The future role of Finland for Russian transit cannot yet be ascertained. It appears rather uncertain whether it will actually be technically and financially pos-

sible to build the additional hinterland infrastructure required if the Bothnia Gulf ports are to participate in such traffic.¹³⁰ Also, from an economic point of view, it seems doubtful whether such diversion of cargo from the northern ports in Russia would really make sense because the Russian ports are either ice-free, or less prone to long periods of freezing than the northern Finnish ports.

Also in future, transport in the Baltic region will be largely maritime transport. The Baltic will keep its connecting functions. The "infrastructure", the sea-way, is available cost-free for users; this should be carefully considered in transport and infrastructure policy-making. The lanes of Baltic traffic will most probably remain the same as before. The share of general (industrial) cargo will rise when industry in Russia and in the Baltic countries turns increasingly to Western Europe, or to the world markets in general. This sector can be seen as the potentially most dynamic part of future Baltic transport.

Certain structural changes are likely to occur in the former "market economy" part of Baltic traffic—to the northwest of the imaginary dividing line from Travemünde to St. Petersburg—if landbridges are built and ferry lines replaced by bridges or tunnels. This will, however, hardly refer to the countries on the Eastern Rim.¹³¹

Container and Ro-ro Shipping Dominant

The demand for port facilities will increasingly be determined by ro-ro and container shipping. As regards overseas transport, goods will be feedered and transhipped to ocean liners via North Sea ports. Direct calls of considerably larger main line ships at ports on the Eastern Baltic, including the Polish ports, do not seem likely because the available cargo volumes that are required will most probably remain too small in view of the still rising ship-sizes, even if containerized trade rises steadily.

It can be expected that this pattern will become the more dominant the larger the volume of general cargoes and its share of total Baltic transport grow. While containers have so far played only a subordinate role in European transport across the Baltic as far as the places of origin and destination are concerned (unless such cargoes are carried on trailers), they may, under certain defined circumstances, play a greater role in future, on such traffic routes between the continent of Europe and the Baltic Rim.

¹³⁰ On the development of Finland transit traffic to and from Russia see, inter alia, "Schnelle und sichere Distribution nach Rußland: Finnland ist wirtschaftliche Alternative im Ostverkehr", *Deutsche Verkehrs-Zeitung* of 5 December 1995: 13.

¹³¹ Possible effects could be imagined only if rail or road cargo were routed through Sweden and via the Gulf of Bothnia to or from Finland. Other routes are hypothetically possible but likewise economically unpromising.

Traffic growth will include rising volumes of transit cargo for Russia and the CIS countries as well as for the former CMEA countries to the south, and other countries such as Austria and former Yugoslavia. The east–west transit trade will be dominated by the Baltic ports of the northern range, with considerable competition among them.

While it can be expected that the total volume of Russian/CIS foreign trade via the Baltic ports will increase over time, the shares of the individual routes appear uncertain at present, depending on political relations, absence or otherwise of decision-making based on economic criteria, and competitive strength mainly of Russian ports. For example, in Estonia estimates of future transit cargo volumes have been made that forecast a steady rise to around 22 million tonnes in 2005, which will settle down thereafter to about 20 million tonnes by 2010, as competition by Russian ports is expected to intensify with improving efficiency of their operations (Reiman 1997).

2. **The End of “Tax-Free”:** Distortions of the Ferry System Ahead

Far-reaching effects on ferry shipping in the Baltic (as elsewhere) must be expected from the declared intention by the EU to repeal the regulations concerning tax or duty-free sales aboard the ferries running between ports of the member states (that is, Germany, Denmark, Sweden, and Finland). On average, the ferry operators have so far earned about one-third of their revenues from such sales while another third came from passenger car and truck or trailer carriage, the rest being passage revenues. If duty-free is actually abolished in 1999, large-scale changes in the ferry lines, and in the passenger volumes and flows must be expected:

- revenues will shrink sharply, especially on the short runs where there is little actual demand for travel,
- this will most probably lead to the suspension of a number of short-run ferries, mainly in the southwestern Baltic, and between Sweden and Denmark on the cross-Kattegat routes,
- elsewhere, that is mainly on the medium- to long-haul lines, both the price of passenger tickets and freight rates for cargo movements will have to be raised considerably because of the loss of revenue.

The likely total effect will, accordingly, be a reduction of the number of passengers carried at present, and also a slow-down of possible expansion in passenger traffic.

Certain adjustments may be possible as regards the costs of the ships employed, if the tax-free regime is abolished. This may involve major changes in the structure of ferry shipping as far as the ships are concerned. For example, the combined passenger-cum-cargo ferries, which carry large numbers of passengers, could be replaced by "ropax"¹³² ships. While this strategy would be suited for the longer distances, on the short runs a type split may occur into high-speed pure, or "near pure", passenger vessels of the catamaran or similar design, and pure cargo ro-ro ships. This would also change the demands on port facilities. It remains to be seen whether all this will also lead to a comprehensive re-structuring of Baltic ferry traffic at least in its western part, which includes a line concentration on fewer routes and ports.

From such changes those Baltic countries that are not members of the EU could at least in theory draw some advantage as far as their sea transport system is concerned.¹³³ Tallinn and Riga might receive a boost as destination ports on the routes to and from Sweden, or new operations might be started from Karlskrona or Karlshamn in southern Sweden to Poland (Gdansk), as long as Estonia and Poland are not yet members of the EU.¹³⁴ This would presumably also offer new cargo capacities on the ships transferred to such new lines. It appears somewhat doubtful, however, whether there would be sufficient demand from shippers to fill the additional space, thus giving the operator the revenue that was lost on their former trading routes. The same refers to the question whether such demand and revenues could be developed over time if one has in mind that such new flows would have to be based on trade between the Baltic countries and North European counterparts while the much larger cargo basis of the Continental countries could hardly be exploited.

¹³² The term "ropax" describes a ferry that carries mainly wheeled cargoes (trailers, trucks) plus a limited number of passengers, mostly up to 300 persons.

¹³³ It might be expected that a large proportion of the nine-million-passengers-per-year traffic between Sweden and Finland would also suffer sharply if the tax-free regime were abolished. Because of the special arrangement made for the status of the Åland Islands, by which it is to be exempt from changes or the abolition of the valid customs rules of the EU, however, this will not be the case. Thus, only routes between Swedish and Finnish ports that do not call at Mariehamn or another Åland port (if possible) can be affected, presumably lines running across the central or northern Gulf of Bothnia ("Nordisk Färjesjöfart, Norra Östersjön", *Svensk Sjöfarts Tidning* 92 (1996) 45: 24 ff., especially 25).

¹³⁴ This particular point has also been made in Sweden with regard to the project of a new ferry line between Sweden and Latvia (*Svenska Dagbladet* of 26 January 1997).

V. Summary

For the future, the following developments are to be emphasized as the most relevant:

Baltic Traffic in the 1990s

Baltic traffic has expanded strongly, although with significant differences in the cargo composition of flows between the market economies and the CMEA countries. The same applies to the shipping techniques, especially container and trailer (ro-ro) shipping. The political turnabout in the Eastern countries led to a sharp decline of traffic volumes in their Baltic ports. It has meanwhile been overcome in most of these ports with the exception of the Russian ports. A large proportion of the traffic volume has become potential transit cargo that may pass through non-Russian ports. The opening of the former Soviet ports has given a strong impetus to passenger and ferry traffic.

Baltic Transport in the Future and Its Driving Forces

Transport in the Baltic Region will largely remain maritime transport. Transport volumes are expected to continue their strong growth well into the next decade. The main driving forces will be the transition process towards a market economy, an emerging division of labour with West European and other market economies, and higher incomes in the EIT. They will determine, in particular, the speed of growth in general cargo traffic, and the structural changes incurred.

Relevant Countries

Traffic growth will mainly be dependent on economic growth in Russia and the CIS countries. Russian foreign trade will remain the predominant determining factor. It can likewise be presumed to expand considerably. The Polish ports will continue to serve mainly the requirements of Polish foreign trade, supplemented by transit for countries in the wider southern hinterland.

Cargo Composition

For some time, bulk goods will still dominate export flows from Russia and the CIS countries, and thus also from the Baltic republics. The main types of cargo carried will be crude oil and oil products, timber, coal (also from Poland), fertilizers, and forest products with rising unit values. The cargo composition will, however, further change towards a higher share of industrial products, especially in the west-east direction. In the longer run, exports of industrial goods from Russia and the CIS countries may also increase.

Passenger and Ferry Shipping

The future of passenger shipping depends on the fate of the duty-free rules. If these are abolished, shifts may occur that will probably favour Riga and Klaipeda as long as these ports remain outside the European Union. Traffic between Sweden and Finland will benefit from the special Åland Islands customs regime.

Ports Demand and Selection

The demand for port facilities will increasingly be determined by ro-ro and container shipping. Direct calls of large overseas container ships do not seem likely. Port choice in the Baltic trades will presumably continue to be politically influenced. The greater the extent is to which shippers may find their choice on rational economic criteria, the more the Baltic ports should be able to strengthen their position in transit traffic for Russia and the CIS countries. The future role of Finland for Russian transit cannot yet be ascertained.

D. Obstacles to a Functioning Transport System in the Baltic Sea EIT

I. Definitions

The following chapter is devoted to the identification of obstacles to a smooth development of transport and trade that substantially raise transport and transactions costs, and that may even result in hold-up situations. Thereby, transport is generally seen as the necessary means to ensure the trade expansion that is expected from an economic revival in Russia and the other countries. We are discerning three basic categories of such obstacles, these being

- factors associated with the general legal framework established mainly by parliaments or some kind of public authorities,
- factors connected with the "hardware" of the transport system,
- factors closely related to the "software" of that system, and constituting a particularly large variety of possible restraining influences on easy and efficient cargo and passenger movement.

The first of the three categories of obstacles may also be defined as a variety of "macro software factors" because they are not related to the obstacles caused by "hardware" factors of the infrastructure facilities, but show close similarities to the third group, which may also be labelled "micro software factors". The investigations in this chapter have been carried out according to the three lines mentioned above and subdivided as required by the individual type of obstacle or impediment. These have then been inspected for each transport mode and country wherever relevant.

The *first of the three categories* set out above comprises international treaties and national regulations. On the international layer such elements of the framework as international treaties or conventions that may be concluded bi- or multilaterally by individual states or governments or as supranational conventions, are relevant in this context. Their aim in this context would ideally be to ensure conditions necessary for a functioning market system for border-crossing transport, while domestic transport is subject to national regulations. They would apply, for example, to ocean or coastal shipping, establishing a regime for free access to the national maritime transport markets, setting out general rules for dealing with the environment, for safeguarding competition, and for safety aboard

ships. Similar treaties may deal with international railway traffic (including, e.g., technical accords on safety equipment and operational procedure), road and air transport.

On the national plane, there is usually a very large and comprehensive number of individual regulations that should, in principle, serve the same objectives and purposes as the international legal framework, and of course, be consistent with them. They will usually directly affect the operation of the individual transport modes, or their co-operation as a system. In general such transport market regulations deal with market entry and exit, price controls, capacity constraints, quality standards, compulsory contracting rules, etc. Highly effective (and, in the present case, unwanted) obstruction may emanate from the legal framework if it is badly constructed, or inconsistent with corresponding international rules, or following conflicting objectives.

The *second of the three categories* refers to the hardware side of transport operations. Transport hardware comprises (i) infrastructure facilities such as ports and their access waterways, railway tracks, roads, airports, terminals of the various modes, (ii) complementary superstructure equipment like cranes in ports, and (iii) rolling stock of the various modes. The quantitative and qualitative upkeep of existing infrastructure and rolling stock was often insufficient in the Soviet era. For the development of transport markets in the EIT insufficient facilities could cause bottlenecks and impairments if they were not cared for.

The *third of the three categories* deals with obstacles that are the result of the operation of the transport system. These obstacles may arise in handling the available infrastructure or in running a transport firm. They can also be found where more detailed obstructions caused by the framework (including obstructions from beyond the transport sector, like customs regulations) are concerned. It could refer, for example, to administrative rules and procedures or the daily execution of existing rules on a low level of administration.

But even if one categorizes conceivable obstacles as outlined above, a few obstacles remain that do not fit smoothly into this structure. They stem from political actions on either the national or the supranational level. These initiatives have their roots in a variety of policy fields, such as mutual relationships between the Baltic Rim countries or the European integration process. Because of their general character, these political issues are dealt with in advance.

II. Political Issues

Mutual Relations in the Region

The most fundamental impediment of very large proportion that affects the entire transport economy in the pertinent geographic area is rooted in the fact that, so far, only slow and often unco-ordinated steps have been made, especially in Russia, on the path of economic transformation, although considerable progress has been made in various fields (EBRD 1996: 169 ff.; EBRD 1997e: 195 ff.). In any case, the situation in Russia and the progress in its transition will have major impacts on the further development of the Baltic Rim countries. This does not only refer to the transport sector,¹³⁵ but to the Baltic Rim economies in general. Any impediment to successful transformation in Russia will also be felt in the whole Baltic Rim.

The need for good and stable political relations between the countries of the Baltic Sea region was made quite clear already in the first few years after 1991. In the ports, problems arose that were largely created by the upheavals following the end of the Soviet Union, and the independence of the Baltic republics.¹³⁶ Thus, heavy congestion developed in the Russian ports, especially in St. Petersburg, which was seen as a necessity for rapidly starting port expansion work in order to provide new capacity. It soon became evident, however, that such congestion did not reflect a lack of port capacity in the Baltic area as a whole because at the same time, turnover and utilization in the non-Russian Baltic ports fell rapidly to low levels. Political tensions affected in particular those ports that had been designed as the gateways of the Soviet Union on the Baltic, such as Tallinn and Muuga, Riga, Ventspils, and Klaipeda.

The following incident may serve as an example for the effects on the trade and transport sector, of actions that arise from political tensions and that may, therefore, repeat themselves often and unexpectedly. In mid-1994, it was reported that "despite the interest of both countries in the transit of Russian oil products, the Samara-Ventspils oil pipeline is out of use for more than a year and a half. Russia stopped the delivery of oil products via it in October 1992, after the Latvian government had decided to make the pipeline the property of the Republic of Latvia" (Bernevega 1994). Even if, in view of their mutual interest, the governments involved will eventually find a solution to the case, and

¹³⁵ It should be kept in mind that, e.g., Estonia is earning more than 10 per cent of its GDP from providing transport services, mainly in Russian transit (Pihel 1997: 1).

¹³⁶ Such observations were frequently made and reported in the professional papers; see, for example, Fromme (1993: especially 11 [Politics and Economics Combine to Affect Riga]). Similar problems arose at Tallinn and Muuga.

the interruption of trade will be brought to an end, the imminent danger of repetition can obviously be taken as a potential obstacle in the present context. If such danger is to be avoided, certain requirements must be fulfilled by politics.

The Role of the European Union

Another element of the general framework that affects both international treaties and national transport regulations is the policy pursued by the European Union with regard to

- (1) the accession of new members to the Union,
- (2) the design and construction of new transport infrastructure and their financing.

Although the EU policies tend to assist the EIT with respect to both infrastructure upgrading and opening transport markets for competition, substantial tensions will arise already in the near future.

The first point is at present under consideration; Poland, Estonia, Latvia, and Lithuania have applied for EU membership.¹³⁷ According to the European Commission's rating, only Poland and Estonia have qualified for being taken into consideration for the first round of access negotiations, whereas Latvia and Lithuania have to wait for a second round (Kommission 1997a, 1997b, 1997c, 1997d). For Estonia and Poland, which will participate in negotiations as would-be entrants, but also for Latvia and Lithuania, this requires adjustment of their legal systems in the transport sector to the pertinent regulations of the Union, and also economic adjustment to the new framework. In the long run, the foundation will be laid for closer integration of the entrants' economies; in the short run, however, certain regulations may force them to renew,¹³⁸ for example, part of their rolling stock in road transport because the existing vehicles do not comply with EU rules.

As regards the second point, considerable influence is exerted by the European Union on infrastructure. Since the Maastricht treaty of 1992—constituting the new version of European Unions's basic treaty—the task of forming and completing Trans-European Networks (TENs) in transport, telecommunications,

¹³⁷ Poland has applied for EU membership in April 1994, and Estonia, Latvia, and Lithuania between October and December 1995 (Kommission 1997e).

¹³⁸ For all requirements of adjusting the legal base of EIT to the "acquis communautaire" see the White Book on the preparation of the associated reform countries (Kommission 1995b, 1995c), which has been labelled by Hare (1997) as "text-book to guide the adaptation process".

and energy has been assigned to the European supra-national layer.¹³⁹ Since the December 1994 meeting of the European Council at Essen this task has been extended towards the EIT that apply for future EU membership. According to this decision, the EU has not only to care for "EU-domestic" transport, telecommunications and energy links, market regulation and interfaces,¹⁴⁰ but also for the links to, and the continuation of the links within, the EIT as major task for preparing the EIT for future EU membership.¹⁴¹ A priority list of essential infrastructure links to the EIT has been compiled, which are called the "Crete-Corridors" (CC).¹⁴² On the list there appear several links through the Baltic Rim countries: Berlin–Warsaw–Minsk–Moscow, Helsinki–St. Petersburg–Moscow, and Helsinki–St. Petersburg–Pskov–Kiew–Budapest as CC No. IX, with branches IXb Kiew–Minsk–Vilnius–Kaunas–Klaipeda and IXd Kaunas–Kaliningrad, and the "Via Baltica" Helsinki–Tallinn–Riga–Kaunas–Warsaw as CC No. I with branch CC Ia Riga–Kaliningrad–Gdansk (in part the "Via Hansetica"). A forecast of investment needs for upgrading infrastructure links along the CC and in associated EIT in general has been performed by the working group on "Transport Infrastructure Needs Assessment (TINA) (EBRD 1997f: 19). In addition, the EU is going to promote telematic devices in trade management and distribution management in the whole Baltic Sea region.¹⁴³ The various programmes that have been designed and put into force in the last few years—they include infrastructure financing from EU PHARE and TACIS funds—will contribute to the future transport network, or are already doing so, and can have far-reaching effects for the Baltic countries.

¹³⁹ According to Art. 129b–d of the Maastricht Treaty the Union layer has been given with the competence of taking actions towards completing TENs by (i) providing connections of the national networks of the member states, (ii) easing the access to these networks, both for service providers and end-users of these services, (iii) guaranteeing the (technical) interoperability of the networks, and (iv) helping to enhance the connections of peripheral and insular regions of the Union with the economic centres and core regions.

¹⁴⁰ For a critical assessment of EU's TEN policy with respect to transport issues see Sichelschmidt (1997), and with respect to fiscal federalism and all three network industries see Laaser (1998).

¹⁴¹ See Sichelschmidt (1997), Ferreira (1996: 151 ff.), and Welfens (1996: 146).

¹⁴² They were defined during the second Pan-European Conference of Transport Ministers in Crete in March 1994.

¹⁴³ See Sichelschmidt (1997), Ferreira (1996: 151 ff.), Boroch (1996: 107), and Roth (1995: 93).

III. Obstacles Associated With the General Legal Framework

The legal framework governing the transport economies of the Baltic states can be subdivided into

- rules and regulations of, or having a bearing on, transport, which are laid down in national laws or decrees and in international conventions;
- the legal code of property rights, especially the role of privatization, and of domestic transport market regulations;
- administrative regulations and procedures set and/or carried out by various public authorities.

While the first group comprises the legislative and government level of the hierarchy of the state, or a multitude of states, the latter group is made up of the lower hierarchy, and is of a more specialized nature.

In this field considerable progress has already been made. International treaties on freight transport are widely accepted. Market access in shipping is not constrained, with the exception of cabotage; in land and air transport the usual bilateral agreements on cross-border transport exist. As regards privatization, an inhomogeneous picture prevails with respect to countries and modes.

1. International Treaties

An important step that was taken by the former East bloc countries towards closer integration into the Western system of market economy was the conclusion of a series of new international treaties, and also the ratification of existing international conventions, so as to establish a common and equivalent framework of internationally applicable rules and regulations.

Bilateral international treaties have been concluded with a large number of Western countries. This can be exemplified by Estonia, which has concluded or ratified almost fifty such treaties, many of which deal with transport matters, including international conventions regulating, for example, safety and related questions (Siimann 1997). Maritime transport was among the subject matters of several such agreements. For example, the Federal Republic of Germany concluded shipping treaties with the States of the Eastern Baltic region in which the contracting parties agreed to refrain from any measures by which unrestrained maritime shipping could be impaired. The first was signed by the German government with Lithuania in 1992 and followed by others with Estonia, Latvia, and

Poland. They grant mutually equal rights to the ships of the contracting parties, and cover numerous other, mainly technical, certification, and safety matters.¹⁴⁴ The Baltic states have also ratified the International Convention on the Law of the Sea, and thus have accepted the special status of the Baltic Sea and its obligations regarding the protection of the environment. Furthermore, the legal foundations were laid for establishing joint ventures of foreign and local companies in transport; there are now foreign firms in several ports, among them oil companies. In Estonia, foreign nationals may now acquire real estate (Schrader and Laaser 1997: 45 [Übersicht 7]).

As far as *international treaties* between Western and Eastern countries on *rail* and *road transport* are concerned, there seem to be no serious obstacles (besides inconsistencies in rules on transport documents, see below). Transport is performed on the basis of these treaties. This may be exemplified by *Latvia*, which as early as in 1992 negotiated mutual access for cross-border transports with (at that time) Scandinavian Countries, Germany and France. By these agreements Latvia was also integrated into Carnet-TIR customs clearance systems. In addition, by repealing its own transport law in 1995, Latvia set in force the application of the Geneva Convention on the International Goods Transport Treaty of 1956.¹⁴⁵ For the other countries similar agreements were negotiated. While international treaties hold, national governments may add or remove own regulations.¹⁴⁶

In the context of transport in the Baltic Sea region *air transport* plays a significant role for passenger traffic. International air transport is to a large extent regulated by international conventions. The three Baltic republics *Estonia*, *Latvia*, and *Lithuania* ratified the relevant international treaties in 1992, for example, the Convention on International Civil Aviation (the Chicago Convention, which grants overflight and technical landing and starting rights to foreign airlines, the so-called first and second "freedom of the air", on a multilateral base). In 1992,

¹⁴⁴ See "Schiffahrtsvertrag mit Litauen", *Blick durch die Wirtschaft* of 5 August 1992. For the full text of these agreements see *BGBI.* (1994, 1995, 1996a, 1996b).

¹⁴⁵ See "Lettland: Autotransport auf Expansionskurs", *Nachrichten für Außenhandel* of 17 November 1992; "Lettland regelt Güter- und Passagiertransporte", *Nachrichten für Außenhandel* of 7 December 1995.

¹⁴⁶ Recently *Lithuania* has taken pertinent action by facilitating transit of dangerous cargo. The obligatory permission for such transit was abolished for rail and road traffic so that only the international treaties for dangerous cargo ADR (for road transports) and Rid (for rail transports) are in force ("Transit ohne Genehmigung", *Deutsche Verkehrs-Zeitung* of 9 September 1997: 9). But examples can also be found of regulations that add to transport costs and that have been imposed by national governments onto the existing frameworks. For instance, in *Poland* an additional regulatory constraint was the prohibition of truck transports beyond temperatures of 30° C, which shifts road transports to days with lower temperature, and adds to congestion in border stations on these days.

the three countries also joined the International Civil Aviation Organisation (ICAO)¹⁴⁷ permitting them to negotiate tariff rights with other nations in international air transport and obliging them to adhere to common safety, security and service standards. For *Russia* there exists still the general problem that the former USSR never ratified the Chicago Convention but has granted the rights defined therein only on a discriminatory basis to some foreign airlines since 1960. North (1996: 39) reports of international pressure on Russia to renegotiate this issue.

2. Market Access

From an economic point of view, one of the main objects of regulation in the macro sphere is *market access*. As under the Soviet system of planned economy the central functions of the market were replaced, and the rest controlled, by the State Planning Authority (Gosplan), there were no direct relationships between the systems of planned and of market economy. The interfaces were specific trade organizations and the state foreign-exchange monopoly. The abolition of that system is at the basis of the transition process of the former Soviet Union republics. The establishment of functioning markets has proved to be essential for international trade and transport of those republics (and also for their internal exchange). In the Baltic region this means creating the prerequisites for open sea transport markets, namely for shipping and ports.

In sea transport to and from the East European countries, as in the maritime trade of all CMEA states, *market access* had been subject to direct and indirect (via state monopolies) regulation,¹⁴⁸ with the Soviet Union at least in principle trying to carry 50 per cent or more of its sea-borne foreign trade, while cabotage and inland water transport were not available to foreign flag ships. All cargo acquisition and chartering of ships was the sole task of the State Freighting Mo-

¹⁴⁷ Information provided by EBRD.

¹⁴⁸ Market access, i.e., access to cargo, has traditionally not been an object of international shipping trades. Such freedom was a de facto right, and it was not an offence of rule-breaking if a country either introduced formal flag discrimination by reserving cargo to its own ships, or pursued such discrimination by state freighting monopolies and terms of shipment, as in Russia. Free market access in shipping became an object of political dispute on a large scale especially in the context of UNCTAD efforts to establish a "new international economic order" (Böhme 1978: 12 ff., 20, 39 ff., 48 ff.). See also Böhme (1988b: 165 ff.), and Böhme (1993).

nopoly, Sovfracht. In principle, the system implied a protective element that, if still continued, could have proved an obstacle to international trade.¹⁴⁹

This has meanwhile changed. In fact, the first changes began already in mid-1988 when in the course of the perestroika reforms the position of Soviet state enterprises was altered. The Sovfracht monopoly was abolished in 1989.¹⁵⁰ As far as the carriage of foreign trade goods and passengers is concerned, the bilateral treaties that various States have concluded with the Western Baltic countries, for example, Germany, grant national treatment to their ships, free participation of their shipping companies in the carriage of their bilateral trade as well as trade with third countries ("cross trade"). Ships chartered by a shipping company of a contracting country shall have the same rights. The identical wording of the pertinent sections of the treaties formally opens the international maritime traffic of the partners.¹⁵¹ Whereas traditionally only freedom of shipping movement was granted, under these treaties the free access to shipping markets is explicitly included in the guarantees. Thus, the Baltic republics and Poland have accepted the internationally agreed principles¹⁵² for their maritime trade, and also for their sea-ports.

Russia made several steps towards maritime reform. The bilateral agreement with Germany, signed in late 1991 by the then Soviet Union and entered into force in 1992 without alterations, still ran along more traditional lines and did not expressly mention market access, although free ship movements were agreed.¹⁵³ Subsequently Russia has repeatedly agreed to the principles of free

¹⁴⁹ In fact, the Socialist countries have almost at all times been charterers of foreign flag ships for their own requirements. Such access to the Soviet markets was, however, entirely dependent on decisions made by the State Monopoly.

¹⁵⁰ Sovfracht was an "All-Union Foreign Trade Corporation". Its sole competence for freighting and chartering was abolished by the Resolution No. 1405 of the Council of Ministers of the USSR on the further development of foreign trade activities by state enterprises and other institutions, of 2 December 1988. In the centre of this step was the changeover to a system of contractual form of relations with Soviet and (Soviet) shipowners. For details see Shutov (1989).

¹⁵¹ See, for example, *BGBL*. (1996a).

¹⁵² These principles were laid down in negotiations between the OECD Maritime Transport Committee and Eastern states in 1993, following those rules that the OECD countries had agreed earlier upon among themselves (OECD 1995: 23, 143-147).

¹⁵³ The agreement was signed in December 1991 with the then Soviet Union. It stipulated that the ships of each contracting party have the right to sail between the ports of the parties and to carry passengers and cargo between such ports. The same should apply to third party's ships that are chartered by shipping companies of the contracting parties. In addition, each party shall have the right to participate in the carriage of cargo between the other party and a third country (*BGBL*. 1992). Nothing was said about restraints although close co-operation between the mutual freighting organizations should be observed, and freight rates should be sufficient to cover the cost of

maritime shipping trades, which include unrestrained access to cargoes and passengers. Russia was a member of the OECD consultations mentioned above and also consented to the principle of unrestricted access to the international market and traffic on a commercial basis, as laid down in the Partnership and Co-operation Agreement between Russia and the EU. No cargo sharing provisions shall be used in their bilateral shipping relations, as well as in bilateral agreements with third countries (Levikov 1996: 33–36). As has traditionally been common to most countries, cabotage and inland water transport are exempt from such freedom although in the longer run admission of foreign vessels to the Russian waterways would prove productive.

In spite of the revision of the earlier Soviet maritime policy, protectionist thinking is still rather prominent in Russia. Thus, a presidential decree of 1992, which was later passed as an Act by the Federal Duma, was aimed at a large-scale rebuilding of the Russian merchant fleet and also declared the objective of carriage of all Russian cargoes by Russian ships. This is in stark contrast to open markets with international competition. It remains to be seen, however, whether in view, inter alia, of the enormous financial requirements of such programme, this is more than a political declaration.¹⁵⁴ While shipping to and from the Baltic sea-ports is now open to international competition, many, if not most, of the numerous liner/ferry services that are being operated at present are run by ships of the former Soviet shipping companies, although in a number of cases under foreign flags.

With respect to *road transport*, it has already been noted that the basis for market access has been laid by the agreements on mutual market access. However, border-crossing movements are subject to *quantitative restrictions* (bilaterally negotiated quotas for single border-crossing trips) as they were known in Western Europe prior to the deregulation of international road transport in the context of the EU Single Market Programme. Because of deteriorating competitiveness of Russian freight forwarders vis-à-vis foreign transport companies, in particular from the Baltic republics, these quotas begin to constitute trade barriers concerning market entrance in *Russia*. While, for instance, the quota of 30,000 permissions for Latvian road hauliers for trips to Russia was exhausted—even the use of an extra-contingent of 2,000 is reported—, Russian transport firms only utilized a small number of permissions (less than 1,200) from their

transport, in their mutual sea transport as well as in cross-trade (“Maritime Ostbeziehungen”, *Kehrwieder, Magazin für die Deutsche Seeschifffahrt* 37 (1993: 4–5, 10).

¹⁵⁴ See North (1996: 29) for details and background. The Russian fleet has shrunk considerably from its Soviet size, and the number of shipping companies had been reduced from 16 to nine because their home ports were located in other Soviet republics that are now independent. See also, “Russischer Verkehrsminister: Protektionismus wird gebraucht”, *Deutsche Verkehrs-Zeitung* of 13 April 1996: 10).

equally sized quota. It cannot be excluded that this discrepancy in the actual use of the formally equal quotas will induce Russia to introduce additional restrictions on access to Russian markets, as is indicated already by such restrictions as the drastic reduction of customs clearance terminals for Baltic hauliers (Rawson 1996; see also Section D.V.2)

In *air transport* mutual market access is normally granted under bilateral agreements, as the underlying multilateral Chicago convention only refers to the first and second "freedom of the air". As ICAO members since 1992, Estonia, Latvia, and Lithuania have negotiated a number of bilateral air service agreements with other countries.¹⁵⁵ From this side there seems to exist no basic obstacle to transport. What is still pending, however, is the European Union's intention to persuade the Baltic States to adhere to an "open skies" policy under which EU airlines would be granted free access to international flights between these countries and EU members.

Another basic prerequisite, in addition to market access, for transporting goods across borders is the consistency of the underlying *legal base for transport contracts*, which permits to engage in mutual transport contracts and their performance. A former basic obstacle to border-crossing transport between Eastern and Western countries probably still exists, but is on the route of being solved. This obstacle stemmed from *different and inconsistent transport contract law systems*. The adjustments that hauliers had to make in order to comply with two different transport law systems added to transport costs, and they so far have constrained and delayed transborder transport relations. This holds, for instance, for rail transport between Western Europe and Russia, but affects also other modes. Different legal institutions and procedures, e.g., concerning liability, prevented the adoption of uniform way bills and transport documents.¹⁵⁶ At the end of June 1997, a draft version for future uniform legal procedures that will do away with the difficulties experienced in the past was negotiated between Western and Russian officials and is waiting for approval by Russian customs authorities (Kulke-Fiedler 1997).

3. Property Rights and Privatization

During the Soviet era, the *sea-ports* had been state property in all socialist countries. They were part of the state shipping companies and had very large numbers of employees of which only a minor proportion was actually assigned

¹⁵⁵ Information provided by EBRD.

¹⁵⁶ See "Konzepte für Osteuropa", *Blick durch die Wirtschaft* of 20 February 1997 and Kulke-Fiedler (1997).

to cargo handling and related port work proper. In Russia the ports were severed from the shipping companies in 1992 but remained state property with a state administration, although some independent status was envisaged, as was, in a longer run, their privatization. As yet, however, little has actually been altered so that most of the inefficiencies that had been typical of the port performance still exist.¹⁵⁷ The same procedure was followed in the other countries, although here the pace of change was more rapid.

As regards the *privatization of the ports*, in most countries the necessity had been recognized already in the early stages of the transition process. Pertinent steps have subsequently been taken with differing intensity and on a different scale so that there are now distinct levels of privatization, dependent in particular on the country to which a port belongs. Also in this respect, Estonia seems to be ahead while Russia and, although to a lesser extent, Lithuania still take up the rear.

In *Estonia*, following a government decision of 25 October 1993, the ownership of the port of Tallinn was vested with the state enterprise "Tallinn Sadam" (Tallinn Port), which had already been founded in April 1992. The ownership structure of the Port of Tallinn aims at separating the responsibility for infrastructure development, vessel accommodation and port promotion on the one hand, and superstructure and cargo handling operations on the other. At present, the port is in the final phase of privatizing the latter.¹⁵⁸ The Estonian port of Pärnu is now a municipal enterprise (Pärnu Sadam) while a number of small local ports are owned and operated by the state and/or private firms. Five private companies are meanwhile working in the port of Muuga.¹⁵⁹ Similarly in *Latvia*, the port of Riga was owned and operated by a state authority until late 1996 when the Riga Commercial Port (RCP)—the Freeport—was established, which became operational in July 1997, the Riga Port Authority, however, being responsible for technical aspects and infrastructure management. RCP also set up a number of joint ventures, including the Baltic Container Terminal with a Maltese co-owner.¹⁶⁰ In *Lithuania*, the (sole) port of Klaipeda is a state authority, with an independent stevedoring company of which 51 per cent of the shares are

¹⁵⁷ The same applies to a programme for port development and financing that was signed by President Yeltsin on December 3, 1992 (Bebriss 1996).

¹⁵⁸ See "Häfen Tallinn, Transithandel wichtigste Einnahmequelle: Passagierfähren sollen regelmäßig auch Deutschland anlaufen", *Handelsblatt* of 7 December 1995 and Port of Tallinn (1997a).

¹⁵⁹ For Muuga, see "Tallin Goes for Growth: Muuga Port Gets Free-Zone Boost", *Fairplay* 332 (1997) 5944: 55. The five firms are Pakterminal, Estonian Transoil, Sonmarin, Nybit, and Eurodek.

¹⁶⁰ Another part of Riga port is operated by the state stevedoring company Rinuzi ("A Matter of Contention", *Lloyd's Ship Manager* 18 (1997) 5: 36).

owned by another state enterprise, the LISCO (Lithuanian Shipping Company), which is only now on the agenda for partial privatization. New steps were announced in 1997.¹⁶¹

There has been some change in the legal structures of ports also in *Russia*.¹⁶² This is taking place, however, in a tentative and selective manner. In *St. Petersburg* the State enterprise is now a joint-stock company (Morskoy Port Sankt-Peterburg), which is responsible for the greater part of stevedoring work, while the ownership of the infrastructure as well as technical services rest with St. Petersburg Port Authority. At least one container terminal is operated under a joint venture with Western firms. As an experiment, the joint-stock port company was given the right to set its own dues and charges, as the only Russian port so far (Berenyi and Zenkovich 1997: 97). Apparently the port administration may grant lower rates if a regular flow of cargo can be contracted with a shipper. There is also a considerable number of other, at least commercialized firms that carry on some business associated with shipping, such as ships' agents, and transport undertakings.¹⁶³ The successes so far have been viewed rather sceptically. "Conversion of whole ports to single joint-stock companies did not bring competition to the individual port, and stevedoring remains usually a port monopoly—which the level of service quality tends to reflect" (North 1996: 28).

In 1997 a consortium was formed by Russian banks that subsequently took over the share majority in the Sea-Port of St. Petersburg Ltd. stevedoring company. The aim is to convert the present port into "an effective, highly profitable company in the next two years". It is intended to attract foreign capital to invest in new facilities (especially in container terminals) while the workforce shall be radically cut, similar to the procedure in the other Baltic ports. The outlook, however, was thought to be still uncertain even after the takeover.¹⁶⁴

¹⁶¹ The relationships between the Lithuanian government, the port and the (then) 20 enterprises operating in the port were put on a legal basis in a new Klaipeda Port law, which was passed by the Parliament in the spring of 1996 (*The Baltic Times* of 23 May 1996).

¹⁶² A draft law was submitted to the State Duma by which the legal foundations of the sea-ports shall be defined; see "Proekt Zakon 'O Morskikh Portakh Rossiyskoy Federatsii' (The Draft Law 'On the Sea-Ports of the Russian Federation')", *Morskoy Flot* 10/1997: 6–10).

¹⁶³ A total of 316 firms is listed in a brochure published by the Port Authority of St. Petersburg as operating in the sea-port (Port Authority of St. Petersburg 1997: 51–80). The activities cover a broad range of which relatively few are port operations in a narrow sense (loading and unloading operations).

¹⁶⁴ St. Petersburg was still described as being one of the most expensive and unreliable gateways into Russia, not only because of high port and channel fees, but also because of widespread pilferage of the goods, a lack of quay equipment and customs

The legal status of the *Polish sea-ports* had been the same as in the Soviet Union and the other CMEA countries. In the 1990s, it has undergone similar alterations as in the other Baltic states. The process was begun even earlier, due to the different political circumstances, but was for the same reason interrupted for considerable time later on. A first stage of reconstruction was completed in late 1991 when the three state-owned enterprises had been converted into joint-stock companies.¹⁶⁵ These companies were again remodelled, with the state as sole shareholder, until October 1996. Thereafter, the reorganization of port ownership entered its third, decisive phase; a law that became effective on 6 August 1997 forced the State Port Authorities to withdraw from operational activities and demanded the privatization of the operating enterprises in the ports. Superstructure equipment that had already been leased to the operators was sold to these enterprises, and new private companies were established as well as the shares of existing state companies were sold. The new act provides uniform rules for the (self-) financing of the port companies, for the responsibilities to be taken by the administration, for the participation of territorial instead of state authorities, and for the establishment of private companies in the port.¹⁶⁶ The extent to which these steps were made in the three ports, however, varies.

In all countries under review, and for identical reasons, the sea-ports were reorganized in a stepwise process, with essentially the same objectives, the last step—where already accomplished—being the separation of classical public functions of a port authority (including infrastructure ownerships and management) from functions connected with technical as well as commercial services for ship and cargo, which were put under the responsibility of private firms.

Thus, in general, ownership of the ports' infrastructure still rests with state authorities. Cargo handling and other port operations have at least to some degree been transferred to private firms, ranging from stevedore companies to ship agents and other associated business. Even if part of the shares are owned by public authorities, this has resulted in significant productivity gains in the ports concerned. Less suitable seem to be such ownership models where the state shares ownerships with the workforce.

Since port infrastructure is traditionally a public responsibility also in most "Western" market economies, with a tendency to privatize the superstructures

slowness in clearing cargoes. See Borisova and Donaldson (1997a: 5), Paci (1997b: 31), and "Ports Chase Investment: New Money and Fresh Ideas Needed", *Fairplay* 332 (1997) 5940: 42 ff.

¹⁶⁵ A detailed analysis of the three stages including an overview of the situation under socialism, and of the main disadvantages connected with port operation by state authorities and by state-owned companies can be found in Kuzma (1997). For the more recent developments see Grzelakowski (1997a), and also Grzelakowski (1996).

¹⁶⁶ For more details see Grzelakowski (1997b).

and their management and operating, a formally converging trend towards the Western model can be discerned. The success of privatization, however, is not solely dependent on a change of ownership of the ports and other institutions. At least equally important is the changeover from administrative and bureaucratic procedure to efficient, professional management and labour systems. Otherwise, essential prerequisites of productivity improvements, especially flexibility and adaptability, will not be met (examples will be given below, in Section D.V). These must be seen as the crucial points in the privatization process in the Eastern ports.

Privatization of former publicly owned¹⁶⁷ transport firms, and in some cases even infrastructure facilities, is a point at stake in the various Baltic Rim EIT also with respect to *land and air transport*. All three Baltic states are trying to introduce at least some private and commercial elements into their *railway operations*. Even if Western European experience with reforming and eventually privatizing inefficient public railway monopolies at least at the moment renders the impression that there exists neither a "golden solution" nor a "free lunch" for success,¹⁶⁸ the privatization of Baltic Rim railway companies seems crucial for their future successful position in the modal split.

Estonia, Latvia, and Lithuania have already proceeded more or less in this respect (EBRD 1997f: 16). The reform concepts in all three countries rest on the notion of modernizing, streamlining and making more efficient existing railway operations first, before proceeding with privatizing entire railway companies or at least parts of them (Rieger 1997; Transitinfo and TBT 1997). The transformation of the national railway companies into joint-stock companies according to private law alone has been initiated already.¹⁶⁹ This, in itself, may, however, not bring about any substantial change, although the three Baltic railway companies share the advantage of being small so that flexibility can be enhanced with less transaction costs than in a large company.¹⁷⁰ The transformation must be accom-

¹⁶⁷ It should be noted at this point that the institution of property had a totally different function in the context of the socialist planned economy. See, e.g., Schrader (forthcoming).

¹⁶⁸ For an evaluation of different Western European railway reforms see Laaser (1998).

¹⁶⁹ The plan to transfer Estonian EVR to a company according to private law was approved in September 1995 (Burger and Lenzner 1996: 81). Latvian LDZ has been a state-owned joint-stock company since December 1993 (Bolz and Polkowski 1996: 142 f.), while LG in Lithuania was transformed in July 1995 (Borock 1996: 101).

¹⁷⁰ Normally, the notion of economies of scale in operating a railway company has been put forward in transport economics. Although such economies of scale are indeed detectable in a technical sense, they may be overcompensated by managerial diseconomies of scale or a lack of competition. As a result, smaller railways in a competitive setting can be more efficient than large railways protected from competition. See for such reasoning Laaser (1991).

panied (i) by a total firm-internal reform towards commercial attitudes so as to prepare railway enterprises for operating in a market environment and in a situation with intermodal competition¹⁷¹ and (ii) by a competitive market setting so as to impose competitive pressure on them (EBRD 1997f: 15 ff.).

