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MODELLING THE ECONOMIES OF THE BALTIC SEA REGION

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CONTENTS

INTRODUCTION

The concept of a region is manifold. On the one hand, a region can be viewed as a part of a state, like a county, parish or province. On the other, the word "region" may also serve as an inter- or multi-national concept, denoting an area that consists of several states or parts of states. Additionally to the geographical and administrative aspects, it is possible to define regions, using the human dimension, physical shape of the world, biology, etc. (see Ryden, 2002).

The Baltic Sea region (BSR), comprising the countries that have links to the Baltic Sea, its coasts and drainage basin is also defined in several ways (Macijewski (Ed.), 2002; Bröcker and Herrmann (Eds), 2001). Geographically, this region is often defined as the drainage basin or the areas close to the coast of the Baltic Sea. This definition has a particular historic and economic background. In the past, travelling and hence trade links were comparatively easy by water. Therefore interaction within the region dominated that with the world outside the drainage basin.

The Baltic Sea region has been one of the European trade centres for centuries. In the Middle Ages, nearly a hundred cities belonged to the Hanseatic League — a trading system which covered most of Northern Europe with its strongholds in the Baltic Sea area. In the 15th century, the League gradually started to lose its importance, but the Baltic rim continued to be an area of strong economic ties between the countries surrounding the sea. These economic ties supported the economic development of the BSR countries, furthering trade relations with other parts of Europe. In some sense, the Hanseatic spirit is still alive today; mainly as a framework for twinned cities agreements (see also Cornett, 2001).

Nowadays, the Baltic Sea region is most frequently seen as a region made up by ten countries:

- Four Nordic countries: Denmark, Finland, Sweden and Norway;
- Three Baltic States: Estonia, Latvia and Lithuania;
- Three large countries with only a minor part belonging to the geographical Baltic rim: Germany, Poland and Russia.

The Baltic Sea region is a non-homogenous region. When examining the economic situation of the region, the BSR countries are traditionally divided into two groups:

1) the high-income countries Finland, Sweden, Denmark, Norway and Germany, which are the so-called old market economy countries, or developed economies of the region;
2) the middle- or low-income countries Estonia, Latvia, Lithuania, Poland, and Russia. The latter are classified as post-socialist or transitional economies.

The division of the BSR countries into the above-mentioned two groups results from their different political conditions for economic and social development. This region has been most significantly affected by the split of post-Second-World-War Europe into two blocs. The BSR countries were divided between two diametrically different economic and political systems — the market-led Western Europe and the command-based socialist or Eastern Europe. The socialist countries (republics) of the region were integrated into the Council of Mutual Economic Assistance (CMEA), while the market-oriented countries developed globally oriented integration processes based on the European Community (EC) and the European Free Trade Agreement (EFTA).

After the fall of the Iron Curtain at the end of the 1980s and the beginning of the 1990s, the Baltic Sea region started to resume its role as an integral part of Europe's regional development. Nowadays this region is playing an important role in the reintegration of post-socialist countries into the economic and political system of Europe.

Traditionally, regional economic integration takes place between countries that are at the same level of economic development and have similar political traditions and institutional framework. In that sense, integration of the countries around the Baltic Sea is an exceptional phenomenon as there are large differences between these countries' economic performance and their speed of adjustment to the challenges of transition and the EU and Euro-zone enlargement processes.

The economic integration of the Baltic Sea region is based on the geographical, historical and cultural factors and also on the feeling of Baltic identity. Responsibility for the sea that has brought people together for centuries is a significant factor in the BSR countries' integration processes. These conditions establish a solid basis for bottom-up activities, creating networks and institutions that support economic development. Many organizations and institutions have been established and various cooperation programmes elaborated in the last decade, furthering the Baltic integration and development processes.[1] The integration processes of the BSR nations and their adjustment to the recent changes in economic, political and social development are also supported by the EU activities.

The integration of the Baltic Sea region's countries with the EU has a more than thirty years long history. Germany together with Belgium, France, Italy, Luxembourg and the Netherlands belongs to the group of EU founders (1958). Denmark became a EU member on January 1, 1973. After several years of negotiations and preparations, Sweden and Finland joined the EU on 1 January 1995, which marked the stage of the northern enlargement. In 1995, the Baltic Sea was declared to be the inland sea of the EU.

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[1] The Union of the Baltic Cities (1991); Baltic Assembly (1991); Convention for the Protection of the Baltic Sea region (HELCOM, 1992); Vision of strategies Around the Baltic Sea (VASAB, from 1992); Council of the Baltic Sea States (CBSS, from 1992); Action Programmes for the Baltic Sea States Cooperation, Agenda 21 (Visby, 1996); Baltic Rim Regional Agenda (from 2001); etc.