Although all three Baltic republics are heading towards more private railway operations there are some differences with respect to implementation and also to their concepts. *Lithuania* has stated that the country is going to comply in the future with EU's directive 91/440 (which calls for a separation of tracks and operation at least with respect to book-keeping), with only tracks remaining public property while operations could be provided by private enterprises. For *Latvia* similar future approaches are reported.¹⁷² At this moment, however, both countries are far off that mark. As yet, railways are excluded from privatization explicitly in Latvia and also in Lithuania (EBRD 1997e: 181, 184). Internal reorganizations are beginning, in Latvia with support of Swedish experts (Transitinfo and TBT 1997). In *Estonia*, major reorganizations are already under way. The separation of the unremunerative southwestern network from the potentially remunerative freight transit lines of EVR, which had already been envisaged in 1996 (Oll 1996b), has become effective as of January 1997. Even more important is the fact that foreign investors are invited to take part in the envisaged material privatization¹⁷³ of EVR so as to import both urgently needed financial means and human and organizational capital. Recently, an American railway enterprise has shown interest in taking over transit lines from the Russian border to Tallinn, and in investing in upgrading. A transfer of railway freight traffic to a private operator would not include tracks, which are to remain in public ownership.¹⁷⁴ Given the lead Estonia has in privatization in general until now, and the consistency of the pursued privatization concepts (Schrader and Laaser 1997),

¹⁷¹ An important part of this task comprises the accumulation of managerial and operational human capital (including sufficient experience in efficiently running a railroad). Estonian, Latvian and Lithuanian railways have suffered from shortages of this kind after the partitioning of the former Pribaltiyskaya Railways, which comprised the railway on the territory of the three countries.

¹⁷² See Borocho (1996) for Lithuania and Rieger (1997) for Latvia.

¹⁷³ While a formal privatization is confined to a transformation of a publicly owned company into a joint-stock company according to private law (commercialization), a material privatization means selling the stocks to private owners at least to 50 per cent of stock capital.

¹⁷⁴ See "Privatisierung der Bahn in zwei Jahren", *Nachrichten für Außenhandel* of 9 October 1997 and "Die Umwandlung in mehrere Gesellschaften hat begonnen", *Deutsche Verkehrs-Zeitung* of 4 November 1997: 9. According to EPA (1997b: 3) the envisaged privatization will comprise the operational side of Estonian Railways.

one should expect the Estonian approach of railway privatization to be associated with the most probable prospects for success.¹⁷⁵

Less private influence than in Estonia is planned for *Polish* rail operations.¹⁷⁶ The concept is based on more entrepreneurial independence of the still state-owned railway. Between 1992 and 1995 the Polish state railway company PKP has been put on a new legal base. Their decision-making is now independent from governmental and administrative bodies (Burnewicz and Bak 1997: 128). In addition, PKP follows the example of Western European railways with outsourcing specific operations to (at least partially private) joint ventures. In 1993, a joint venture with an Austrian freight forwarding firm has been established that manages railfreight forwarding, combined transports and additional services. Another joint venture for specific combined traffic was envisaged (Sager 1994). For improving passenger services in the Berlin–Warsaw corridor, which is also technically upgraded, PKP and Deutsche Bahn AG have announced their intentions to establish a specific joint operational unit for this kind of traffic (Blees 1996). For *Russia* no privatization is planned. Instead, the Railway Ministry (not the Ministry of Transport) still holds responsibility for the various decentralized public railway companies. Only some secondary and ancillary functions from within the old SZD have been transformed into joint-stock companies (North 1996: 13 f.).

Road transport privatization apparently has not posed substantial problems in the three Baltic republics given the successes that the companies of these countries have had in Russian road transport since 1991. Explicit information is available for *Estonia*, where (according to the Estonian Privatization Agencies' records) numerous goods and passenger transport enterprises have been fully privatized and sold to private owners since 1993 (EPA 1997b: annexes). The *Lithuanian* Ministry of Transport also claims that already until 1995 80 per cent of former public road transport and freight forwarding were privatized, although no indication was made whether this was formal or material privatization (Karpfen 1996). For *Poland* the picture is somewhat more mixed, as newer sources only report the intention of further road transport privatization (Burne-

¹⁷⁵ Furthermore, private operations of railways might facilitate co-operation across borders, e.g., with October railways, where private-public partnerships at least in infrastructure upgrading are said to work successfully, as has been put forward in private communication by EBRD officials. Concerning bilateral co-operation with Russian railways Latvia has proceeded so far with joining the Council of Railway Transport of CIS Member States as associated member with some influence on decisions (Transitinfo and TBT 1997).

¹⁷⁶ From the Visegrad countries only the Czech Republic is approaching towards railway privatization. See "Infrastructure Survey: Construction Ahead", *Business Central Europe* No. 26 of November 1995.

wicz and Bak 1997); also the recent OECD report has criticised the unclear position of the state in road transport (OECD 1997: 71).

In *Russian road transport* state owned enterprises under direct government control, publicly owned joint-stock companies, partly privatized firms and entirely newly founded private enterprises (mostly small firms) supply transport services in the various markets. Some of the larger (probably mainly still state-owned) enterprises have preserved the old range and scale of operations, while others—like the new private enterprises—have specialized on niche operations (North 1996: 19 ff.). Some former road transport combines have survived the privatization process, while private operators already play an important role in road transport.

In *airline privatization*, the Baltic republics exhibit different approaches, too. *Estonia* and *Latvia* both have proceeded with privatizing their national airline companies, with foreign stockholders permitted to take at least minority stakes. Latvia took the lead by selling 28 per cent of its Air Baltic to SAS (with Danish and Swedish pension funds as additional minority owners) already in 1995 whereas Estonia followed one year later when selling 49 per cent of Estonia Airlines to Danish Maersk and 17 per cent to a domestic investment fund so that the state is no longer majority stockholder. Both enterprises have benefitted from enhanced profitability since then, due not only to an influx of foreign investment, but also of managerial human capital and professionalism provided by new stockholders, streamlining of served lines, better service quality, marketing, and lower costs (Linderfalk 1996a, 1996b).

In *Lithuania* reluctance towards privatization is evident, not only in air transport, but in transport in general and even with a number of so-called sensitive sectors (Schrader and Laaser 1997), although air transport was removed from this list in 1997 (EBRD 1997e: 184). It may even be the example of strong commercial attitude and foreign management that was instilled into Latvian and Estonian airlines after privatization that has led vested interest in Lithuania to plead for the postponement of *airline privatization* for several years (Linderfalk 1996a). Although Lithuanian Airlines claim of being successful also under a public regime, cost cutting has by far been less pronounced than in Latvia and Estonia. This may be due to the protection of internal rents of such public enterprises as the airline and airport authorities, and also to the discrimination between competitors. A conspicuous point is the 90 per cent discount on landing fees only for Lithuanian Air (Linderfalk 1996a).

Also in *Poland*, *airline privatization* has been postponed again and again, although the Polish airline company LOT was transformed into a public joint-stock company already in 1992. There may be anxiety of Polish officials to lose control over the national airline. The Polish government is searching for a foreign minority stake without, however, too much influence on the management of

LOT; it is not willing to accept a strategic investor who would take over operational and managerial lead (Vetter 1996). On the one hand, airline experts consider at least a partial privatization as necessary in view of the urgent capital needs and the deteriorating performance of operations, productivity and financial status in the last year. On the other hand, an (even only partial) privatization is not very likely given the slow progress in recent years.¹⁷⁷ The recognition of a national flag carrier not being the most efficient form of organizing air transport (EBRD 1997f: 14) has not gained ground in Poland. Competition and independence of the users from single foreign carriers can also be obtained by pursuing a liberal open skies policy.

In *Russian air transport* the all-embracing integration of regulatory tasks, airport administration and airline operation in the sole organization of Aeroflot had to be dissolved. Regulatory tasks were transferred to the Ministry of Transport in 1992, with air traffic control forming a separate entity. Aeroflot was divided into an international airline and regional divisions, which all became joint-stock companies, with the proviso of organizing airport and airline operations in separate companies. Not all of these former "production associations" have yet been dissolved, although.¹⁷⁸ The government is still retaining majority or at least block stakes in the joint-stock airline companies. But in addition to Aeroflot successors, numerous mostly small new airline companies (in 1995 the number amounted to 178, in 1996 to 332) entered the market, of which apparently 150 in 1995 and 201 in 1996 were allowed to offer either scheduled or charter international flights.¹⁷⁹

4. Price Regulation and Licensing

Concerning *rail transport* one has to take into account that this mode is still operated by public enterprises (although in the case of Estonia, Latvia and

¹⁷⁷ "Polen verschiebt LOT-Privatisierung", *Nachrichten für Außenhandel* of 18 December 1996; "Polnische Airline auf dem Flug in die roten Zahlen", *Handelsblatt* of 14 March 1997.

¹⁷⁸ The dissolution of such a production association seems to be one of the main objects of a recently announced project of partial privatization of a Russian airport ("Flughafen Domodedowo wird privatisiert", *Nachrichten für Außenhandel* of 8 July 1997). A material privatization of an airport would be an institutional innovation even by Western European standards. Currently in Germany a number of international airports that are operated as public joint stock companies may be partially privatized. More experience with this institutional setting has been gathered in the United Kingdom, in Austria, and in Denmark. For an assessment see Wolf (1996).

¹⁷⁹ See North (1996: 37 ff.) and "Rußland: Nur der internationale Verkehr wächst", *Blick durch die Wirtschaft* of 13 March 1997.

Lithuania already as joint-stock companies according to private law). These enterprises are therefore easily subject to various public regulations. Price regulations are existing for passenger traffic in Estonia, Latvia¹⁸⁰ and Lithuania; in Lithuania also goods traffic tariffs are subject to approval. Internal cross subsidization schemes in favour of unremunerative passenger traffic are still widespread (EBRD 1997f: 16); this also holds for Russia, where the lack of funds for subsidies has forced the Ministry of Railways to shift the burden for funding onto the railways' cross subsidization schemes (North 1996: 15). In the case of the Baltic republics cross subsidization as well as public subsidies have proven unsustainable. Thus, the closing down of secondary passenger lines takes place in Latvia (Transitinfo and TBT 1997), while Estonia has separated remunerative from unremunerative services. Accordingly, *partial market exit* seems to be possible, while *market entry* (licensing of railway enterprises) can take place only in operations; the networks will remain public monopolies. Private ownership of carriages does not go beyond industrial carriers. In Latvia at present only additional local or private railway lines can be licensed, while Lithuania adheres to LG's monopoly but plans to admit other operators at a later stage.¹⁸¹

Inland road transport seems to be widely liberalized. This is to be exemplified for the three Baltic republics by the case of *Latvia*, where the legal base for road transport was settled in September 1995. Under the road transport law not only contractual, liability, insurance and transport documents' issues were regulated, but also freight and passenger road transport regulations were put forward. Licensing of both freight and passenger road transport enterprises has been made obligatory, although there are no hints that the number of licenses issued would be limited. Licenses for freight transport are valid for all cargoes with the exception of alcoholic spirits in transit, for which extra (and quite expensive) licenses are required. In road passenger transport a price regulation scheme, which is exercised by local authorities, has been introduced.¹⁸² A similar price regulation in passenger transport can be found in *Lithuania*, although available sources do not indicate the range of coverage of these transport price controls (EBRD 1996:

¹⁸⁰ Bolz and Polkowski (1996: 105) point to the draft of the Railway Law, according to which LDZ would be free to fix its tariffs on its own, but they suspect that tariffs have to be approved by the Ministry of Transport. This view is corroborated by Transitinfo and TBT (1997), who report that raising passenger tariffs to remunerative levels would contradict Latvian laws.

¹⁸¹ See Burger and Lenzner (1996: 81 f.), Bolz and Polkowski (1996: 143 ff.), and Boroch (1996: 103 ff.).

¹⁸² See "Lettland regelt Güter- und Passagiertransporte", *Nachrichten für Außenhandel* of 7 December 1995, Bolz and Polkowski (1996: 67), and EBRD (1996: 160).

162; Boroch 1996: 64). Explicit information is available that price regulations hold for *Estonian* passenger transport as far as services are subsidized.¹⁸³

With respect to *Russia* both Kulke-Fiedler (1995) and North (1996: 19 ff.) report that markets have been opened and price controls withdrawn.¹⁸⁴ Price regulations are said to have ceased to exist in 1992, and numerous transport firms either emerged from privatization or were newly founded.¹⁸⁵ Licensing schemes were introduced in 1994 (North 1996: 22), but they apparently impose no strain, apart from the fact that some licenses were withdrawn on the occasion of some firms violating safety regulations. However, regulatory measures protect Russian road transport firms from foreign competition in the domestic market; this is the main objective of the "Programme for the Development of International Road Traffic" (North 1996: 22). Also the closure of most of the customs clearance posts for Baltic freight forwarders (Section D.V.2.b) can be seen as a regulatory measure to protect Russian transport firms against their apparently more efficient Baltic competitors.¹⁸⁶

Airline markets have been opened up to the extent that besides traditional airlines, for which partial privatization schemes have been set up, new but mostly small air traffic companies have been licensed at least in Estonia, Latvia, and Lithuania on the one hand (Schrader and Laaser 1997: 61, 69, 75) and in Russia on the other hand. EBRD (1997f: 14) considers competition in Russian air transport to be fierce.

¹⁸³ Besides cross-country and municipal bus services this holds also for rail passenger traffic and air transport to and from the Estonian islands (Burger and Lenzner 1996: 54).

¹⁸⁴ Still unprivatized combines compete with large former state-owned privatized enterprises and a bulk of new private firms (Kulke-Fiedler 1995). Some of the large former state-owned road transport firms were trust-busted before privatization, others remained intact in their former structure, which included diverse branches of transport; they diversified even further to multi-modal operations and activities beyond transport due to domestic taxes and levies on transport in Russia (North 1996: 21).

¹⁸⁵ Information on active enterprises varies substantially. While Kulke-Fiedler (1995) refers to an estimate of the Russian Ministry of Transport, according to which at the end of 1993 approximately 500,000 individuals would be active in one or another way in trucking, North (1996: 19) mentions another Russian source, according to which in early 1995 there would exist 212,000 road transport enterprises with 2 million vehicles, of which 500,000 would belong to 100,000 individuals.

¹⁸⁶ The picture of *Polish* road transport market regulation looks more puzzling. According to Burnewicz and Bak (1997: 127 f.) licensing schemes have been introduced at least with respect to international road transport; furthermore, formerly paid subsidies to freight transport have been abolished. Transport price controls are not mentioned as still existing in the recent EBRD transition report (EBRD 1996: 165 f.).

IV. Infra- and Superstructure Hardware Problems

In this section, the focus is on obstacles that result from deficiencies of the transport infrastructure. These could be bottlenecks arising from insufficient capacity, such as a lack of quay-length of sufficient depth for the relevant ship size in a port, or a state of disrepair of a railway line or of rolling stock, or the non-existence of suitable roads where these are required. In some instances such obstacles do not exist at present but are likely to emerge in the course of further trade expansion whenever available capacities are approaching their optimum utilization.

Hardware problems can be observed with nearly every mode, although the economic impact of these factors varies. With respect to port infrastructure, hardware shortages are not a pressing problem at present (Section D.IV.1). Somewhat more relevant are shortages with respect to other modes (including port-hinterland-links, Section D.IV.2), but also in these fields a process of upgrading, substantially financed by supranational institutions such as World Bank, EBRD or EIB, has been launched.

In general, it is the *quality* of the infrastructure facilities in the Eastern part of the Baltic Sea region that is not sufficient. While network densities can be considered by and large adequate for current and future traffic, the technical capability of infrastructure facilities of various modes shows deficiencies. The problem will be aggravated if transport volumes grow substantially, as is expected if the transformation of the EIT into functioning market economies progresses successfully.

1. The Maritime Sector

The turnover of cargo in the sea-ports of the Baltic countries was, at the end of the eighties, mostly larger than at present. Hence, at least in an overall view significant *bottlenecks are unlikely to exist*. Bottlenecks could, however, in addition to insufficient overall infra- and superstructure capacities, be the result of a lack of facilities, caused by changes in transport technologies that are emerging in shipping.

The following analysis deals with various aspects of hardware development in the maritime ports of the Baltic countries, namely,

- future tendencies of trade and cargo volumes in the Baltic region, and of available transfer capacities in the ports;
- current construction work and port capacity planning in each of the Baltic countries;

- the additional transfer capacities that could be available if and when these new facilities are completed;
- details on sectoral overcapacity in a few ports, and further evidence corroborating the basic hypothesis.

The conclusions point to areas where additional work could be useful already in the short run.

New Techniques, Future Cargo Structures, and Nautical Demands

Such changes have occurred since the political turnabout, mainly in the general cargo sector of transport. They have been brought about by an adaptation of the container and ro-ro transport modes, which had formerly been in a comparatively backward state in the socialist countries, to the conditions that had developed over a long time (since about 1960) in the market economies, especially in the Baltic region.

Container and especially ro-ro ships can be handled efficiently only with tailor-made equipment. If such equipment is lacking, it can in principle be replaced by the ship's gear, or by using the traditional cranes that are available in the Baltic ports, but at the price of lower productivity, i.e., higher cost and longer time in port. Wheeled traffic requires either a floating pontoon connected to the quayside, or special ramps, unless the ship is equipped with its own ramp that can be lowered directly onto the quay. The additional cost is, however, much lower than in the case of constructing complete new quays.

Apparently, such equipment had been installed by most port administrations already shortly after the political turnabout. Accordingly, it may be concluded that, at least for the time being, available transfer capacities for containers and ro-ro cargo are sufficient. Impediments caused by a lack of specified facilities or capacity bottlenecks caused by obstacles in the infra- or superstructure do not at present pose a real problem for general cargo and also for passenger ferry traffic.¹⁸⁷

Since, as has been shown in Section C.IV, trade in industrial products will be a dynamic sector of Russia's and also the other countries' foreign trade, new requirements for port equipment will most likely focus on this sector. Exports of raw materials, which had so far been dominant in Russia's trade with Western market economies, will lose importance. As far as crude oil or oil products are concerned, ports are able to relatively easily fulfill the requirements associated with this type of cargo.

¹⁸⁷ At present, ro-ro facilities are available in the following Eastern Baltic ports: Gdynia, Gdansk, Szczecin, Swinoujscie (also for railway carriages), Kaliningrad, Klaipeda (also for railway carriages), Liepaja, Ventspils, Riga, Tallinn, Muuga, Kopli, St. Petersburg (according to Lloyd's 1998). Container cranes are available at Riga (already in the Soviet era), Muuga (under construction) and St. Petersburg.

Upgrading and Building New Port Facilities

At present, capacities are not fully utilized at several ports. Nevertheless, the *extension of existing ports, and/or the construction of new ports* in the Baltic region are either planned or have already been started. There even seems to be the danger that the total capacity of such projects exceeds foreseeable requirements considerably. Other measures to *improve the conditions in the ports*, and also the shipping channels leading to the ports, including navigational aids, began soon after the political changes. A leading role was taken by the three Baltic states whereas less was carried out in the Russian ports. This is shown in the following sections:

(i) Latvia

In Latvia, the ports of Riga, Ventspils and Liepaja were modernized, and plans were prepared for further extension. While projects for Riga include the upgrading of container facilities, and the completion of the Riga port railway terminal, work focusses on Ventspils, which has a more favourable location. Various projects include an extension of the existing petroleum and chemicals terminals, and a diversification of the port facilities by adding a ro-ro and a container terminal.¹⁸⁸ Liepaja port, being a Soviet naval base, used to be closed for civil shipping but has been re-opened. Meanwhile, the reconstruction for civil purposes of the naval facilities has begun, and new facilities are being built.¹⁸⁹ Further on the agenda are additional hinterland road links. The potential and prospects of this third Latvian port are regarded as being rather good (Assmann 1996). The government hopes that foreign investors will engage in the future extension.

(ii) Estonia

Similarly in Estonia, the port of Tallinn is being reconstructed. The City Port will be devoted entirely to passenger shipping (Port of Tallinn 1997b: 15). Cargo operations are shifted to Muuga, because of its natural advantages, location, available land resources, and better hinterland links. Of the existing plans for new bulk facilities, the construction of container and chemicals terminals is underway. A new container terminal—long-term capacity 150,000 TEU per year—

¹⁸⁸ See "Ventspils: Hafenbecken wurde vertieft", *Deutsche Verkehrs-Zeitung* of 22 July 1997: 8. In addition, the existing berth was deepened to accept tankers up to 120,000 tdw.

¹⁸⁹ See "Bauvorhaben in Ostseehäfen: Lettland erweitert Anlagen in Ventspils, Riga und Liepaja" *Nachrichten für Außenhandel* of 20 November 1995 and "Liepaja Attracts Russian Transit", *The Baltic Times* of 1 August 1996.

is scheduled to open in 1998 with an initial transfer potential of 60,000 TEU.¹⁹⁰ New facilities will also be completed at Paldiski, where the former naval base will be rebuilt,¹⁹¹ and improved roads and railways will connect the ports to the main lines. Finance for a new oil terminal in Tallinn will be put up by a Russian oil company, A/O Orenburgneft, which has acquired a participation in the city's Bekkeri port.¹⁹²

(iii) Lithuania

In comparison, less progress has as yet been made in Lithuania. The reconstruction and extension of Klaipeda's facilities have been begun, mainly by constructing two new ro-ro berths close to the existing ferry site. Further work concentrates on the container facilities, especially on additional terminal parking area for trucks and trailers (Jennings 1996). Plans for a new terminal are laid out for a final capacity of 200,000 TEU/year. Further extension of facilities for petroleum, chemicals and fertilisers, timber and bulk cargo, as well as for a new passenger ferry terminal is envisaged. The depth at the berths will be increased, and work has begun to dredge the port to about 12.5 metres, and later to 15 metres.¹⁹³ Lithuania has succeeded in obtaining loans from both the EIB and the EBRD for financing these projects, and it has already begun several of these. If completed, these measures are expected to increase turnover capacity from 20 to 27 million

¹⁹⁰ At Muuga, the Danish Eurodek company completed the first stage (light products) of a new oil terminal in the beginning of 1997 while the second stage began in September of the same year. Already in 1996, the port was connected with the trunk oil pipeline by a four miles long, 1 million tonnes annual capacity branch line built by "Estonian Oil Service". For details, see "Tallinn Goes for Growth: Muuga Port Gets Free-Zone Boost", *Fairplay* 332 (1997) 5944: 55, "Neue Terminals für den Tallinner Hafen", *Nachrichten für Außenhandel* of 8 December 1995, and "Hafenumbau in Tallinn steht vor Beginn", *Nachrichten für Außenhandel* of 2 January 1995.

¹⁹¹ The Finnish company Satatankki Oy is planning a chemical and oil port for a turnover of 0.3 million tonnes per year. Included will be a tank farm of 20 tanks, each for 50,000 cbm ("Hafenbau: Entwicklung und Perspektiven weltweit", *Schiff & Hafen* 49 (1997) 11: 110).

¹⁹² "Entwicklung in den baltischen Häfen: Ein bedeutender Faktor für die russischen Transitverkehre", *Deutsche Verkehrs-Zeitung* of 6 November 1997: 9.

¹⁹³ For details of current port extension plans at Klaipeda see, inter alia, "Trading Patterns: Hanse Again?", *Business Central Europe* of November 1996, Jennings (1996), "Litauens offenes Tor zur Welt: Die Hafenstadt Klaipeda wieder im Aufschwung", *Neue Zürcher Zeitung* of 31 August 1996, and Valantiejus (1997).

tonnes per year.¹⁹⁴ A new oil port is planned at Butangé north of Klaipeda; it is doubtful, however, whether this project will go ahead.¹⁹⁵

(iv) Russia

In Russia, St. Petersburg currently has several major projects underway: a 150,000 TEU annual capacity container terminal costing around 50 million dollars, scheduled to be fully operational in 1998; a 24 million dollars refrigerated cargo and box terminal; a 1 million ton capacity white sugar terminal; and a 220 metres long bulk-handling complex (Port Authority of St. Petersburg 1997: 18; Berenyi and Zenkovich 1997: 97). Also, several projects for overhaul, repair and update of older facilities are underway. In Kaliningrad, the extension of the port area and facilities (with a view to possible requirements of the Yantar Free-Zone) has apparently not made much progress as yet.¹⁹⁶

Growing concerns in Russia because of the dependency on foreign ports and, hence, the increasing need for hard currency¹⁹⁷ have given incentives to build new ports. Most prominent is a project to build an entirely new large port on the Baltic coast of the Leningrad oblast. It was launched already in 1991 but was altered in 1993 in the face of environmental concerns and local opposition. Instead, three smaller projects were designed (Ust-Luga for general cargo, Primorsk for petroleum and Batareij Bay for petroleum products with 15–35 million, 45 million or 15 million tonnes per year turnover capacity, respectively).

The large-scale planning for new ports near St. Petersburg is difficult to assess realistically. Of the latter projects little has been realized so far. Although a foundation-stone was laid for Ust-Luga in 1993, its future remains uncertain, as well as that of the other projects, mainly because of financial problems as their estimated costs run up to several hundred millions of dollars (Bolz and Polkowski 1993: 53 ff.). It has been reported meanwhile that such far-flung projects must be considered as utopian, or may at least be carried out in two or three

¹⁹⁴ "Ölterminal kommt voran: Bankenkrise stört Arbeiten im litauischen Klaipeda", *Nachrichten für Außenhandel* of 17 September 1996, Frierson (1996), "Klaipeda Port Loses Transit", *The Baltic Times* of 3 October 1996, and Hidrosfera Ltd. (1997: 2).

¹⁹⁵ "Butangé Investment Plan Held Up", *The Baltic Times* of 28 November 1996.

¹⁹⁶ "Kaliningrader Hafenprojekt scheint zu scheitern", *Nachrichten für Außenhandel* of 31 August 1994; "Königsberg erhält neuen Hafen: Jetziges Projekt hat realistischere Grundlage", *Nachrichten für Außenhandel* of 21 September 1994.

¹⁹⁷ The turnover fees for handling cargoes in the Baltic and Finnish ports Russian shippers had to pay in hard currency were reported to amount to 20 billion dollars in 1992 with additional 2 billion dollars of hinterland transport costs according to Bolz and Polkowski (1993: 52), who were citing Russian sources. Even if one accepts the fact that hard currency outlays are an important cost component for Russian shippers, the reported figures seem unreliably high.

decades only (Arklina 1996).¹⁹⁸ While they have thus been put into a more critical perspective as being currently too expensive, there have, however, also been press reports recently that a Russian businessman has announced that he would soon take up the Primorsk project (Borisova and Donaldson 1997b). But in general the danger of “overextending” port facilities has been pointed out repeatedly,¹⁹⁹ especially because of national aspirations—mostly, but not entirely by Russia—which do not take the facilities already existing in the transit ports, and also the economics of transit (cost advantages), sufficiently into consideration.

(v) Poland

There are likewise problems of possible overcapacity in Poland. At Gdansk a shift in planning and building is underway after a longish period of large-scale measures that have not developed satisfactorily.²⁰⁰ This refers to a grain terminal planned by a North American consortium for serving the CIS in transit. The contract was signed in 1995 but no significant steps have so far been made. More positive developments have been reported from the new iron ore terminal in the North Port, and also from a new LPG terminal. Still in the planning stage is a new container terminal with an annual capacity of 500,000 TEU. Moreover, the smaller facilities in the “Old Harbour” are to be rebuilt as smaller projects are thought to be economically more rewarding.

The port of Gdynia is rebuilding and enlarging its container and trailer facilities. The port’s Baltic Container Terminal will order its fourth crane in 1998. Its turnover in 1997 is estimated to be 170,000 TEU (1996: 156,000 TEU; 1995: 140,000 TEU). The terminal has a virtual monopoly in Poland (the turnover in Szczecin and Gdansk is less than 1,000 TEU each) and is served by several feeder lines. Because of the shift of general cargo to containers and other units, Gdynia’s Baltic General Cargo Terminal faces a decline of its cargo base, of which at present steel and steel products exports have a 60 per cent share. To take over the transfer of trailerized containers from the container terminal, a first ro-ro ramp is being built (temporary) for forest products to or through Poland; two more ramps are to follow until 2000. Also, a fruit facility for bananas and a

¹⁹⁸ During a visit to Latvia, the president of the Union of Russian Manufacturers and Entrepreneurs noted that the construction of the St. Petersburg port will be postponed by up to 20–30 years because of Russia’s economic problems. On the various new-building plans for Russian Baltic ports, including Baltiysk, and the problems of finance see, inter alia, Ruwwe (1994). For problems of financing port extension plans at St. Petersburg see also Paci (1997a).

¹⁹⁹ See, for example, Peters (1993) and Hayter (1993).

²⁰⁰ “Ancient Port Returns to Its Roots”, *Lloyd’s List* of 24 September 1997: 11.

citrus terminal are being planned on the area (so far 100,000 tonnes per year, plans for 300,000 tonnes per year).²⁰¹

Other aims of the modernization programme that the Polish government has initiated and that is financially assisted by World Bank loans are (i) to ease the bottleneck situation for shipping on the River Odra between Swinoujscie and Szczecin, and (ii) to improve the still widely insufficient hinterland links by rail and, in particular, by road.²⁰²

Overall Estimates Show Emerging Overcapacities

It is not possible to give detailed calculations of port capacities that are based on existing facilities. On the one hand, earlier analysis has shown that total figures for one port are meaningless unless the port consists of only one or at most a few entirely specialized facilities, e.g., for certain bulk cargoes such as iron ore, or crude oil. Otherwise total substitutability of all facilities in the transfer of all goods would be assumed, which is largely unreal. On the other hand, the transfer capacity of a given facility depends on a large number of factors, among which, apart from pure technical relationships, the type of cargo, the frequency of ships calling, their size, draught, and other relevant parameters, and the regularity of cargo flows assumed are especially relevant.

Some estimates have been made of future capacities of the Baltic ports after the extension projects that are currently underway or being planned had been completed. According to these estimates, for Ventspils—present capacity given as 56 million tonnes per year—a maximum of 100 million tonnes, for Liepaja (now 1.6 million tonnes) a maximum of 6 million tonnes is estimated; the maximum throughput of Riga container terminal shall rise from 0.3 to 1 million tonnes. The Latvian Railways are currently undertaking an investment programme that aims to increase transit cargo movements 1.7 times over 1996, to 60 million tonnes per year. The capacity of Klaipeda port is to be raised from 15 to 25 million tonnes per year by the year 2000.²⁰³ A rough estimate suggests that

²⁰¹ Several feeder lines from and to North Sea hub ports use the terminal, as well as a con/ro service to Finnish ports. Bulk traffic fluctuates sharply; the planned Baltic Grain Terminal is to be privatized shortly ("Daewoo Fillip for Box Facility" and "General Cargo Faces Changes", *Lloyd's List* of 23 September 1997: 10).

²⁰² At present the approached channel to the port of Szczecin is 67 kilometres long and 90 metres wide, with a water depth at its entrance of 9.15 metres. At the same time, however, the draught of the largest vessel having used the port so far is also given as 9.15 metres (*Lloyd's* 1998: 570). Up to Swinoujscie the fairway is 15 metres deep while the maximum draught is 12.8 metres.

²⁰³ The above figures have been taken from: "Entwicklung in den baltischen Häfen: Ein bedeutender Faktor für die russischen Transitverkehre", *Deutsche Verkehrs-Zeitung* of 6 November 1997: 9, "Box Imbalance: Forwarders Blamed for Problem", *Fair-*

the extended or completely new additional container facilities that are currently being built or being planned for the Northern Baltic ports would, if completed, have a total of approximately four times their present capacity of around 300,000 TEU.²⁰⁴ In addition, growing oil exports from Russia will most likely make up a large proportion of future bulk cargo transfer. With the new oil terminal capacities under construction or planned at various ports, it can safely be assumed that bottlenecks in the hardware for oil transfer are unlikely not only over the short and medium term.

Sectoral Surplus Capacities—Smooth Turn-Round of Ships

Part of the surplus of capacity is concentrated on a few specialized bulk facilities. At the time of the CMEA, *Poland* was an important exporter of bulk cargoes, mainly coal. Since then, shipped volumes have shrunk considerably. Existing port facilities for this type of cargo are not fully utilized at present so that there is idle capacity, especially at Swinoujscie and Gdansk North Port. In this port, in addition, overcapacity exists so far at facilities for unloading iron ore, although it has recently been reported that the terminal shall in the near future supply up to 7 million tonnes of iron ore to Katowice and steel works in Czechoslovakia.²⁰⁵

Unused capacities exist also in *Baltic* grain ports. During the Soviet era, in some of these ports, especially at Muuga (then Novotallinnsky), large facilities were constructed for unloading overseas grain under the high-volume import programmes of the Soviet Union. Since the end of the USSR, however, these volumes have dwindled away to less than 1 million tonnes. At present, the grain trades do not seem to offer employment opportunities for the ports unless a strong reflation of imports could be expected. This does not seem to be the case at least in the short to medium term.

One particular "hardware" obstacle may, in principle, be the available depth of water. This cannot, at least at present, be regarded as relevant for the ports in question. Requirements for deep-draughted ships are limited in the Baltic because of the limitation of access from outside—presumably the only source or

play 338 (1997) 5943: 48, and "Litauens offenes Tor zur Welt: Die Hafenstadt Klaipeda wieder im Aufschwung", *Neue Zürcher Zeitung* of 31 August 1996.

²⁰⁴ For more details of the recent development see Bascombe (1997a).

²⁰⁵ Polish seaborne <total> coal exports declined considerably over time, from a total of approximately 24 <40 million> tonnes (1984) to 17 million <32 and 29> in 1995 and 1996, due mainly to a reorganization of coal-mining, during which many mines were closed down, and production shrank from around 190 million tonnes (until 1988) and 150 (1990) to 130 million tonnes. A further reduction is forecast, which must be presumed to affect also exports via the ports so that overcapacities are likely to remain, or even grow (see Verein Deutscher Kohlenimporteure 1986: 88 f. and 1996: 51, 64–67).

destination of trades in which such ships are employed. While the deepening of access channels and of berths themselves is technically feasible, from the viewpoint of economic viability such measures do not seem to be warranted.²⁰⁶ As regards intra-Baltic trades, the dimensions of most ships are adapted to the port conditions. Thus, the port conditions do not present obstacles to the trade flows between Baltic ports, especially so as in a few cases of large ships operating in special trades as industrial carriers, the outlay for the private port facilities is part of the total investment by relevant enterprises.

The view that at present there are no pressing bottlenecks in the ports that are caused by insufficient facilities is further corroborated if turn-round times of ships in port are analysed. At least for sectors of ro-ro and container shipping, turn-round is normal in comparison to western and Northern Baltic ports so that rather tight schedules can be set up. While problems may arise from time to time, they usually stem from factors that have been classified here as “software” (Section D.V.1). Moreover, it must be considered that shipping is subject to the forces of nature, which may inevitably result in irregularities.

Summing up

As a result of these observations it can be stated that at present there are no serious “hardware” bottleneck problems in the entire port range, and that adjustment to the changing requirement in general cargo trade is well underway or has already been completed.²⁰⁷ This view was also taken by Hayter in an article on Baltic maritime development prospects. Despite the existence, however, of general overcapacity in the main Baltic ports there remains considerable scope for the upgrading of facilities. Areas in which improvements would be desirable include: improved road service to and from ports—at present access to and from ports is mainly by railway and pipeline —, facilities for the expansion of ro-ro traffic, reduction of environmental hazards in port surroundings, and installation of modern information systems (Vanags 1993: 321).

Some additional remarks are appropriate as regards unitized traffic. Container volumes have increased with very high growth rates so that sufficient capacities

²⁰⁶ It must be kept in mind that there is also the alternative to enter the Baltic with a ship that is not fully laden, and thus going on less than its full draft. While a certain loss of carrying capacity cannot be avoided in such case, the additional in the freight rate that may have to be accepted (although this is dependent on various other factors determining the process of rate formation) might be low, because the ship's unit costs decrease with rising capacity, and might thus warrant to take this way.

²⁰⁷ See also Hayter (1993: 299): “... the Baltic states are quite well endowed with port facilities and the main requirement for the future is not for significant expansion facilities, but rehabilitation and improvement of productivity of the available facilities. The same holds true for Poland, at least into the medium term”.

for speedy transfer could become more urgent.²⁰⁸ At present, while bottlenecks may occur in one port or another especially if they are temporary, probably very short-term, total capacities of all Baltic ports including the Finnish, which are extending their facilities rapidly, will suffice to cope with requirements. As plans for new construction provide for more than ample scope, additional terminals may be required only in a longer run. Even then, each individual port administration must carefully consider its comparative advantage and opportunity costs of investment in such facilities.²⁰⁹

2. Land and Air Transport

a. Railways

Rail traffic played and still plays the most prominent role in Russian modal split, and will do so in the foreseeable future due to geographic, topographic, climatic, and locational reasons.²¹⁰ Rail traffic thus influences the situation on transport markets at least in the Baltic states, because the bulk of cargo transported to and from the Baltic ports is transit traffic. Even the modal split in Poland could be affected, if traffic relations between Central Europe and Russia via non-Baltic routes are chosen by users. The situation here has altered during recent times, however: four-fifth of all Moscow-bound traffic that uses continental routes through Poland and Belarus has been reported as being hauled by road.²¹¹

Insufficient Track and Terminal Quality

As far as rail network *densities* are concerned, there seems to be no apparent obstacle in the Baltic Rim EIT. In fact, both area and population related densities rank between Central European and Scandinavian figures (Table A2), and, with the exception of Estonia and Poland, above US figures (Carbajo and Fries 1997: 13).

²⁰⁸ It has been emphasized that, while container movements in the Baltic ports are said to have quintupled after 1991, this strong expansion started from a very low volume and may only have regained the 1988 number of containers (Bascombe 1997b).

²⁰⁹ This is a field for joint ventures where Western partners can contribute not only capital but also organizational know-how, which will assist in improving the efficiency of the terminals as can already be seen in several ports including St. Petersburg.

²¹⁰ The World Bank study on Russian transport claims that "for all practical purposes, surface transport, excluding pipelines, in Russia is rail, and will remain so for the foreseeable future despite an expected shift to road transport" (Holt 1993: 64). A similar position is held by North (1996).

²¹¹ "'Ostwind' bietet Alternative zu Lastwagen-Transporten", *Handelsblatt* of 27 February 1997.

With respect to *track and terminal quality*, rail infrastructure in the Baltics, in the Russian Baltic Rim oblasts, and in Poland still suffers from the legacy of the past. The railway companies, which belonged either to the former Soviet broad-gauge system (EVR, LDZ, LG, October Railways) or to the Central European standard gauge network (PKP), are burdened with comparable hardware problems, although to a different extent:

(i) In general, EBRD's missions concluded that design standards of former Soviet and CMEA railways were less exacting than those in EU member states.²¹² Because Eastern railways had to serve mainly bulk freight traffic purposes, to which standards were adapted, operating speeds of 100–120 kilometres per hour are low compared with Western passenger traffic standards. But even these figures are not really representative given the numerous line sections with low speed limits due to poor technical condition of tracks and bridges (EBRD 1996: 45; Reynaud 1996: 52).

(ii) Heavy duty bulk traffic from and to the ports has worn out existing tracks and has contributed to maintenance requirements. Anyhow, track maintenance and investment to increase capacity have been neglected for years. As a consequence, the present state of repair of tracks, bridges and other facilities is highly unsatisfactory. Significant parts of the networks are in urgent need of repair and upgrading. This hampers productivity substantially.²¹³ In addition, the proportion of double track is considered to be below modern standards, thus lowering capacity even further.²¹⁴

(iii) Signalling devices, traffic control systems, and internal communication systems are considered to be outdated.

²¹² From a genuine technical standpoint this observation could be questioned: As the Russian railway system is much more similar to that of the United States and could permit a substantially higher line productivity it could exhibit the same performance as U.S. railways if hardware deficiencies were cared for and, above all, if Russian railways were only run in an efficient manner. That means that the institutional setting for railway operations may be essential for future success and that far-reaching privatization's are called for (Lindberg 1997: 1). For some technical annotations see Carrol (1996); for organizational requirements see EBRD (1997f: 15).

²¹³ For Estonian Railways this may be exemplified by the facts presented in Carrol (1996), but the same holds for the other countries. With respect to Russia as a whole, EBRD (1996: 45) reports that the share of lines being subject to speed restrictions doubled from 1988 to 1993 to 20 per cent of the network; for Eastern Europe the share of lines being in unsatisfactory technical condition is considered 25 per cent of the networks for the middle of the 1990s.

²¹⁴ Concerning *Poland*, also the share of electrified lines is reported being below optimal standards although electrification of main lines has been pursued since the 1980s (Burniewicz and Bak 1997: 121).

(iv) Terminal and rolling equipment suited for modern forms of transport (container transport, combined traffic) is still widely lacking, and as far as it exists, it seems outdated and can only be operated with insufficient productivity.

(v) But even the traditional rolling stock (locomotives, freight carriages, passenger carriages of normal design) is of poor quality with an unsatisfactory age-structure and lacks spare parts.²¹⁵ Thus, the physical capital stock is in urgent need of investment.

(vi) From the organizational side operational efficiency is low, the same holds for quality of services (Reynaud 1996: 52).

A side-problem for rail infrastructure can be inferred from *shortages of dispatching stations at the borders* of the Baltic countries where rail transit from and towards Russia is handed over to the partner operator. For example, the Russian/Estonian border station Narva was during the Soviet era only an interim station.²¹⁶ Now Narva has to serve as border station, for which purpose it is not equipped at present so that train operations are delayed.²¹⁷

The need for an upgrading of the rail networks of the EIT has been acknowledged by both the national governments and the international community²¹⁸ so that there are several upgrading projects under way, which are financed mainly by loans from the World Bank, the EBRD, the EIB, and even from EU PHARE and TACIS funds. Within these programmes also complementary software problems are going to be tackled, e.g., managerial questions of professionally running a railway company in a competitive market environment.

²¹⁵ Because of these deficiencies a substantial part of rolling stock is in bad condition or can even not be utilized. Some older figures for Estonia and Latvia reported a breakdown quota of locomotives of 35–40 per cent (Umann 1995 and communication by EBRD).

²¹⁶ Administratively, Narva was the border between October and Pribaltiyskaja Railways.

²¹⁷ Since 1995, Estonian railways have invested in designing and constructing border stations and handling capacities in Narva as a part of upgrading the Tallinn–Narva mainline with financial funding from EU PHARE programme (EVR 1996: 5). While EU PHARE funds originally have been designed for purposes of conducting feasibility studies, recently a new dimension has been opened up by the newly introduced option in this funding scheme for using funds also for hardware upgrading programmes. EVR still seems to consider shortages in carriage and handling capacity as an obstacle to its operations, at least with respect to expected rising transit volumes in the future (Juchnewitsch 1997: 1 f.).

²¹⁸ See the TINA initiative of the EU. The TINA working group has forecasted investment needs for upgrading infrastructure to 65–95 billion ECU until 2005, of which 31 billion ECU are for Crete Corridors (11 billion for railways and 20 billion for motorways) (EBRD 1997f: 19).

Gauge Differentials

Some authors view the *difference between Russian broad gauge and Central European standard gauge* as a hardware obstacle.²¹⁹ This may hold insofar as the extra-costs (transfer time for either re-gauging or re-loading, capital costs of providing re-gauging facilities and devices, additional capital costs for providing both kinds of bogies and gauges) are accounted for. One should, however, distinguish different transport links, namely potential north–south direct rail traffic between the Baltic States and Central Europe on the one hand, and rail traffic between Central Europe and Russia via Poland and Belarus on the other hand. As far as the *Baltic States* are concerned, the obstacle of the gauge differences seems of minor importance. The relevance of this obstacle is limited because north–south transit traffic flows to Western Europe and vice versa that could not be handled via Baltic Sea shipping are hardly conceivable. In contrast, the use of the same gauge by the Russian and the Baltic railways allows them to take an active part in Russian transit traffic in the future as they did in the past. As far as there are re-gauging obstacles in transport from the Baltic countries to Poland and vice versa, Lithuania is envisaging the construction of double-gauge tracks from the Polish–Lithuanian border northward, towards a new re-gauging and re-loading yard on its own territory with international financial support in order to facilitate re-gauging (Section C.II.2). International financial institutions, however, tend to be rather sceptical with respect to the net benefits of this project because it would simply mean relocating transborder facilities some kilometres inside Lithuania at substantial costs (Information provided by EIB).

This attitude would further reinforce the position put forward above that re-gauging does not pose serious problems in north–south traffic relations in the Eastern Baltic region.

Concerning *transit traffic from Central Europe to Russia via Poland and Belarus* the time consuming re-loading and the capital and operating costs for re-gauging constitute more relevant obstacles, because rail transport links in continental inland traffic relations play a more decisive role. Technically, upgrading, reconstruction, and modernization of re-gauging facilities do not pose any serious problems.²²⁰ If commercial viability can be expected, even the fund-

²¹⁹ See, e.g., Kommission (1997c) for such a reasoning in the case of Lithuania.

²²⁰ Re-gauging itself may be regarded as a less pressing problem. More important seem to be different brake and coupling systems as well as different maximum trainloads and climatic differences, which both call for exceptional construction criteria. Western freight forwarders who were engaged in Russian rail and combined traffic pointed in 1995 to still existing hardware obstacles with respect to modernizing the disposable rolling stock and re-gauging facilities, to constructing automatic re-gauging systems, and to providing automatic trip performance devices ("Die Schiene

raising may be easy. According to a consulting study, time savings could be substantial so as to improve viability and promise positive returns if complementary software obstacles were removed.²²¹

b. Road Networks

Road transport suffers from hardware shortages in several respects. It should be noted in advance that road networks exhibit similar qualitative defects as rail networks while densities do not seem to be a pressing problem in general. This situation may, however, change in the future if the modal shift towards road transport gathers further momentum (Section C.III.3). Within the Baltic Rim, EIT modal split is changing towards a higher share of road freight and passenger transport. Former transport systems were based on preferential treatment of rail traffic. With an increasing role of market mechanism in EIT transport sectors, road traffic is gaining importance (EBRD 1997f: 18). In passenger transport the car ownership figures have risen substantially (according to EBRD figures up to 30 per cent over pre-transition levels; see EBRD 1996: 46). This contributes to congestion at least in agglomerations. In freight transport mainly rail traffic has declined, whereas road transport has in some cases even increased (EBRD 1996: 45 f.) In addition, new forms of domestic delivery are developing: e.g., ferry terminals are now connected by direct truck links with final recipients in the three Baltic states. The modal shift towards road transport is limited, however, as far as transit traffic to and from Russia via Baltic ports is concerned.

Network Deficiencies

The share of *motorways* or motorway-like roads with controlled access and traffic restrictions for slow vehicles is extremely low or even virtually non-existent, with a certain exception of Lithuania and few arterial roads in the agglomerations of the region. Even the share of multi-lane roads with higher capacity below motorway standard is low. The relevance of this lack of motorway capacities, however, is limited, with respect to Estonia, Latvia, and the Russian oblasts. Existing road network *quantities* in these countries can by and large be considered to suffice for domestic purposes. Transit traffic to and from Central Russia is largely performed by rail. A different evaluation holds for Poland,

empfeht sich als der vernünftiger Weg", *Handelsblatt* of 8 November 1995; Koop 1995: 71).

²²¹ This study is referred to by Mahnke (1997). Currently existing re-gauging capacities at Brest where the Central European standard gauge network and the Russian broad gauge network are bound with each other are utilized only to a very limited extent (Kulke-Fiedler 1997). This could be interpreted as an obstacle to new investment, but can equally be seen as the obsolescence of past vintages of re-gauging devices.

where the lack of motorway capacities may hamper regional accessibility and development potential, as is argued below.

A time-consuming constraint for road transport, however, is the *lack of bypasses* for congested agglomerations or even for simple villages. This holds for all Baltic Rim EIT (World Bank 1997a, 1997b, 1997c, 1997d). In Poland, some specific constraining features exist with respect to the network composition: Substantial bottlenecks are encountered mainly on the hinterland road links of Polish ports. Remedy seems under way, as recent support programmes of World Bank and EBRD are explicitly devoted to enhance port–hinterland road links for Gdynia, Gdansk and Szczecin, but programmes have not yet been completed and for some time these bottlenecks will persist (World Bank 1997a, 1997d).

In general, existing road networks of all categories suffer from *delayed maintenance, rehabilitation and re-investment*. (i) The share of hard-surface roads ranging from 38 per cent in Latvia to 65 per cent in Poland is substantially below Western standards (Table A3). (ii) Hard surfaces often are of inferior quality (Holt 1993). The maximum axle load of roads in all Baltic Rim EIT, also of highways, is (with 6–6.5 tonnes) in most cases significantly below the level of Western road networks (10 tonnes and beyond) (IRF 1995, 1996). (iii) Not only surfaces lack quality, but the same holds for bridges and other complementary devices (see, e.g., World Bank 1996b).

In part, the low quality of the road network can be attributed to the limits on investment in the past. There is, however, also a *lack of suitable road maintenance equipment*; the existing equipment is largely outdated. *Financial resources* are lacking for keeping up with current requirements of road repair and for investments in new equipment. Although road maintenance work increased in the last years, only the most pressing projects could be picked up. Hence, road quality is still deteriorating. This tendency is evident for all three Baltic states.²²² In the case of the *Russian oblasts*, even a traditionally significant shortage of suitable building material for road construction is prevailing. In addition to these hardware problems, supporting financial institutions have pointed to *technological, managerial and skill deficiencies* in road maintenance administrations of the various Baltic Rim EIT. Accordingly, a considerable share of financial support is devoted to improve managerial and skill-related human capital in road maintenance units. Also, maintenance administrations must adjust to new aims and develop more professional attitudes towards their tasks. Up to now, existing insti-

²²² For Estonia currently a debit/credit ratio for repair work of 12:1 is reported ("Straßen reparaturbedürftig—Finanzierung auch über Phare", *Deutsche Verkehrs-Zeitung* of 18 September 1997), for Latvia one of 4:1 ("Lettland saniert seine Straßen", *Nachrichten für Außenhandel* of 2 January 1995), while for Lithuania LRA (1997) has admitted that repair work records of 1996 (260 kilometres of black pavements and 250 kilometres of gravel pavements) were by far lower than the 1995 and 1996 backlog increases (1,250 kilometres or 1,800 kilometres, respectively).

tutions often perform these tasks with a low productivity.²²³ In this context, outsourcing relevant functions to private providers or to joint ventures might be conceived as a device to improve maintenance productivity.

The Polish Motorway Programme

The *lack of adequate motorways in Poland* may constitute a development constraint for this densely populated large country directly adjacent to Central Europe. According to existing plans a network of 2,600 kilometres is to be constructed until the year 2015, of which 2,300 kilometres are to be operated as private (or semi-private) toll roads based on the BOT (build-operate-transfer) model. The envisaged network is going to consist of two north-south and two west-east links.²²⁴

It can be seen that existing traffic arteries in Poland run in the north-south direction from the Baltic coast to the southern hinterland on the one hand, and in the west-east direction from the German to the Belarussian and Ukrainian border on the other hand. In an overall perspective it can be expected that this network will serve the demands of traffic in Poland and in the foreign trade of the Eastern countries including Czech Republic and Slovakia, Belarus, Ukraina and the southern part of European Russia. An interim obstacle could be created, however, by still meagre traffic flows that can be expected in the medium run in some relations: According to forecasts it is open to doubt whether traffic flows would generate enough revenue for future pay-off of investment in all parts of the envisaged network if private BOT schemes and road tolls were employed. In addition, it is doubted whether the BOT schemes really can be made operational in the actual legal context of the Polish motorway construction law, and whether the difficulties Hungary and the Czech republic have been facing in the same respect could be avoided in the Polish case. Notwithstanding, first BOT concessions have been granted already. Actually, it looks like the sceptical forecasts might turn out to hold because the subsidies which are demanded by private con-

²²³ See, for example, World Bank (1997a, 1997b, 1997c, 1997d) and EBRD (1996, 1997a, 1997b, 1997c, 1997d).

²²⁴ The planned two north-south motorways are going to connect Szczecin with Legnica and the Czech border (A3), and Gdansk with Katowice and the Czech border (A1). Both are to serve as a part of the Transeuropean Motorway (TEM) to Southern Europe, which is promoted by Scandinavian countries. The two west-east motorways are planned to connect Swiecko (Frankfurt/Oder) with Poznan, Warsaw, Terespol and the Belarussian border (A2), and Zgorzelec (Görlitz) with Wroclaw, Katowice, Cracow and Ukrainian border (A4/A12). See Map A2, Kalinkowski (1996), and "Experten üben Kritik an Polens Autobahn-Plänen", *Handelsblatt* of 5 March 1997.

cessionaires tend to go beyond the ceiling at which the motorways could have been built entirely in the public sector.²²⁵

Moreover, the planning and implementation of the programme recently has been heavily criticized by infrastructure experts:²²⁶ (i) Planning has been accelerated too much at the expense of care, (ii) plans for tracks are already several years old and do not account for environmental and regional development demands that have changed since then, (iii) existing laws do not provide for transaction cost saving procedures to solve conflicts of environmental and transport policy,²²⁷ (iv) the acquisition of land is often protracted because of unclear property rights, (v) traffic forecasts lack reliability so that the whole financial concept and viability of BOT are questionable for some of the planned motorways,²²⁸ (vi) the inclusion of foreign motorway operators proved less simple as envisaged; instead, "buy Polish" aims had to be followed.²²⁹ However, there is no reason why these pitfalls in the infrastructure planning processes cannot be overcome with more experience and hard budget constraints.

Other Motorway Projects

While the planned Polish motorways will serve domestic traffic purposes, as well as they will provide Polish ports with links to the hinterland and to transit countries in the south, there are at present two other major motorway projects under discussion (and in part in preparation). These are

- the "Via Hanseatica" (from Riga through Western Lithuania to Kaliningrad and further to Elbląg, Gdansk, Szczecin and westwards), which would run parallel to the Baltic shore, and
- the "Via Baltica" (from (Helsinki-) Tallinn to Riga, Kaunas and Warsaw), which would run in a north-south direction through the Baltic states and to

²²⁵ "Infrastructure Survey: Construction Ahead", *Business Central Europe* No. 26 of November 1995; "Experten üben Kritik an Polens Autobahn-Plänen", *Handelsblatt* of 5 March 1997, and Information provided by EIB.

²²⁶ See in detail "Experten üben Kritik an Polens Autobahn-Plänen", *Handelsblatt* of 5 March 1997.

²²⁷ With respect to this point one may argue, however, that this obstacle is not specific to EIT, but, contrarily, even more pronounced in advanced Western economies, given the realization periods of major infrastructure projects like high speed rail lines and the Munich airport in Germany, which took 30 years from the first idea until opening.

²²⁸ This reproach was already put forward as early as 1995 by EBRD experts when evaluating some of the envisaged motorway plans ("Infrastructure Survey: Construction Ahead", *Business Central Europe* No. 26 of November 1995: 40).

²²⁹ Again, similar policy approaches are not unknown in advanced Western countries.

Poland, and which is one of the Pan-European Crete-Corridors and supported by EU funds.²³⁰

The Via Hanseatica, to a lesser extent also the Via Baltica, is conceived partly as an alternative to Baltic Sea shipping. In view of (i) the short distances and travelling times in Baltic maritime transport, (ii) lower costs of shipping, and (iii) the apparently ready availability of modern cargo reloading facilities in the Baltic Rim ports, a potential modal shift from maritime to road transport would be highly questionable. In turn, Baltic sea shipping could even substitute for still existing infrastructure gaps in Poland. This could also be the case, if future motorways in Poland could only be used if user charges are applied. Given this competitive setting between sea and land transport in the Baltic Sea region the construction of motorways running parallel to the Baltic shore as the Via Hanseatica can be questioned.

Likewise, we take issue with the projected motorway Via Baltica (which already exists as normal two-lane highway, but which probably is to be upgraded as four-lane motorway later on). It has been included in the sample of the so-called Crete corridors of the 1994 Pan-European Conference of Transport Ministers for priority action of infrastructure provision. Some parts of the Via Baltica, e.g., in Lithuania are already being upgraded with EU funds (Linderfalk 1996d; Kommission 1997f). Even if one can understand the wish of the Baltic republics to be linked to Western Europe also by high ranked roads, the Via Baltica motorway can be considered as of only secondary priority at the moment, at least from the perspective of goods traffic. If it would divert traffic from cheap sea transport it could be questioned on the same grounds as the Via Hanseatica. If not, the problem would be less pronounced, but we raise the question whether scarce funds should be really devoted to prestige projects instead to general upgradings of worn-out road networks.²³¹

²³⁰ Neither the Via Hanseatica (with the exception of a projected toll highway from Elblag to the Kaliningrad' oblasts' border) nor the Via Baltica seem to be part of the Polish motorway programme. Also from EU sources (see Kommission 1997f) it does not come clear whether the Via Baltica will be constructed as four-lane motorway from the beginning or not. According to EIB information it shall start as a two-lane express road in most of its parts while an upgrading as four-lane motorway is envisaged for a later construction stage.

²³¹ It should be noted that the Via Baltica project had not been unanimously welcomed in Poland, so that the Polish part was planned only as expressway (below motorway standard). Poland expected much less advantages of the Via Baltica than Estonia, Latvia, and Lithuania; it was feared that (i) it would divert financial resources from other Polish road projects such as the north-south motorways, which are part of the TEM—Trans European Motorway—link from Scandinavia to Southern Europe (Krzyzanowski 1996), or like the various planned east-west links, that (ii) it would intensify the competition for the Polish ports, and that (iii) in the case of redirecting sea transport it would add to congestion in Poland (Teichmann et al. 1995: 48 f.).

Summing up

In sum, the deficiencies in road networks in all the Baltic Rim EIT—as in transformation countries in general—are still present and add to costs of road transport also with respect to rolling stock choice and composition. However, the relative relevance of road network shortages must be kept in perspective to the various problems and delays in crossing national borders and passing customs clearance procedures (see Section D.V) According to the majority of experts, these problems are hampering trade and traffic much more than missing links or the poor quality of road networks.²³²

c. Airports

In the Soviet era, airport infrastructure in Russia and in its neighbouring countries was reported to be in a bad condition, in particular with respect to the capacity of air traffic control systems.²³³ In addition, airports suffered from substantial capacity shortages²³⁴ and quality deficiencies (e.g., with respect to runway pavements, runway load bearing capacities, taxiway capacities, lighting and navigational systems), while the sole Soviet air transport enterprise Aeroflot (which was run jointly with airports)²³⁵ showed all the unpleasant characteristics of a large and over-integrated monopoly (Foders et al. 1991: 141 f.).

As these shortcomings threatened to hamper the integration of the independent Baltic republics into international air transport, steps towards their removal were taken at an early stage. With internal funds and support from the international financial community (World Bank, EBRD, EIB), infrastructure investments have been made in *Estonia*, *Latvia*, and *Lithuania* since 1993.²³⁶ The

This position seems to hold because the Via Baltica link is still lacking as part of the Polish motorway programme (Kalinkowski 1996).

²³² See, e.g., “Kredit für Via Baltika”, *Nachrichten für Außenhandel* of 9 October 1996.

²³³ Also the World Bank study of Holt (1993: 170 ff.) points at some quality and capacity constraints in air traffic control systems that may have led to the former USSR’s relatively poor safety record, which, however, improved at the end of the 1980s. Although airport ATC systems were said to be obsolete in many cases, St.Petersburg’s international airport belongs to the six Russian international airports that are classified as ICAO II and that are said to be adequately covered by ATC systems.

²³⁴ Concerning capacity shortages, however, Holt (1993: 171 ff.) warned of potential overinvestment due to a substantial decline in air traffic and obsolescent capacities after the dissolution of the former USSR. So again the hardware problem shifts to quality aspects.

²³⁵ “Aeroflot was in effect both regulator and operator, controlling everything from international routes to crop dusting” (North 1996: 37).

²³⁶ While Estonia and Latvia have gained support for upgrading their central and some additional airports mainly from EBRD, the same task has been fulfilled in Lithuania

rehabilitation and upgrading of the air control system and of runways, taxiways, lighting systems and terminals was given high priority at an early stage. New systems have been implemented and existing facilities have been rehabilitated in order to (i) ensure aviation security according to international standards, (ii) provide for accessibility in international air transport, (iii) enhance technical capability (load bearing and length) of runways, and (iv) support the development of an appropriate institutional and regulatory framework for airport operations.²³⁷ Additional projects are underway for further improving main airports especially with regard to safety, capacity, and comfort levels.²³⁸ In Lithuania recently a new civil airport (a reconstructed air force facility) has been opened in the northwest in an economic free-zone around Siauliai with private support.²³⁹

Also in *Poland* airport capacities have been upgraded. Warsaw airport, which is one of three international airports of Poland and which accounts for 90 per cent of international air transport links of Poland, has been reconstructed since 1992. The project concentrated on modernizing runways and taxiways, supplying modern supplementary devices for airplane operation (e.g., de-icing), upgrading lighting systems and air traffic control systems, and reconstructing passenger and freight terminals (Augustyniak et al. 1995: 105). The same holds for another international airport, Cracow, and several regional airports.²⁴⁰

Concerning the current state in *Russia*, North (1996: 40 f.) maintains that airports are still in a worse state than the employed aircraft (which he considers old and uncompetitive). Airports are suffering from underinvestment in the past, and terminals, servicing facilities and runways are not in good state, the facilities are largely regarded as primitive, closed hangars for servicing newer vintages of aircraft are mostly lacking. Because of the inefficient control equipment, potential capacity utilization of airports is lower than on Western airports; air traffic con-

by EIB. In Lithuania, EBRD is engaging in railway rehabilitation and in Via Baltica motorway construction. See "Litauen erneuert Flughäfen", *Nachrichten für Außenhandel* of 9 November 1994, Leff (1997), and EBRD (1997a: 3; 1997b: 3; 1997c: 4).

²³⁷ See EBRD (1997a, 1997b) for Tallinn and Riga airport rehabilitation projects that have been conducted since 1993/94.

²³⁸ See, e.g., EBRD (1997d), Biznes & Baltija and TBT (1996), and "PHARE Assigns Latvia \$4.7 Million", *The Baltic Times* of 15 May 1997, for an additional project for Tallinn airport and navigation control improvements and new terminal facilities in Riga airport.

²³⁹ "Litauen: Neuer Flughafen im Nordwesten eröffnet", *Deutsche Verkehrs-Zeitung* of 2/4 October 1997; "Neuer Flughafen eröffnet", *Nachrichten für Außenhandel* of 16 September 1997; "Litauischer Airport erhielt Kreditzusage", *Nachrichten für Außenhandel* of 30 March 1995.

²⁴⁰ See, e.g., "Krakauer Flughafen wird ausgebaut", *Nachrichten für Außenhandel* of 31 March 1995 and Augustyniak et al. (1995: 105 ff.).

tol systems need updating.²⁴¹ Upgrading programs have been launched also for Russia; and EBRD is supporting some airport projects including rehabilitating runways in Moscow Scheremetjewo, or modernizing St. Petersburg Pulkovo and others.²⁴² It should be kept in mind, however, that Russian domestic air traffic has declined substantially since 1990²⁴³ both in freight and passenger operations due to the abolition of subsidized tariffs (North 1996: 37). Excess capacities in airport infrastructure arise and a number of secondary airports has been already shut down.²⁴⁴ Summing up, EBRD (1997f: 15) considers meanwhile airport infrastructure to be less a problem than the airline industry with both remaining quite a problem in Russia.

d. Pipelines

Pipeline transport has played a major role in former Soviet freight transport. In the Soviet Union, a dense network of crude oil, oil products, and natural gas pipelines of approximately 300,000 kilometres (of which more than two-thirds were used for natural gas transports) were in use.²⁴⁵ At the end of the 1980s, pipeline transport accounted for nearly two-fifths of the former USSR's tonne-kilometric performance of land transport (Foders et al. 1991: 111, 151). In 1991, 27 per cent of all freight performance in Russia was carried out by pipeline transport (Holt 1993: 24).

There do not seem to be quantitative pipeline capacity constraints. However, severe quality obstacles hampered the operation of pipelines in the Soviet era: In many instances inferior metal alloy subject to progressive corrosion was used in construction. In addition, pump stations could only be equipped with (inferior) domestic technology because pumps were excluded from exports to CMEA countries according to COCOM regulations (Foders et al. 1991: 151). As the Baltic Rim was included in the former USSR's pipeline system by the significant

²⁴¹ This evaluation is reinforced by the Russian Transport Ministry ("Flughafen Domoedowo wird privatisiert", *Nachrichten für Außenhandel* of 8 July 1997).

²⁴² "Rußland: Modernisierung der Flughäfen", *Deutsche Verkehrs-Zeitung* of 18 September 1997: 6; "Modernisierung von Flughäfen geplant", *Nachrichten für Außenhandel* of 16 August 1997.

²⁴³ The opposite holds for international flights, because foreign airlines have increased the number of links to Russia, and domestic companies (numerous successors of former Aeroflot) put their best equipment into international business to earn hard currency abroad (North 1996: 37; "Rußland: Nur der internationale Verkehr wächst", *Blick durch die Wirtschaft* of 13 March 1997).

²⁴⁴ "Modernisierung von Flughäfen geplant", *Nachrichten für Außenhandel* of 16 August 1997.

²⁴⁵ From 1970–1989 network length nearly tripled (Foders et al. 1991: 151 f.).

crude oil pipeline from Siberia to the exporting port of Ventspils, one can conclude that the same constraint existed for this pipeline, too. Meanwhile, the situation has improved because (i) COCOM regulations do not apply any longer so that upgradings are only subject to profitability considerations, and (ii) Western firms are permitted to engage and, accordingly, are acquiring shares in joint ventures in Russian pipeline transport.²⁴⁶

e. Telematics as Complementary Device to Transport

Telecommunications is an important complementary infrastructure network for transport, serving purposes of telematics, satellite based tracking and freight location, freight data transmission (for the end of speeding up intra- and intermodal transport chains) and the like. The rapid dissemination of telecommunications networks and firms including mobile communications and satellite communications in all EIT²⁴⁷ since the beginning of the 1990s, although, has reduced the risk of transport hardware obstacles being substantially aggravated by an insufficient supply of complementary hardware infrastructure in telecommunications. Of course existing internal communications networks, e.g., of railways are outdated and have to be replaced, and freight data transmission systems may still have to be installed, but in a commercial setting for telecommunications this is taking place in the course of normal operation and is underlying only the general budget constraints (Rieger 1997; Carrol 1996). In addition, the European Union is promoting the establishment of such freight data transmission systems (including the definition of common standards and interfaces) for Baltic Sea transport in the realm of its TEN program (Ferreira 1996).

²⁴⁶ In order to increase the carrying capacity of the main oil pipelines, petroleum products pipelines and the transfer capacity of terminals in sea-ports, i.e., the export pipeline systems, the Russian Government in its Decision No. 209 of 28 February 1995 asked ministries to submit proposals to attract private investment, including foreign ("On Measures Regulating the Access to the Systems of Main Oil Pipelines, Petroleum Products Pipelines and Terminal Facilities in Sea-Ports for Exporting Oil, Petroleum Products beyond the Customs Territory of the Russian Federation", *Foreign Trade* of July/August 1995). Several foreign oil companies acquired shares of the new Russian oil producers, and have taken up production; such companies are also shareholders in pipelines running from the oil fields in northern Russia to the Baltic oil ports. See, inter alia, "Oil Industry Privatization, Russian Style", *Petroleum Economist* 63 (1996) 2: 3-4 and "Russian Pipeline Network Begins to Shape Up", *Petroleum Economist* 63 (1996) 6: 16.

²⁴⁷ For an assessment of the telecommunications development for Estonia, Latvia, and Lithuania see Schrader and Laaser (1997: 61, 69, 75 ff.), for the EIT as a whole EBRD (1996), Carbajo and Fries (1997), and the various papers published in Welfens and Graack (forthcoming).

V. Obstacles To Trade Caused by Software Problems

The final section in this chapter deals with such impeding factors that are either a result of the operation of the transport system, that is, handling the available hardware, or stem from functions associated with the transport system, such as customs regulations. This is the widest field, with a large number of factors that are often less easily discernible than capacity bottlenecks caused simply by a lack of hardware, but with detrimental effects on the efficiency of the transport system as a whole.²⁴⁸

1. Obstacles in Ports and Shipping

Institutional and Safety Problems

Basically, the greater weight must be placed on such obstacles to goods transport that arise from inefficient use being made of the hardware available in the sea-ports and waterways or from the existence of inadequate institutional set-up (for example as a consequence of an inappropriate legal framework of transport), or from a lack of safety inside and outside the port areas. A number of such factors will be examined.

Port Pricing

Transport prices play an important role. These prices include not only sea freight rates but also various other prices. In this context, port dues are particularly relevant. For stable, regular sea connections, reliable calculations are required. Port pricing must, therefore, be plausible, stable, and free from discrimination. The application of discriminatory port dues, e.g., between ships of various flags, may impede the flow of traffic, especially if under such flags more modern and more productive vessels of advanced types are sailing than under the national flag of the port-state.

In fact, such impediments have been observed in the Baltic states especially after 1991. During the first few years, wide gaps occurred between the dues valid for national flag ships and those for foreign ships, mainly in Russian ports,

²⁴⁸ See, e.g., Franck (1997), who stated that “.... the accumulation of piles of cargo, bottlenecks etc. seen today are not so much caused by deficient infrastructure facilities as by flawed and faulty systems, agreements, and procedures”. The above presentation is based on extensive use of published material, especially in the shipping press, information by ports, and on personal enquiries and conversations with experts.

but also elsewhere. As far as this was deliberate policy for the protection of the merchant fleet, it can be expected that under the new shipping treaties such policy will no longer be pursued because foreign flag vessels are granted national treatment in ports. While the immediate effect on trade cannot be assessed, it may be expected that trade will be facilitated.

Setting differing prices according to flags may also, for example in the newly independent republics, have been the outcome of a trial-and-error pricing. It is also likely, however, that the port administrations charged dues from ships calling at their facilities that in some cases were extremely high, even if compared with those of Western ports, simply because they tried to maximize foreign-exchange earnings. Such practice at the port of Riga, for example, caused a Swedish ferry operator to discontinue its passenger service from Sweden.²⁴⁹ There is a likelihood that experience forces the port authorities to more market-oriented pricing behaviour.

Detrimental effects occur, moreover, where "artificial" cost factors are included in price calculations. Such factors are, e.g., dues for extra weighing, extra payments for exceeding the height limits for trucks because of the higher build of Russian vehicles, or similar discretionary acts by the port or other administrations. They may be applied without prior warning, and often result in considerable additional burden for the ship or shipper. Examples have been given of such incidents inducing ferry operators to divert the cargo from the port in question to a new line opened ad hoc.²⁵⁰ Even if this helps to keep costs down, the costs will still be higher than they would be in the absence of those arbitrary acts, which were the cause of the diversion, which must accordingly be considered as an act of despair. (Of course, similar short-term adjustments to obstacles can also be met on land routes, for example where customs problems and delays are a common occurrence.)²⁵¹

It can be expected that partly as an effect of the new shipping agreements, partly also attributable to unfavourable experiences made, port dues will increasingly be set according to rational economic criteria, and that pertinent distortions and effects on trade will, accordingly, become a thing of the past.

²⁴⁹ The service was abandoned already in the spring of 1993 ("Baltic Express Line wird eingestellt", *Deutsche Verkehrs-Zeitung* of 27 April 1993: 15). Meanwhile, another ferry company is serving the route.

²⁵⁰ "Mit Ro-Ro-Dienst Grenzstaus umgehen: Polferries startet neue Verbindung Dänemark-Polen", *Deutsche Verkehrs-Zeitung* of 2 July 1996: 15.

²⁵¹ It was also stated, however, that "it seems likely that the level of port dues is less important a factor in turning away both foreign and Russian customers than the ports poor reputation for reliability, speed, range of services, legal protection of customers and control of crime (Zaika 1993, pp. 2-4; Yermolayev 1994, pp. 7-8)" (North 1996: 29).

Insufficient Capabilities and Discriminatory Pricing by Railways

Sea-ports are an interface between ships and overland carriers. The efficiency of operations in the Baltic ports is, therefore, in part susceptible to the quality of their relationships with the Russian railways. In Russia, while the important position of railways is emphasized with regard to the climate and geography of the country, it is also pointed to the insufficient capabilities of rail transport. As this coincides with still existing general operational problems of Russian railways, this issue will be referred to in detail in Section D.V.2.a

Problems with railways are not confined to co-operation with the management or the workforce. Another object of complaints is the more or less erratic pricing policy of the railways, which makes planning over time extremely difficult or even uncertain for shippers (for example, tariff schedules seem to be altered on the 15th of each month).

Furthermore, transit ports and shippers alike have repeatedly complained of *tariff discrimination between ports* by the Russian railways. There is, however, no uniform line of such policy. On the one hand, extra-high tariffs were charged, for example, by the Russian railway for foreign trade cargoes moving via a Baltic transit port instead of St. Petersburg. The port of Kaliningrad, on the other hand, complained that high tariffs were applied by the Lithuanian railways for Russian goods in favour of the port of Klaipeda.²⁵² For example, starting in July 1994, the Lithuanian Railways introduced new tariffs in order to divert to Klaipeda cargo using the port of Kaliningrad. As a consequence, the freight rate for Russian transit goods through Lithuania (232 kilometres) was 8 Sfr., while only 2.67 Sfr. were charged per tonne if the goods were shipped via Klaipeda. Such tariff fixing was thought to be responsible for a decline of the port turnover at Kaliningrad (from 3.85 million tonnes in 1993 to about 2.5 million tonnes). Apparently, such practices also affect the competitive position of the transit ports themselves. There have also been reports that industrialists in Russia have expressed strong interest in a continued existence of lower special tariffs for shipments via Baltic transit ports (Arklina 1996).

From such individual shortcomings more comprehensive obstructions for transport may arise. One particular example recorded concerns the breakdown of intermodal container movements between railways and seagoing vessels because the Russian railways refuse to deliver their own containers into the hands of another operator (and also vice versa), the reason being that the containers may be stolen, or not be redelivered for some other reason. Thus, these problems in effect make through-carriage from shipper to recipient (consignee) unviable. The necessity to re-load the cargo stowed in a container to another results in con-

²⁵² "Königsberg: Das Hafenprojekt droht zu scheitern", *Schiff & Hafen* 46 (1994) 10: 56.

siderable extra costs, including the additional time consumed. Many cases have been reported of a lack of co-operation in the ports that may lead to similar effects.

Too High Tax Burden on Ports

Similar "software obstacles" refer to what is termed an "*erratic tax and levies policy*" by the state. Thus in the *Russian* ports, considerable difficulties were caused by pricing rules, and also by extremely high tax burdens plus mandatory hard currency transfers at a low artificial rate, to the tune of 50 per cent tax and an additional 40 per cent currency transfer. The resulting inability to finance necessary repairs contributed to the ongoing decay of equipment in the ports (Peters 1993: 275).²⁵³

Damaging Customs Procedures

Also to be included in the context of "software obstacles" are the manifold problems in the customs administration, which are frequently criticized. Among the large number of potentially damaging customs procedures the following have frequently been reported:

- the rapid and often entirely unexpected, and partly retroactive alteration of customs regulations;
- selective extra charges for certain goods, e.g., fresh or frozen meat, or high-value food;
- the application of such measures even if sales contracts have already been concluded and the price has been agreed between the parties, which may lead to losses for the firms, and short-term interruptions of the trade.

Customs charges may also vary, in the same country, between different locations, for unknown reasons and at will. Only recently there have been problems with the TIR carnets, which also include insurance. As these obstacles occur also in land transport, and are regarded by land transport enterprises as the most pressing ones, details are given below in Section D.V.2.b (external obstacles in land transport).

For a recent example, a serious impediment for the port of Klaipeda was registered in early 1997 when new regulations on cargo declarations for transit cargoes were introduced by the Customs Department in Vilnius. This led to a

²⁵³ Similar complaints have been raised by the managers of non-Baltic ports. The port directors-general of Murmansk and Arkhangelsk, V. Nikulin and S. Kravchenko, pointed to very high, or even exorbitant, rail freight rates plus high taxation as the factors responsible for an ongoing loss of cargo (Berenyi and Zenkovich 1997: 95, 97).

slowdown in the port, and to the congestion of its access routes. It was also reported that the backlash effect of these regulations reached as far as Magnitogorsk, which is one of the main shippers, via Klaipeda.²⁵⁴

In addition, there is little flexibility of customs administrations mainly in the Russian ports if a ship cannot, for some reason, unload or load at a certain berth as intended. The goods must be carried to predetermined customs points that are competent for the ship's original berth. This can involve long distances and, as prices are fixed, cause high additional costs.

Wrongful Behaviour of Forewarders or Hauliers

It should not be overlooked that problems connected with the customs procedures mainly at the Russian borders, are in actual fact frequently caused by the forwarding agents or the hauliers themselves, e.g., by incorrect or incomplete filling-in of customs papers, or false declaration of cargo value (Franck 1997).

As regards such problems in Russia, the head of the St. Petersburg customs administration warned all firms not to try to by-pass the customs procedures; any such attempt would be severely punished by very high fines (Schmidt 1997). He also underlined that criminal behaviour inside the customs administration will likewise be prosecuted (in that context, he quoted a case where a customs official illegally acquired information, which he passed on to criminals, this resulting in large-scale theft and corresponding damage to the owners of the stolen cargoes).

In other branches of state administration similar problems can arise.²⁵⁵ Inflexible or extended passport and visa controls may be particularly unpleasant for passengers, but also for the ships carrying them, especially if such controls take place aboard the ships before the passengers may alight.

It has been emphasized that the customs administration and the immigration authority in Russia are, by and large, the only branches of Soviet administrative structure that have overcome the changes nearly unscathed, with strict procedures and little corruption. Surprisingly their contribution to trade and transport is negative rather than helpful, not least because of the high degree of arbitrariness of decision-making.

A particular problem can be associated with the successful operation of Western firms or joint ventures if the port capacities, operated on a leasing arrangement, are no longer sufficient to handle a growing cargo volume, and additional capacity is required. A conflict may then arise between the owner of the port, that is, the state or municipal administration, and the port operating agency

²⁵⁴ "Customs Bottlenecks Paralyze Klaipeda Port", *The Baltic Times* of 6 March 1997.

²⁵⁵ These and the following obstacles have been put forward in personal communication.

if the owner welcomes the successful undertaking while the port operating agency fears that inroads are made into its competence because another part of the port area or capacity is delivered into private operation. The outcome of such conflict—whether it could be detrimental to further trade development—seems to be uncertain and depends on the specific condition of the individual case.

Lack of Mentality

Finally, a more diffuse range of relationships between effects and causes is illustrated by, for example, delays or interruptions in cargo handling that may reflect certain mental problems of the workers when they have not yet caught up with their Western counterparts as regards *flexibility, ad-hoc decision-making, use of telecommunication on the terminal, et cetera*. While these occurrences seem to be only minor, they may result in considerable disturbances, which are particularly felt in the turn-round of ferries and/or liner ships, which are bound to a fixed schedule.

The lack of *professionalism, expertise, and readiness for change* were in the view of port users the causes of cargo loss and disruption of activities from which the port of Riga suffered at that time.²⁵⁶ Similar reasons can be quoted for numerous other shortcomings among the workforce as well as the management. Taken as a whole, however, it would seem that such problems, although they will never entirely be solved (similar to Western ports), will gradually peter out with improving training and professionalism.

In some countries, genuine privatization is seen as an urgent necessity in order to overcome the authority-like character and too slow, too complicated procedures of currently still state-owned would-be enterprises. In the same context, and especially again if passengers are carried, more customer orientation is still often lacking, including strict adherence to contractual commitments.²⁵⁷

Safety in Ports

Safety and crime affect both people and cargo, and are problems that are encountered in many ports in the world. They are bound to be problems also in the Baltic ports, and have in fact often been reported. As regards crime, the offences range from corruption—which incidentally is one of the most widespread evil in ports everywhere—to pilferage of cargo, and even to stealing of complete transport units (containers, trailers, trucks). While the first, less obvious types are

²⁵⁶ See "A Terminal Case: Riga Port in Need of Urgent Treatment", *Fairplay* 329 (1996) 5892. These problems may now be solved, after the Riga Commercial Port company was set up and started its operations.

²⁵⁷ Examples are hotels, where overbooking or second sale of booked rooms against higher price occur.

closely related to the low levels of income in the countries concerned and cannot immediately be overcome by suitable measures, the latter seems to be less frequent in ports that can relatively easily be guarded, than on overland routes to hinterland destinations. This conclusion could be drawn from interviews with partners engaged in traffic with Baltic ports. The various types of safety precautions taken by port, shipping and transport enterprises are, however, of necessity associated with additional costs and productivity losses.

Summary

The analysis has shown that a large number of potential impediments exist in the Baltic ports that may, if activated, obstruct a smooth flow of cargo through the sea/land interface in a multitude of ways. Their removal is a more urgent need than in the "hardware" field, which can be fulfilled in a comparatively short time, without much capital outlay. The main task is to minimize transaction costs in the ports by suitable institutional means by which transparency, reliability, credibility, and security of this part of the transport chain may be achieved. Cooperation with partners from the Western countries can be particularly helpful.

2. Land and Air Transport

a. Transport Software Obstacles

General Operations of Railways

Railway companies in the region (as other transport combines or Soviet firms in general) were substantially over-staffed during pre-reform periods (EBRD 1997f: 14 ff.). Cuts in workforce by half or even two-thirds of existing staff figures are inevitable if Western productivity levels—which still are unsatisfactory in themselves—shall be reached. Although the railway companies in the three Baltic republics have made substantial staff cuts, the financial situation of EIT railways in general remains precarious (Reynaud 1996: 51; Umann 1996).

The railway companies of the Baltic Rim countries were lacking operational experience in the first place. When *Estonian, Latvian, and Lithuanian* companies (EVR, LDZ, and LG) started business on their own account after the spin-off from former Soviet Pribaltiyskaya railways, all three companies had insufficient managerial and technical skills (see, e.g., EVR 1996). This held in particular for Estonia and Lithuania, while Latvia was less constrained because Pribaltiyskaya railways' administration had been located in Riga so that in Latvia more operational skills were available. This obstacle should, however, prove being transitory as managerial and technical human capital is easily transferable, and actual-

ly it is being transferred in the course of, for instance, the rehabilitation set-up programmes set up by the EBRD, the EIB and others for the railway companies of the Baltic Rim Countries.²⁵⁸

Human capital for improving operations can be imported also if joint ventures with Western railway firms are established. *Estonia* seems to be a forerunner in this respect. To meet the challenge of repairing worn-out tracks and improving unproductive rolling stock, a joint venture with a German construction firm has been set up in Estonia for track (and according to some sources even rolling stock) maintenance and repair.²⁵⁹ If such examples were followed, a speeding up of improving operational performance could be expected. A further option for increasing human capital stocks and skills in railway operations and in market development is privatization under which foreign operators may take over operations. Again *Estonia* is the forerunner in this respect; its privatization plans were already mentioned in Section D.III.3.

The effects of such strategies are not confined to operational efficiency. Issues that can likewise be expected to be improved by the strategies mentioned are: *developing commercial attitudes*, improving service level, supplying those services that shippers demand, reacting to price changes, improving cost-controlling, enhancing competitiveness, the very notion of selling services to customers, and getting rid of former monopoly slack (see also EBRD 1997f: 16 f.). Baltic Rim railways are in need of such improvements, although progress with young management personnel is being claimed in some cases (EVR 1996). *Russian* railways have also tried to proceed towards more commercial attitudes. How far-reaching and how successful the strategies employed up to now will be, cannot be evaluated at the moment.²⁶⁰ One may be sceptical because the influence of railway bureaucracies still prevails. On the other hand, at least one information provided by EBRD can be cited in this respect: Private public partnerships seem to work well in improving the performance of October Railways.²⁶¹

One may even suspect that the modal shift from rail to road, which already takes place (EBRD 1996; Carbajo and Fries 1997), may to a certain degree be reinforced because of the EIT railways' inability to manage the transport of additional cargo. This has been reported explicitly for *Poland (as well as for other*

²⁵⁸ Also major Western railway consulting firms are active in the Baltic Sea region. Information provided by EBRD.

²⁵⁹ See "Deutsche reparieren Estlands Eisenbahn", *Nachrichten für Außenhandel* of 9 September 1996 and Oll (1996b).

²⁶⁰ The strategies are, e.g., unfolding marketing activities, establishing first approaches towards freight forwarding activities, slowly introducing the long neglected combined and container traffic and others (Kulke-Fiedler 1995; North 1996: 15 ff.).

²⁶¹ Information provided by EBRD.

Visegrad countries) in 1995.²⁶² Railways were shunned by shippers because they were said to be overutilized. Any such overutilization, however, seems to be doubtful in view of the reported decline in rail freight traffic. Apparently not only terminals and rolling stock are deficient but, above all, the flexibility to attract potential cargoes. This may be due to organizational problems within the current institutional setting, which could be overcome by steps towards material privatization.

Transport Chains, Container and Combined Traffic

In *rail transit traffic* between Russia and the Baltic countries, cargoes have to be interchanged between Russian and Baltic railway companies. This does not necessarily mean a reloading—although this procedure may in fact be unavoidable because of problems with containers, which must often be saved from disappearing in Russia. Border formalities, changing crews and locomotives, and the technical interchange are, however, time-consuming and costly to both railways and shippers. Breaking up railway networks according to national borders may not be the economically superior solution. Co-operation would be helpful. One might even conceive intermodal co-operation between ports and hinterland rail operations across borders. This would, however, call for an efficiently designed regulatory framework for railway operations to permit such options.

A more general obstacle in rail operations can be seen in the former backward state of *container and intermodal services*, which were not very prominent during Soviet times (Foders et al. 1991: 112). A slight improvement is happening in this form of transport, because Russian railways are eager to expand this branch of business. New container stations have been opened as well as repair facilities; in addition automatic data systems have been introduced to speed up operations so that hardware conditions have improved. But the success is impeded on the software side, in particular by the still persisting lack of advanced freight forwarding services of Russian railways (North 1996: 16 ff.).

Concerning container traffic in *rail transit from Western Europe to Russia via Poland and Belarus, and vice versa* the situation seems to have improved slightly since 1995, although the traffic flows are still meagre. From this year on the direct container train service named “Ostwind” (East Wind) from Berlin to Moscow and return has been set into operation.²⁶³ This rail container link has proven

²⁶² “Ostmitteleuropa: Die logistische Herausforderung”, *Ostwirtschaftsreport* of 31 March 1995.

²⁶³ The “Ostwind” is connected to the Western network by 22 links and provides services to more than 80 destinations around Moscow.

fairly successful, although it has not rendered the expected results.²⁶⁴ This train suffers from the usual problems with delays at the border²⁶⁵ and uncertainties because of frequently changing customs regulations and procedures. It is reported, however, to provide rather safe transports so that since 1995 not a single container has been lost.²⁶⁶ A general problem for the operators of the train is that transport flows are highly unbalanced. In this special case the profitability of the service is dependent on the supply of a sufficient number of empty containers by Russian railways for return traffic, which reportedly is rather cost-intensive.²⁶⁷ Another small improvement might be the transport of unaccompanied trailers by rail from Finland via St. Petersburg to Moscow, which has been tested from October 1997 onwards.²⁶⁸

²⁶⁴ The transit volumes as transported with this link from 1995 until June 1997 add up to about 8,300 TEU or 133,000 tonnes of cargo (Kulke-Fiedler 1997). However, these figures differ substantially from those as reported by Mahnke (1997), who speaks of 11,000 containers (however without reference to the TEU unit) being transported in 1996. This is only a small fraction of cargo traffic between Germany and the CIS, however, which currently amounts to 3.1 million tonnes per year (of which 2.0 million tonnes are bound eastward) and where the share of railway traffic (all kinds of cargoes) is 17 per cent, while road traffic carries 80 per cent. The remaining 3 per cent of cargo is transported by sea and inland shipping. These figures have been taken from a consulting report of Dornier System Consult as cited in Kulke-Fiedler (1997).

²⁶⁵ The train runs 4 days from Berlin to Moscow, although re-loading of containers at gauge alteration station Brest is handled under preferential conditions, clearance procedures at the Polish border account for 8 hours and the delivery from Moscow marshalling yard to recipients could still be speeded up for a whole day. See "'Ostwind' bietet Alternative zu Lastwagen-Transporten", *Handelsblatt* of 27 February 1997 and Kulke-Fiedler (1997). In addition, the upgrading of the Brest re-gauging devices to automatic operation would substantially save time that is currently consumed by re-loading containers instead of re-gauging carriages. See Mahnke (1997), whose figures for total transport times, however, show considerable differences to the other sources, although this source relies on the same Dornier System Consult study as Kulke-Fiedler (1997) does.

²⁶⁶ This feature of the service is not only stressed by the operator, the Deutsche Bahn AG in collaboration with Polish, Belarussian and Russian railways ("'Ostwind' bietet Alternative zu Lastwagen-Transporten", *Handelsblatt* of 27 February 1997), but also by transport information services (Kulke-Fiedler 1997). So even if one takes into account certain advertising components in DBAG's reasoning the reported difference in the safety level seems conceivable, as containers shipped by rail cannot be misappropriated as easily as containers shipped by trucks.

²⁶⁷ This perception may coincide with the fact that Western shippers show reluctance concerning container shipments towards Russia, because these containers do not return from there.

²⁶⁸ "Unbegleitete Trailer reisen auf der Schiene nach Moskau", *Deutsche Verkehrs-Zeitung* of 11 September 1997: 12.

Operations of Other Modes

For the other modes, internal operational problems are not as prominent as for railways, at least for the *firms that supply transport services*.²⁶⁹ This is due to the new market structures, where private firms compete with the old, still state-owned firms. Rolling or flying equipment can be bought or leased, firms can import managerial competence from abroad if necessary. If Baltic Rim EIT abstain from regulatory protection for old firms, obstacles that exist at present, will vanish. For Western firms entering the market either from within or just from serving cross-border transports, obstacles can be found in the first place in market formation and co-operation.

Nevertheless, for the reform countries in Central and Eastern Europe in general, *forwarding and logistics markets* are still a difficult terrain. The market for logistics services emerges only slowly, at least as far as advanced services are concerned. Indeed, advanced logistics markets are still underdeveloped in EIT, but the current situation changes slowly and continuously. Former state-owned freight forwarding companies have by and large been privatized and are now subject to competition from newly established firms and increasingly also from large forwarders from the West. In the market segment of standardized services, which are offered at lower prices, intense competition among domestic suppliers using old rolling stock and equipment can already be observed. Western freight forwarders, who engage mainly in advanced market niches, face oligopolistic market structures, but apparently are not prevented from entering markets.

Western freight forwarders point more to software obstacles than to hardware deficiencies if asked for the main impediments to market development. Crucial for entering forwarding and logistics markets in reform countries is (i) to establish joint ventures, to found subsidiaries or to buy domestic forwarding companies, so as to develop Eastern markets from within, (ii) to adjust to different mentalities, e.g., with respect to the significance of time, (iii) to overcome still serious deficiencies in professional skills of employees,²⁷⁰ (iv) to apply modern forms of communicative management, (v) to accept rapidly changing circumstances (including those that are influenced by bureaucratic action), and (vi) to

²⁶⁹ Problems in network maintenance and planning have been dealt with in Section D.IV.2 on hardware obstacles.

²⁷⁰ Educational and training costs for qualified logistic personnel, which has to be borne by foreign entrants on own account because the supply of such personnel is virtually inexistent, are considered being substantial. See the experiences of a major German freight forwarder as reported in "Osteuropa bleibt ein schwieriger Markt", *Blick durch die Wirtschaft* of 19 June 1997. This is, however, normal in markets that are still to emerge.

be cautious concerning market development and pay-off periods.²⁷¹ These intangible characteristics are not specific, however, but can be found in every foreign market that is to be served. Thus, related problems will prove transitory.

b. *External Obstacles*

Taxes, Levies, and Fees Policy

Some EIT are collecting general road user fees from commercial road users in freight and passenger transport. These fees could basically be justified by the "user cost principle" but practically what goes on has nothing to do with motorway tolls or with congestion fees. The latter ones are based on economic grounds, as they are accounting either for capital amortisation of BOT motorway links or for sharply rising marginal user costs in the case of congestion. Instead, existing road user fees seem to reflect (i) a poor condition of tax collecting systems of the EIT so that transport and trade are used as a tax base as is true for less developed countries, and (ii) regulatory aims because the fees are often collected discriminatorily only from foreign road users.

Of the countries being dealt with in this report, *Lithuania* has collected this tax since 1995. It is applied to users from countries with which no treaty of exemption exists.²⁷² According to a recently published IRU tax survey (IRU 1997a, 1997b), which, however, did not cover Latvia, Lithuania, and Poland,²⁷³ such road user fees are collected also in *Russia* (although on a non-discriminatory basis), but not in *Estonia*. *Estonia* seems to pursue a rather liberal tax regime with respect to transport (IRU 1997a: 5), because it collects only two kinds of fees (diesel tax and fees for oversized loads). This seems to correspond to the rather liberal trade regime of this country in general (Schrader and Laaser 1997; Kommission 1997a). *Russia* is collecting four kinds of fees: road user charges, fees for oversized loads, tax for the use of terminal facilities and other regionally imposed fees, furthermore a border crossing charge is under consideration (IRU 1997b). In most countries, regional or local bodies are imposing additional local road user fees because of underdeveloped systems of fiscal federalism²⁷⁴ even if

²⁷¹ "Osteuropa bleibt ein schwieriger Markt", *Blick durch die Wirtschaft* of 19 June 1997.

²⁷² No such treaty exists, for instance, between Lithuania and Germany ("Litauen erhebt Gebühren zur Straßennutzung", *Nachrichten für Außenhandel* of 7 March 1996).

²⁷³ This survey was conducted by a questionnaire among national IRU member organizations.

²⁷⁴ This has been reinforced in interviews with German transport companies' association and freight Forwarders' association. Furthermore, the authors may point to personal experience when travelling through Latvia.

they are considered illegal (as in the Russian case mentioned).²⁷⁵ Shortly before this report was completed, also *Poland* introduced a road user fee for trucks of more than 12 tonnes gross weight. According to available sources it is applied to both domestic and foreign trucks. In this case it would not be inconsistent with the user cost principle. However, foreign truckers' associations complain that the level of the fee lies three times above the maximum threshold for such fees in the EU. This might be justified by the scarcity of funds available for road construction purposes. At the same time, it could be motivated merely by general fiscal purposes without any fiscal equivalence to road building.²⁷⁶

Rail links to the Russian market are currently hampered by some similar regulatory obstacles that seem to be simply based on fiscal considerations. Russia recently imposed an extra value-added tax of 20 per cent on rail transports using Russian tracks. This tax is reported as lacking a consistent legal base. In addition, compulsory currency deposits have to be made in order to ensure compliance with safety regulations (Kulke-Fiedler 1997). In part this additional VAT was cancelled in September 1997. Transports from Russia (or other CIS states) to consignees outside the CIS are now exempted, while the tax still applies to rail transports from outside the CIS to Russia (or other CIS states).²⁷⁷ This measure has apparently been taken without consideration of further modal shifts to road transport, which can be expected as a consequence.

Also under the heading of taxation obstacles, one may subsume *fee discrimination in air traffic*, which is taking place in *Lithuania*. The same discriminatory attitude, exhibited with road user fees in that country, holds for landing fees on airports, where Lithuania offers the advantage of a 90 per cent discount on airport landing fees only for its own national airline; foreign airlines that have gained landing rights are subject to the full amount of fees.²⁷⁸ Anyhow, Lithuanian air transport is far from being separated from airport authorities, and thus exhibits anti-competitive features. Landing fee discrimination adds to this lack of competition and sheds some additional unfavourable light on national

²⁷⁵ On all federal levels normal taxes are also imposed on locally based transport companies, without regard to their cumulative effect; local authorities often take wage payrolls as the best taxbase available and thus add to wage costs. *Russian* hauliers complain that they are forced to diversify their activities beyond transport because profits from transport are used up by the aggregate domestic taxes (North 1996: 21).

²⁷⁶ "Polen führt zum 1. Januar neue Straßenbenutzungsgebühr ein", *Deutsche Verkehrs-Zeitung* of 30 December 1997: 1.

²⁷⁷ "VAT teilweise abgeschafft", *Deutsche Verkehrs-Zeitung* of 2/4 October 1997.

²⁷⁸ Foreign airlines apparently are showing some understanding for the preferential treating of the Lithuanian company in the light of the infant industry argument (Linderfalk 1996a).

flag carrier policy for a small country, which could easily be served by international air traffic (Linderfalk 1996a).

Customs Regulations and Clearing at the Border

An overall obstacle to transport in the Baltic Sea region regardless of the mode concerned, but hampering in particular transit traffic, are *complex and time-consuming customs and border procedures*. Economic costs of the respective efforts are not only incurred in the form of delays, higher pecuniary costs, opportunity costs for employing human capital, but also of uncertainty and, in case of doubt, extra-costs for bypass strategies such as changes in transport route choice or modal shifts, because routes and modes are differing with respect to security and calculability (Breitzmann 1996: 10).

Transport companies are increasingly reluctant to undertake commitments in the Baltic countries and Russia (Franck 1997: 1). As regards customs clearance, Russian, but also Baltic customs authorities have been criticized for causing delays, slow processing of documents, and a low speed of cargo inspections. Some blame in this respect may also be attributed to shippers and forwarders so that the relevance of this issue is somewhat mitigated. The most important obstacle seems to be the frequent change in customs regulations of the countries analysed here, which has raised transaction costs and insecurity for transport companies (Franck 1997:1).

The International Road Transport Union (IRU) has stated that the bottlenecks at the border with respect to customs clearance are the most important problems at present for road traffic to and from the EIT in general (the Baltic republics and Poland included). IRU points to peak waiting hours for trucks of 90 hours at the Polish border to Ukraine and of similar ones to Belarus.²⁷⁹ But even at the German-Polish border maximum delays as witnessed in the course of 1997 add up to 48 hours at Frankfurt/Oder, 55 at Forst and 60 hours at Guben. Delays at the borderline from Poland to Lithuania are reported of being up to 40 hours.²⁸⁰ As can be inferred from time series statistics provided by IRU (1997c) delays are

²⁷⁹ Cited according to "Transport: Schwer kalkulierbares Risiko", *Ostwirtschaftsreport* of 5 September 1997: 341 f.

²⁸⁰ Reported September 1997 figures on waiting times (IRU 1997d: 3 f.) are in some cases lower for seasonal reasons, but roughly corroborate the aforementioned ones: The worst customs stations seem to lie at the Polish-Belarus border (medium waiting hours from 4.5 to 27.5 hours, maximum waiting hours from 20 to 112 hours) and at the Polish-Ukrainian border (medium 3 to 28.4 hours, maximum 17 to 100 hours); the Polish-Lithuanian border is a serious bottleneck, too (medium 23 to 24.3 hours, maximum 25 to 27 hours), and even the Lithuanian-Latvian border is striking (medium 10.3 to 11.3 hours, maximum 11 to 12 hours); also the German-Polish border is reported of still causing serious delays (medium 1.3 to 13.2 hours, maximum 5 to 30 hours).

still pressing because the situation does not seem to have improved between January 1996 and July 1997 for the customs points relevant for this study.

The reasons for these delays seem manifold: (i) Above all, border stations cannot handle the rapidly rising transport volumes²⁸¹ because hardware shortages exist as well. These shortages include the lack of modern electronic data processing and other complementary equipment for fast clearance. According to IRU (1997c: 1) even EU support from PHARE and TACIS programmes and international banks that have been launched so far could not catch up with the increase in traffic. However, issues of procedure, human capital, and motivation seem more relevant. (ii) Even where modern equipment is available, customs personnel exhibits deficiencies in handling performance so that training programmes are called for. (iii) In general, the "administrative human capital" that is essential for a frictionless clearance process is widely lacking, e.g., with respect to organizing functioning changes of shifts, or providing 24 hours services; sometimes these services, to which Western transport companies are used, are provided but depending on the goodwill of customs personnel. (iv) Complaints are made because of annoyances due to "bureaucratic red tape". (v) Customs bureaucracies are said to lack comprehension of the basic prerequisites for rapid and smooth trading in the age of globalization.²⁸² (vi) On the side of the forwarders and shippers of goods, a lack of accuracy in complying with the procedures or in correctly filling in the necessary documents has been reported.²⁸³ Dissemination of information on the correct procedures proves to be helpful.²⁸⁴

Answers to a questionnaire that was recently distributed among Western multinational enterprises that were trading with Central and Eastern European reform countries have again underlined the existence of customs obstacles (DHL 1997: 2 ff.). Such obstacles ranged on a 1–10 scale at 5.3 in aggregate view. 89 per cent of firms complained of customs problems, 27 per cent pointed at existing political instability, and 25 per cent pilloried corruption. 39 per cent of the firms felt that customs authorities raise serious barriers, 25 per cent mentioned

²⁸¹ According to IRU road transport, volumes towards the East doubled from 1991–1996 with emphasis on the traffic relations crossing the German–Polish borderline. See IRU (1997c: 1, Annex I) and "Transport: Schwer kalkulierbares Risiko", *Ostwirtschaftsreport* of 5 September 1997: 341.

²⁸² See "Transport: Schwer kalkulierbares Risiko", *Ostwirtschaftsreport* of 5 September 1997: 341 and DHL (1997: 4).

²⁸³ Franck (1997) even maintains that "... there are countless examples of falsely low invoice amounts...".

²⁸⁴ For this purpose, the German forwarders' association has—in collaboration with EIT forwarders' associations—published a series of instructional leaflets, which provide the necessary information for cross-border transports to the single EIT and which have been highly welcomed by forwarders.

police-like behaviour, and only 10 per cent felt being treated as partners. Progress was considered to be slow, but the firms encountered a perceivably better situation and less complicated procedures in those countries that were accepted for EU accession negotiations in the first round: Czech Republic (41 per cent of firms mentioned the country explicitly), Hungary (34 per cent), Poland, Slovenia, and Estonia (each 12 per cent).

Congestion at the borders and the problems with customs clearance have forced transport companies to devise bypass strategies, which add substantially to transport costs: (i) A mild remedy seem to be re-routings to less congested border stations, as for instance at the German–Polish border in Szczecin. (ii) Modal shifts to more expensive transport modes have been observed. (iii) Some firms report that—besides employing only experienced drivers—they rely on “good contacts” and “short wires” to customs administrations, and on early and continuous information of the administrations about the cargoes that have to be expected in the coming transports. In their view this contributes to a thriving climate and mutual understanding.²⁸⁵

A specific barrier to transport and trade across the *Baltic–Russian borderline* has been imposed by the Russian customs committee. (i) The number of customs terminals for clearance of cargoes from or in transit through Baltic countries in road transport was reduced to three for Latvians in March 1996, and to only one for Lithuanians in September 1996, and (ii) repeatedly claims were made against Baltic truckers based on the allegation that they transported contraband into Russia. With respect to the concentration of clearance to only a few customs offices, the 1996 regulations provide for goods transported by Latvian and Lithuanian trucks (also transit cargoes from Germany and Denmark)²⁸⁶ to be unloaded for clearance procedures at only a few designated stations that have poor infrastructure and are located far from main transport routes. Russian officials have justified the necessity of this regulation with two arguments, (a) the trucking firms of these and other countries (e.g., Turkey and Iran) are unreliable business partners, and (b) a high volume of contraband is passing through these countries into Russia (Rawson 1996; TBT and Biznes & Baltiya 1996). What seems more likely, however, is that this measure is intended to prevent the Russian freight forwarding market from being dominated by Baltic firms, which have been quite successful in gaining substantial market shares since 1991 and have challenged

²⁸⁵ “Transport: Schwer kalkulierbares Risiko”, *Ostwirtschaftsreport* of 5 September 1997: 342.

²⁸⁶ These measures have been officially published in transport information services. It was stated there that similar restrictions would be imposed to Estonian trucking firms (Rawson 1996).

the position of domestic Russian firms who asked for protection.²⁸⁷ While this may explain why Russia has imposed the restrictions, the extra-costs for transport to and from Russia in general should not be overlooked. They may be responsible for the drastic decline of Baltic forwarding in Russian markets after these restrictions have been enacted.²⁸⁸

Customs problems can be observed also in *intra-Baltic trade and road traffic*. The new borderlines between the three Baltic republics prove to be a trade barrier of its own, although an intra-Baltic free trade area came into effect in 1993. Customs checks can be found in particular with transit through other Baltic states, e.g., at the Latvian-Lithuanian borderline. While rigid customs procedures are officially justified by a necessity to control the alcohol and tobacco trades, in fact controls are performed for all cargoes even if they can be traded duty-free. At least Latvia has already experienced some cases of foreign investors' threats to withdraw from the country because of excessive customs procedures (Dörrenbacher 1994: 40; Rawson 1996; Wein 1994: 107).

Another obstacle that can be either subsumed under the current heading of customs clearance or under the following of criminal offences is the deterioration of customs procedures like the *TIR clearance system* in 1996 due to smuggling.²⁸⁹ This procedure worked quite well, until it was exploited by smuggling gangs for transports from Poland to North Africa, mainly with alcohol and tobacco products, all of which "vanished" within EU borders. As a consequence, these products were removed from TIR procedures, but smuggling turned to other commodities. From 1992 to 1994 more than 1,400 truckloads have thus been lost, so that most European freight forwarders' associations cancelled the TIR treaty with respect to Poland. Since then Polish transport companies have had to deposit either money or bank declarations of guaranty for meeting customs claims. This constitutes high barriers for Eastern freight forwarders. Eastward trade in turn is under the threat of the Polish forwarders' association to re-

287 The market share of Russian forwarders fell from 75 per cent (1991) to 25 per cent (1996). Foreign shares rose fast with a growth rate of 27 per cent from 1995-1996 alone because of superior competitiveness (Transitinfo 1997).

288 From April to September 1996, Latvian transport companies lost 20 per cent of their cargo volume because of the customs restrictions (TBT and Biznes & Baltiya 1996; Transitinfo 1997).

289 The TIR system normally has the purpose to reduce clearance transactions costs. With the help of TIR clearance documents trucks have to be cleared only twice: at the first borderline that is crossed, in the case of the EU the outer borderline, and at their destination point. In the case of a "loss" of cargo on the way to its destination (e.g., if cargo is supplied to the market without payment of customs duties) the freight forwarders' association is held liable. This association in turn is insured while within the EU the insurance company itself is bailed out by the European Commission.

move their own guarantees for Western forwarders (Bachmann 1996). Also Russia has recently threatened to cancel TIR procedures if Western firms would not pay at least part of alleged damages and unpaid customs duties in Russia for which they are made responsible by Russian officials.²⁹⁰

Criminal Offences

Criminal offences—in the form of the theft of cargo, containers or even entire transport vehicles—are reported for all modes, but in particular with respect to road transport. It should be noted in advance, however, that a different evaluation has to be made with respect to the individual EIT. On the one hand, available evidence in most cases points to problems in *Russia*.²⁹¹ On the other hand, domestic transport markets in *Poland* (as in the other Visegrad countries) seem to be far more safe with regard to criminal offences. The safety risk level is considered by freight forwarders as being only slightly higher than in Western Europe. Of course high-value cargo is associated with relatively more problems (and higher surveillance costs), but these are not looked upon as unsolvable by forwarders.²⁹²

As far as *rail transport* is concerned, not only the operators of rail container services *from Central Europe to Russia via Poland*, but also transport information services report higher safety levels on the rail links to Russia so that from 1995 to 1997 no container has been lost according to these sources.²⁹³ In contrast, road transport firms and associations point to theft or re-direction of whole trains taking place in Russia.²⁹⁴ But it is conceded that in general, criminal offences seem to persist as a major obstacle to transport operations in particular in Russia, but also in other EIT, and with special reference to road transport.²⁹⁵

²⁹⁰ "Carnet-TIR-Verfahren: Rußland will Erlaß nochmal überdenken", *Deutsche Verkehrszeitung* of 23 October 1997: 12.

²⁹¹ See, e.g., articles in transport information services like "Ostmitteleuropa: Die logistische Herausforderung", *Ostwirtschaftsreport* of 31 March 1995 and "Die logistische Herausforderung (II)", *Ostwirtschaftsreport* of 14 April 1995. As it has been argued below the situation seems to prevail there, although information on it is less pronounced in recent information services.

²⁹² Of course also in Poland trickeries have been reported in the case of extremely low pricing for alleged empty back-trips in road transports to Poland (what could be interpreted as marginal cost pricing) where the cargo never reached its consignee ("Ostmitteleuropa: Die logistische Herausforderung", *Ostwirtschaftsreport* of 31 March 1995).

²⁹³ See "'Ostwind' bietet Alternative zu Lastwagen-Transporten", *Handelsblatt* of 27 February 1997 and Kulke-Fiedler (1997).

²⁹⁴ As put forward in a personal interview in the course of this study.

²⁹⁵ "Transport: Schwer kalkulierbares Risiko", *Ostwirtschaftsreport* of 5 September 1997: 341 f.

Although the situation appears to have improved somewhat, because the bulk of information in news services was provided a few years ago, interviews with transport firms render the impression that crime is still a pressing problem, and the situation reported for the years before may still persist. For 1994 it was put forward that in particular in Russia, circumstances would turn out to be intolerable to Western freight forwarders due to the government's inability to cope with crime. As a consequence, insurance premiums increased, trucks were held to drive in convoys (which, however, did not guarantee security after their dispersion of traffic flows to single destinations), and many German and Benelux forwarders refused to accept transports to Russia altogether, at least with respect to high-value consumer goods. To some extent Polish and Czech forwarders closed this supply gap.²⁹⁶ Nevertheless, safety issues are even now among the front-runners on freight forwarders' complaints.²⁹⁷ The declining level of information in transport news services is explained by declining interest in a well-known topic. Actual organizational problems in this context faced by Western transport firms engaging in EIT transports are shortages of drivers willing to drive trucks to reform countries.²⁹⁸

Two categories of measures appear to have been taken to increase the safety levels: (a) measures that are necessary to remain competitive also in Western transport markets, and (b) measures that are specific to unsafe markets. Under heading (a) one can subsume the employment of modern information technologies of satellite-based trip performance control devices so as to know where a transport is actually located.²⁹⁹ Something specific under heading (b) is the basic principle that everything has to be planned to the tiniest details in advance. This strategy has proven successful,³⁰⁰ but it also adds to planning costs.

²⁹⁶ "Spediteure wollen nicht nach Rußland fahren", *Blick durch die Wirtschaft* of 14 September 1994.

²⁹⁷ In contrast to the preceding, some German freight forwarders who engage in the EIT stated already in 1995 that sending trucks to Russia was no more dangerous than transports to Italy. This has been maintained by the chief manager of one of the greatest German forwarding firms ("Bei den Preisen funktioniert der Markt im Osten schon", *Handelsblatt* of 8 June 1995).

²⁹⁸ This was maintained in personal interviews.

²⁹⁹ It has been argued that smaller forwarding firms could not afford expensive theft protection and satellite-based cargo surveillance systems, but these systems are a kind of fixed costs when entering unsafe markets anyhow ("Ostmitteleuropa: Die logistische Herausforderung", *Ostwirtschaftsreport* of 31 March 1995).

³⁰⁰ "Bei den Preisen funktioniert der Markt im Osten schon", *Handelsblatt* of 8 June 1995.

VI. Evaluation of Obstacles

In our view, the various software obstacles are clearly more relevant than the hardware obstacles in transport networks, although the hardware obstacles are still present and perceptible, too. In addition, it appears that the most pressing impediments stem from outside the transport sector itself, that are the complementary fields of customs procedure, taxes and fee policy, and security. This evaluation is shared by most transport firms officials, administrations, and supranational institutions who have contributed directly or indirectly to the results, and it refers to all modes.³⁰¹

Nevertheless, it can be stated that most of the obstacles that were defined have already lost at least a part of their earlier significance. This refers in the first place to what has been termed "hardware" obstacles, in particular for ports, less for land transport. It has become obvious that for the time being there is (at least) no lack of port capacities, and also that where such bottlenecks had existed because of the changes in maritime transport techniques after 1990, they were quickly removed. It is also justified to say that in view of the port extension measures that are already underway, or in a planning (although not financing) stage, there is at present an imminent danger of overcapacity rather than the opposite.

Somewhat more pressing are hardware obstacles still with respect to land and air transport. Here the mere size of the hardware maintenance backlogs and infrastructure quality deficiencies may constitute an obstacle for a longer time period. However, remedy is being under way via many channels, so that the transitory character of the hardware obstacles is true for these infrastructures, too, but with a longer time-horizon.

Similarly, it could be seen that also in the "software" sector of hypothetical obstacles considerable progress has been made, although it still presents a large number of factors causing impediments. While it can not be overlooked that there are still many improvements to be made, and the process must speed up at

³⁰¹ The interviews have corroborated information that can be found in literature and transport information services. See for road transport, e.g., the position of German freight forwarders engaging in EIT markets as cited in "Bei den Preisen funktioniert der Markt im Osten schon", *Handelsblatt* of 8 June 1995; further sources are "Kredit für Via Baltika", *Nachrichten für Außenhandel* of 9 October 1996 and "Transport: Schwer kalkulierbares Risiko", *Ostwirtschaftsreport* of 5 September 1997: 341 f. For rail traffic similar conclusions (that the software aspect of restructuring has the highest priority before undeniable hardware shortcomings) can be found in "Infrastructure Survey: Construction Ahead", *Business Central Europe* No. 26 of November 1995. See also Annex III for the findings of World Bank questionnaires among businessmen in the CIS and some Baltic Rim countries.

least in some countries or ports, it can likewise be said that many of these obstacles have been either successfully overcome, or reduced to a less harmful level, after the first, and most difficult, steps had been made. This has proved to be a process of mental adjustment to vastly changing circumstances, which is obviously most rapid where foreign assistance is available, and where impediments by administrative rules and regulations are being removed at the same time. Not surprisingly, it is slowest where such efforts are lacking, and outdated micro frameworks have overcome so far.

E. Conclusions and Recommendations: What Can Be Done?

This chapter deals with the question what can be done to improve the current or future situation. It runs along the time horizon of conceivable measures. In Section E.I the guiding line will be the short to medium term, and in Section E.II the long term.

I. Strategies to Remove Existing Software Obstacles

When conclusions are drawn with a view towards what is required if a sustained and efficient further development of the transport system in the Baltic region is to be attained, two avenues are open to reach the goal. One is the action by *public bodies*, which is necessary in the legislative and administrative sectors. Attention must be given to the framework in which that system operates including legislation and its administrative enactment. The other avenue refers to actions by *private enterprises*, which aim at efficiency and productivity in the production of transport services; the importance of private action should increase in relevance over time.

1. Requirements for Public Policy Action

A considerable number of options, which are not mutually exclusive, is open to deal with the current situation:

- applying privatization to all sections of the transport economy;
- opening transport markets and safeguarding free access for carriers of all flags, including, e.g., national cabotage between sea-ports of one country, or (by truck) between various places inside a country, both to the account of shippers and/or consignees in that country;
- establishing a framework for the admission of private enterprises to the various activities in each transport mode, for example, operation of individual port terminals, ownership of such terminals or certain equipment such as cranes, conditions for the use of rail-track systems by private firms, including the acquisition of property by foreigners;

- streamlining the general administrative process so as to facilitate transport, in particular, removing impediments; adjusting legal micro framework for ports, customs, and cargo handling to market requirements;
- carrying out an effective anti-crime policy for improved security.

As has been shown in the preceding chapter, considerable steps have been made to adjust the legal regulations on the macro level to international procedure. Therefore it seems justified to say that, similar to the “hardware” section, former obstacles have already been largely removed. Where *market access* is still constrained, as is the case in road transport by bilateral quotas for cross-border trips, or in air transport by bilaterally agreed landing rights, further action should be taken to liberalize transport markets. The participation of foreign flag ships in the coastal trades of the Baltic countries is of no great importance due to the rather short coastlines, although it might perhaps help to give additional assistance to the “road to sea” policy. As regards inland cabotage for road transport, liberalization would be preferable from the point of view of a liberal market setting in any case, but is obviously not a pressing problem, because the road network hardly allows profitable employment of trucks on the long haul especially in Russia.

Privatization

Privatization of transport firms and of parts of the transport network plays an important, and also successful, role in dealing with impediments. It has been shown above that such steps have been taken in most ports where at least cargo handling, stevedoring, and other operations have been opened to private firms. Privatization has made good progress particularly in Estonia. 70 per cent of the Estonian Shipping Company were sold in early 1997. The operating functions of sea-ports have been transferred to private companies whereas the port infrastructure is kept by the state, in “strategically important ports” (Siimann 1997). Apparently this corresponds to the pattern in the large German ports. Further progress in this direction should be made also in the other countries, and Russia should take a leading position in this field.

Privatization is appropriate also for the other transport modes. The problem seems to have been largely solved in road transport, as here the greater part of the former combines in the various EIT is now privatized, or has simply been substituted by new private firms. More pressing is the problem of privatization, however, for railways and in airline operations. Chapter D has presented a rather inhomogeneous picture of the present state of privatization for these modes in the Baltic Rim EIT. Estonia, followed by Latvia at least in air transport, has exhibited the most promising progress in this respect and has extended its consequent privatization approach also to the field of land including railways and air

transport operations. This approach should be continued, and could serve as a benchmark also for the other countries.

In rail transport, Lithuania, and less explicitly Latvia, have declared to comply with EU's directive 91/440, which stipulates a separation of tracks and operations at least for book-keeping purposes. The options that are offered by this directive³⁰² should give guidance to a far-reaching material privatization of operations also in these countries. This is not to say that the institutional design of such an approach is simple, as Western European experience shows. But Estonian, Latvian and Lithuanian railways are small and newly established companies (with less vested interests embodied) so that the transformation may even be facilitated compared with former Western rail monopolies.

The privatization of railways could render another potentially favourable result. An assessment whether the small operating scale of Estonian, Latvian and Lithuanian railways is an obstacle to efficient operations would require a detailed cost structure analysis.³⁰³ National borders may be inimical to the optimum size of an efficient rail network. Thus, transnational co-operation could enhance efficiency, even including October railways in Russia. Privatization of railway operations would give incentives to strive for an efficient scale in firm size.³⁰⁴

Of course, often protectionist national economic policy goals are pursued and privatization is slow, as it is shown by airline operations in Lithuania or Poland. This policy regime resembles the out-dated "national flag carrier" policy that had been pursued in Western countries before airline deregulation (and in many countries this policy still pursued). If the political objective is a regular connection of domestic airports to the world airline network, this aim could be achieved by an "open sky" policy without any national operator.³⁰⁵

³⁰² Also Estonia will have to comply with this directive, once it may become EU member in the future. The envisaged Estonian rail freight privatization plans would seem to be compatible with it.

³⁰³ In fact, one can suppose that all three Baltic Republics' railway companies may be operating not much above the minimal optimal firm size. Empirical cost analyses for American railways show economies of firm size up to a network length of 500 miles (800 kilometres) (Laaser 1991: 65 ff.).

³⁰⁴ Of course, public co-operation has to accompany potential private approaches as tracks are going to remain in public property, but for this end the institution of "public-private partnerships" could be applied to railway operations and complementary network co-operation. According to EBRD, such partnerships are successfully working at October railways in Russia.

³⁰⁵ See also EBRD (1997f: 16 f.). Furthermore, the small size and population of Estonia, Latvia, and Lithuania may not be sufficient for the long-term viability of three carriers. Similar solutions as have taken place in Scandinavia have already been advised by airline experts (Linderfalk 1996b). It is not the purpose of this study to advise such measures. What may be said, is, however, that under a private regime for airline

Customs Clearance and Other Procedures

Having in mind the significant progress that has been made to adjust the legal framework, it is fair to say that the need for further improvement focusses on the *administration*, that is, the *micro sphere of the framework*. Measures to be taken in this sphere are to reduce transaction costs and to increase credibility, reliability, transparency and foreseeability. In this respect, *customs procedures* take the first place. Steps should be taken to ensure that uniform customs rules are applied throughout each country, that such rules are stable over time, and that personnel is trained so as to fulfil the commercial requirements given in a market economy. This applies, *mutatis mutandis*, also to other administrative procedures by public authorities. What seems to be urgently required, especially in Russia, is more stability in the making and application of rules. This holds also, for example, where erratically shifting tax policies are concerned that impede rational economic planning by individual firms even in the short run. Dealing with such inefficiencies is, of course, a task of improving the general framework of the economy as a whole, not just of an individual sector such as transport.

An instrument to solve customs clearance problems could be sourcing-out procedures as may be recommended by experiences made in an Asian developing country, Indonesia, which faced similar problems.³⁰⁶ Although these problems resulted from corruption rather than from red tape, they nevertheless were crucial obstacles to trade and welfare. In the course of its liberalization programme in the second half of the 1980s, Indonesia undertook a fundamental reform of its customs procedures. The entire customs services were transferred to an internationally active private Swiss company (Geneva-based SGS), which conducted surveillance, quality control and international trade services in all parts of the world. SGS was given the right to inspect all imports and to issue the usual documents of origin, shipping fees, tariffs and value-added taxes. It was also made responsible for adequate reporting, valuation, tariff specification, and rapid clearance procedures. The Indonesian reform was a success: The private company had acquired a high reputation in international trade relations and hence a strong incentive to fulfil its commitments in order not to jeopardize its reputational capital. On that basis the Indonesian government could have trust that SGS would lend its integrity to crowd out the ill reputation to the advantage of international trade. Indonesian foreign trade was no longer hampered by corrupt customs procedures; instead trade volumes, GDP and direct foreign invest-

operations economically advantageous solutions—be they merger or dissolution—could be realised more smoothly and with less political interference, because one may suppose that private companies, if threatened by bankruptcy, would pursue the respective strategy in order to regain profitability.

³⁰⁶ This section rests mainly on Spinanger (1991: 16 f.).

ment increased.³⁰⁷ A similar approach might prove beneficial also for Baltic Rim EIT if customs problems arising from bureaucratic red tape should continue or even get worse.

Another regulatory device is the establishment of free-zones or free-ports. Free-ports have in the past proved to be successful in facilitating transport and trade as well as in opening opportunities for industrial development or other kinds of value-adding processes. In such cases, while in principle import duties have to be paid for goods passing the national boundary of the state in question, goods entering the free-zone are exempt from such charges and may be re-exported to foreign countries. Usually duty payments become due only when goods leave the free-zone for a domestic destination in that state.

Free-zones have already been used to foster development by all Baltic states that formerly were members of the CMEA. At present, such zones have been established in the Baltic ports of Szczecin,³⁰⁸ Gdynia and Gdansk,³⁰⁹ Muuga,³¹⁰ Ventspils,³¹¹ and others. For example, in March 1997 the regulations concerning the establishment of a special economic zone for Liepaja entered into force.

³⁰⁷ Spinanger (1991: 17) refers to an econometric analysis conducted by WEFA (1990), which concluded that this change of a specific policy regime accounted for an additional GDP increase of 3 per cent up to 1990. The increase in GDP had been stimulated by an increase in investment by roundabout 12 per cent in the 1985–1990 period. Investment was promoted by the beneficial effects of imported machinery and intermediary goods, which were no longer stranded in ports and storages substantial time, lower interest fees due to shorter port clearance periods, and simply higher imports due to substantially lower amounts of stolen cargoes. This in turn improved export competitiveness. The most beneficial effect for enterprises in Indonesia was apparently that their links with international markets were safeguarded. These and other liberalization measures induced foreign direct investment, which enhanced export performance. Although the productivity effects of the various liberalization measures could not be singled out, the greater security in accessibility proved to be an essential element of the liberalization strategy. As has been added by the author of the underlying analysis in personal contact, Indonesia abandoned this innovative customs clearance system in 1996 and did the job on its own. Only one year after this policy change, transport and trade records were again deteriorating.

³⁰⁸ Unlike others, the free-zone of the Port of Szczecin at Lasztownia apparently provides only some storage facilities for transit goods as its area is given as only 45,000 square metres, including 20,000 square metres of covered storage ("New Free-Zone for Szczecin", *Lloyd's List* of 5 September 1995: 13).

³⁰⁹ For the port of Gdansk see "Port Free-Zone", *Lloyd's Ship Manager* of August 1997: 51.

³¹⁰ "Tallinn Goes for Growth: Muuga Port Gets Free-Zone Boost", *Fairplay* 332 (1997) 5944: 55.

³¹¹ See Linderfalk (1996c).

While the status of "freeport" was given to the port, tax rebates up to the year 2017 are intended to assist transit traffic in the entire coastal area.³¹²

In addition, there is a large free-zone in the Kaliningrad oblast (the Yantar Free-Zone). It has been said that the Yantar Free-Zone is the only such zone in the CIS that actually works. Its basis is the "Law on the Special Economic Zone in the Kaliningrad area (Kaliningradskaya oblast)" of January 1996. Foreign enterprises with settlements in the zone are exempt from import or export duties, many goods from VAT. Also all goods that are processed in the zone and have an added value of at least 30 per cent, may be exported to the rest of Russia dutyfree.³¹³

It is obvious that the free-zone concept can be a useful instrument only where foreign trade is restricted by customs duties. In the longer run at least, it would, however, be advisable to establish a system of free trade under which no such duties would have to be paid for imported goods. As long as this is not (yet) the case, and as a pump-priming device to start economic development, the free-zone may be applicable with some success.

2. Private Strategies to Overcome Obstacles

If public policy proceeds along the lines described in the preceding section it will be possible to establish an appropriate legal and institutional framework for a market-oriented transport economy. This would help to reduce transaction costs for individual firms so that bottlenecks or other obstacles can be overcome. Such strategies are applied to short-term extension of existing port facilities, e.g., in the ro-ro sector. In this particular case, private foreign suppliers offered modules (floating pontoons, ramps, etc.) that were readily available at relatively low prices. This did not even require privatization because such equipment was mostly bought by port authorities already in the first stage after the turnabout. While relative ease may be a reason for a too rapid extension of capacities, it also shows that bottlenecks in hardware can at least to an extent be removed in foreseeable time periods. The inclusion of private economic agents may speed up planning and performance, not only for ports, but also for other modes. Of course, for private infrastructure facilities in land and air transport additional public action is still needed in most of the countries to provide the underlying framework.

³¹² "Hafenbau: Entwicklung und Perspektiven weltweit", *Schiff & Hafen* 49 (1997) 11: 110.

³¹³ For a recent assessment of the Yantar free-zone see "Zollfreier Im- und Export", *Hamburger Abendblatt* of 9 December 1997, Supplement "Geld und Kapital": 3.

Other strategies have been developed by private enterprises that deal with obstacles in the software section, e.g., in operations, impeding the efficiency and productivity aims. Once private action can unfold its innovative powers a lot of software obstacles can be expected to vanish relatively soon. In the following sections only a few examples can be presented from the large sample of private actions that are considered to have been successful. They have been taken either from written sources or from personal communication.

One of the strategies Western firms apply successfully in the Eastern Baltic is to seek *co-operation with a local partner*. For Russia, it has been emphasized as the only really viable and working option. Strategies devised by port users, mainly shipping lines or freight forwarders from foreign countries, often start from this basic insight. They usually include leasing or building ad hoc terminals, which form an integral part of the transport chains that are to be developed. According to reports by such firms, this concept has met with considerable success in most cases, after some initial difficulties had been solved. A prominent example are the container operations by Sea-Land at St. Petersburg; this U.S. company has also close relationships with the Russian railways for services to Siberia. Another case in question is a ro-ro service from Sweden (Oxelösund) also to St. Petersburg, where Nordic Trucker Line operates a terminal in close co-operation with a Russian partner (the line was opened in early 1997). It is particularly interesting that the problems usually experienced with customs could apparently be effectively solved. Also, technical expertise in Russia often meets with approval from Western operators.³¹⁴

Experience has shown that port administrations and operators, especially where these are now private firms, have quickly adapted to the new circumstances and requirements. Co-operation between Western firms and Eastern partners is vital. Western firms must aim at stable and regular transport volumes so as to *establish stable relationships* with Eastern carriers (especially truckers), which sometimes have had insufficient capacities for hauling trailers arriving at the ports to the hinterland destinations. Such longer-term strategies should be given priority over attempts to maximize short-term, ad hoc profitability.

Under such conditions, stable planning can be achieved to which Eastern partners will also adhere. This is also an important prerequisite for overcoming the theft of cargo, to which well organized transport seems to be less subject. As regards the ports, loading and unloading time for containers and ro-ro cargo is comparable to "western" ports, in particular again in Estonia and Latvia, but

³¹⁴ For details on the two companies and other examples see "Containertrafiken ökar på Östersjön", *Svensk Sjöfarts Tidning* 93 (1997) 35: 27, 34 ff. The same arrangement has been made by the multinational TransRussia Line that runs a regular service between Kiel and St. Petersburg. The operators/agents stressed the indispensable role of a contractual arrangement with an experienced Russian partner.

only in a few privatized terminals in Russian ports. Ship and cargo handling is now also adequately flexible and on time as required so that lay-time in ports can be planned well in advance. Obviously, Baltic ports prepare for growing requirements. Although there is still a measure of critique from, e.g., forwarders, because of bureaucratic procedures. This appears justified because many ports seem to do what can be done in order to overcome problems and to improve their performance and competitive standing. Development in this field has been rapid, especially where the EIT firms in question pursue an economic self-interest also in the long run.

What is true for ports and shipping can be inferred also for land and air transport: On a genuine private basis an improved performance can be expected. Western freight forwarders who are successfully working in EIT road transport markets have pointed to local co-operations when they were asked for prerequisites for success. Western forwarders often provide organizational and managerial skills while EIT firms contribute specific market know-how. The further emergence of private transport firms (both domestic and foreign), which are not protected by regulation and have to rely on their own competitiveness, will improve transport market development in EIT.

Improved productivity is crucial for the further development of all transport modes. Employing recent technology, coping with overstaffing from the Soviet era (which apparently already proves successful), developing commercial attitudes, enhancing service levels, supplying marketable services, and adjusting to market trends is indispensable for all firms engaged in transport, to remain or to become competitive. In addition, if foreign managerial, technical and institutional know-how could be employed, the productivity of domestic transport operations might be enhanced even more. Reducing the particularly large work forces in order to raise labour productivity and attain profitability has been a task of high priority for all modes but in particular for the Baltic ports. It is a permanent requirement because of the specific conditions of their operation. Port employment is subject to various types of irregular fluctuations, some of which are of an extreme short-term nature, and often caused by the distribution of ship calls over time. Accordingly, port workers tend to be de facto unoccupied, or at least under-occupied, during slack periods while the peak activity caused by the bunching of arriving or sailing ships requires a higher-than-average number of workers. Where not all sectors of a port are equally affected by such employment variations, the establishment of a pool from which workers can be drawn in addition to the individual firms' own employees can offer a suitable solution. This device, which has been applied in many Western ports, may be useful also

for the Baltic ports pertinent to this study.³¹⁵ This may demand additional public rules.

In addition to these examples, which were claimed to be successful, a lot of others are conceivable. It is their nature that they cannot be prescribed in advance, but are the result of innovative private action in competitive markets. Competition serves as an efficient process of discovery (Hayek 1968). More decentralized experimenting, combined with hard budget constraints allows to discover new knowledge and skills. Accordingly, private initiative should be permitted to find the most promising solutions for overcoming obstacles.

II. A Perspective on Infrastructure Provision in the Baltic Sea Region

The focus in the following paragraphs is on conclusions that can be drawn for transport infrastructure policies. To this purpose the elements of a concept for transport policy in that area will be derived from theory and the assessment of experience with existing patterns of infrastructure, and from the future requirements that can be expected.

In the present context, the focus must be on the east–west movement of cargoes and passengers. It is in this direction that transport volumes have—according to our understanding—the most promising growth potential that will make above-average demands on the various elements of the transport infrastructure. The networks must be adjusted accordingly.

From this starting-point a basic design should be worked out for future transport infrastructure policy in the Eastern Baltic area. Its main issues are

- to identify where infrastructure has to be or should be extended,
- which transport modes should be considered, and
- at what point in time such measures should be carried out.

As very large sums are required to rebuild and to extend the traffic infrastructure, long-term time plans that include material as well as timing priorities for infrastructure projects must be developed. This requires a vision of (i) the expected evolution of trade and the competitive position of different ports (since seaborne traffic will remain dominant) and of (ii) the future modal split, and should be taken in hand at an early stage.

³¹⁵ The pool concept has, for example, been mentioned as suitable for the Baltic General Cargo Terminal at Gdynia (“General Cargo Faces Changes”, *Lloyd’s List* of 23 September 1997: 10).

Port Capacity Planning

A particular problem for the adequacy of hardware provision results from the fact that public authorities are the owners of most of the transport infrastructure and responsible for the planning and construction of such facilities. At present, for example, capacity planning by the individual Baltic ports seems to exceed the demand for port services that can rationally be expected, at least, for the near or medium-term future. Accordingly, over-investment in this sector is likely to occur. In such cases, economically more productive investment alternatives may be foregone because funds have been channelled into unprofitable projects or projects for which there is only less urgent demand. The allocation of public funds to such projects obviously requires thorough cost-benefit considerations if waste of scarce resources is to be avoided.³¹⁶ The institutions that are responsible for making the required financial means available, have to apply particular care in identifying the opportunity costs of the pursued projects and the suitable investment alternatives to which finance is actually allocated. This refers not only to the public authorities of the individual port states, but also to international financing agencies such as the EBRD, various EU funds, e.g., the EIB, PHARE, and TACIS, and last but not least to commercial banks.

De-politization, privatization, the application of commercial attitudes and hard budget constraints, as well as introducing cost-oriented pricing schemes, could be helpful in this respect, as could joint ventures between ports in, e.g., the southwestern Baltic and partners in the Baltic States or Russia. The latter may prove to be a suitable means to avoid overinvestment, insufficient utilization of new capacities, which, in the end, may result in dumping-price competition, and perhaps financial breakdown, or demands on the public budget.

There is a pertinent risk of politically determined strategic port capacity extension. Particularly prone to be put on a shaky calculus of opportunity costs is the so-called "Project of the Century", the plan to build new ports in the wider St. Petersburg region. The underlying political aim, which rejects the idea of the division of labour, may be seen in diverting traffic with Russian foreign trade from the Baltic republics' ports and making them, at the very end, superfluous. If realized, this diversion would hit the economies of the Baltic republics very hard. In view of these near-disastrous results for the economies of the three

³¹⁶ Although the prospects of rising transport volumes may necessitate additional infrastructure investment, no port and no intermodal transport corridor in the Eastern Baltic Region can expect to reap the fruits of this favourable trend entirely on its own so that the danger of future excess capacities should lead to more conservative cost-benefit analysis of single projects. It is in the line of this reasoning that rationalization, improvement, and better utilization of existing facilities as well as the improvement of the additional software side should gain priority over the design and construction of entirely new capacities (Breitzmann 1996: 11).

countries, demands have been made that "international legal act be passed directed at normalization of development of ports and infrastructure, in the interest of all countries of the Baltic region" (Bronstein 1997). From an economic viewpoint, the high costs of constructing entirely new ports and the current capacity expansions in the competing Finnish ports have to be kept in mind. In addition, one should not forget that the ports of the three countries had largely been constructed and equipped by the Soviet Union for its requirements, and with a view to their location on ice-free stretches of the Baltic coast.

Conditions in Russia as an Important Determinant of Modal Split

Infrastructure policy must take a prominent place in transport policies in the Baltic region. A significant feature in this context is the high degree to which these policies are dependent on conditions in Russia, because Russian transit traffic has such a large share of total turnover especially of the sea-ports in the Baltic republics. For this reason, attention must always be paid to the particular characteristics of transport in Russia.

In the present paper it has been assumed, accordingly, that serving this transit will remain an aim of economic and transport policy in the Baltic countries because of the contribution it makes to their respective GDP, even if it will eventually decrease when other sectors expand. It may be mentioned, however, that the desirability of this course has occasionally been doubted on the ground not only of possible political interference but also of a lack of comparative advantage so that it might be advisable to allocate capital funds to other investment opportunities outside the transport sector. On the whole, however, such alternative ways do not appear to present a realistic approach.³¹⁷

It is obvious that at present, the infrastructure of the Baltic countries that were members of the CMEA is deficient in many ways, and often seriously so. In particular, a technical reconstruction of the railways that restores their potential is urgent. This refers to the Russian railways in the first place. There are, however, demands being made, and construction plans designed, for long-run infrastructure policies that, with a view to the conditions of economic and transport geography in Eastern Europe as a whole, must be subject to critique from an economic viewpoint. It must be mentioned, in the first place, that the territory of the former Soviet Union was developed in part along the lines drawn by Gosplan or the military, while another, and very considerable, role was played by more or less cogent conditions of the climate and geography (Raupach 1968: 211 ff., es-

³¹⁷ See, for example, Vanags (1993: 319 ff.). This author's arguments are, however, not entirely convincing, and may even be somewhat contradictory. They may also be influenced by the sharp decrease of port turnover immediately following the demise of the Soviet Union, which in 1993 probably created an unduly unfavourable outlook for transit traffic (Vanags 1993: 323).

pecially 213). This meant that high priority was, or rather had to be, given to rail transport.

Road transport, on the contrary, is less important, especially compared with Western countries, as it is largely limited to certain rather short ranges around centres of industry and population, which are extended only slowly. Roadbuilding is extremely costly under the Russian climate. Authors who have carried out analyses of the Soviet economy, especially the transport system and pertinent policies, have often pointed to the fact that in the European but also in the Asian regions of the Soviet Union (and of Russia and the CIS today) there is a lack of stone and gravel for ballast purposes (see, e.g., Foders et al. 1991: 122). It has strongly impeded the building of motorways for long-distance transport by trucks, the more so as, in addition, heavy rainfall, snow and frost conditions are very demanding. The priority of railways over road traffic has, accordingly, been seen as determined by objective factors rather than by ideology (as opposed to those countries that became part of the Soviet system after World War II and where conditions were quite different).

It is true that trucking between Central Europe and Russia has made rapid advances since the early 1990s. Contributing factors are the political opening to the West, and also the technical deterioration of the railways. They can explain much of the increase of truck market shares, which takes place in spite of the very long distances being involved and of the numerous software obstacles with which road transport meets. Inside Russia, some reorientation in favour of trucking is fostered by the fact that new factories, distribution centres, or similar points of origin or destination of cargo, are often being built without rail connection. This may, however, be a short-run development that will be reversed over time due to a more balanced cost-benefit calculus.

It would seem that Russia still offers good conditions for a continuing predominance of rail transport. Given the existing pattern of the location of economic activities and having in mind the problems of building new roads, a large-scale relocation of economic activities would be possible only at very high costs. There is, therefore, a certain probability that mutual traffic by ship between Russia and Central and West Europe will be containerized and then go further by rail to a greater degree than transport between other Baltic countries. One reason, of course, would be the lower transfer cost as compared with the transshipment of cargo from trucks to railway carriages, with the former being shipped by ro-ro vessels to or from Eastern Baltic ports. An additional point that is often made is, therefore, that combined rail transport of unitized cargo between Central/North Europe and Russia should be intensified as considerable advantages could be attained; inter alia, the theft risk could be avoided more easily. This would require additional equipment in the Eastern countries for loading/unloading (transfer) gear, as well as more rolling stock; rail carriages for this purpose are lacking at

present. This mode of carriage has already reached some importance in rail transit between Finland and Russia.³¹⁸

Taking the predominance of Russian transport conditions in the Eastern Baltic Sea region for granted it is one of the basic political tasks to remove all impediments to transit traffic between Russia and the Baltic countries wherever and in what particular shape they may exist. This also, and again, refers to specific software guidelines, e.g., for railway tariff policies that now aim to divert cargo to Russian ports, from those Baltic ports that had been used under the Soviet/CMEA regime. If current unstable relations prevailed in the future, this would run counter to long-term advantages of all participated parties in the region. It must also be appreciated that transit countries must be able to recover the costs they incur, and that these must be compared with the costs for shipping the goods via, for example, St. Petersburg (although in this case, no foreign currency will be required that poses a problem at least for the time being). The same applies of course, also to similar measures taken by railways of the transit countries.

Intermodal Competition between Baltic Sea Shipping and Land Transport

In the context of determinants of future infrastructure policy, competition between shipping and overland traffic over ways running parallel to the coasts must be mentioned. This aspect of competition has received new importance by the European Commission's "from road to sea" policy, which aims at greater use of seaways in intra-European goods transport. To follow this declared principle is particularly sensible in the Baltic area, where no long detours must be made by ships such as those that are characteristic for shipping between (North) Continental and Mediterranean ports because of the long distance around the Iberian peninsula. Whether a shift towards waterborne transport on the Baltic is economically feasible depends, of course, on the relative costs of the alternative transport chains, which the shippers have to bear.

From this viewpoint, waterways are to be given priority over land routes wherever possible. It must be remembered that the Baltic Sea has at all times been a connecting rather than a dividing factor for the adjacent countries. This is made obvious by world trade in general, as shown in the successes of globalization, which largely depends on ocean transport, but also by the increasingly close division of labour that has developed in the past decades between the "western" Baltic economies.

³¹⁸ See "Huckepack-Dienst zwischen Finnland und Rußland", *Internationale Transport-Zeitschrift* 59 (1997) 29: 53–54. To foster combined traffic by rail the "Intermodal Platform Estonia" was created.

Decisive factors shaping the advantages of the waterways in the Baltic are, under the conditions prevailing at present in this area, the following:

- waterways can be used free of charge,
- distances are often very long,
- the full costs of overland transport are usually significantly higher than the costs of maritime, and also of sea-river, transport,
- finance for infrastructure purposes is extremely scarce in the area,
- environmental costs have to be considered.

The Baltic sea lane offers itself for future traffic volumes generated by trade with the Baltic states. The gains are obvious, the seaway is there at no cost, and the short roads required to be built are comparatively cheap.³¹⁹ With a view to the small size of the Baltic republics, there is the chance to concentrate economic development, especially where industrial production is involved, on sea-port locations, following the patterns set by Singapore and Hong Kong. Under these circumstances a port-oriented growth of industry might develop on its own.

Considerable savings could be made by locating new industrial establishments either in the port cities themselves or in their close vicinity, especially if modern, traffic-intensive strategies of industrial division of labour are considered, such as "just-in-time" and "outsourcing", which require a dense, high-capacity transport network. A locational pattern that is oriented towards the seaway would make it possible to dispense with large capital outlays for the construction of expensive long motorways, both for hinterland traffic to and from distant locations, and for overland traffic as the alternative to shipping.

Turning to an overall view of the region, in order to utilize existing potentials more efficiently, rational choice ought to be possible between overland and sea-borne transport routes whenever decisions must be taken on transport infrastructure projects in the southern and eastern regions of the Baltic. As opposed to this view politicians often seem to hold the idea that only fixed links can guarantee close relationships between countries, or economies, which are basically separated by stretches of water. The history of Baltic Sea transport points to the opposite. Accordingly, building autobahn-type motorways running roughly parallel

³¹⁹ For examples of port-oriented industry in Lithuania see, inter alia, "Litauens offenes Tor zur Welt: Die Hafenstadt Klaipeda wieder im Aufschwung", *Neue Zürcher Zeitung* of 31 August 1996, with special reference to planned free-zone and new processing industry. In Estonia, fertilizer and concrete production for export is located at Kohtla-Järve while peat is shipped from Pärnu. Russian firms are planning, in a joint venture with a Western firm, to build a methanol-producing factory. See "Small Estonian Port Expects Renaissance", *The Baltic Times* of 6 March 1997 and Oll (1996a).

to the coast³²⁰ over long distances³²¹ should be considered with very much scrutiny.

It has occasionally been said in the Baltic States, that transit trade between the Baltic members of the EU, Finland and Germany should pass through the three republics (plus Poland and, possibly, Kaliningrad oblast) either by rail or road.³²² This would obviously be in contrast to the aims of environment policy as laid down by the European Union; rather, north-south traffic should remain waterborne, running directly between Finnish and German ports. Incidentally, the same is true of such traffic between Finland and other West (and South) European countries. Transit traffic through the Baltic States must be understood, accordingly, as being basically east-west traffic, that is, to the account of Russia and other CIS. The exception to this pattern is transit via Polish ports to/and from the countries to the south of Poland.

In evaluating the competitive setting between sea and land transport, the options should be taken into consideration that are offered by inland shipping. In Russia, a large-scale network of rivers and canals is open for traffic of relatively large ships, which are also suitable for sea-river transport. Although there is an ice-period each winter, water-borne transport can easily be imagined with general cargo or container ships over combined sea and inland waters, connecting Western Europe and areas of origin or destination adjacent to the large rivers in Russia and Ukraine, where industrial locations could increasingly be directed towards inland ports. There are particularly good conditions for this type of operations in Europe because many rivers are suitable for relatively large vessels in northwestern Europe (the Rhine axis), as well as in Russia. It may safely be assumed that road transport costs over such long distances would be considerably higher.³²³ Such opportunities, which also include the interchange with ports

³²⁰ A relevant example is the concept of the so-called "Via Hanseatica" between Kiel and St. Petersburg.

³²¹ For example, the overland distance between Klaipeda and St. Petersburg is about 950 kilometres.

³²² A "very great potential" was forecast in the north-south bound traffic between the EU and the Nordic countries (Reiman 1997).

³²³ An attempt is now being made by the Berlin-based Deutsche Binnenreederei to open a line from Germany to Moscow, which is to use Russian river-sea ships. See "DBR und Moskauer Binnenreederei: Containerlinie nach Moskau könnte im Frühjahr starten", *Deutsche Verkehrs-Zeitung* of 1 March 1997: 2 and "'From road to sea' in der Praxis: DBR startet Containerlinie Rostock-Moskau im August", *Deutsche Verkehrs-Zeitung* of 5 July 1997: 9. As from November 1997 weekly sailings were announced, as "Baltmos Container-Line", on the route Köge (Denmark) - Rostock - Szczecin - Moscow (see advertisement in *Deutsche Verkehrs-Zeitung* of 1 November 1997: 24). Already in earlier years (in the 1970s) there existed, for example, a regular shipping line between North Sea ports and ports on the Caspian Sea in northern Iran.

on the Rhine, should be exploited. For the Baltic ports, of course, this means additional competition.

Conclusions for Infrastructure Policy

The conclusion that must be drawn for infrastructure policy in the Baltic Sea region including Russia is that it is not advisable to emulate the structures that have developed in Western Europe and are dominated by the building of roads. This refers, on the one hand, to the building of roads in the Baltic countries that run parallel to the coast-line, the most conspicuous example being the "Via Hanseatica" plan. Since distances are quite small inside the Baltic countries, coastal shipping can certainly take a leading position, which could well be supported by a suitable, port-oriented choice of industrial locations. Another view holds for Poland in general as far as inland motorways are concerned. For this large, densely populated country with a pattern of scattered industrial location, and adjacent to Central Europe, the emergence of a motorway network (as well as an upgrading of the existing rail network) seems advisable on accessibility grounds. Employing the BOT model (Build-Operate-Transfer) and the "pay as you use" principle at least for parts of the network, can contribute to a more rational infrastructure planning. This includes more attention to be paid to cost-effectiveness, a more efficient facility construction and operation management, and prices closely reflecting costs. Finally, it may be associated with an influx of urgently needed foreign capital for adding to infrastructure capacities if foreign operators are permitted to participate in the projects.³²⁴

³²⁴ See, e.g., EBRD (1997f: 21 ff., Annex D). It should be noted, however, that even the preferable option of institutional design—the BOT model—cannot be employed without problems. (i) Above all, expected traffic flows must generate enough revenue for future pay-off of investment, otherwise private investor-operators will call for public bail-out (and thus again absorb traditional infrastructure financing schemes). (ii) In addition, the appropriate risk allocation between public bodies and private BOT contractors is crucial for the success but difficult to obtain. In any case, a concession law (a concession law has existed in Poland since 1994 (Burniewicz and Bak 1997) but it looks like as if the actual law does not define duties and rights properly (according to EBRD)), which defines and allocates duties and rights to the various parties, involves helps to save transaction costs. (iii) A device to handle complicated incentive structures between private management and remaining public obligations in infrastructure policy can be seen in "Public-Private-Partnerships" (PPPs) (EBRD 1997f: 23). To set up PPPs, however, is a demanding task because market recognition, risk allocation, commercial aims and public duties, which all have to be performed by the PPP, must be harmonized in advance. (iv) While economists may praise the option of attributing the costs of an interaction to those economic agents who enjoy the benefits of it, regional development planners may object because of the mobility costs that have to be borne by underdeveloped regions. (v) The inclusion of foreign capital, in particular privately provided funds, is hampered by the still prevailing uncertainty of the reform process in EIT. While in telecommunications private foreign funds for infrastructure provision may be readily available

On the other hand, it can be deduced from both the objectively determined preponderance of railroads in Russia, and from the eminent relevance of transit traffic via the ports of the Baltic republics, that rail traffic plays the decisive role also in the very large hinterland of the ports. West European creditors must also keep in mind when public money is allocated to infrastructure projects that the Commission of the EU has, for some years already, declared "from road to sea" to be an important principle of European transport policy. An extension of the overland road network according to the West European pattern would to a large extent—at least with regard to Northern and Central Russia—be in direct contrast to that principle.

In the same context it seems necessary to refer again to those plans and measures that are currently supported by the EU, and the aim of which is to enable the Finnish sea-ports in the northern Gulf of Bothnia to participate in transit traffic to or from Russia (Tervala 1996). From an economic standpoint these intentions appear to lack an obvious advantage, and it is likely that they in fact originate from other political aims (such as opening up or supporting the northern parts of Finland) (Stares 1997). The same reservations can be raised against the Russian port projects in the Gulf of Finland, which are promoted for political reasons.

Because of the exceedingly high expenditure that is required not just for the infrastructure but also for other sectors, such as the production economy, it would seem imperative, in extending the transport infrastructure, to strictly stick to economic principles.³²⁵ Political ideas and criteria should be repudiated entirely, and the consistency of all planning and actual measures must be secured. Wherever possible, the "user pays" principle should be applied in order to ensure that a basis is provided for rational comparisons of efficiency and profitability.³²⁶ It is true that the expected capital outlays for infrastructure upgrading will absorb substantial sums of savings, which may not be bearable by the EIT alone, because of (i) still low domestic savings ratios, and (ii) tax systems having not yet reached a stable condition so far as to provide for sound financing of public

because of the fact that this sector will gain significant importance in the future, and even sunk costs investment may pay off at relatively short notice, the development of transport infrastructure with private help might be hampered more seriously because of long-run pay-off periods and the sunk cost character of transport infrastructure. For such reasoning see Klodt et al. (1995).

³²⁵ This means that theories which emphasize possible growth effects of the infrastructure systems as an independent criterion for investment in this sector should be viewed critically.

³²⁶ In the three Baltic states, common road pricing was already envisaged for all trucks of more than 12 tonnes weight in a protocol that was signed in January 1995 by the Ministers of Transport of Estonia, Latvia and Lithuania; it was decided to set up a working group of experts to define common principles of taxation of road users (Kristopanas 1997).

duties. As the availability of foreign public loans is also constrained due to the so-called "financial crisis" in Western countries, employing private capital for infrastructure financing is inevitable (see also Breitzmann 1996: 11). This should be taken as a chance rather than as a risk factor, as the world market for private capital can effectively care for an economically rational use of funds.

To sum up, it has become abundantly clear that transport in the Baltic Rim EIT heavily depends on the Baltic Sea-ports. The fate of these ports themselves depends to an unusually large degree on the transit traffic to and from Russia and the CIS countries; Poland is an exception. Development during the past period has given examples of unfavourable effects on the ports, of political tension or even pressures. For the governments of the Baltic countries, therefore, securing "goodneighbourly relations with Russia"³²⁷ is an important political task, and will remain so as long as the ports and transport ways keep their crucial role in their economies. The other strategical point is to develop other sectors of the economy that can take over part of that role as development forces, and income generators.

³²⁷ See the statement made by the Estonian Prime Minister, Mart Siimann, in his Opening Address to the Conference "The Role of Transit Transportation in Emerging Markets", Tallinn, 11–13 September 1997 (Siimann 1997). It may safely be assumed that the same applies to Latvia and Lithuania.

Annex

I. Different Perspectives on Baltic Sea Trade Figures

It would be misleading to describe the Baltic Sea region's significance in trade relations by the figure of the share of all Baltic Rim states in world trade as it is often put forward in political discussions. If Baltic Sea trade were defined this way, figures would total the trade of all Baltic Rim countries, regardless of the fact whether these trade flows are transported via Baltic Sea or at least with Baltic Rim land transport modes or not. For 1995, the total trade of Baltic Sea countries accounted for 16.8 per cent of World exports and 14.0 per cent of World imports (see Table A20, calculated by data in UN *Yearbook of International Trade Statistics* (1995)). These figures, however, are clearly dominated by Germany's total trade. Only a value basis, Germany alone accounted for 61.7 per cent of exports and 64.4 per cent of imports of all Baltic Sea countries in 1995, of which only a small fraction is related to Baltic Sea trade.

Correcting trade figures for Baltic Sea and Baltic Rim relevance—by deducting trade flows to and from Baltic Rim countries that clearly take other routes—renders a much more realistic notion of Baltic Sea trade: According to this correction, the share of Baltic Sea and adjacent's regions trade in world trade amounted to roughly 4.7 per cent of world exports and 3.8 per cent of world imports in 1993 (the last year for which consistent figures for intra-Baltic trade can be singled out for all Baltic Rim countries (Table A21)), nearly half of which was intra-Baltic trade.

The employed correcting scheme for this very rough and tentative estimate runs as follows (see also Table A22–A25 on intra-Baltic trade, especially in Tables 23 and 25 “Estimated Exports”, “Estimated Imports”): For Germany, where only the states of Schleswig-Holstein and Mecklenburg-Vorpommern are lying on the Baltic shore, only the share of trade with other Baltic countries (9 per cent of exports and 10 per cent of imports in 1993) is included; the same procedure is applied to Denmark and Poland, which both trade via other links than Baltic (Rim) links. For Russia and for Norway 50 per cent of exports and imports are estimated as Baltic Sea related trade, although these figures are substantially above the intra-Baltic shares, but by this procedure in the case of Russia some CIS transit traffic can be accounted for. For the rest of the Baltic Sea countries total trade is included in the figure.

II. Quality and Reliability of Empirical Data on Transport Flows

The purpose of this annex is to describe the statistical problems that arose with the attempt to give empirical evidence on the pattern of current transport flows and infrastructure endowment in the Eastern Baltic Sea region. The problems were related to the availability of suitable statistical data bases and to statistical definitions and methods applied in existing data.

The most pressing obstacle to carry out a comprehensive analysis of transport patterns in the Baltic Sea area was a perceptible lack of suitable and consistent material on traffic flows in the total Baltic area. This obstacle stemmed in part from deficiencies in EIT statistics. Yet the attempt to mirror transport flows to and from EIT by the statistics of their trading partners also revealed problems in Western statistics.

Sections 1 and 2 describe the problems of the EIT statistics. These were partly of a conceptual and long-term, and partly of a more short-term transitional nature, which mostly resulted from adapting the statistical data base of the EIT in the course of their transition from centrally planned to market-oriented economies. Section 3 refers to the problems in Western statistics.

1. Conceptual Statistical Problems

It should be noted that most of the long-term problems are by no means confined to EIT countries, but largely pertain to (transport) statistics in general. Many of them may thus be relevant to any study on transport problems, even when such a study applies to Western countries only and therefore uses exclusively statistical sources of market-type economies or of international organizations.

The majority of the observed problems is in one way or another related to port activities. The reason is that transport in the Baltic Rim mostly means sea transport, and ports play a special role in this context as points of interconnection between sea-borne and land-based modes, which often means a break between different systems of statistical reporting.

a. Geographical Structure of Transport Flows

A major specific deficiency of actual EIT transport statistics that they do not share with Western transport statistics is that none of the available publications of the five countries in question presents a geographical structure of traffic

flows. Neither the port statistics nor the EIT statistics of shipping or of the other transport modes give any information about the origin and destination of cargoes carried to or from the country in international traffic.³²⁸ The relevant Tables A10–A14, therefore, had to be derived from “Western” sources, making use of the fact that in international trade and transport, one country’s exports to another country are (ideally and at least in physical terms) identical with that country’s imports from the first one. This procedure was not without problems, which, however, primarily concern the statistical publications of the Western countries, and thus will be discussed in Section 3 below. A consequence of this lack of information is that very considerable obstacles exist if the aim is to compile statistics on total Baltic area traffic flows.

The obvious recommendation in view of further development of the EIT statistics is that they should try to record traffic flows according to geographical areas of origin and destination as soon as possible; this primarily refers to sea transport, but the international traffic flows of the land-based transport modes should be shown in a comparable manner. The unit of recording in this respect should—at least—be the “country” (= state). As usual in well-designed statistics, an aggregation of whole continents (“Asia”) or the use of residuals like “Europe otherwise” should be avoided because it substantially reduces the value of such publications for analytical purposes. In the case of large countries or (especially) Russia with several long coastlines it would be desirable if they would be divided, for statistical purposes, into several districts, and the traffic with each of these districts recorded.³²⁹

For statistical purposes a division into districts could, in some respects, be desirable also for smaller countries like Latvia. For example, the Netherlands are, for internal purposes of the Central Statistical Office, split up into 54 traffic districts (“verkeersgebieden”), and for publication purposes into four country districts (“landsdelen”), north, east, south and west Netherlands (Centraal Bureau voor de Statistiek 1995: 13, 43). A special feature of the Netherlands’ traffic statistics is that traffic flows—land- as well as sea-borne traffic—into, out of, and through the sea-ports are recorded separately, and differentiated according to the categories of direct im- or export, im- or exports to/from bonded warehouses

³²⁸ However, in some cases, e.g., in Estonia, the cargo turnover of the ports could be separated into cargoes for/from the port state and cargoes in transit for other countries. Moreover, in the latest edition of the Polish source GUS *Transport—wyniki dzialalnosci* (1996) there are tables that show the Polish export and import of that year according to countries of origin and destination.

³²⁹ An example are the transport statistics of the Federal Statistical Office of Germany, which works, at least in theory, with traffic districts like “Denmark, Baltic Sea” and “Denmark, North Sea”, “Spain, Atlantic”, “Spain, Gulf of Cadiz” and “Spain, Mediterranean”. (Regrettably, this structure is, as far as it goes beyond whole countries, not completely used for the time being.)

("entrepôt"), and transit with transshipment. This has repeatedly proven useful for analytical purposes and may be recommended for adoption especially by Estonia, Latvia, and Lithuania. The high relative importance of transit traffic through these countries, mainly to and from the CIS, is comparable to the relevance of transit to/from Germany in the Netherlands. In any case, it would be desirable to record in traffic flow statistics (of shipping as well as of land-based modes) transit traffic separately.

Such break-down of large geographical entities would likewise be desirable with respect to *internal traffic flows*, at least within large countries. In the context of the EIT, this refers to Poland and especially to the Russian Federation. *Transport i svjaz' Rossii* (Goskomstat Rossii 1996: 63–69) contains several tables in which the total transport volumes of the different transport modes are broken down according to the oblasts where it has been *loaded*. For analytical purposes it would be most desirable, however, if these tables could be extended to show traffic flows *between* the districts. (This would, of course, take the form of m times an n,n -matrix, where m denotes the number of transport modes and n that of the districts.) Such a recording system would allow much more detailed analyses of transport acts within a country, which are highly relevant, e.g., for the evaluation of the need for infrastructure projects like, e.g., road building.³³⁰

The geographical structure of sea-borne trade can, in principle, be recorded not only according to the countries from/to which the transport is performed but also according to the flags flown by the ships that are used in the trade. Indeed, a large part of most national statistics is devoted to the shares of different flags in the own country's international trade (thus widely exceeding the above-mentioned use in the calculation of a tonne-kilometric performance figure). While this may be of interest to national shipowners and their organizations, or for protectionist national transport policies, it should be stressed that such data are only of a rather limited value for analytical purposes like traffic forecasts or evaluations of present and future capacities in a country's ports.

b. Definition of a Port

In ports statistics the *definition (statistical concept) of a "port"* is by no means unambiguous. Relevant questions can arise especially with respect to

- the existence of *geographically separated ports* that in some cases belong to a *single port administration* so that their traffic (and other) data may be repor-

³³⁰ In a second step such a system could be further extended by a differentiation according to cargo categories, i.e., each matrix would have to be worked out for a number of different goods transported. (This would, of course, multiply the size of the relevant statistics.)

ted either in aggregated or in disaggregated form. For correct information, clarity, and analytical purposes, e.g., to analyse the pattern of port specialization independently of the administrative and legal situation, it would be advisable to present data individually for each of the ports that make up an administrative group. This refers, in the Baltic area in particular to the Polish ports of "Szczecin" and "Swinoujscie", but also to the ports of Tallinn.

- the existence of *private port facilities* that often belong to energy or industrial plants and serve their special needs, e.g., as to the delivery of raw materials. The activity of such facilities should be included in figures that are released by national statistical offices in order to correctly assess total transport activity. This procedure would correspond to reporting principles applied in Western countries (although not necessarily to data provided by individual port administrations). Hence, data must sometimes carefully be checked with respect to their actual coverage.

Just to give an example for the necessary distinctions: In the present study, figures for the Szczecin port usually include Swinoujscie. The 1996 figure given in Table A5, however, does not include Swinoujscie; the correct figure for both ports is 22.7 million tonnes (the same as 1995; taken from GUS *Transport—wyniki dzialalnosci* (1996)). Similarly, it may be presumed that figures on St. Petersburg traffic that have been published in sources not used in Table A5 of this study and are much lower (around 10 million tonnes annually) than those given in Table A5, do not contain the traffic in some neighbouring ports that are situated in the Leningrad oblast.

The user of statistical data would appreciate clear information about the statistical unit "port of ...". Hence, a detailed definition of the included port facilities in a footnote would be appropriate at least if the administrative or geographical structure of a port (e.g., the existence of out-ports) might cause some doubt.³³¹ This is particularly relevant if the database changes over time.

c. *Demarcation Line between Sea and Inland Shipping*

A crucial point with respect to the interpretation of any data on "shipping" is the inclusion or exclusion of inland waterway shipping. Data on traffic flows or transport performance of sea-borne and of inland shipping are usually reported separately. This is not necessarily the case with statistics on cargo turnover in ports. As inland shipping on the rivers Nemunas in Lithuania and Daugava in

³³¹ With respect to Muuga, it was inferred from the published data that Muuga was included in all figures on Tallinn port. It should, however, be stressed that semi-official sources such as newspapers must be used with caution in respect to the coverage of their data on port turnover.

Latvia is only of minor importance, the most relevant cases in the context of the present study are the ports of St. Petersburg in Russia, Szczecin-Swinoujscie and—to some extent—Gdansk in Poland.

In the present study, data on inland waterway shipping are shown only in Tables A18 and A19, which deal with the modal split in the domestic merchandise traffic of Russia and Poland, respectively. All port figures refer exclusively to sea-borne transport. Thus, the substantial cargo loaded and unloaded to/from river and canal ships in the ports of St. Petersburg are not included in the cargo turnover according to Tables A4 and A5. Similarly, the (small) cargo volumes transferred to and from shipping on the rivers Odra and Vistula in the ports of Szczecin-Swinoujscie and Gdansk are omitted from the ports statistics.

With respect to the further development of statistical reporting systems in EIT countries, from the users' standpoint the separation of sea-borne and inland shipping data is desirable and should be maintained. Accordingly, port statistics should present data in separate tables.³³²

d. Problems of Goods Classification

A basic problem that affects any international analysis of cargo flows is the consistency of goods nomenclatures. In Western Europe, this problem has, at least in principle, largely been solved by the common "Nomenclature uniforme des marchandises pour les statistiques de transport (NST)", which had been introduced by EC member states as early as in the 1960s; the use of its hierarchical classification system is compulsory down to the level of three-digit "commodity groups" while the individual member states may, at their discretion, introduce further (four- to five-digit) subdivisions.³³³

The statistical offices of the individual Baltic Rim countries publish data on the commodities transported according to different principles. For Lithuania and the two Russian oblasts, only rudimentary relevant details were available. In particular, while it may be assumed that, e.g., "coal" or "ore" in the Latvian classification refer to the same cargo categories as in the Polish, it cannot be expected that classification schemes employed by the individual countries are exactly identical; this may be inferred from the fact that the number of subdivisions of the whole cargo differs considerably between the countries. In Tables A6–A9 of the study, therefore, the denominations used in the individual sources have been

³³² This would be advisable for analytical purposes even if sea-borne and inland shipping cargoes are handled on the same facilities.

³³³ This may be exemplified by the notes attached to the Belgian port statistics (Institut National de Statistique *Statistiques du trafic international des ports* (1980: I [foot-note])).

adopted (or translated) without any attempt to standardize the cargo categories shown. Hence, a high degree of comparability cannot be guaranteed.

It would be desirable if the Baltic Rim EITs would adjust their statistical reporting practices to the use of the NST nomenclature employed by the EU countries. Furthermore, the common use of a nomenclature should translate into a consistent practice of assigning cargo to the categories. Even if several sources used all adhere to the same standardized nomenclature, it is sometimes questionable whether *formally corresponding denominations really cover the same* collections of goods. Differences of statistical practices as to the assignment of individual cargoes to the statistically defined cargo categories may affect the interlocal as well as the intertemporal comparability of the figures. Problems of this kind arise not so much where goods can easily be indentified, such as dry and liquid bulk cargoes (coal, ore, grain, or oil). They are, however, typical of the "general cargo" sector, which consists of a very large variety of individual goods.

e. Problems Related to New Transport Technologies

Statistical problems have also arisen from the progressive use of new transport technologies like container and ro-ro (trailer, lorry, railway van) traffic. The various kinds of cargoes carried by these modes are often not specified when the containers or ro-ro vehicles are taken on (or released from) the board of a ship. Most nomenclatures, including those of Estonia, Latvia and Poland, contain an unspecified position "general cargo" (sometimes supplemented by special designations for "container" and/or "trailer cargo"); in the three-digit NST, this is number 999. Whether a cargo carried in a container or on a trailer or truck, is assigned to the appropriate individual category, or is simply classified as "general cargo", seems to depend on the statistician's information about the composition of unitized cargo. Often, especially in the statistics of a semi-official nature, which are issued beyond the responsibility of national statistical offices, *all* such cargo is designed as "general cargo". (This simple method is not the one used in official statistics of Western countries, and not recommended with respect to further development of EIT countries' statistics.)

The different recording practices have one obvious consequence: if, as shown, either the transfer methods (e.g., from lift-on/lift-off in bulk, bags, bales or barrels to roll-on/roll-off on lorries or trailers, or to container transport), or the practice of statistical assignment vary over time, between countries, or even between ports, intertemporal or interlocal comparisons of the results require great care. In the present study, for example, significant influences of changes in the transfer methods could not be excluded from the analysis of, e.g., cargo structure development in Latvian ports (see Footnote 106 on page 44 of the text).

Another problem in the context of the new transfer techniques is the question whether the weights of the ferried vehicles, trailers or containers (tare weights) should be included in sea transport and port statistics. Such an inclusion would greatly affect the statistical database and could obviate any meaningful comparison of turnover figures for different ports, as well as hamper time-series analysis for one single port, the main reasons being

- different shares of the new transport methods in different ports,
- different proportions of rail and road vehicle weights to the cargo weights carried on those vehicles,
- varying shares of the new transport methods in different years because of the progressing news of these techniques,
- different shares of the new transport methods in the transportation of different goods, even within one single port.

Thus, it is recommended to exclude from port or sea transport statistics any tare weights of vehicles, trailers or containers used in passenger or cargo transport. Instead, their weight (and, in addition, their types and numbers) should be recorded separately.³³⁴

f. Statistical Problems of Transit Traffic

The presentation of transit traffic (i.e., traffic that passes through a country on its way from one foreign country to another foreign country) raises specific questions of classification of cargoes with respect to geographical and goods categories. In most cases the scope of data on transit traffic that actually are published is greatly reduced because several elements of geographical, goods, and modal classification are omitted. For instance, in Estonia and Poland only the total quantities of the various goods categories transported in incoming and outgoing sea-borne transit are shown. No data are given for countries of origin and destination of the transit traffic flows passing these two countries in either direction. An exact registration of such traffic would follow—at least—a four-fold classification: according to goods category, transport mode, country of origin and that of (ultimate) destination. Each of these characteristic features of transport acts could, at least in theory, be combined with each of the others and would make sense for answering different specific analytical questions. With modern

³³⁴ It would be appropriate to differentiate between loaden and empty containers and trailers. A different point, however, is the statistical record of the transport of completely new containers or trailers on the way to their first use: they should, like exported or imported passenger cars, be included in the appropriate group of the cargo nomenclature ("means of transport" or the like).

data processing equipment it would seem possible to collect, to process, and to provide the relevant data at least on request even if they could hardly be reproduced in printed form in standard statistical publications.

An example of a more comprehensive actual presentation of transit traffic that could also serve as a benchmark was given by Belgium and the Netherlands. In earlier years, the statistical offices of these countries published considerably more detailed sets of figures on transit traffic. Although these data sets (at least their printed and published versions) are now much less sophisticated than in the 1980s, they may still be regarded as exemplary in scope and structure.³³⁵

g. Problems of Data Coverage in Land-based Transport Modes

In addition to the above-mentioned difficulties, which are mostly related to port traffic, there are also some problems that pertain to the statistics of land-based transport modes. These problems were used mainly in Tables A15–A19 (modal split) of the present study. They are related to the scope of the available data.

One problem is that in any country statistical records of *road traffic* will almost necessarily be more or less incomplete because of the myriads of *single small, short-distance transport acts* performed by road vehicles. It is, therefore, inevitable to define minimum levels of weight and distance for a transport act to be recorded in the official statistics. A related question is that of the inclusion of *industrial carriage (own transport)* as well as common carriage. In Germany, e.g., both types of road transport are completely—and then only based on estimates—recorded for transports beyond a 75 kilometres circle around the lorry's legal location. In the EITs, no reference to this question is made in the Estonian, Latvian and Lithuanian statistical sources. Only a Polish source (*GUS Transport—wyniki dzialalnosci* (1996)) clearly states that it refers to industrial as well as common carriage.

International studies often have to use many different statistical sources. The incompleteness of road traffic statistics has the obvious consequence that quantitative statements will, to a certain degree, lack reliability because the employed statistical concepts and recording principles may differ considerably among different countries. In the case of the EIT, however, a careful examination is often impeded because of a kind of language barrier: relevant informations are usually given in a country's own language only.

Concerning inexact definitions that are employed in traffic flows statistics, serious discrepancies could also be encountered in tonnage carried by railways. The figures that could be found in the annual report of the Estonian railway

³³⁵ See sources from Belgium and the Netherlands cited in Table A14 of the present study.

company (EVR 1996) were for a series of years only about half of those published by the Estonian statistical office (ESA). Burger and Lenzner (1996: 80), who used EVR data, and EVR (1996: 8) itself published such figures for 1992: 20 million tonnes, 1993: 24.2 million tonnes, 1994: 22.6 million tonnes, 1995: 23.7 million tonnes. Figures in Estonian official statistics (*ESA Statistika aasta-raamat* (1995, 1996); *SOE Transport side* (1995, 1996)) are nearly twice as high: 1993: 41.8 million tonnes, 1994: 40.0 million tonnes, 1995: 41.2 million tonnes, 1996: 44.6 million tonnes. Presumably, the differences may be explained by the inclusion or exclusion of tare weights of carriages.

h. Special Problems of Tonne-kilometric Transport Performance Data

Another crucial point that must be carefully observed, especially when the performance (on a tonne-kilometric basis) of several transport modes is compared and aggregated to the total transport performance of a country, is the *definition of the geographical area* in which the transport acts to be included in the statistics have been carried out. Two principles may be distinguished:

- according to the *territorial principle* all transport within the borderlines of a country's territory will be recorded, irrespective of the nationality of the carrier employed,
- according to the *nationality principle* all transport acts that have been carried out by carriers resident in a country, irrespective of the area where the transport actually takes place, will be recorded; transport by foreign carriers on domestic routes is excluded from statistical records.³³⁶

The two concepts render nearly identical results only in railway transport. As a rule, the activities of one country's national (or resident) railway companies end at the borderline of that country,³³⁷ where international traffic is taken over by the neighbouring country's railways. In road transport, unless explicitly stated otherwise, it must be assumed that transport performance statistics adhere to the nationality principle because it provides a much simpler basis to collect the data than the territorial principle does.³³⁸ In sea transport the nationality (here:

³³⁶ Even in the absence of so-called cabotage rights transport by foreign carriers on domestic routes will inevitably take place with respect to that part of an international route that is covered within the country's borders.

³³⁷ However, as regards domestic operations there may be some uncertainty as to the inclusion of local branch lines and railways of ports or industrial plants in the statistical records.

³³⁸ Data are mostly collected from resident transport firms of a single country and refer to the whole transport performance of such firms, irrespective of the routes (domestic

flag) principle is the only usable concept for recording one country's transport performance³³⁹ because in many cases ships will sail within the "territory" (territorial sea) of the country only for a small part of their voyages. This also applies to air transport where it could only hypothetically be imagined to record that part of each flight's whole mileage that is performed in a country's own airspace.

One consequence of these considerations for the present project was that Tables A15–A19 dealing with the "modal split in domestic merchandise traffic" had to be confined to rail, road and inland waterway traffic. No attempt was made to include air or sea transport even although especially in large countries a significant proportion of all traffic may actually be performed by coastal shipping (which is often reserved for national flag vessels under "cabotage preference rules"). With respect to *road transport*, all available statistics of the EITs had some deficiencies:

- In the Estonian statistics (*SOE Transport side* (1996: 9)) international traffic could be separated from total road traffic (note the considerable difference between the share of roads in total and in domestic traffic according to Table A15) but the traffic of foreign (e.g., Russian) trucks on Estonian roads is not included in the table because the source is explicitly confined to "goods carried by Estonian road enterprises";³⁴⁰
- Latvian statistics (LRVSK 1996: 43) do not contain direct information as to the scope of the table; it may, however, be inferred from the "explanatory notes" (LRVSK 1996: 120) that the nationality principle was employed and that no additional information is given that would enable the reader to identify that part of the traffic of Latvian enterprises that was performed within the country's borders;
- the same applies to the Lithuanian source (*LDS Lithuania's Statistics Yearbook* (1996: 393)), where the introductory remarks to the relevant chapter only point to "goods ... carried by national transport means" (*LDS Lithuania's Statistics Yearbook* (1996: 388));

or foreign) where it was carried out. This simple method inevitably leads to the nationality principle.

³³⁹ It should, however, be noted that even the flag concept is becoming more and more meaningless with respect to the analysis of any geographical aspects of sea transport. This follows from the fact that the flag of a ship is not necessarily the country of residence of its owner.

³⁴⁰ As a consequence of this method it must be assumed that domestic road traffic in Estonia as calculated from the source (and shown in our table) is substantially underestimated. Thus, the share of road transport in domestic traffic of Estonia is too low and that of rail transport is too high.

- from the Polish source (GUS *Transport—wyniki dzialalnosci* (1996: 37 [Table 45])) it may be inferred that the nationality principle is employed,³⁴¹ although this is nowhere explicitly stated.

The statistical results as to the modal split in the EIT must, because of the explained deficiencies of road statistics, be taken with some precaution. Presumably, the share of road transport is underestimated.

An obvious recommendation with respect to the further development of road transport statistics of the EIT countries is that it would be desirable that, as a first step, all countries follow the Estonian model and separate carriage on (purely) domestic routes from that on international routes. In subsequent steps the carriage by foreign enterprises should also be recorded according to the territorial principle, although shown separately. With respect to data on a tonne-kilometric basis, the length of international journeys could be split into the proportions covered inside and outside the country. In any case the transport performed on domestic sections of international journeys and that performed on purely domestic routes should be recorded and shown in all tables separately.

The statistical concepts and recording principles deployed should be documented in annexes to statistical publications and standardized as far as possible, so as to secure consistency in international comparisons and over time.

i. Problems of Consistency of National and International Statistics

In addition to the problems with traffic flow data mentioned above, other difficulties arise when data on the infrastructure endowment of the various Baltic Rim EIT are considered. These problems are most prominent concerning road network figures.³⁴² In general the data on road network composition that are provided by the various national statistical offices are often inconsistent with those data that are published in international statistics, in this case mainly the World Road Statistics of the International Road Federation. The reason for the discrepancies is that different criteria are applied to the classification of public and non-public roads. In addition, different opinions prevail with respect to the classification of “hard surface” roads.

³⁴¹ Transit traffic accounts for only 11 per cent of the whole transport performance. Since the application of the territorial principle would require the inclusion of the extensive traffic between Germany/Czech Republic/Slovakia/Austria on the one hand and the East European EITs on the other hand, it may be supposed that the transit share would be substantially higher if calculated on that basis.

³⁴² Some discrepancies of this kind could be detected also for railway networks, but to a much lesser extent than for roads. In the case of Estonia, figures for the total length of the network varied between different sources, presumably because of a partial inclusion of industrial sidings, but the differences were not substantial.

As regards the apparent discrepancies between national and international statistics concerning road network composition, the statistics of Latvia, Lithuania and Russia are a case in point, which resulted in the adjustment of internationally provided figures in Table A3. Only for *Estonia*, IRF and nationally provided figures seem to be consistent.

According to national statistical sources (LRVSK *Statistical Yearbook of Latvia* (1995: 255); LRVSK 1996: 79 ff.) the public road network of *Latvia* consists of (1995) 20,400 kilometres. Figures published by the International Road Federation concerning Latvian road networks (IRF 1995, 1996), however, show that Latvia has a road network of more than 60,000 kilometres. This is twice as large as that of Estonia whereas the country's area is only a little less than one and a half of that of Estonia. Following these figures, network densities amount to more than 1,000 kilometres/1,000 sq.kilometres (three times that of Estonia) and 23.7 kilometres/1,000 inhabitants (two and half the figure of Estonia). The difference to the figures published by the LRVSK (1996: 79 ff.) can probably be explained by the inclusion of non-public roads in the Latvian data as transferred to IRF, because IRF figures for highways and secondary roads add up to the public network figure of LRVSK.

A very similar discrepancy between international and national statistics applies to *Lithuania*, where even three sources are available all of which show different figures. According to official Lithuanian statistical sources (LDS *Lithuania's Statistics Yearbook* (1994: 171)), the total length of Lithuania's public road network amounts to 21,120 kilometres. This figure is backed up by others of the Lithuanian roads administration. In addition to the above-mentioned public roads included in IRF (1995, 1996) figures, there are some 35,000 to 40,000 kilometres of "other roads" that are classified by LDS *Lithuania's Statistics Yearbook* (1994: 171) as local and urban roads. It remains uncertain, however, whether these are public, semi-public or constrained roads, because LDS statistical data qualify the 21,120 kilometres mentioned before as "public roads". Also LRA (1997) does not mention this type of roads at all. With "other roads" included, as one can find in IRF statistics, Lithuanian density figures would be three times as large as those that are calculated on the basis of LRA (1997) figures.

For *Russia* the problem is that at short notice no detailed data were available concerning the road network in the Leningrad and Kaliningrad oblasts at all. For Russia as a whole available published data again were found inconsistent. According to the World Bank study by Holt (1993: 107 ff.), which rests on Russian sources and whose figures are by and large comparable to those of former USSR statistics (Foders et al. 1991: 122 ff.), Russia's public road network consists of only 453,000 kilometres of roads. In addition, there exist approximately 450,000 kilometres of non-public enterprise and agricultural roads and, eventually,

700,000 kilometres of access paths to farms and forests. The IRF data (IRF 1996) report of a total 949,000 kilometres of Russian road network, and seem to include the non-public roads under the heading of "secondary roads". Furthermore, for 1991–1995, IRF time series suggest a sharp increase in the category of primary roads, which seems rather doubtful given the prevailing financial constraints even if internationally provided funds are included.

Differences in national and international road statistics could be found also with respect to the share of paved roads in the total network. Apparently, the figures of some countries do not comply with the international definition of "hard roads", which calls for a bituminous, concrete or at least paved surface of the respective road. This problem could be found both in statistics of national statistical offices and in IRF figures. In the case of *Latvia* this may be only an issue of semantics, because *LRVSK Statistical Yearbook of Latvia* (1995: 255) and *LRVSK* (1996: 79 ff.) on the one hand maintain that 18,800 kilometres of the public road network of 20,400 kilometres consist of "hard roads". On the other hand, *LRVSK* (1996: 80) differentiates its figures so that one can conclude that only 7,800 kilometres (38.3 per cent) have improved surfaces according to Western standards (concrete or bituminous surfaces), while the rest of "hard roads" consists of gravel roads without any binders, and thus, do not qualify as paved roads. According to the Lithuanian Statistical Office (*LDS Lithuania's Statistics Yearbook* (1994: 171)), the road network of *Lithuania* consists entirely of paved roads. Data provided by the Lithuanian Road Administration, which is responsible for the administration and repair of the network, suggest, however, that non-improved gravel roads are included in this figure so that the share of roads that comply with Western standards is much lower. Only 51 per cent are of improved surface; the difference is made up mainly by regional roads of which only 36 per cent are improved roads (*LRA* 1997). The same caveats concerning the inclusion of gravel roads in the paved total as in the Baltic republics apply to *Russia*.

2. Statistical Problems of a Transitional Nature

Apart from the above-mentioned statistical problems there were difficulties that more or less originated in the turnabout of the economic and political system, the breaking-up of the USSR and the emergence of a whole series of new political entities, each of which developed its own system of statistical reporting. This inevitably led to severe *breaks in the available time series* of statistical figures that were relevant to the study.

Several statistical data series, e.g., the throughput of Estonian ports according to commodity categories, have been available for a few years only. This inevitably hampered the statistical analysis of long-term or at least medium-term tendencies that otherwise might have been used for long-term comparisons. In Latvia, the corresponding time series have been collected in retrospect since 1990, but comparable data for the preceding decade were unavailable. This also holds for the few figures published on port traffic in Klaipeda, Lithuania. Only in Poland, a complete time series was available in the Statistical Yearbook (*GUS Rocznik Statystyczny*) already from 1980 onwards.³⁴³ Its usefulness for analytical purposes was, however, limited by the fact that it revealed only the aggregate of incoming and outgoing traffic.³⁴⁴ Since 1992, however, in the new Polish publication *GUS Transport—wyniki dzialalnosci* this restraint has been eliminated.

Similar differences in the length of time series between the individual EIT statistics could be found with rail transport figures. The Estonian time series for rail freight tonnage and performances start with the year 1993, while Latvian and Lithuanian statistics try to refer in their respective time series to the pre-transition period.

Generally, it can be foreseen that with more and more time elapsing since the beginning of the current data series, *the impact of these problems will dwindle*. They can, therefore, be regarded as being of a temporarily nature. If commodity or geographical nomenclatures are changed in the course of a presumed further development of statistical publications, statistical offices should provide a certain overlap of series and devices for translating the respective series. It is desirable that each publication should contain a comparison of the old and new nomenclatures so that, if necessary, any results based upon the latter can be re-arranged in terms of the former. This is a precondition for the collection of coherent time series.

³⁴³ Indeed, it could have been traced back to still earlier years.

³⁴⁴ This regrettably also applied to the comparable publications of the voivodship of Szczecin (*Wojewódzki urząd statystyczny w Szczecinie 1995: 342*), whereas the corresponding yearbook of Gdansk (*Wojewódzki urząd statystyczny w Gdańsku 1991: 307*) contained the relevant figures for a few years up to 1990; this publication was not available for recent years. Another version may be cited from the predecessor of *GUS Transport—wyniki dzialalnosci*, the former *GUS Rocznik Statystyczny transportu* (e.g., 1986: 180–182): figures for the commodity structure of the whole throughput refer to the sum “total of incoming and outgoing traffic” only. The subsequent table on sea-borne transit traffic contains detailed cargo structures for both directions. It is urgently recommended to standardize the different reporting practices and to publish, as is already done in *Transport—wyniki dzialalnosci*.

3. Problems of Using Western Statistics

The third set of statistical problems that occurred in the course of the present study is widely connected with the method that, for a lack of original EIT data, had to be applied for estimating the geographical pattern of EIT countries' traffic. As has already been pointed out, this pattern has been calculated from the statistics of the partner countries, although this method was not without numerous problems in itself. These problems are, of course, not attributable to EIT countries, but to the publication procedures or database of the relevant "western" countries.

One problem was simply that, in principle, any country of the world (with the exception of land-locked countries) could possibly have at least some sea-borne traffic to or from the EITs in one of the years of the reference period. The *large number of potential trade partners* made it inevitable to restrict the contents of the relevant tables (Tables A10–A14) to major European partner countries. Although traffic from/to countries in other continents is thereby excluded, this restriction is of only limited importance, because since the demise of the direct overseas liner shipping from and to the Eastern Baltic ports nearly all general cargo in these relations has been transported by transshipment in a North Sea port. This does not refer, however, to most bulk cargoes, which are still handled by the EIT ports.

A more serious deficiency is that even the relevant figures concerning the *important European countries could not be collected completely*. The most conspicuous case in point of totally missing data is Sweden: the necessary information could be derived neither from that country's official statistical series *Statistiska Meddelanden - T* nor from the *Statistical Yearbook* (both titles from Statistiska Centralbyrån, Stockholm) because of an insufficient specification of the country nomenclature.³⁴⁵ The traffic flows of the EIT to/from their main European trading partners were, as may be seen from Table A14 of the study, generally available up to 1994. In some cases the time series could be continued up to 1996, the latest year from which results could have been expected at the time of writing.

The *great number of different national sources* that had to be used (see sources to Table A14) entailed several problems. Most of these stem from the different statistical practices that have been observed with respect to the former USSR and the Russian Federation.

Sea-borne transport statistics of different countries are, as regards their *traffic with the former USSR or Russia*, not fully comparable because statistical publi-

³⁴⁵ The possibility of ordering a special off-print from internal data bases that had been offered on request from the Central Statistical Office was ruled out because the considerable costs involved did not seem justified in view of the limited importance of the traffic flow analysis in the context of the study.

cations of the Western countries have no common definitions of the *several separated coastlines of the country*. The following different practices could be observed:

- only one figure is given for the total of sea-borne imports and exports from/to the whole country, irrespective of the coast district (Baltic, White, Black Sea or even Pacific) where the loading or unloading ports are actually situated: this practice has been observed in France, the Benelux countries, and Scandinavia,
- detailed figures are recorded only for the "Baltic" or the "European" ports of the USSR while traffic with the other ports of that country is not explicitly shown; this was the practice of Finnish statistics at least up to 1990,³⁴⁶
- the whole Russian Federation (after separating data of the newly independent countries) is divided into two parts—west and east of 80° east of Greenwich—which stand for the European and Asian part of the country, respectively, and record the traffic with both parts separately; this is the current practice of the German Federal Statistical Office (FSO),
- the whole USSR is similarly divided into three parts—Asia, Europe and Black Sea—as was done by Italian statistics at least until 1994 (in spite of the fact that the USSR did no longer exist at that time),
- the whole USSR was divided into several parts according to its geographically coherent coastlines (Baltic, Black Sea, White Sea and Arctic Ocean, Pacific Ocean); this method was applied by the German FSO until 1991.

For analytical purposes, the last method would be the most informative, and therefore the most desirable. Its de facto abolishment by the German FSO³⁴⁷

³⁴⁶ With respect to more recent years, it is not totally clear whether the figures in the Finnish statistics (*Tilastokeskus Liikennetillastollinen vuosikirja* (1997: 133 f.) concerning traffic with Russia, which is sorted into "Europe", mean cargoes from/to all Russian ports (including those in Asia) or are in fact confined to the European ports of Russia. In the latter case one would have to conclude that those (presumably very few, if any) cargoes transported between Finland and Asian ports of Russia are included in the figures—which are not split up according to single countries—on the Finnish traffic from/to "Asia". (In subsequent editions of the Finnish yearbook a footnote would be helpful—if it were not only in a Finnish, but also in an English version.)

³⁴⁷ The abolishment is "only" de facto because the several coastlines are still separately contained in the attached list of statistical traffic districts (*Verzeichnis der Verkehrsgebiete und -bezirke*). They form the traffic districts nos. 571–573. In all recent editions of the German sea transport statistics, however, no figures are shown for these districts. All figures concerning traffic with the Russian Federation west of 80° E are aggregated, and only the traffic with ports in the Asian part of Russia (east of 80° E, i.e., the coastlines of the Arctic Ocean east of the mouth of River Yenisei, the Bering Strait and Sea and the Pacific Ocean) is shown separately.

with effect from 1 January 1992 should, therefore, be repealed as soon as possible; moreover, the method is recommended for implementation by other countries' statistical offices.

A further difficulty, although also of a transitional nature, was that, after the break-up of the Soviet Union and the emergence of the newly independent states, the necessary changes in the statistical recording systems of the several Western countries were implemented at individually *different dates*. Traffic with the Baltic countries was recorded separately from that with the Russian Federation

- as from 1991 in Finland and France,
- as from the beginning of 1992 in Denmark and Germany,
- as from mid-1992 in the Netherlands.

With respect to these countries, any impact of the inaccuracies that are due to the differing recording practices in 1991 and 1992, will automatically diminish as more and more time elapses since those years.

A more fundamental problem was that in the statistics of some other Western countries the *three Baltic countries did not show up at all*. The relevant statistical publications of Italy and the UK did not explicitly take notice of the new states even in their 1994 editions, the latest publications of the relevant series that were available at the time of writing.³⁴⁸ In publications of Denmark and Norway traffic with the three countries was obviously separated from that with "Russia" but not explicitly shown; instead it was aggregated with several other small European countries to a collective category "Europe otherwise", which is inappropriate for analytical purposes.³⁴⁹ It is self-evident that in statistical publications such collective items should be avoided as far as possible.

³⁴⁸ In the UK publication (Department of Transport *Seaborne Trade Statistics of the United Kingdom* (1994: 32, 38)) there is only one set of figures with respect to transports by the different modes from/to the whole of "Baltic States and Former USSR" (furthermore, as this is placed under the heading "Scandinavia and Baltic" it leaves open the question of the non-Baltic coasts of the USSR; since there is no further reference to the USSR in the whole table, it must be concluded that these coasts are contained in the figures as well, which implies that the heading is misleading insofar). With respect to the Italian source (Istituto Nazionale di Statistica *Statistiche dei trasporti marittimi nei porti italiani* (1994: 114, 117)) it would be desirable to split up the category "U.R.S.S.—Europa" at least into separate figures for the three Baltic countries and Russia (or even better Russia/White Sea, Arctic Ocean, European part, and Russia/Baltic Sea) and the category "U.R.S.S.—Mar Nero" accordingly (Russia, Ukraina, Moldavia).

³⁴⁹ It is, however, gratefully acknowledged that the imminent gaps could be widely closed by the use of unpublished material that was made available upon request by the Danish and Norwegian Central Statistical Offices.

Comparability of figures with respect to the traffic flows between the EITs and Western countries is further hampered by the fact that the principles governing *the geographical classification of traffic flows are not uniform* among countries.³⁵⁰ For analytical purposes in the field of transport it will mostly be of primary interest to know the countries where the goods making up in individual countries international traffic are loaded and unloaded. This is the case, e.g., with Germany, where the countries of loading and unloading with their respective cargo volumes are recorded in a special transport statistics, not to be confused with the international trade statistics (which, however, in some cases furnishes useful additional information on traffic flows).³⁵¹ Presumably, the statistical sources of the other countries are not uniform in this respect. In most cases, the explanations attached to the statistical sources were not unequivocal on this point. Apparently in several cases (for example Norway) the transport figures were merely derived from data sets of the international trade statistics. This might imply that the country of loading/unloading principle is not always strictly observed but sometimes substituted by (elements of the) other principles.

The problems mentioned above stemmed from the fact that inconsistent transport statistics of the various trading partners of the EIT had to be aggregated in order to assess the traffic flows to and from the Baltic Rim EIT. The task of obtaining these traffic flow figures from Western "mirror" sources would have been facilitated if comprehensive Western sources that cover total Baltic Sea traffic flows could have been employed. Such comprehensive statistics are very rare, however. The most promising source would have been the ECMT statistics. The ECMT published, in matrix form and for the last time in 1997 with reference years up to 1992, the annual traffic between the Conference member countries. There were two reasons, however, to use the ECMT statistics only in a few

³⁵⁰ One single cargo, say a car, can, in principle, be four-fold classified in the international trade of a country:

- country of origin/consumption: the country where the cargo was produced (the car assembled from parts) or finally consumed (the car used for driving or transporting),
- country of consignment/destination: the country where the cargo was consigned (which may include some packaging or adapting to special needs) or destined for (which leaves open the possibility of re-exporting the cargo before its final use),
- country of loading/unloading: the country where the cargo was taken on board/released from board of that transport mode on which it passed the reporting country's border,
- country of purchase or sale: the country to/from which the cargo is paid for (recorded mostly for balance of payments purposes).

³⁵¹ A good example as to the difference between the two sources is Swedish ore exported via Narvik: this appears in the German transport statistics as a cargo from Norway (or even from the Netherlands in case of transshipment in Rotterdam), but in the international trade statistics it is an import from Sweden.

exceptional cases: (i) There are no figures available for the most recent years. (ii) In ECMT statistics, large discrepancies between the figures for loaded and unloaded cargo of the same category in the corresponding ports can be found, whose magnitude could not be explained. An impression of the magnitude of the possible deviations can be gained if the two matrices that are published for each year are compared. The first of these shows the cargo flows as reported by countries of loading, and the other the same flows as reported by countries of unloading. Although the elements of each matrix are only partially quantified because the ECMT obviously met with similar recording problems as the present study did, it can easily be seen that there are sometimes large differences between figures that in theory would have to be identical.³⁵²

It would be highly welcome, therefore, if the said lack of national statistics would be overcome as soon as possible, and traffic flow and turnover statistics would be provided for all Baltic Rim countries so as to avoid the complicated method of mirroring traffic flows by foreign statistics.

4. Concluding Remarks

As a conclusion the following recommendations can be made:

- port, shipping and land transport statistics should provide a detailed and as disaggregated as possible geographical structure of traffic flows, at least for international, but preferably also for domestic traffic, not only in large but also in small countries, in order to make identification of transit traffic possible;
- port statistics should always clearly reveal the specific coverage of the statistical unit "port of ...";

³⁵² Examples (ECMT 1997: 218–221; in 1,000 tonnes, reference year 1992) are:

- unloaded in Belgium from Sweden: 1,581, loaded in Sweden to Belgium: 942;
- unloaded in Germany from Poland: 2,392, loaded in Poland to Germany: 3,931;
- unloaded in Finland from Poland: 2,936, loaded in Poland to Finland: 255;
- unloaded in the Netherlands from Poland: 1,905, loaded in Poland to the Netherlands: 1,192;
- unloaded in Poland from Belgium: 53, loaded in Belgium to Poland: 3,755;
- unloaded in Sweden from Finland: 2,838, loaded in Finland to Sweden: 4,633.

This selection was done with respect to the subject of the main study and is by no means to suggest that such deviations are confined to the Baltic area (see, e.g., the Spain to Italy traffic). Furthermore, in some cases the theoretically expected identity is nearly fulfilled (see, e.g., Germany to Finland). Because of the great number of deviations, however, and because of the early end of its reference period the ECMT source was used in the present study only in a few cases where the relevant figures could not be derived from national sources.

- a separation of sea-borne and inland shipping data is desirable and should be maintained;
- it would be desirable if the Baltic Rim EIT would adjust their statistical reporting practices with respect to goods' classification, to the use of the "Nomenclature uniforme des marchandises pour les statistiques de transport (NST)" and assign cargo according to the disaggregated categories wherever possible;
- tare weights of containers, trailers, vehicles and rail-carriages should be excluded from port turnover and sea and land traffic flow statistics and be recorded separately;
- in view of its relevance for the countries involved, transit traffic should be reported separately and, wherever possible, be classified according to goods' category, transport mode, country of origin and ultimate destination;
- road transport statistics should be compiled with respect to rather low minimum levels of cargo weight and transport distance, in order to cover as large a proportion of all transport as possible;
- in addition, road transport statistics should cover industrial carriage (own transport) as well as common carriage, and they should differentiate between domestic and international traffic, thus enabling data on a tonne-kilometric basis to be broken down according to distances of international journeys performed inside and outside the country in question;
- in subsequent steps of statistical improvement of road transport statistics, carriage by foreign enterprises could be included and recorded separately;
- if in the course of the improvement of data bases, commodity or geographical nomenclatures are revised, each publication should contain a comparison of the alternative nomenclatures so that time series that are in part based on a former, and in part on a current nomenclature, may be re-arranged according to a single principle, and coherent series may be produced;
- it would be desirable if national statistics were consistent with international ones that are based on national reporting to international or supranational organizations, and if coherent definitions of data were used.

Looking to the future, it is foreseeable that a gradual rapprochement of the EIT countries to the European Union will result in their subsequent adoption of EU standards of statistical recording practices. This will presumably bring about a considerable improvement in scope and structure of statistical sources available from the EITs. Since it will also, however, inevitably result in many alterations of commodity and other classification systems, statistical offices of the EITs may want to keep losses, e.g., of intertemporal comparability, as small as possible. To achieve this goal, it will in many cases be useful to publish (or at least to make available on request) data in more detail than demanded by the

cogent requirements of the EU. An orientation towards the standards of recording, which are observed in Germany or the Benelux countries, would be desirable.

Finally, from the analyst's viewpoint it would be particularly welcome, if in publishing statistical data the following points were observed:

- any terms used in table titles, head lines, columns and footnotes shown in English as well as in the country's own language,³⁵³
- the time lag between the end of the reference period and the publication of the statistical records being kept to a minimum,
- yearbooks showing an overview of transport statistics at least of the three Baltic republics, but perhaps also of Poland and the Russian Federation (Baltic ports), a possible model being the Benelux countries' publication *Benelux-statistiques de la navigation maritime* of the Union Economique Benelux.³⁵⁴

As it appears that the Baltic countries will sooner or later become members of the EU, and the Baltic Sea, thus, an EU "Inland Sea" with Russia being the only "extern", the Eurostat office should prepare, as soon as possible, coherent statistics of (at least) maritime transport for this entire region.

III. Evaluation of the Relative Relevance of Obstacles

In addition to the views expressed in transport information services or in personal interviews with transport firms representatives it may be helpful for the evaluation of observed obstacles to confront the results with those of questionnaires among businessmen in the CIS and some of the Baltic Rim countries for the most important obstacles for doing business in general. These questionnaires and their results have been put forward by the World Bank (Selowsky 1997: 4 ff.). Their results widely coincide with the view presented in this study that even if hardware infrastructure bottlenecks still are pressing in various Baltic Rim countries, additional software obstacles are the most striking ones to run a business in these countries. The CIS survey rendered the result that entrepreneurs felt the most pressing obstacles, with more than proportionate relevance

³⁵³ This likewise refers to methodological or other explanations that are not contained in the tables, but given separately.

³⁵⁴ Such a publication would, however, make sense only if the collection of data from the several participating countries does not take too much time and a timely appearance of the book can be secured.

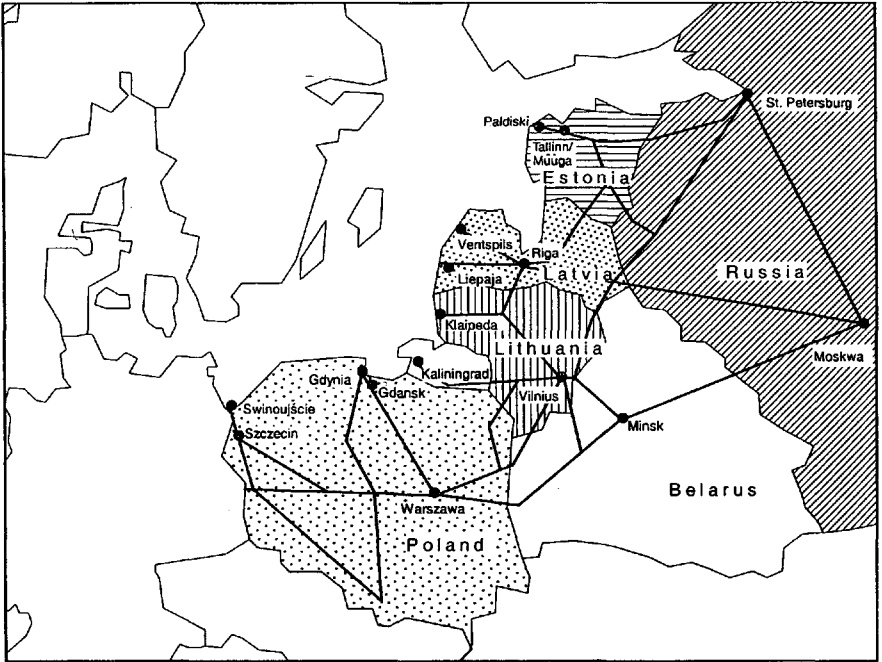
(as measured against world average) being high taxes/tax regulations, policy instability, corruption, crime and theft, general uncertainty on costs of regulations, foreign trade regulations, and some others (Selowsky 1997: 4 ff.). An inadequate supply of infrastructure was felt ranging among the obstacles with lower than average relevance in the CIS, but it still proved to be a substantial obstacle if measured against the situation in developed countries.³⁵⁵ Thus, also in general software obstacles that can be classified being external to transport were ranked highest.

Another survey for *Lithuania* on constraints for foreign direct investment (FDI) widely corroborated the CIS results. Besides some FDI-specific obstacles it was deplored that legislation would change frequently and would be vague and non-transparent what would be exacerbated by bureaucratic red tape and corruption (90 per cent of mentionings), the success of market economic transformation would be insufficient (85 per cent), corruption would take place in customs (75 per cent) and tax administration (70 per cent), tax laws would be non-transparent (65 per cent), and legislation would be applied discretionary (60 per cent) (Selowsky 1997: 11). Problems in the interpretation of laws and a lack of consistency in the application of laws (besides bottlenecks in access to real estate, residence, and work permits) were also reported from another survey from Estonia (Selowsky 1997: 12), although there were few complaints about the overall policy framework.

³⁵⁵ The quality of the road network was considered by 84 per cent of businessmen as rather poor, poor or very poor (Selowsky 1997: 8).

IV. Maps and Tables

Map A1 — The Baltic Rim Economies in Transition



—— Main railway lines

Map A2 — Motorways in Poland and Lithuania

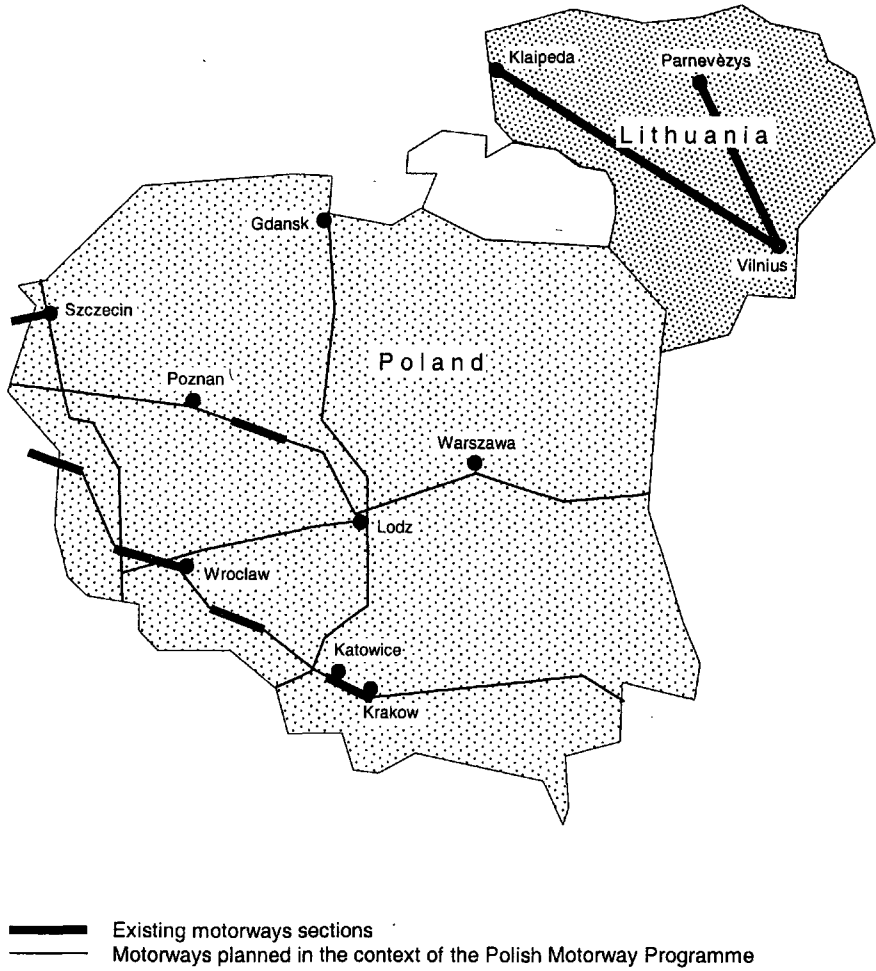


Table A1 — Per Capita Income and Total GDP in Baltic Rim countries, 1995

	Rank regarding to GNP/capita	GNP/capita	PPP estimates of GNP/capita	GDP/capita	GDP
		dollars			million dollars
Norway	3	31,250	21,940	33,510	145,954
Denmark	4	29,890	21,230	32,800	172,220
Germany	5	27,510	20,070	29,530	2,415,764
Sweden	12	23,750	18,540	25,880	228,679
Finland	14	20,580	17,760	24,510	125,432
Estonia	47	2,860	4,220	2,630	4,007
Poland	48	2,790	5,400	3,060	117,663
Latvia	55	2,270	3,370	2,380	6,034
Russian Federation	56	2,240	4,480	2,350	344,711
Lithuania	60	1,900	4,120	1,920	7,089
Baltic Sea region	x	11,110	10,050	11,960	3,567,553
As percentage of world	x	227.6		243.7	12.8

Source: World Bank (1997e), own calculations.

Table A2 — Rail Networks in Baltic Rim Countries, 1994

	Network length				Network density with respect to		
	Total	of which electrified	of which double track and more		surface area	population	
	km	per cent	km	per cent	km/1,000 km ²	km/1,000 inhabitants	
	<i>Economies in transition</i>						
Estonia	1,024 ^a	132	12.9	108	10.6	23	0.673
Latvia	2,413	271	11.2	304	12.6	37	0.951
Lithuania	2,002	122	6.1	560	28.0	31	0.542
Poland	24,313	11,613	47.8	8,933	36.7	75	0.632
Russian October Railways	10,186 ^b						
	<i>Western market economies on the Baltic Rim</i>						
Denmark	2,349	370	15.8	897	38.2	55	0.447
Finland	5,880	1,950	33.2	496	8.4	17	1.149
Germany	41,401	17,748	42.9	17,239	41.6	116	0.506
Norway	4,023	2,422	60.2	111	2.8	12	0.924
Sweden	9,661	7,182	74.3	1,338	13.8	24	1.093

^aAccording to EVR (1996): 1,127 km. — ^b11.8 per cent of Russian railways.

Source: UIC (1996a, 1996b), own calculations.

Table A3 — Road Networks in Baltic Rim Countries, 1995

	Network length ^a						Network density ^a with respect to	
	Total	of which motorways (or motorway-like roads)		of which highways and primary roads		Percentage of paved roads ^b	surface area	population
	km	per cent		km	per cent		km/1,000 km ²	km/1,000 inhabitants
	<i>Economies in transition</i>							
Estonia	14,992	65	0.4	1,127	7.5	54.0	332	9.9
Latvia ^{b,c}	20,402	—	—	7,024	34.4	38.3	316	8.0
Lithuania ^{b,c}	21,121	394	1.9	4,479	21.2	51.0	324	5.7
Poland	372,479	257	0.07	45,420	12.2	65.3	1,152	9.7
Russia ^c	453,000	^d	^d	38,700 ^e	8.5 ^e	51.0	27	3.1
	<i>Western market economies on the Baltic Rim</i>							
Denmark	71,420	830	1.2	3,730	5.2	100.0	1,657	13.6
Finland	77,723	394	0.5	12,366	15.9	63.0	280	15.2
Germany	650,700	11,200	1.7	41,700	6.4	99.0	1,823	8.0
Norway	90,261	105	0.1	26,452	29.3	73.5	278	20.7
Sweden	136,233	1,231	0.9	14,645	10.8	76.0	332	15.4

^aPublic networks only. — ^bCorrected for obviously misspecified data for paved roads because of the inclusion of gravel roads. — ^cAgricultural and industrial roads that are included in IRF data base omitted; figures are for Latvia: 39,644 km; Lithuania: 40,321 km; Russia: 416,000 km. — ^dAccording to Holt (1993: 107), 2,600 km of roads in Russia (0.6 per cent of the total public network) are four-lane or more. The source does not indicate whether these are federal or regional roads. — ^eFederal roads.

Source: Holt (1993), IRF (1996), LRA (1997), CSBL *Statistical Yearbook of Latvia* (various issues), LDS *Lithuania's Statistics Yearbook* (various issues), own calculations.

Table A4 — Seaborne Cargo Turnover of All Sea Ports in Estonia, Latvia, Lithuania, Poland, and the Russian Baltic Rim Oblasts, 1980–1996

	Total	Russia ^a	Estonia	Latvia	Lithuania	Poland
<i>Millions of metric tonnes</i>						
1980	.	.	.	36.8	12.2	61.5
1985	.	.	.	39.6	15.6	50.1
1988	135	10.9	9.0	42.6	20.7	51.8
1989	.	.	.	44.2	21.1	48.0
1990	119	10.8	8.3	37.2	16.1	47.0
1991	.	.	.	30.3	15.7	41.8
1992	110	15.0	10.7	27.4	12.9	44.3
1993	120	13.8	12.5	27.4	15.8	50.5
1994	130	16.5	11.7	35.1	14.5	52.4
1995	135	21.4	13.0	39.0	12.7	49.2
1996	144	21.1	14.1	44.5	14.8	48.9
<i>Shares in total turnover of port range (per cent)</i>						
1988	100	8	7	32	15	38
1990	100	9	7	31	14	39
1992	100	14	10	25	12	40
1993	100	12	9	23	13	42
1994	100	13	9	27	11	40
1995	100	16	10	29	9	36
1996	100	15	10	31	10	34
<i>Index numbers 1988 = 100</i>						
1990	88	99	92	87	77	91
1992	81	138	119	64	62	86
1993	89	127	139	64	76	97
1994	96	151	130	82	70	101
1995	100	196	144	92	61	95
1996	107	194	157	106	71	94

^aBaltic ports (St. Petersburg and Kaliningrad).

Source: ECMT (1997: 223), Larin (1989: 22), CSBL *Statistical Yearbook of Latvia* (various issues), GUS *Biuletyn Statystyczny* (various issues), GUS *Rocznik Statystyczny* (various issues), ISL *Shipping Statistics Yearbook* (various issues), LDS *Lithuania's Statistics Yearbook* (various issues), various issues of the newspapers *Morskoy* and *The Baltic Times*, Information from Central Statistical Bureau of Latvia, own calculations.

Table A5 — Seaborne Cargoes Unloaded and Loaded in the Ports of Estonia, Latvia, Lithuania, Poland, and the Russian Baltic Rim Oblasts, 1990–1996 (millions of metric tonnes)

	1990	1991	1992	1993	1994	1995	1996
	<i>Total turnover^a</i>						
Vyborg/Vysotsk	3–4	.	.	.	.	1.7	.
St. Petersburg	10.8	.	11.0	10.0	14.0	17.1	16.0
Tallinn ports	8.3	.	10.7	12.5	11.7	13.0	14.1
Riga	6.0	5.5	5.2	4.7	5.8	7.5	7.5
Ventspils	31.2	24.8	22.1	22.2	27.9	29.6	35.7
Liepaja	.	.	0.1	-0.4	1.1	1.4	1.6
Klaipeda	16.1	15.7	12.9	15.8	14.5	12.7	14.8
Kaliningrad	.	.	4.0	3.8	2.5	4.3	5.1
Gdansk	18.6	17.0	20.5	23.3	22.4	18.6	16.5
Gdynia	10.0	7.3	6.3	7.8	8.1	7.7	8.6
Szczecin–Swinoujscie	18.1	17.2	17.5	19.3	21.7	22.7	16.3 ^b
thereof Swinoujscie	(8.4)	(7.9)	(6.5)	(7.8)	(8.1)	(8.8)	.
	<i>Unloaded</i>						
St. Petersburg	.	.	.	.	.	2.4	.
Tallinn ports	.	.	.	6.2	4.6	3.2	4.0
Riga	.	4.1	3.3	1.4	1.4	2.0	2.1
Ventspils	.	0.9	1.0	0.3	0.3	0.4	0.6
Liepaja	.	.	0.0	0.0	0.1	0.2	0.4
Klaipeda	.	.	4.1	3.7	2.8	.	.
Gdansk	4.0	5.9	9.0	8.7	7.7	6.6	5.7
Gdynia	3.4	2.1	2.3	2.8	2.1	2.6	4.2
Szczecin–Swinoujscie	4.6	4.2	3.0	2.8	2.7	4.3	5.1
	<i>Loaded</i>						
St. Petersburg	.	.	.	.	.	8.5	.
Tallinn ports	.	.	.	6.3	7.1	9.8	10.0
Riga	.	1.4	2.0	3.3	4.4	5.5	5.3
Ventspils	.	23.8	21.1	22.0	27.6	29.2	35.1
Liepaja	.	.	0.1	0.4	1.0	1.3	1.3
Klaipeda	.	.	8.8	12.1	11.7	.	.
Gdansk	14.3	10.8	11.2	14.3	14.4	11.7	10.8
Gdynia	6.5	5.2	4.0	4.9	5.9	5.0	4.3
Szczecin–Swinoujscie	10.0	8.7	9.2	11.6	12.9	11.3	11.2

^aDeviations from the sum of unloaded and loaded cargo due to rounding and, in some cases, different sources used. — ^bNot comparable with previous years.

Source: CSBL Statistical Yearbook of Latvia (various issues), GUS Biuletyn Statystyczny (various issues), GUS Rocznik Statystyczny (various issues), ISL Shipping Statistics Yearbook (various issues), LDS Lithuania's Statistics Yearbook (various issues), various issues of the newspapers Morskoy flot and The Baltic Times, Informations from Central Statistical Bureau of Latvia.

Table A6 — Seaborne Cargoes Unloaded and Loaded in Estonia according to Cargo Categories: Total versus Transit Traffic, 1994–1996 (thousands of metric tonnes)

	Total unloaded cargo			Of which transit			Total loaded cargo			Of which transit		
	1994	1995	1996	1994	1995	1996	1994	1995	1996	1994	1995	1996
	Unloaded						Loaded					
Cereals	2,537.0	411.8	1,103	2,537.0	406.0	1,066	118.0	1,032.9	361	117.0	1,031.9	360
Fruits, vegetables	.	8.0	.	.	5.0	.	.	-	.	.	-	.
Other food products, beverages, tobacco	166.5	290.0	324	93.0	240.0	267	60.3	24.1	9	1.0	1.0	-
Fat, vegetable oil	.	10.0	.	.	10.0	.	.	4.0	6	.	-	-
Wood, raw	1.0	1.0	.	1.0	1.0	.	1,007.5	1,575.2	1,433	8.0	3.1	21
Sawn timber	.	1.9	12	.	.	.	.	158.0	305	.	6.0	3
Products from timber	.	.	.	.	.	.	.	126.3	69	.	37.0	26
Fertilizers	4.0	6.7	22	.	.	.	485.5	777.7	672	380.0	637.5	396
Iron ore, scrap iron	7.0	44.4	.	7.0	44.0	.	176.1	336.2	437	105.0	130.0	220
Non-ferrous metals	80.0	133.0	99	80.0	133.0	99	160.0	123.0	12	160.0	120.0	7
Other crude materials	.	9.0	47	.	.	30	.	211.3	152	.	199.0	152
Solid fuels	133.0	311.0	125	133.0	290.0	93	1,690.7	1,665.4	724	1,480.0	1,312.0	385
Petroleum products, gas	341.2	520.0	723	125.0	126.0	247	1,747.1	2,887.0	5,118	1,747.0	2,886.0	5,102
Chemicals	.	62.9	41	.	62.0	33	.	19.0	29	.	7.0	14
Cement, lime, manufactured building materials	105.0	199.8	02	.	8.0	11	298.9	445.4	415	-	1.0	2
Metals	156.0	14.0	8	156.0	12.0	6	769.6	921.0	494	738.0	913.0	490
Manufactured metal articles	.	2.0	1	.	.	.	.	9.0	34	.	3.0	32
Machinery and transport equipment	535.3	120.0	48	3.1	.	3	343.0	120.0	41	47.0	35.0	17
Container goods	169.0	250.6	326	100.0	99.0	83	75.0	148.0	170	32.0	38.0	30
Goods on trailers	.	810.0	1,198	.	38.0	3	.	650.0	882	.	8.0	-
Miscellaneous articles	.	129.7	37	.	20.0	31	.	102.3	63	.	1.0	52
<i>Total</i>	4,299.0	3,335.8	4,222	3,302.1	1,494.0	1,979	7,488.8	11,338.6	11,475	5,043.0	7,372.5	7,312

Source: SOE *Transport side* (various issues).

Table A7 — Seaborne Cargoes Unloaded and Loaded in Latvia according to Cargo Categories, 1990–1996 (thousands of metric tonnes)

	1990	1991	1992	1993	1994	1995	1996
	<i>Unloaded</i>						
Liquid cargoes	—	155.0	43.5	21.3	178.5	723.4	655.2
Coal	66.4	—	—	—	—	—	—
Ore	—	—	54.3	41.1	33.5	26.7	—
Metals and scrap	98.1	160.8	28.2	2.6	9.3	16.3	—
Machinery, equip.	39.7	29.2	14.3	21.8	93.0	15.8	—
Chemical cargoes and fertilizers	409.6	241.3	89.9	18.9	22.9	21.2	—
Timber	—	1.7	0.5	0.5	1.0	4.7	—
Mineral building materials	280.6	237.3	251.5	65.5	28.2	13.6	—
Grain, cereal prod.	3,498.2	3,434.3	3,220.0	526.9	213.2	116.5	194.9
Sugar	444.8	348.5	279.2	281.6	131.2	130.7	186.0
General cargo ^a	947.3	425.7	333.5	662.2	1,141.9	1,545.9	2,021.8
of which:							
in containers	—	—	—	—	—	794.3	894.6
Roll-on/roll-off	—	—	—	—	—	323.1	339.5
Perishables	—	—	—	—	—	119.0	241.9
<i>Total</i>	5,784.7	5,033.8	4,314.9	1,642.4	1,852.7	2,614.8	3,154.0
without cereals	2,286.5	1,599.5	1,094.9	1,115.5	1,639.5	2,498.5	2,959.1
	<i>Loaded</i>						
Liquid cargoes	23,898.3	20,059.2	17,425.1	18,049.6	22,090.0	22,577.4	29,525.1
of which: Oil	—	—	—	—	—	12,087.8	14,549.2
Oil products	—	—	—	—	—	8,857.1	13,254.4
Chemical cargoes	—	—	—	—	—	1,593.9	1,705.2
Coal	937.2	896.3	917.1	973.8	592.2	414.5	147.7
Ore	29.1	102.7	35.9	37.3	33.0	5.4	—
Metals and scrap	723.9	805.7	1,129.2	1,947.4	3,264.0	3,684.5	3,699.4
Machinery, equip.	100.3	97.3	66.3	237.2	80.2	11.7	—
Chemical cargoes and fertilizers	2,859.8	2,840.3	2,615.1	3,019.2	4,030.7	4,723.9	4,022.1
Timber	6.0	2.9	122.7	610.9	2,021.8	3,608.3	2,645.1
Mineral building materials	11.5	9.6	269.8	273.1	244.7	341.7	449.5
Grain, cereal prod.	—	—	—	—	26.3	63.5	—
General cargo ^a	1,819.7	433.5	490.6	256.6	831.7	939.6	1,391.5
of which:							
in containers	—	—	—	—	—	441.2	511.3
Roll-on/roll-off	—	—	—	—	—	—	189.9
<i>Total</i>	30,385.8	25,247.5	23,071.8	25,765.1	33,214.6	36,370.5	41,880.4
Dry cargo only	6,486.8	5,188.3	5,646.7	7,715.5	11,124.6	13,793.1	12,355.3

^aStatistical difference (exception: unloaded cargoes in 1996).

Source: CSBL (1996).

Table A8 — Seaborne Cargoes Unloaded and Loaded in Poland according to Cargo Categories, 1992–1995 (thousands of metric tonnes)

	Unloaded				Loaded			
	1992	1993	1994	1995	1992	1993	1994	1995
Coal and cokes	24	11	12	14	11,579	16,798	20,797	17,175
Ore	1,929	1,766	1,882	3,451	170	80	47	53
Cereals	959	2,290	746	818	2,764	245	243	761
Timber	3	12	12	25	747	378	339	134
Oil, petroleum	9,372	8,832	7,650	6,760	1,059	871	816	900
Other bulk cargoes	2,702	2,019	2,897	3,092	5,526	5,358	4,838	5,466
General cargo	1,785	2,097	2,495	3,087	7,023	9,026	8,346	6,334
<i>Total</i>	16,774	17,027	15,694	17,247	28,868	32,756	35,426	30,823

Source: GUS *Transport—wyniki dzialalnosci* (various issues).

Table A9 — Cargo Turnover in Polish Sea Ports according to Cargo Categories, 1980–1996 (thousands of metric tonnes)

	1980	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Coal and cokes	21,133	21,835	18,161	17,843	16,577	15,801	16,023	11,315	12,043	17,163	21,614	17,786	16,546
Ore	7,066	5,834	4,991	5,687	5,926	3,981	3,854	3,633	2,112	1,850	1,929	3,514	3,610
Cereals	8,725	2,959	2,913	4,040	4,202	4,559	2,839	2,053	1,693	2,541	1,004	1,580	3,547
Timber	1,050	1,695	1,132	1,017	978	723	417	465	750	390	351	160	132
Oil, petroleum	7,275	2,905	3,347	4,766	6,653	5,653	5,575	7,513	10,435	9,722	8,519	7,732	6,770
Other bulk cargoes	7,983	7,551	8,049	8,891	9,360	9,187	8,541	7,813	8,387	7,601	8,023	8,819	8,295
General cargo	8,260	7,352	7,437	7,954	8,115	8,131	9,790	8,993	8,921	11,228	10,944	9,584	10,045
<i>Total</i>	61,492	50,131	46,030	50,198	51,811	48,035	47,039	41,785	44,341	50,495	52,384	49,175	48,945

Source: GUS *Biuletyn Statystyczny* (various issues), GUS *Rocznik Statystyczny* (various issues).

Table A10 — Seaborne Cargoes Unloaded in Estonia, Latvia, and Lithuania according to Selected Countries of Loading, 1991–1996 (thousands of metric tonnes)

	1991	1992	1993	1994	1995	1996
	<i>Estonia</i>					
Finland	15	238	284	604	947	1 106
Denmark	.	29	56	20	63	66
Germany	.	172	102	385	155	557
Netherlands	.	167	137	49	57	72
Belgium	.	84	49	18	.	.
France	–	143	337	90	.	.
	<i>Latvia</i>					
Finland	10	185	10	164	346	362
Denmark	.	51	13	29	47	121
Germany	.	775	123	97	241	324
Netherlands	.	148	21	51	180	110
Belgium	.	3	51	38	.	.
France	54	358	171	42	.	.
	<i>Lithuania</i>					
Finland	.	36	11	32	6	12
Denmark	.	159	10	24	30	58
Germany	.	1,421	736	745	673	787
Netherlands	.	95	103	73	92	109
Belgium	.	49	82	4	.	.
France	82	437	325	21	.	.

Source: Centraal Bureau voor de Statistiek *Statistiek van de aan-, af- en doorvoer* (various issues), Danmarks Statistik *Udenrigshandel* (various issues), Department of Transport *Seaborne Trade Statistics of the United Kingdom* (various issues), Institut National de Statistique *Statistiques du trafic international des ports* (various issues), Istituto Nazionale di Statistica *Statistiche dei trasporti marittimi nei porti italiani* (various issues), Ministère de l'Équipement, des Transports et du Tourisme *Résultats de l'exploitation des ports maritimes* (various issues), Statistisches Bundesamt *Fachserie 8, Reihe 5* (various issues), Statistisk sentralbyrå *Samferdselsstatistikk* (various issues), Tilastokeskus *Liikennetilastollinen vousikirja* (various issues).

Table A11 — Seaborne Cargoes Loaded in Estonia, Latvia, and Lithuania according to Selected Countries of Unloading, 1991–1996 (thousands of metric tonnes)

	1991	1992	1993	1994	1995	1996
	<i>Estonia</i>					
Finland	394	1,030	1,382	1,864	1,876	1,413
Denmark	.	219	679	560	702	763
Germany	.	143	367	628	915	989
Netherlands	.	340	380	492	776	954
Belgium	.	9	40	102	.	.
France	11	23	142	69	.	.
	<i>Latvia</i>					
Finland	970	1,948	1,659	1,825	1,761	985
Denmark	.	595	1,190	1,216	1,621	975
Germany	.	1,593	2,319	2,728	3,790	5,979
Netherlands	.	40	58	68	.	.
Belgium	.	6,586	1,882	1,539	2,057	3,035
France	185	1,824	1,999	1,797	.	.
	<i>Lithuania</i>					
Finland	28	343	381	256	121	112
Denmark	.	546	416	452	362	371
Germany	.	1,207	1,317	1,125	1,117	879
Netherlands	.	1,436	1,377	1,268	982	728
Belgium	.	751	475	778	.	.
France	39	501	572	204	.	.

Source: Centraal Bureau voor de Statistiek *Statistiek van de aan-, af- en doorvoer* (various issues), Danmarks Statistik *Udenrigshandel* (various issues), Department of Transport *Seaborne Trade Statistics of the United Kingdom* (various issues), Institut National de Statistique. *Statistiques du trafic international des ports* (various issues), Istituto Nazionale di Statistica *Statistiche dei trasporti marittimi nei porti italiani* (various issues), Ministère de l'Équipement, des Transports et du Tourisme *Résultats de l'exploitation des ports maritime* (various issues), Statistisches Bundesamt *Fachserie 8, Reihe 5* (various issues), Statistisk sentralbyrå *Samferdselsstatistikk* (various issues), Tilastokeskus *Liikennetilastollinen vousikirja* (various issues).

Table A12 — Seaborne Cargoes Unloaded and Loaded in Poland according to Selected Countries of Loading and Unloading, 1980–1996 (thousands of metric tonnes)

	1980	1985	1988	1990	1991	1992	1993	1994	1995	1996
	<i>Unloaded</i>									
Finland	.	.	192	127	655	788	564	894	523	569
Sweden	.	.	.	392	191	214	.	.	.	.
Norway	355	226	470	551	1,384	1,732	1,759	1,798	1,576	921
Denmark	60	242	98	53	123	95	240	115	116	565
Germany ^a	152	664	669	626	343	528	597	483	537	833
Netherlands	917 ^b	537	433	1,010	4,159	3,819	2,942	2,062	1,692	688
Belgium	129	—	89	72	54	179	121	8	157	193
UK	.	.	.	251	778	3,405	3,471	2,712	.	.
France	.	159	120	368	225	220	210	235	.	.
Spain	.	.	.	34	106	289	.	.	.	.
Italy	.	.	.	8	8	13	3	0	.	.
	<i>Loaded</i>									
Finland	.	.	3,479	3,515	3,301	2,936	4,128	5,165	3,537	4,168
Sweden	.	.	.	1,412	1,146	1,208	.	.	.	.
Norway	480	447	246	250	202	279	323	465	494	502
Denmark	3,867	2,379	2,319	1,714	1,709	1,882	2,910	4,688	4,432	3,430
Germany ^a	1,377	2,135	2,070	2,590	2,445	2,392	2,240	2,287	2,071	2,021
Netherlands	1,115 ^b	2,431	1,604	2,132	2,067	1,834	1,920	1,770	2,145	1,672
Belgium	489	765	820	921	890	761	758	945	1,365	1,110
UK	.	.	.	2,391	1,572	2,074	2,436	2,940	.	.
France	.	1,578	746	1,053	730	806	1,185	797	.	.
Spain	.	.	.	542	557	866	.	.	.	.
Italy	.	.	.	1,092	1,176	675	571	585	.	.

^a1980–1991: West Germany. — ^bPorts of Rotterdam and Amsterdam only.

Source: ECMT (1997: 210–211), Centraal Bureau voor de Statistiek *Statistiek van de aan-, af- en doorvoer* (various issues), Danmarks Statistik *Udenrigshandel* (various issues), Department of Transport *Seaborne Trade Statistics of the United Kingdom* (various issues), Institut National de Statistique *Statistiques du trafic international des ports* (various issues), Istituto Nazionale di Statistica *Statistiche dei trasporti marittimi nei porti italiani* (various issues), Ministère de l'Équipement, des Transports et du Tourisme *Résultats de l'exploitation des ports maritimes* (various issues), Statistisches Bundesamt *Fachserie 8, Reihe 5* (various issues), Statistisk sentralbyrå *Samferdselsstatistikk* (various issues), Tilastokeskus *Liikennetillastollinen voutsikirja* (various issues).

Table A13 — Seaborne Cargoes Unloaded and Loaded in the USSR^a according to Selected Countries of Loading and Unloading, 1980–1996 (thousands of metric tonnes)

	1980	1985	1988	1990	1991	1992	1993	1994	1995	1996
	<i>Seaborne cargoes unloaded</i>									
Finland ^b	.	.	101	183	216	79	14	11	60	92
Norway	222	90	181	76	126	54	36	139	170	224
Denmark	115	221	205	629	156	654	374	184	220	212
Germany ^c	2,032	4,404	2,867	1,625	874	2,513	1,136	676	661	568
Baltic SSR ^d	980	1,498	1,761	1,001	542	—	—	—	—	—
Netherlands	1,384 ^e	2,066	883	765	819	1,026	1,424	811	1,196	1,021
Belgium	4,258	3,111	1,874	1,008	386	408	902	120	792 ^f	728 ^f
France ^g	.	5,517	3,895	3,958	4,660	2,983	2,945	134	.	.
	<i>Seaborne cargoes loaded</i>									
Finland ^a	.	.	13,864	12,055	6,188	2,344	2,413	2,815	2,309	2,374
Norway	393	803	655	1,382	1,253	1,228	1,141	1,269	1,443	1,776
Denmark	1,895	1,508	1,903	2,375	2,725	1,480	2,598	1,292	1,429	895
Germany ^b	3,797	4,816	6,426	4,593	4,475	2,483	2,562	3,008	2,097	1,436
Baltic SSR ^c	3,470	4,285	6,051	4,147	3,994	—	—	—	—	—
Netherlands	7,629 ^d	14,628	13,841	12,754	14,659	10,841	7,583	10,072	11,041	12,387
Belgium	4,628	5,283	5,334	5,225	3,800	1,390	3,774	3,476	4,532 ^e	4,856 ^e
France ^f	.	1,539	3,961	3,979	3,282	1,867	1,045	500	.	.

^aFrom 1992: Russian Federation. — ^b1988: Baltic; 1990: European ports of the USSR; from 1991: Russian Federation. — ^c1980–1991: West Germany (cargoes unloaded in the Baltic ports of the USSR); from 1992 onwards: cargoes unloaded in ports of the Russian Federation west of 80° E. — ^dCargoes unloaded in the former Estonian, Latvian and Lithuanian SSR (included in the total for West Germany). — ^ePorts of Rotterdam and Amsterdam only. — ^fFormer USSR. — ^gExcluding Mediterranean ports; 1991–1993: cargoes unloaded/loaded in CIS.

Source: Centraal Bureau voor de Statistiek *Statistiek van de aan-, af- en doorvoer* (various issues), Danmarks Statistik *Udenrigshandel* (various issues), Department of Transport *Seaborne Trade Statistics of the United Kingdom* (various issues), Institut National de Statistique *Statistiques du trafic international des ports* (various issues), Istituto Nazionale di Statistica *Statistiche dei trasporti marittimi nei porti italiani* (various issues), Ministère de l'Équipement, des Transports et du Tourisme *Résultats de l'exploitation des ports maritime* (various issues), Statistisches Bundesamt *Fachserie 8, Reihe 5* (various issues), Statistisk sentralbyrå *Samferdselsstatistikk* (various issues), Tilastokeskus *Liikennetillastollinen vuosikirja* (various issues).

Table A14 — Seaborne Cargo Turnover in the Ports of Estonia, Latvia, Lithuania, Poland, and the USSR^a according to Selected Countries of Origin and Destination, 1988–1996 (millions of metric tonnes)

	Total ^b	Of which loaded or unloaded to/from (partner countries) ^c							
		Finland	Norway	Denmark	Germany	Benelux	France	UK	Italy
1988	135	17.6	1.6	4.5	12.0 ^d	24.9	8.7	.	.
1990	119	15.9	2.3	4.8	9.4 ^d	23.9	9.3	12.6	1.5
1992	110	9.9	3.3	5.7	13.2	23.6	9.2	13.2	1.6
1994	130	13.6	3.7 ^e	8.6	12.2	23.7	3.9	13.8	1.4
1995	135	11.5	3.7 ^e	9.0	13.1	27.1	.	.	.
1996	144	11.2	4.1	7.5	15.6	27.7	.	.	.

^aFrom 1992: Russian Federation. — ^bIncluding cargo whose countries of origin or destination are not identified. Of the ports of the Russian Federation, only St. Petersburg/Leningrad and Kaliningrad are included. — ^cAs to the selection of ports of the USSR/Russian Federation, see the footnotes of Table 17. — ^dWest Germany. — ^eNot including traffic between Norway and ports of Estonia, Latvia, and Lithuania.

Source: Centraal Bureau voor de Statistiek *Statistiek van de aan-, af- en doorvoer* (various issues), Danmarks Statistik *Udenrigshandel* (various issues), Department of Transport *Seaborne Trade Statistics of the United Kingdom* (various issues), Institut National de Statistique *Statistiques du trafic international des ports* (various issues), Istituto Nazionale di Statistica *Statistiche dei trasporti marittimi nei porti italiani* (various issues), Ministère de l'Équipement, des Transports et du Tourisme *Résultats de l'exploitation des ports maritime* (various issues), Statistisches Bundesamt *Fachserie 8, Reihe 5* (various issues), Statistisk sentralbyrå *Samferdselsstatistikk* (various issues), Tilastokeskus *Liikennetillastollinen voutsikirja* (various issues).

Table A15 — Modal Split in Merchandise Traffic of Estonia, 1990–1996

	1990	1991	1992	1993	1994	1995	1996
	<i>Millions of metric tonnes</i>						
Rail	.	.	.	41.8	40.0	41.2	44.6
Road	78.2	52.4	33.9	11.4	12.1	9.6	11.2
of which: domestic	.	.	(33.0)	(10.6)	(10.9)	(8.4)	(9.9)
	<i>1993 = 100</i>						
Rail	.	.	.	100	96	99	107
Road	.	.	.	100	106	84	98
	<i>Percentage shares of total traffic</i>						
Rail	.	.	.	78.6	76.8	81.1	79.9
Road	.	.	.	21.4	23.2	18.9	20.1
	<i>Millions of tonne-kilometres</i>						
Rail	.	.	.	4,152	3,612	3,846	4,198
Road	2,097	1,662	1,457	1,056	1,415	1,549	1,897
of which: domestic	.	.	(1,150)	(502)	(518)	(449)	(442)
	<i>1993 = 100</i>						
Rail	.	.	.	100	87	93	101
Road	.	.	.	100	134	147	180
	<i>Percentage shares of total traffic</i>						
Rail	.	.	.	79.7	71.9	71.3	68.9
Road	.	.	.	20.3	28.1	28.7	31.1
	<i>Percentage shares of domestic traffic</i>						
Rail	.	.	.	89.2	87.5	89.5	90.5
Road	.	.	.	10.8	12.5	10.5	9.5

Source: SOE Transport side 1996 (1997), own calculations.

Table A16 — Modal Split in Domestic Merchandise Traffic of Latvia, 1980–1995

	1980	1990	1991	1992	1993	1994	1995
	<i>Millions of metric tonnes</i>						
Rail	87.0	84.1	75.3	31.8	30.6	27.8	28.8
Road	218.6	206.2	161.8	85.0	28.9	19.8	25.0
	<i>1993 = 100</i>						
Rail	284	275	246	104	100	91	94
Road	756	713	560	294	100	69	87
	<i>Percentage shares of total</i>						
Rail	28	29	32	27	51	58	54
Road	72	71	68	73	49	42	46
	<i>Millions of tonne-kilometres</i>						
Rail	17,586	18,538	16,739	10,115	9,852	9,520	9,757
Road	5,133	5,853	4,866	2,500	1,253	1,402	1,834
	<i>1993 = 100</i>						
Rail	179	188	170	103	100	97	99
Road	410	467	388	200	100	112	146
	<i>Percentage shares of total</i>						
Rail	77	76	77	80	89	87	84
Road	23	24	23	20	11	13	16

Source: CSBL (1996), own calculations.

Table A17 — Modal Split in Domestic Merchandise Traffic of Lithuania, 1989–1995

	1989	1990	1991	1992	1993	1994	1995
	<i>Millions of metric tonnes</i>						
Rail	79.8	66.5	63.9	56.2	38.4	29.5	26.0
Road	348.9	308.2	295.6	201.1	170.2	130.1	138.3
	<i>1993 = 100</i>						
Rail	208	173	-166	146	100	77	68
Road	205	181	174	118	100	76	81
	<i>Percentage shares of total</i>						
Rail	19	18	18	22	18	18	16
Road	81	82	82	78	82	82	84
	<i>Millions of tonne-kilometres</i>						
Rail	21,749	19,258	17,748	11,337	11,030	8,849	7,685
Road	8,113	7,336	7,019	4,989	6,906	4,574	5,160
	<i>1993 = 100</i>						
Rail	197	175	161	103	100	80	70
Road	117	106	102	72	100	66	75
	<i>Percentage shares of total</i>						
Rail	73	72	72	69	61	66	60
Road	27	28	28	31	39	34	40

Source: LDS Lithuania's Statistics Yearbook (various issues), own calculations.

Table A18 — Modal Split in Domestic Merchandise Traffic of Poland, 1990–1995

	1990	1991	1992	1993	1994	1995
	<i>Millions of metric tonnes</i>					
Rail	281.7	227.8	201.7	214.2	214.7	225.3
Road	1,292.4	1,188.7	1,121.7	1,071.2	1,060.7	1,086.8
Inland Waterway	9.8	7.8	7.9	8.7	10.1	9.3
	<i>1993 = 100</i>					
Rail	132	106	94	100	100	105
Road	121	111	105	100	99	101
Inland Waterway	113	90	91	100	116	107
	<i>Percentage shares of total</i>					
Rail	18	16	15	17	17	17
Road	82	83	84	83	83	82
Inland Waterway	1	1	1	1	1	1
	<i>Millions of tonne-kilometres</i>					
Rail	83,530	65,146	57,763	64,359	65,788	69,116
Road	40,293	39,641	42,037	40,744	45,365	51,200
Inland Waterway	1,034	737	750	661	793	876
	<i>1993 = 100</i>					
Rail	130	101	90	100	102	107
Road	99	97	103	100	111	126
Inland Waterway	156	111	113	100	120	133
	<i>Percentage shares of total</i>					
Rail	67	62	57	61	59	57
Road	32	38	42	39	41	42
Inland Waterway	1	1	1	1	1	1

Source: GUS *Rocznik Statystyczny* (1995), GUS *Transport—wyniki dzialalnosci* (1995), own calculations.

Table A19 — Modal Split in Domestic Merchandise Traffic of Russia, 1990–1994

	1990	1991	1992	1993	1994
	<i>Millions of metric tonnes</i>				
Common carrier					
Rail	2,140	1,957	1,640	1,348	1,058
Road	2,941	2,731	1,862	1,109	653
Inland Waterway	562	514	308	215	155
Pipeline	1,101	1,042	947	873	801
Non-common carrier					
Industrial railways	6,357	5,789	5,101	4,050	3,507
Motor transport	12,406	11,957	10,597	9,091	6,947
<i>Total of all carriers^a</i>	25,587	23,990	20,455	16,686	13,121
	<i>1993 = 100</i>				
Common carrier					
Rail	159	145	122	100	78
Road	265	246	168	100	59
Inland Waterway	261	239	143	100	72
Pipeline	126	119	108	100	92
Non-common carrier					
Industrial railways	157	143	126	100	87
Motor transport	136	132	117	100	76
<i>Total of all carriers^a</i>	153	144	123	100	79
	<i>Percentage shares of total</i>				
Common carrier					
Rail	8.4	8.2	8.0	8.1	8.1
Road	11.5	11.4	9.1	6.6	5.0
Inland Waterway	4.3	4.3	4.6	5.2	6.1
Pipeline	2.2	2.1	1.5	1.3	1.2
Non-common carrier					
Industrial railways	24.8	24.1	24.9	24.3	26.7
Motor transport	48.5	49.8	51.8	54.5	52.9
^a Not including maritime shipping and air transport.					

Source: North (1996: 5), own calculations.

Table A20 — Total Export and Import Volumes of the States of the Baltic Sea Region, 1980–1995 (million dollars)

	1980		1985		1990		1993		1995	
	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports
Denmark	16,733	19,345	16,941	18,072	34,801	32,230	37,172	30,546	48,981	43,168
Estonia ^a	—	—	—	—	—	—	805	897	1,838	2,546
Finland	14,155	15,638	13,620	13,234	26,718	27,003	23,447	18,033	39,573	28,114
Germany ^b	210,383	207,221	209,247	182,289	397,912	345,342	382,631	346,130	511,874	448,219
Latvia ^a	—	—	—	—	—	—	963	872	1,283	1,810
Lithuania ^a	—	—	—	—	—	—	2,025	2,279	2,707	3,083
Norway	18,545	16,928	19,989	15,560	34,062	27,219	31,778	23,892	41,744	32,707
Poland	14,191	16,690	11,489	11,855	13,627	8,413	14,143	18,834	22,892	29,050
Russian Fed. ^c	76,449	68,522	87,281	83,140	104,640	120,651	52,249	34,468	78,290	46,680
Sweden	30,908	33,441	30,467	28,553	57,326	54,266	49,864	42,687	79,918	64,446
Total BSR ^d	381,364	377,785	389,034	352,703	669,086	610,332	595,077	518,638	829,100	699,823
Per cent of world trade	18.9	18.3	20.0	17.5	19.5	17.2	16.3	13.7	16.8	14.0
Total world trade	2,020,539	2,066,145	1,943,169	2,012,025	3,426,665	3,556,473	3,660,807	3,795,689	4,925,668	4,998,592

^aSubsumed under USSR values until 1991. — ^bTotal value of the Federal Republic of Germany and the German Democratic Republic before 1990. — ^cFigures of USSR until 1991, thereafter values of CIS. — ^dBaltic Sea region.

Source: UN *Yearbook of International Trade Statistics* (various issues), own calculations.

Table A21 — Different Perspectives on Trade in the Baltic Sea Region, 1990 and 1993 (million dollars)

	1990				1993			
	Exports		Imports		Exports		Imports	
	million dollars	per cent	million dollars	per cent	million dollars	per cent	million dollars	per cent
Total Baltic Sea region	669,089	19.5	610,332	17.2	595,077	16.3	518,638	13.7
Intra-BSR trade ^a	122,185	3.6	137,426	3.9	102,988	2.8	100,503	2.6
Estimated BSR trade ^a	209,728	6.1	203,632	5.7	171,506	4.7	145,659	3.8
Total world trade	3,426,665	x	3,556,473	x	3,660,807	x	3,795,689	x

^aBSR = Baltic Sea region.

Source: UN *Yearbook of International Trade Statistics* (various issues), own calculations.

Table A22 — Intra-Baltic Exports und Imports according to Countries, 1993 (million dollars)

	Denmark	Estonia	Finland	Germany	Latvia	Lithuania	Norway	Poland	Russia	Sweden	Total
	<i>Intra-baltic export (exporting countries \ importing countries)</i>										
Denmark	x	.	644.5	7,985.8	.	29.5	2,425.7	452.3	268.4	3,385.6	15,191.9
Estonia	19.1	x	166.4	64.3	69.1	29.8	4.8	8.5	182.0	76.1	620.1
Finland	771.1	325.8	x	2,980.8	43.7	.	733.7	353.1	1,045.1	2,548.4	8,801.6
Germany	6,836.8	.	2,815.5	x	.	.	3,105.5	5,864.0	6,875.6	7,660.4	33,157.8
Latvia	10.1	22.0	22.8	74.9	x	48.5	3.3	33.6	336.3	73.6	625.1
Lithuania	30.3	50.9	18.2	137.7	147.8	x	.	141.4	670.8	36.5	1,233.5
Norway	1,399.8	.	810.0	4,148.3	.	.	x	316.6	96.1	2,773.0	9,543.7
Poland	418.9	.	195.9	5,117.0	23.7	45.6	76.9	x	644.5	307.1	6,829.6
Russia	.	82.8	1,364.1	5,074.4	207.6	299.0	284.3	1,311.1	x	783.0	9,406.3
Sweden	3,295.9	104.4	2,273.6	7,109.6	.	.	4,039.6	422.3	332.7	x	17,578.2
	<i>Intra-Baltic imports (importing countries \ exporting countries)</i>										
Denmark	x	22.7	840.9	6,589.4	85.6	44.9	1,505.7	388.1	307.7	3,179.8	12,964.8
Estonia	23.2	x	249.6	96.2	20.2	29.6	4.2	3.6	153.6	79.7	659.9
Finland	565.2	133.0	x	2,938.2	.	.	860.2	241.7	1,349.3	1,836.8	7,924.3
Germany	6,376.7	.	3,412.2	x	.	.	5,562.7	5,218.0	6,452.9	7,571.9	34,594.5
Latvia	19.8	42.4	45.3	107.0	x	102.9	1.4	10.5	305.8	56.8	692.0
Lithuania	55.6	18.1	29.6	219.4	33.3	x	.	49.8	1,220.2	25.0	1,650.9
Norway	1,784.7	.	785.7	3,252.6	22.0	.	x	112.3	344.5	3,387.0	9,688.7
Poland	456.0	.	383.3	5,289.1	.	90.4	355.8	x	1,271.3	421.6	8,267.5
Russia	189.8	.	723.6	5,142.1	77.4	.	87.6	528.8	x	313.6	7,062.9
Sweden	3,037.8	94.4	2,646.4	7,618.4	102.7	.	2,748.0	318.9	431.2	x	16,997.8

Source: UN Yearbook of International Trade Statistics (various issues), own calculations.

Table A23 — Intra-Baltic Sea Total Exports and Imports, 1993

	Worldwide Exports	Intra-Baltic Sea Exports		Estimated Exports ^a		Worldwide Imports	Intra-Baltic Sea Imports		Estimated Imports ^a	
	million dollars	million dollars	per cent	million dollars	per cent	million dollars	million dollars	per cent	million dollars	per cent
Denmark	35,909.7	15,191.9	42.3	15,191.9	42.3	29,502.3	12,964.8	43.9	12,964.8	43.9
Estonia	803.9	620.1	77.1	803.9	100.0	894.0	659.9	73.8	894.0	100.0
Finland	23,490.9	8,801.6	37.5	23,490.9	100.0	18,026.1	7,924.3	44.0	18,026.1	100.0
Germany	379,395.2	33,157.8	8.7	34,145.6	9.0	341,130.3	34,594.5	10.1	34,113.0	10.0
Latvia	1,179.2	625.1	53.0	1,179.2	100.0	1,088.2	692.0	63.6	1,088.1	100.0
Lithuania	2,024.7	1,233.5	60.9	2,024.7	100.0	2,274.5	1,650.9	72.6	2,274.5	100.0
Norway	31,890.6	9,543.7	29.9	15,945.3	50.0	24,002.7	9,688.7	40.4	12,001.3	50.0
Poland	14,041.1	6,829.6	48.6	6,829.6	48.6	18,844.6	8,267.5	43.9	8,267.5	43.9
Russia	44,297.4	9,406.3	21.2	22,148.7	50.0	26,806.7	7,062.9	26.3	13,403.4	50.0
Sweden	49,753.5	17,578.2	35.3	49,753.5	100.0	42,634.2	16,997.8	39.9	42,634.2	100.0
<i>Total</i>	582,786.2	102,987.7	17.7	171,513.3	29.4	505,203.6	100,503.2	19.9	145,667.0	28.8

^aWith respect to maritime or land-based Baltic Sea region transport, see Annex I.

Source: UN Yearbook of International Trade Statistics (various issues), own calculations.

Table A24 — Intra-Baltic Exports und Imports according to Countries, 1990 (million dollars)

	Denmark	Estonia	Finland	Germany	Latvia	Lithuania	Norway	Poland	Russia	Sweden	Total
	<i>Intra-baltic exports (exporting countries \ importing countries)</i>										
Denmark	x	.	863.0	6,494.0	.	.	1,946.0	218.5	345.9	4,283.1	14,150.5
Estonia	.	x	.	.	.	.	.	.	.	.	.
Finland	923.7	.	x	3,314.0	.	.	799.1	94.5	3,349.0	3,749.1	12,229.5
Germany	7,405.6	.	4,400.0	x	.	.	3,437.1	2,933.8	6,378.1	10,304.9	34,859.5
Latvia	.	.	.	.	x	.	.	.	.	.	.
Lithuania	.	.	.	.	.	x	.	.	.	.	.
Norway	1,644.3	.	925.4	3,844.5	.	.	x	155.0	172.1	3,913.7	10,655.0
Poland	239.0	.	213.8	3,421.4	.	.	57.7	x	2,080.8	357.1	6,369.8
Russia	312.1	.	3,063.8	11,882.1	.	.	401.9	7,066.4	x	833.3	23,559.5
Sweden	3,888.4	.	3,888.3	8,089.1	.	.	4,773.5	300.4	422.1	x	21,361.7
	<i>Intra-Baltic imports (importing countries \ exporting countries)</i>										
Denmark	x	.	957.1	7,123.1	.	.	1,464.4	301.2	216.3	3,636.7	13,698.6
Estonia	.	x	.	.	.	.	.	.	.	.	.
Finland	886.4	.	x	4,705.5	.	.	893.4	315.6	2,572.2	3,506.0	12,879.1
Germany	6,828.2	.	3,530.7	x	.	.	4,878.0	3,218.3	5,487.0	8,180.5	32,122.7
Latvia	.	.	.	.	x	.	.	.	.	.	.
Lithuania	.	.	.	.	.	x	.	.	.	.	.
Norway	1,795.7	.	842.5	3,848.2	.	.	x	89.3	381.9	4,236.4	11,194.1
Poland	92.8	.	103.6	1,640.7	.	.	108.4	x	1,617.8	159.3	3,722.7
Russia	372.7	.	3,627.9	21,380.2	.	.	234.9	13,553.2	x	793.1	39,961.9
Sweden	4,091.6	.	3,735.8	10,568.9	.	.	4,308.5	387.7	754.8	x	23,847.2

Source: UN Yearbook of International Trade Statistics (various issues), own calculations.

Table A25 — Intra-Baltic Total Exports und Imports, 1990

	Worldwide Exports	Intra-Baltic Sea Exports		Estimated Exports ^a		Worldwide Imports	Intra-Baltic Sea Imports		Estimated Imports ^a	
	million dollars	million dollars	per cent	million dollars	per cent	million dollars	million dollars	per cent	million dollars	per cent
Denmark	34,801.0	14,150.5	40.7	14,150.5	40.7	31,562.1	13,698.6	43.4	13,698.6	43.4
Estonia	.	.	.	.	.	.	.	.	.	.
Finland	26,718.1	12,229.5	45.8	26,718.1	100.0	27,098.3	12,879.1	47.5	27,098.3	100.0
Germany	397,911.8	34,859.5	8.8	35,812.1	9.0	341,248.4	32,122.7	9.4	34,124.8	10.0
Latvia	.	.	.	.	.	.	.	.	.	.
Lithuania	.	.	.	.	.	.	.	.	.	.
Norway	34,062.4	10,655.0	31.3	17,031.2	50.0	26,860.1	11,194.1	41.7	13,430.1	50.0
Poland	13,626.8	6,369.8	46.7	6,369.8	46.7	8,160.0	3,722.7	45.6	3,722.7	46.7
Russia	104,639.9	23,559.5	22.5	52,320.0	50.0	120,866.9	39,961.9	33.1	60,433.4	50.0
Sweden	57,326.3	21,361.7	37.3	57,326.3	100.0	54,536.3	23,847.2	43.7	54,536.3	100.0
Total	669,086.3	123,185.5	18.4	209,728.0	31.3	610,332.0	137,426.3	22.5	203,631.8	33.4

^aWith respect to maritime or land-based Baltic Sea region transport, see Annex I.

Source: UN *Yearbook of International Trade Statistics* (various issues), own calculations.

References

- Arkadie, B. van, and M. Karlsson (1992). *Economic Survey of the Baltic States: The Reform Process in Estonia, Latvia and Lithuania*. London.
- Arklina, I. (1996). Liepaja Attracts Russian Transit. *The Baltic Times*, 1 August.
- Arrow, K.J., and M. Kurz (1972). *Public Investment, the Rate of Return, and Optimal Fiscal Policy*. Baltimore.
- Aschauer, D.A. (1989a). Is Public Expenditure Productive? *Journal of Monetary Economics* 23 (2): 177–200.
- (1989b). Does Public Capital Crowd Out Private Capital? *Journal of Monetary Economics* 24 (2): 171–188.
- (1989c). Public Investment and Productivity Growth in the Group of Seven. *Economic Perspectives* 13 (5): 17–25.
- (1990). *Public Investment and Private Sector Growth: The Economic Benefits of Reducing America's "Third Deficit"*. Washington, D.C.
- Assmann, T. (1996). Häfen/Riga, Ventspils und Liepaja bauen ihre Kapazitäten aus—Attraktive Möglichkeiten trotz des schwierigen Umfelds. *Handelsblatt*, 12 September.
- (1997). Situation und Perspektiven von Transithäfen im Ostseeraum. *Hansa* 134 (11): 94.
- Augustyniak, G.M., A. Laskowska, and K. Rutkowski (1995). Die Finanzierung der Luftverkehrs-Infrastruktur in Polen. In H.-J. Ewers (ed.), *Verkehrsinfrastrukturpolitik in Europa: Eine deutsch-polnische Perspektive*. Beiträge aus dem Institut für Verkehrswissenschaft an der Universität Münster 137. Göttingen.
- Bachmann, K. (1996). Krieg der Trucker an den EU-Ostgrenzen. *Die Presse*, 29 April.
- Banister, D., and J. Berechman (1995). A Methodological Framework for Analyzing the Impact of Transportation Infrastructure Investment on Economic Development. Discussion Paper TI 5-95-201. Tinbergen Institute, Amsterdam.
- Bascombe, A. (1997a). Battle of the Baltic. *Containerisation International* 30 (1): 63–64.
- (1997b). Baltic Changes. *Containerisation International* 30 (2): 36–37.
- Bebriss, P. (1996). Shipping in the "Land of Opportunities". *The Baltic Times*, 21 November: 15.
- Behnke, N.C. (1997). Wirtschaftswachstum, Strukturwandel und Verkehrsentwicklung—Der volkswirtschaftliche Nutzen des Verkehrs. Ph.D. diss., Faculty of Economics and Social Sciences, University of Cologne.
- Berenyi, I., and S. Zenkovich (1997). Hit by Dwindling Cabotage. *Seatrade Review* 26 (9): 95–97.

- Berndt, E.R., and B. Hansson (1991). Measuring the Contribution of Public Infrastructure Capital in Sweden. NBER Working Paper 3842. Cambridge, Mass.
- Bernevega, S. (1994). Russia—Latvia: Mutual Economic Ties. *Foreign Trade* (7/8): 11–13.
- BGBI. (*Bundesgesetzblatt, Teil II*) (1992). Gesetz zu dem Abkommen vom 7. Januar 1991 zwischen der Regierung der Bundesrepublik Deutschland und der Regierung der Union der Sozialistischen Sowjetrepubliken über die Seeschifffahrt. (33): 977–983.
- (1994). Gesetz zu dem Abkommen vom 28. Juli 1992 zwischen der Regierung der Bundesrepublik Deutschland und der Regierung der Republik Litauen über die Seeschifffahrt. (4): 100–106.
- (1995). Gesetz zu dem Abkommen vom 5. April 1993 zwischen der Regierung der Bundesrepublik Deutschland und der Regierung der Republik Lettland über die Seeschifffahrt. (1): 2–8.
- (1996a). Gesetz zu dem Abkommen vom 20. Dezember 1994 zwischen der Regierung der Bundesrepublik Deutschland und der Regierung der Republik Estland über die Seeschifffahrt. (21): 758–764.
- (1996b). Gesetz zu dem Abkommen vom 20. März 1995 zwischen der Regierung der Bundesrepublik Deutschland und der Regierung der Republik Polen über die Seeschifffahrt. (51): 2694–2700.
- Biehl, D., E. Hussmann, K. Rautenberg, S. Schnyder, and V. Südmeyer (1975). *Bestimmungsgründe des regionalen Entwicklungspotentials*. Kieler Studien 133. Tübingen.
- Biznes & Baltija and TBT (1996). Riga Airport Claims Baltic Turnover Prize. *The Baltic Times*, 6 February.
- Blees, T. (1996). Verkehrswege durch Polen: Schnell wie der "Ostwind". *Süddeutsche Zeitung*, 18 April.
- Böhme, H. (1978). *Restraints on Competition in World Shipping: An Investigation into Current Problems of the International Shipping Order*. Thames Essay 15. London.
- (1987). Güterströme und Verkehrsstrukturen im Ostseeverkehr. In Industrie- und Handelskammer zu Lübeck (ed.), *Verkehrsmarkt Ostsee*. Ostsee-Jahrbuch 53. Lübeck.
- (1988a). Der Wettbewerb im Ostseeverkehr. *Internationales Verkehrswesen* 40 (6): 383–387.
- (1988b). Staatliche Regulierung der Linienschifffahrt oder Freiheit der Meere? Zur Revisionskonferenz über den UN-Linienkodex. *Die Weltwirtschaft* (2): 165–176.
- (1993). Rechtzeitig die Weichen stellen: Ost-West-Seeverkehr braucht liberalen Rechtsrahmen. *Deutsche Verkehrs-Zeitung*, 9 March: 46–48.
- Böhme, H., and H. Buck (1976). *Die Schifffahrtspolitik der sozialistischen Länder und die Ordnung des internationalen Seeverkehrs*. Hamburg.

- Böhme, H., and H. Sichelschmidt (1990). Die künftige Wettbewerbsposition der schleswig-holsteinischen Ostseehäfen nach Öffnung der DDR und des RGW-Raumes. Gutachten. Kiel.
- Bolz, K., and A. Polkowski (1993). Wirtschaftsraum St. Petersburg: Ausgewählte Probleme der Wirtschaftspolitik. Studie III. HWWA-Report 129. Hamburg.
- (1996). Lettland: Regulierung und Deregulierung im Transformationsprozess. Die wirtschaftliche und soziale Entwicklung. HWWA-Report 158. Hamburg.
- Borisova, Y., and L. Donaldson (1997a). Takeover Will Stub Out Bad Practices at St Petersburg. *Lloyd's List*, 1 October: 5.
- (1997b). "Pie in Sky" Port Getting Off the Ground. *Lloyd's List*, 1 December: 10.
- Boroch, W. (1996). Litauen: Regulierung und Deregulierung im Transformationsprozess. Die wirtschaftliche und soziale Entwicklung. HWWA-Report 157. Hamburg.
- Bougheas, S., and P. Demetriades (1995). Infrastructure, Specialisation and Economic Growth. Working Paper 95-15. Department of Economics, Keele University, Staffordshire.
- Breitzmann, K.-H. (1996). The Role of Transit Transport in the Process of Establishing an Economic Baltic Sea Region. In J. Vainio (ed.), *Transit Chains in the Baltic Sea Region*. VI International Conference on Cooperation and Competition in Maritime Transport, Helsinki, 5-7 June, 1996. Publications from the Center for Maritime Studies A 22. University of Turku.
- Bronstein, M. (1997). Price to Pay for Strategic Overshoot. Paper presented at the International Seminar on "The Role of Transit Transportation in Emerging Markets", September 10-13, Tallinn.
- Bruinsma, F. (1995). The Impact of New Infrastructure on the Spatial Pattern of Economic Activities. Research Memorandum 1995-12. Faculteit der Economische Wetenschappen en Econometrie, Vrije Universiteit Amsterdam.
- Bruinsma, F., and P. Rietveld (1993). Accessibilities of Cities in European Infrastructure Networks: A Comparison of Approaches. Research Memorandum 1993-18. Faculteit der Economische Wetenschappen en Econometrie, Vrije Universiteit Amsterdam.
- Buchhofer, E. (1993). Die baltischen Staaten—Probleme der Infrastruktur und der räumlichen Verflechtung. In Johann-Gottfried-Herder-Institut (ed.), *Die Unabhängigkeit der baltischen Länder: Geschichte—Probleme—Perspektiven*. Wirtschafts- und sozialwissenschaftliche Ostmitteleuropa-Studien 18. Marburg/Lahn.
- Burger, B., and M. Lenzner (1996). Estland: Regulierung und Deregulierung im Transformationsprozess. Die wirtschaftliche und soziale Entwicklung. HWWA-Report 156. Hamburg.
- Burniewicz, J., and M. Bak (1997). Initial Experiences in Adapting Polish Transport to European Union Conditions. In P.-C. Müller-Graff and A. Stepniak (eds.), *Poland and the European Union*. European Community Studies Association (ECSA) Series 4. Baden-Baden.

- Busch, B., and H.-P. Klös (1995). *Potentialfaktor Infrastruktur: Ökonomische Bedeutung und privatwirtschaftliches Engagement*. Beiträge zur Wirtschafts- und Sozialpolitik 222. Cologne.
- Button, K.J. (1982). *Transport Economics*. London.
- Button, K.J., S. Leitham, R.W. McQuaid, and J.D. Nelson (1995). Transport and Industrial and Commercial Location. *Annals of Regional Science* 29 (2): 189–206.
- Carbajo, J., and S. Fries (1997). Restructuring Infrastructure in Transition Economies. Working Paper 24. European Bank for Reconstruction and Development, London.
- Carrol, J. (1996). Rail Repairs Pick Up Speed. *The Baltic Times*, 28 November.
- CCET (Centre for Co-operation with the Economies in Transition) (ed.) (1996). *Investment Guide for Estonia*. Paris.
- Centraal Bureau voor de Statistiek (various issues). *Statistiek van de aan-, af- en doorvoer*. Voorburg.
- Cheshire, P. (1990). Explaining the Recent Performance of the European Community Major Urban Regions. *Urban Studies* 27 (3): 311–333.
- Christaller, W. (1933). *Die zentralen Orte in Süddeutschland: Eine ökonomisch-geographische Untersuchung über die Gesetzmäßigkeit der Verbreitung und Entwicklung der Siedlungen mit städtischen Funktionen*. Jena.
- CIA (Central Intelligence Agency) (1997a). Estonia. In CIA (ed.), *The World Factbook 1996*. Available from Internet.
- (1997b). Latvia. In CIA (ed.), *The World Factbook 1996*. Available from Internet.
- (1997c). Lithuania. In CIA (ed.), *The World Factbook 1996*. Available from Internet.
- (1997d). Poland. In CIA (ed.), *The World Factbook 1996*. Available from Internet.
- Conrad, K., and H. Seitz (1992). The Economic Benefits of Public Infrastructure. Beiträge zur angewandten Wirtschaftsforschung 469-92. Institut für Volkswirtschaftslehre und Statistik der Universität Mannheim.
- Danmarks Statistik (various issues). *Udenrigshandel*. Copenhagen.
- Department of Transport (various issues). *Seaborne Trade Statistics of the United Kingdom*. London.
- DHL Worldwide Express (1997). Schwarze Tinte ist verboten. DHL-Studie: Export nach Osteuropa leidet unter der Zollbürokratie. DHL Presseinformation of 17 November.
- Dodgson, J.S. (1974). Motorway Investment, Industrial Transport Costs, and Sub-regional Growth: A Case Study of the M62. *Regional Studies* 8 (1): 75–91.
- (1997). Evaluating Transport Projects and Policies. In G. de Rus and C. Nash (eds.), *Recent Developments in Transport Economics*. Aldershot.
- Dörrenbächer, H. (1994). Die Sonderwirtschaftszone Jantar—Hoffnungsschimmer für das Kaliningrader Gebiet? *Osteuropa-Wirtschaft* 39 (1): 26–41.
- EBRD (European Bank for Reconstruction and Development) (1996). *Transition Report 1996: Infrastructure and Savings*. London.

- EBRD (1997a). *EBRD Activities in Estonia*. Available from Internet.
- (1997b). *EBRD Activities in Latvia*. Available from Internet.
- (1997c). *EBRD Activities in Lithuania*. Available from Internet.
- (1997d). Tallinn Airport Passenger Terminal Reconstruction Project, Estonia. EBRD Project Summary Document. Available from Internet.
- (1997e). *Transition Report 1997: Enterprise Performance and Growth*. London.
- (1997f). *Transport Operations Policy*. London.
- ECMT (European Conference of Ministers of Transport) (1997). *Statistical Trends in Transport, 1965–1992*. Paris.
- EIA (Estonian Investment Agency) (1995a). Fact Sheet “Transport”. In EIA (ed.), *Your Internet Guide to Investing in Estonia*. Available from Internet. (This version was updated in 1997).
- (1995b). Fact Sheet “Development of Estonian Ports”. In EIA (ed.), *Your Internet Guide to Investing in Estonia*. Available from Internet. (This version was updated in 1997).
- (1997a). Fact Sheet “Transport”. In EIA (ed.), *Your Internet Guide to Investing in Estonia*. Available from Internet.
- (1997b). Fact Sheet “Development of Estonian Ports”. In EIA (ed.), *Your Internet Guide to Investing in Estonia*. Available from Internet.
- Emmerink, R.H.M., P. Nijkamp, and P. Rietveld (1994). How Feasible Is Congestion Pricing? Discussion Paper TI 5-94-62. Tinbergen Institute, Rotterdam.
- EPA (Estonian Privatization Agency) (1997). *Privatization in Estonia*. Available from Internet.
- ESA (Eesti Statistikaamet/Statistical Office of Estonia) (various issues). *Statistika aastaraamat (Statistical Yearbook)*. Tallinn.
- (various issues). *Transport side (Transport, Communications)*. Tallinn.
- Eschke, C.-A. (1995). Logistische Prozesse in der Praxis. In Ost- und Mitteleuropa-Verein e.V. (ed.), *Logistik in der Ost-West-Kooperation: Vorträge anlässlich der Jahrestagung des Ost- und Mitteleuropa-Verein e.V. am 2. November 1995 in Hamburg*. Hamburg.
- EVR (Riigiettevõtte Eesti Raudtee/Estonian Railways) (1996). *Annual Report 1995*. Available from Internet.
- (1997). Estonian Railway Network. Tallinn.
- Ferreira, J. (1996). Short Sea Shipping, Ports and the Trans-European Transport Network: What Is Happening in the European Union. In J. Vainio (ed.), *Transit Chains in the Baltic Sea Region*. VI International Conference on cooperation and Competition in Maritime Transport, Helsinki, 5–7 June, 1996. Publications from the Center for Maritime Studies A 22. University of Turku.

- Franck, J. (1997). Freight Transport Infrastructure for the Baltic Trades. Paper presented at the International Seminar on "The Role of Transit Transportation in Emerging Markets", September 10–13, Tallinn.
- Frierson, B. (1996). Ministry Opposes Duty-free Port. *The Baltic Times*, 29 August.
- Fromme, H. (1993). Baltic Ports and Shipping, Special Report. *Lloyd's List*, 19 February: 8–11.
- Gentvilas, E. (1996). Klaipeda Looks Ahead to the Future. *The Baltic Times*, 25 July.
- Giersch, H. (1963). Das ökonomische Grundproblem der Regionalpolitik. *Jahrbuch für Sozialwissenschaft* 14 (3): 386–400.
- (1977). *Allgemeine Wirtschaftspolitik*. Zweiter Band: *Konjunktur- und Wachstumspolitik in der offenen Wirtschaft*. Wiesbaden.
- Girnius, S., and E. Leontjeva (1995). Litauen. In W. Weidenfeld (ed.), *Mittel- und Osteuropa auf dem Weg in die Europäische Union*. Gütersloh.
- Goskomstat Rossii (1996). *Transport i svjaz' Rossii*. Moscow.
- Gramlich, E.M. (1994). Infrastructure Investment: A Review Essay. *Journal of Economic Literature* 32 (3): 1176–1196.
- Grzelakowski, A. (1996). Eigentumsumwandlung der Betriebe wird fortgesetzt: Polnische Seehäfen vor der zweiten Restrukturierungsphase. *Deutsche Verkehrs-Zeitung*, 10 September: 12–13.
- (1997a). Umstrukturierung/Hafengesetz tritt am 6. August in Kraft: Häfen sind investitionsbereit. *Deutsche Verkehrs-Zeitung*, 1 April: 10–11.
- (1997b). Deregulierung der polnischen Seehafenwirtschaft. *Hansa* 134 (12): 15–16.
- GUS (Główny Urząd Statystyczny) (various issues). *Biuletyn Statystyczny*. Warsaw.
- (various issues). *Rocznik Statystyczny*. Warsaw.
- (various issues). *Rocznik Statystyczny transportu*. Warsaw.
- (various issues). *Transport—wyniki działalności*. Warsaw.
- Gwilliam, K.M. (1997). The Economics of Transport and Development. In G. de Rus and C. Nash (eds.), *Recent Developments in Transport Economics*. Aldershot.
- Hansen, W.G. (1959). How Accessibility Shapes Land Use. *Journal of the American Institute of Planners* 25 (2): 73–76.
- Hare, P.G. (1997). The Distance between Eastern Europe and Brussels: Reform Deficits in Potential Member States. In H. Siebert (ed.), *Quo Vadis Europe?* Tübingen.
- Hayek, F.A. von (1968). *Der Wettbewerb als Entdeckungsverfahren*. Kieler Vorträge 56. Institut für Weltwirtschaft, Kiel.
- Hayter, D.M. (1993). Prospects for Maritime Development in the Baltic. *Maritime Policy & Management* 20 (4): 293–300.
- Henderson, J.V. (1974). A Note on the Economics of Public Intermediate Inputs. *Economica* 41 (August): 322–327.

- Hidrosfera Ltd. (1997). *Port Klaipeda Information*. Available from Internet.
- Hillman, A.L. (1978). Symmetries and Asymmetries between Public Input and Public Good Equilibria. *Public Finance* 33 (3): 269–279.
- Hirschman, A.O. (1958). *The Strategy of Economic Development*. New Haven.
- Hoffmeyer, M., C. Krieger-Boden, C.-F. Laaser, K. Lammers, and M. Merz (1990). *Struktur und Perspektiven der Wirtschaft Schleswig-Holsteins*. Kiel.
- Holt, J. (1993). *Transport Strategies for the Russian Federation*. Studies of Economies in Transformation 9. Washington, D.C.
- Holtz-Eakin, D. (1993). New Federal Spending for Infrastructure: Should We Let This Genie out of the Bottle? In The Jerome Levy Economics Institute of Bard College (ed.), *Public Infrastructure Investment: A Bridge to Productivity Growth?* Public Policy Brief 4. Annadale-on-Hudson.
- HWWA and IfW (HWWA-Institut für Wirtschaftsforschung Hamburg and Institut für Weltwirtschaft an der Universität Kiel) (1991). Die mittel- und osteuropäischen Länder als Unternehmensstandort—Länderstudie Sowjetunion. Hamburg und Kiel.
- Institut National de Statistique (various issues). *Statistiques du trafic international des ports*. Brussels.
- IRF (International Road Federation) (1995). *World Road Statistics 1990–1994*. Geneva.
- (1996). *World Road Statistics 1991–1995*. Geneva.
- IRU (International Road Transport Union) (1997a). IRU Tax Survey in Central and Eastern Europe (Goods Transport). Geneva.
- (1997b). IRU Tax Survey in Central and Eastern Europe (Goods Transport), Answers from the Russian Federation. Geneva.
- (1997c). Continuing Border Crossing Difficulties in Central and Eastern Europe. Geneva.
- (1997d). Temps d' attends. *IRU Newsletter* 74 (October): 3–4.
- Isard, W. (1949). The General Theory of Location and Space Economy. *Quarterly Journal of Economics* 63 (4): 476–506.
- (1956). *Location and Space-Economy: A General Theory Relating to Industrial Location, Market Areas, Land Use, Trade, and Urban Structure*. New York.
- ISL (Institute of Shipping Economics and Logistics) (various issues). *Shipping Statistics Yearbook*. Bremen.
- Istituto Nazionale di Statistica (various issues). *Statistiche dei trasporti marittimi nei porti italiani*. Rome.
- Jennings, A. (1996). Klaipeda Gets New Ro-Ro Terminal. *The Baltic Times*, 7 November.
- Jochimsen, R. (1966). *Theorie der Infrastruktur: Grundlagen der marktwirtschaftlichen Entwicklung*. Tübingen.

- Juchniewitsch, P. (1997). Estonian Railway. Paper presented at the International Seminar on "The Role of Transit Transportation in Emerging Markets", September 10–13, Tallinn.
- Junesch, R. (1996). *Untersuchungen zur Bedeutung der Verkehrserschließung für Standortqualitäten*. IREUS-Schriftenreihe 19. Institut für Raumordnung und Entwicklungsplanung der Universität Stuttgart.
- Kalinkowski, A. (1996). Neues Autobahnkonzept bindet Polen an Europa. *Frankfurter Allgemeine Zeitung*, 19 November.
- Karpfen, B. (1996). Litauen: Hilfe beim Aufbau der Infrastruktur. *Blick durch die Wirtschaft*, 5 September.
- Keeble, D.E., P.L. Owens, and C. Thompson (1982a). *The Influence of Peripheral and Central Locations on the Relative Development of Regions*. Cambridge.
- (1982b). Regional Accessibility and Economic Potential in the European Community. *Regional Studies* 16 (6): 419–432.
- Klodt, H., C.-F. Laaser, J.-O. Lorz, and R. Maurer (1995). *Wettbewerb und Regulierung in der Telekommunikation*. Kieler Studien 272. Tübingen.
- Kommission der Europäischen Gemeinschaften (1995a). *Vorbereitung der assoziierten Staaten Mittel- und Osteuropas auf die Integration in den Binnenmarkt der Union*. Hauptband. KOM(95) 163 endg. Luxemburg.
- (1995b). *Vorbereitung der assoziierten Staaten Mittel- und Osteuropas auf die Integration in den Binnenmarkt der Union*. Add. Annexe. KOM(95) 163,2 endg. Luxemburg.
- (1997a). Agenda 2000—Stellungnahme der Kommission zum Antrag Estlands auf Beitritt zur Europäischen Union. DOC/97/12 of 15 July. Available from Internet.
- (1997b). Agenda 2000—Stellungnahme der Kommission zum Antrag Lettlands auf Beitritt zur Europäischen Union. DOC/97/14 of 15 July. Available from Internet.
- (1997c). Agenda 2000—Stellungnahme der Kommission zum Antrag Litauens auf Beitritt zur Europäischen Union. DOC/97/15 of 15 July. Available from Internet.
- (1997d). Agenda 2000—Stellungnahme der Kommission zum Antrag Polens auf Beitritt zur Europäischen Union. DOC/97/16 of 15 July. Available from Internet.
- (1997e). Agenda 2000: Zusammenfassungen und Schlußfolgerungen der Stellungnahmen der Kommission zu den Beitrittsanträgen zur Europäischen Union folgender Länder: Bulgarien, Estland, Ungarn, Lettland, Litauen, Polen, Tschechische Republik, Rumänien, Slowenien, Slowakei. DOC/97/8 of 15 July. Available from Internet.
- (1997f). *Auf dem Wege zu einer gemeinsamen kooperativen gesamteuropäischen Verkehrsnetzpolitik*. Luxemburg.

- Koop, J. (1995). Logistische Herausforderungen im Güterverkehr in Mittel- und Osteuropa auf dem Sektor des LKW- und Bahntransports. In Ost- und Mitteleuropa-Verein e.V. (ed.), *Logistik in der Ost-West-Kooperation: Vorträge anlässlich der Jahrestagung des Ost- und Mitteleuropa-Verein e.V. am 2. November 1995 in Hamburg*. Hamburg.
- Krieger-Boden, C. (1995). *Die räumliche Dimension in der Wirtschaftstheorie: Ältere und neuere Erklärungsansätze*. Kiel.
- Kristopanas, V. (1997). Intergovernmental Organizations and International (sic!) Conventions with Relevance for Baltic Trade and Related (sic!) Transport (sic!) Systems. Paper presented at the International Seminar on "The Role of Transit Transportation in Emerging Markets", September 10–13, Tallinn.
- Krugman, P. (1991a). Increasing Returns and Economic Geography. *Journal of Political Economy* 99 (3): 483–499.
- (1991b). *Geography and Trade*. Cambridge, Mass.
- Krzyzanowski, M. (1996). The Development of the Polish Land Transportation Systems Linking Hinterland with the Baltic Ports. In J. Vainio (ed.), *Transit Chains in the Baltic Sea Region*. VI International Conference on Cooperation and Competition in Maritime Transport, Helsinki, 5–7 June, 1996. Publications from the Center for Maritime Studies A 22. University of Turku.
- Kulke-Fiedler, C. (1995). Kreml will Ausbau der Verkehrswege. *Handelsblatt*, 13/14 October.
- (1997). Eisenbahngüterverkehr bleibt problematisch. *Nachrichten für Außenhandel*, 24 June.
- Kurihara, K. (1970). Social Overhead Capital and Balanced Economic Growth. *Social and Economic Studies* 19 (3): 398–405.
- Kuzma, L. (1997). Restructuring and Privatising Poland's Seaports. In M. Roe (ed.), *Shipping in the Baltic Region*. Aldershot.
- Laaser, C.-F. (1991). *Wettbewerb im Verkehrswesen: Chancen für eine Deregulierung in der Bundesrepublik*. Kieler Studien 236. Tübingen.
- (1998). Deregulierungserfahrungen und -probleme im Eisenbahnwesen in Europa. *Eisenbahningenieur* 49 (2): 10–18.
- Laaser, C.-F., and K. Schrader (1992). Zur Reintegration der baltischen Staaten in die Weltwirtschaft. *Die Weltwirtschaft* (2): 189–211.
- Larin, A. (1989). Soviet Seaports Today and Tomorrow. *Soviet Shipping* 9 (3): 20–23.
- Launhardt, C.F.W. (1882). Die Bestimmung des zweckmäßigsten Standortes einer gewerblichen Anlage. *Zeitschrift des Vereines Deutscher Ingenieure* 26 (3): 105–116.
- Laving, J. (1997). Development and Outlook of Transit Transportation in Estonia. Paper presented at the International Seminar on "The Role of Transit Transportation in Emerging Markets", September 10–13, Tallinn.

- LDS (Lithuanian Department of Statistics) (various issues). *Lithuania's Statistics Yearbook*. Vilnius.
- Lebedev, S.B. (1996). Russian Export and Import Flows through Baltic Sea Ports and Their Perspectives. In J. Vainio (ed.), *Transit Chains in the Baltic Sea Region*. VI International Conference on Cooperation and Competition in Maritime Transport, Helsinki, 5–7 June, 1996. Publications from the Center for Maritime Studies A 22. University of Turku.
- Leff, J. (1997). Lithuanian RR Gets a Boost from EIB Loan. *The Baltic Times*, 15 May.
- Levikov, G.A. (1996). Shipping Reforms and Liberalization in Russian Sea Transport. In J. Vainio (ed.), *Transit Chains in the Baltic Sea Region*. VI International Conference on Cooperation and Competition in Maritime Transport, Helsinki, 5–7 June, 1996. Publications from the Center for Maritime Studies A 22. University of Turku.
- Lindberg, D. (1997). Prospects for Developing Heavy Haul Railways in Estonia and the Former Soviet Union. Paper presented at the International Seminar on "The Role of Transit Transportation in Emerging Markets", September 10–13, Tallinn.
- Linderfalk, B. (1996a). Baltic Airlines on the Road to Profitability. *The Baltic Times*, 25 April.
- (1996b). Air Baltic Marks First Anniversary. *The Baltic Times*, 3 October.
- (1996c). Free Economic Zone to Boost Ventspils Port Investments. *The Baltic Times*, 8 August.
- (1996d). Lithuanian Highways Get Overhaul: Long Awaited via Baltica Credits Finally Secured. *The Baltic Times*, 19 September.
- Lloyd's (ed.) (1998). *Lloyd's Ports of the World*. London.
- Lösch, A. (1939). *Die räumliche Ordnung der Wirtschaft*. Jena.
- LRA (Lithuanian Road Administration) (1997). *Lithuanian Road Network*. Vilnius.
- LRVSK (Latvijas Republikas Valsts Statistikas Komiteja/State Committee for Statistics of the Republic of Latvia) (1996). *Transports un sakari (Transport and Communications): Statistikas datu kraujums (Collection of Statistical Data)*. Riga.
- (various issues). *Latvijas statistikas gadagramata (Statistical Yearbook of Latvia)*. Riga.
- Mahnke, H.-J. (1997). Der "Ostwind" kommt immer häufiger zum Zug. *Die Welt*, 19 June.
- Martellato, D., and P. Nijkamp (1996). The Concept of Accessibility Revisited. Discussion Paper 96-100/5. Tinbergen Institute, Amsterdam.
- Martellato, D., P. Nijkamp, and A. Reggiani (1995). Measurement and Measures of Network Accessibility. Discussion Paper TI 5-95-207. Tinbergen Institute, Amsterdam.
- MEA (Ministry of Economic Affairs of the Republic of Estonia) (ed.) (1994). *Estonian Economic Survey 1993–94*. Available from Internet.

- Meade, J.E. (1952). External Economies and Diseconomies in a Competitive Situation. *Economic Journal* 62 (March): 54–67.
- Mera, K. (1973). Regional Production Functions and Social Overhead Capital: An Analysis of the Japanese Case. *Regional and Urban Economics* 3 (2): 157–186.
- MERL (Ministry of Economy, Republic of Latvia) (ed.) (1995). *Report on the Development of the National Economy of Latvia*. Riga.
- Miecznikowski, S. (1995). Daten, Erfahrungen, Herausforderungen: Probleme des Transitverkehrs in Polen. *Internationales Verkehrswesen* 47 (5): 238–242.
- (1997). Marktstrategien der nördlichen Dokp Gdansk bei der Güterbeförderung im Außenhandel. *Internationales Verkehrswesen* 49 (12): 654–658.
- Ministère de l'Équipement, des Transports et du Tourisme (various issues). *Résultats de l'exploitation des ports maritimes*. Paris.
- Miotke-Dziegiel, J., and J. Zurek (1996). Polish Ferry Lines on the Baltic Sea: Past, Present and Future. In K.-H. Breitzmann (ed.), *Market Transition and Structural Changes in Shipping and Ports of Baltic Sea Countries*. Rostocker Beiträge zur Verkehrswissenschaft und Logistik 5. Rostock.
- Misztal, K. (1996). The Place of Polish Sea Ports in the Baltic Sea Basin. In K.-H. Breitzmann (ed.), *Market Transition and Structural Changes in Shipping and Ports of Baltic Sea Countries*. Rostocker Beiträge zur Verkehrswissenschaft und Logistik 5. Rostock.
- Munnell, A.H. (1993). An Assessment of Trends in and Economic Impacts of Infrastructure Investment. In OECD (ed.), *Infrastructure Policies for the 1990s*. Paris.
- Nadiri, I., and T. Mamuneas (1991). The Effects of Public Infrastructure and R&D Capital on the Cost Structure and Performance of U.S. Manufacturing Industries. NBER Working Paper 3887. Cambridge, Mass.
- North, R. (1996). *Russian Transport: Problems and Prospects*. London.
- OECD (1995). *Maritime Transport 1993*. Paris.
- (1997). *OECD Economic Surveys. Poland*. Paris.
- Oil, L. (1996a). Deep Freeze Closes Harbour. *Baltic Independent*, 9 February.
- (1996b). Split-up of Estonian Railways Delayed. *The Baltic Times*, 1 August.
- Paci, G. (1997a). Authority Is Exploring Ways of Raising \$170m Worth of Investment to Upgrade Facilities. *Lloyd's List*, 26 September: 6.
- (1997b). New Lease of Life for St Petersburg Firm. *Lloyd's Freight Transport Buyer* (November): 31.
- Peters, H.-J. (1993). Russia's Waterborne Trade and Transport: Issues in Market Transformation. *Maritime Policy and Management* 20 (4): 265–292.
- Pfähler, W., U. Hofmann, and W. Bönte (1996). Does Extra Public Infrastructure Capital Matter? An Appraisal of Empirical Literature. *Finanzarchiv* 53 (1): 68–112.

- Pfähler, W., U. Hofmann, and U. Lehmann-Grube (1995). Infrastruktur und Wirtschaftsentwicklung: Kritische Bestandsaufnahme, Erweiterungen und Fallstudien. In A. Oberhauser (ed.), *Finanzierungsprobleme der deutschen Einheit*. Band III: *Ausbau der Infrastruktur und kommunaler Finanzausgleich*. Schriften des Vereins für Sozialpolitik 229/III. Berlin.
- Pihel, M. (1997). Intermodal Transport and Options for Development Thereof in Estonia. Paper presented at the International Seminar on "The Role of Transit Transportation in Emerging Markets", September 10–13, Tallinn.
- Port Authority of St. Petersburg (1997). *Sea Port of Saint Petersburg—Sankt-Petersburg Morskoy Port*. St. Petersburg.
- Port of Tallinn (1997a). *Technical Information*. Available from Internet.
- (1997b). *Annual Report for the Year 1995*. Available from Internet.
- Potrykowski, M. (1985). Some Problems of the Pattern of the Transport Networks in Poland. *Geographia Polonica* 51: 275–283.
- Predöhl, A. (1958). *Verkehrspolitik*. Göttingen.
- Raupach, H. (1968). *System der Sowjetwirtschaft: Theorie und Praxis*. Reinbek.
- Rawson, A. (1996). Latvian Transit Still under Customs Stress. *The Baltic Times*, 4 April.
- Reiman, T. (1997). Nature, Volume and Size of Domestic and Contemplated Transit Cargo Flows. Paper presented at the International Seminar on "The Role of Transit Transportation in Emerging Markets", September 10–13, Tallinn.
- Reymann, S. (1993). Aktuelle Entwicklungslinien, Problemfelder der Wirtschaftspolitik und ordnungspolitische Veränderungen in der russischen Region Königsberg. HWWA-Report 121. Hamburg.
- Reynaud, C. (1996). Latest Trends in Transport in Central and Eastern Europe. In ECMT (European Conference of Ministers of Transport) (ed.), *Access to European Transport Markets: Proceedings of a Seminar on the Integration of Central and Eastern Operators in European Transport Markets, 16th–17th March*. Paris.
- Rieger, H.E. (1997). Baltische Eisenbahnen werden modernisiert. *Nachrichten für Außenhandel*, 3 January.
- Romer, P.M. (1987). Growth Based on Increasing Returns Due to Specialization. *American Economic Review, Papers and Proceedings* 77 (2): 56–62.
- Roth, W. (1995). Die Finanzierung transeuropäischer Verkehrsnetze in Ost- und Mitteleuropa. In Ost- und Mitteleuropa-Verein e.V. (ed.), *Logistik in der Ost-West-Kooperation: Vorträge anlässlich der Jahrestagung des Ost- und Mitteleuropa-Verein e.V. am 2. November 1995 in Hamburg*. Hamburg.
- Ruploh, W. (1995). Die Küstenschifffahrt als Element transeuropäischer Netze. In H.-J. Ewers (ed.), *Verkehrsinfrastrukturpolitik in Europa: Eine deutsch-polnische Perspektive*. Göttingen.
- Rutz, W., and J. Laving (1997). Die Seehäfen Estlands und ihre Bedeutung für die estnische Außenwirtschaft. *Internationales Verkehrswesen* 49 (19): 494–499.

- Ruwwe, H.-F. (1994). Rußlands Ostseeprojekte kommen nicht voran. *Nachrichten für Außenhandel*, 16 December.
- Sager, H. (1994). Gute Partnerschaft auch im Güterverkehr. *Die Presse*, 8 November.
- Sawiczewska, Z. (1993). The Impact of Economic and Political Change on Polish Sea Transport. In D. Hall (ed.), *Transport and Economic Development in the New Central and Eastern Europe*. London.
- Schelzel, M., B. Janssen, and H. Dora (1974). *Ökonomie des Seetransports. Grundlagen*. Berlin.
- Schmidt, B. (1997). Der russische Zoll und die Gummistempel: Fahrer sollen bei Abfertigung ihre Augen offenhalten. *Deutsche Verkehrs-Zeitung*, 1 November: 27.
- Schrader, K. (forthcoming). Ordnungspolitische Weichenstellungen für eine marktwirtschaftliche Entwicklung in mittel- und osteuropäischen Reformländern. Kiel Institute of World Economics, Kiel.
- Schrader, K., and C.-F. Laaser (1994). *Die baltischen Staaten auf dem Weg nach Europa: Lehren aus der Süderweiterung der EG*. Kieler Studien 264. Tübingen.
- (1997). Der Transformationsprozeß in den baltischen Staaten: Ordnungspolitische Fortschritte und strukturelle Anpassungsprozesse. Kieler Arbeitspapiere 783. Institut für Weltwirtschaft, Kiel.
- Schwanitz, S. (1997). Die Privatisierung in St. Petersburg und im Sverdlovsker Gebiet. Berichte des Bundesinstituts für Ostwissenschaftliche und Internationale Studien 5-1997. Köln.
- Seefeld, H. (1984). Gemeinsamer Markt und gemeinschaftliche Verkehrspolitik. *Die neue Gesellschaft* 31 (4): 319–323.
- Selowsky, M. (1997). Improving the Environment for Business and Investment in the CIS and the Baltic Countries. Views from Entrepreneurs and World Bank Economists. Background Paper prepared for the "Seminar on Enhancing Prospects for Growth in the CIS and Baltics" sponsored by the EBRD, IMF and the World Bank, and being held at the occasion of the 1997 meetings of the EBRD, April 13, London. Available from Internet.
- Shutov, V. (1989). Sovfracht Anniversary. *Soviet Shipping* 9 (1): 10–11.
- Sichelschmidt, H. (1997). Das Programm "Transeuropäische Netze" der EU—ein sinnvolles Konzept für den Verkehr von morgen? *Die Weltwirtschaft* (4): 396–425.
- Siebert, H. (1967). *Zur Theorie des regionalen Wirtschaftswachstums*. Tübingen.
- (1972). Infrastruktur und regionales Wachstum. *Jahrbücher für Nationalökonomie und Statistik* 186 (3): 185–202.
- Siimann, M. (1997). Opening Address. Paper presented at the International Seminar on "The Role of Transit Transportation in Emerging Markets", September 10–13, Tallinn.

- Soltwedel, R. (1997a). Economic Perspectives in the Baltic Area: Overcoming the Legacy of Socialism and Welfarestatism under the Gun of Globalization. Paper presented at the conference "Schleswig-Holsteinisch-Norwegische Wirtschaftstage", August, Kiel.
- (1997b). Schleswig-Holstein—Standortpolitik in schwieriger Zeit: Standortpolitik im Land und in den Kommunen. Paper presented at the Hermann-Ehlers-Akademie, August 26, Kiel.
- Spinanger, D. (1991). From Sandlots to the Big League: Some Thoughts on Why East Asia has been Winning. In S. Koppers, S. Dingens, A. Klaas, and H.-E. Wermuth (eds.), *Growth Determinants in East and Southeast Asian Economies*. Berlin.
- Stares, J. (1997). Finland Raises Profile of Northlink Project as EU Presidency Looms. *Lloyd's List*, 21 November: 7.
- Statistisches Bundesamt (various issues). *Fachserie 8: Verkehr. Reihe 5: Seeschifffahrt*. Stuttgart.
- Statistiska Centralbyrån (various issues). *Statistisk årsbook (Statistical Yearbook of Sweden)*. Stockholm.
- (various issues). *Statistiska meddelanden. Serie T: Transport och kommunikationer*. Stockholm.
- Statistisk sentralbyrå (various issues). *Samferdselsstatistikk (Transport and Communication Statistics)*. Oslo.
- Strunskis, V. (1991). Probleme der Infrastrukturpolitik in den baltischen Staaten bei dem Übergang zur Marktwirtschaft. München (mimeo).
- Suchorzewski, W. (1994). Poland. In ECMT (European Conference of Ministers of Transport) (ed.), *Transport Infrastructure and Systems for a New Europe: Report of the Ninety-Fifth Round Table on Transport Economics, held in Paris on 18th–19th March*. Paris.
- Taylor, Z. (1993). Recent Transport Development and Economic Change in Poland. In D. Hall (ed.), *Transport and Economic Development in the New Central and Eastern Europe*. London.
- TBT and Biznes & Baltiya (1996). Trucks Bound for a Jam. *The Baltic Times*, 5 September.
- Teichmann, E., H. Brdulak, T. Dolegowski, J. Archutowska, and M. Madalinski (1995). Das polnische Autobahnbauprogramm und seine Finanzierung. In H.-J. Ewers (ed.), *Verkehrsinfrastrukturpolitik in Europa: Eine deutsch-polnische Perspektive*. Beiträge aus dem Institut für Verkehrswissenschaft an der Universität Münster 137. Göttingen.
- Tervala, J. (1996). The Northern Transit Corridors via Finland. In J. Vainio (ed.), *Transit Chains in the Baltic Sea Region*. VI International Conference on Cooperation and Competition in Maritime Transport, Helsinki, 5–7 June, 1996. Publications from the Center for Maritime Studies A 22. University of Turku.

- Tesch, G. (1996). Die Veränderungen im Ostseefährverkehr seit 1990. In K.-H. Breitzmann (ed.), *Market Transition and Structural Changes in Shipping and Ports of Baltic Sea Countries*. Rostocker Beiträge zur Verkehrswissenschaft und Logistik 5. Rostock.
- Thünen, J.H. von (1875). *Der isolirte Staat in Beziehung auf Landwirthschaft und Nationalökonomie*. Complete edition in 3 parts. Berlin.
- Timm, H. (1969). Staat, Wachstum und Preisniveau. In H.C. Recktenwald (ed.), *Finanztheorie*. Köln.
- Tilastokeskus (various issues). *Liikennetilastollinen vuosikirja (Transport and Communications Statistical Yearbook for Finland)*. Helsinki.
- Toen-Gout, M., and J. van Sinderen (1995). The Impact of Investment in Infrastructure on Economic Growth: Some Empirical Results for the Netherlands. Research Memorandum 9503. Research Centre for Economic Policy, Erasmus University, Rotterdam.
- Toy, N., and M. Roe (1997). The Polish Passenger Ferry Industry in the Post Communist Era. In M. Roe (ed.), *Shipping in the Baltic Region*. Aldershot.
- Transitinfo (1997). Russia Feeds Growing Baltic Freight Forwarding. *The Baltic Times*, 4 March.
- Transitinfo and TBT (1997). Latvian Rail Struggles with New Realities. *The Baltic Times*, 6 March.
- UAB VIYP (1997). *Kaliningrad in Your Pocket*. Vilnius.
- UIC (Union Internationale des Chemins de Fer/Internationaler Eisenbahnverband) (1996a). *Chronologische Statistiken der Bahnen 1984–1994*. Paris.
- (1996b). *Internationale Eisenbahnstatistik 1994*. Paris.
- Umann, U. (1995). Eisenbahn muß rollendes Material ersetzen. *Nachrichten für Außenhandel*, 27 February.
- (1996). Estland Eisenbahn muß kräftig investieren. *Nachrichten für Außenhandel*, 26 March.
- UN (United Nations) (various issues). *Yearbook of International Trade Statistics*. Volume I: *Trade by Country*. Volume II: *Trade by Commodity*. New York.
- Union Economique Benelux (various issues). *Benelux-statistiques de la navigation maritime*. Brussels.
- Valantiejus, R. (1997). Klaipeda Port: Investment Projects Continue. *The Baltic Times*, 6 March.
- Vanags, A.H. (1993). Comparative Advantage and Maritime Transport in the Baltic States. *Maritime Management & Policy* 20 (4): 319–324.
- Verbeke, A., and K. Debisshop (1996). A Note on the Use of Port Economic Impact Studies for the Evaluation of Large Scale Port Projects. *International Journal of Transport Economics* 23 (3): 247–266.

- Verein Deutscher Kohlenimporteure (1986). *Jahresbericht*. Hamburg.
- (1996). *Jahresbericht*. Hamburg.
- Vetter, R. (1996). Polnische Fluglinie hält den Erfolgskurs bei. *Handelsblatt*, 15 July.
- Vickerman, R.W. (1987). The Channel Tunnel: Consequences for Regional Growth and Development. *Regional Studies* 21 (3): 187–197.
- Voigt, F. (1973a). *Verkehr*. Erster Band: *Die Theorie der Verkehrswirtschaft*. Erste Hälfte. Berlin.
- (1973b). *Verkehr*. Erster Band: *Die Theorie der Verkehrswirtschaft*. Zweite Hälfte. Berlin.
- Vosgerau, H.J. (1970). Wachstumstheorie und reale langfristige Perspektiven der wirtschaftlichen Entwicklung. In R. Jochimsen and U.E. Simonis (eds.), *Theorie und Praxis der Infrastrukturpolitik*. Berlin.
- Weber, A. (1922). *Über den Standort der Industrien*. Erster Teil: *Reine Theorie des Standorts, mit einem mathematischen Anhang von Georg Pick*. Tübingen.
- WEFA (Wharton Economic Forecasting and Analysis) (1990). The Direct and Indirect Effects of the Inpres 4/1985 Program on the Economy of Indonesia 1985–1990. Bala Cynwyd, Penn. (mimeo).
- Welfens, P.J.J. (1996). Koordinationserfordernisse der EU Infrastrukturpolitik. In H. Karl (ed.), *Die Koordination der Finanz-, Währungs- und Strukturpolitik in der EU*. Bonner Schriften zur Integration Europas 7. Bonn.
- Welfens, P.J.J., and C. Graack (eds.) (forthcoming). Competition in Network Industries: Telecommunications, Energy and Transportation in Europe and Russia. European Institute of International Economic Relations (EIIW), University of Potsdam.
- Wein, N. (1994). Die Exklave Kaliningrad/Königsberg: Eine geographische und geopolitische Bestandsaufnahme. *Zeitschrift für Wirtschaftsgeographie* 38 (1/2): 101–109.
- Wojewódzki urząd statystyczny w Szczecinie (1995). *Rocznik statystyczny Województwa Szczecińskiego*. Szczecin.
- Wojewódzki urząd statystyczny w Gdańsku (1991). *Rocznik statystyczny Województwa Gdańskiego*. Gdańsk.
- Wolf, H. (1996). Privatisierung der Flughäfen?—Zu den Rahmenbedingungen für eine effiziente Flughafenpolitik nach der Liberalisierung des EU-Luftverkehrs. *Die Weltwirtschaft* (2): 190–218.
- World Bank (1994). *World Development Report 1994: Infrastructure for Development*. New York.
- (1996a). Russian Federation Bridge Rehabilitation Project. Public Information Center Document RUPA 35764. Available from Internet.
- (1996b). Russian Federation Bridge Rehabilitation Project. Project Implementation Document of 12 June. Available from Internet.

- World Bank (1997a). World Bank Supports Port Access and Management Project in Poland. News Release No. 97/008 ECA. Available from Internet.
- (1997b). World Bank Supports Highway Project in Lithuania. News Release No. 97/1111 ECA. Available from Internet.
- (1997c). World Bank Supports Highway Project in Latvia. News Release No. 97/1290 ECA. Available from Internet.
- (1997d). World Bank Helps Improve Poland's Roads and Reverse Flood Damage. News Release No. 98/1511 ECA. Available from Internet.
- (1997e). *World Development Report 1997: The State in a Changing World*. New York.
- Zurek, J. (1991). Shipping and Seaborne Foreign Trade: Some Economic Correlations and Relationships, 1991. In University of Gdansk Maritime Transport Economics Institute and University of Antwerp (RUCA) Department of Transport Economics (eds.), *Shipping and Port in the National Economy*. Antwerp.