This event is of strategic importance in the Scandinavian countries' integration with Central and Southern Europe and the Mediterranean.

After the German unification in 1989, the EU border moved to the east and thus the importance of EU in the Baltic Sea region increased considerably. Since 1997, the BSR has been involved in the EU eastward enlargement processes. In 1997, Estonia and Poland (Luxembourg group), and in 1999 also Latvia and Lithuania (Helsinki group) were nominated as EU candidate countries due to become full members in May 2004. So after this date eight of the ten Baltic Sea region countries belong to the EU, the two non-members being the EU-associated developed country Norway and non-associated post-socialist Russia.

Regional integration helps countries to attract foreign direct investments and modern technologies, penetrate into new markets and create business networks. There are also other possible economic gains, e.g., benefits from exploitation of economies of scale, chances to increase specialization, efficiency and profits, to improve economic growth, etc. But these are only opportunities to gain by regional integration, which themselves do not guarantee economic advance. These opportunities should be seized, taking into account the special features and conditions of the countries involved. For instance, integration may benefit rich and poor countries differently.

According to Michael Porter, Professor at Harvard, who supervised the elaboration of the Baltic Rim Regional Agenda — the Baltic competitiveness vision for the future (see also Porter and Sölvell**,** 2001), the differences between the poor and rich countries in terms of gains from participation in the integration processes are the following. The poor countries will have a chance to catch up quickly, to get access to sophisticated consumers and to gain from competitive pressure. The rich countries will profit from access to bigger markets. They will also get an opportunity for efficient specialization, which makes it possible to outsource production in

an effective way (Porter, 1998). Thus, due to the non-homogeneity of the region, the BSR countries' challenges and possible gains from integration differ.

Our book focuses on the economic aspects of the BSR countries' development in the context of the enlargement processes of the EU and the European Monetary Union (EMU). For their surveys, the authors use various approaches with the emphasis on application of quantitative methods for analyzing economic processes.

The book comprises two main parts. The first part, which consists of four chapters, stresses the evaluation of competitiveness, modelling of economic growth and bilateral trade flows and examining the strength of economic ties between the EMU and the new member countries in case of asymmetric shocks. In this part of the book, the BSR is viewed as a regional economic cluster of Europe. In this book we view a regional cluster as a geographically proximate group of economically integrated countries, and associated institutions and networks. In the case of the BSR, new institutions and networks have sometimes been established spontaneously, but their outcomes have predominantly been successful, particularly in education and research as well as in attracting foreign direct investments and developing trade relations.

The second part of the book comprises five chapters that consider the possibilities of using economic modelling for analyzing various aspects of Estonia's economic development. The modelling results and Estonian economic indicators are compared with the indicators of other BSR countries. It is reasonable to expect that actions taking place in one country influence other countries of the region, as foreign trade and investments tightly link countries to one another. We also presume that foreign shocks usually have a similar influence on the majority of the BSR countries, as these countries operate in a similar economic environment (particularly Estonia, Latvia and Lithuania).

In order to test the hypothesis that despite (or due to) their non-homogeneity, the Baltic Sea region's countries have a good competitive position both among the leading and emerging world economies, the evaluation results of competitiveness based on various internationally acknowledged methodologies are analyzed (Chapter 1). In addition, the competitive position of the BSR countries is evaluated by means of factor analysis. Comparing various evaluation results enables us to get complementary information about the level of competitiveness of the BSR economies that will make it possible to elaborate policy proposals for improving competitiveness.

For modelling the economic growth of the BSR countries, panel data analysis is used (Chapter 2). The recent economic development in the transitional and developed countries of the region having been dissimilar, it is reasonable to estimate the regression models separately for these two groups of countries. The estimation results provide information about the main growth factors of the countries involved. Evidently, these factors do not coincide across the groups, if we take into account the different economic and political backgrounds of the BSR nations. This additional information is valuable for accelerating economic growth and improving cooperation.

The most expedient factor in pushing economies into integration is international trade. International trade flows are often considered to be indicators of links between the economic centres of the region, thus representing links between the economic and spatial units. The distance between the centres represents not only transport and communication costs, but also linguistic and cultural (dis)similarities, differences in the scope of social and political life, etc. Therefore, the approach based on implementing the law of gravity for studying international trade flows and effects of regional integration on trade relations of the BSR countries has been used in our research (Chapter 3).

For analyzing shock asymmetries in the context of EMU enlargement, structural VAR (sVAR) models are implemented (Chapter 4), which have become the mainstream methods for comparing economic shocks in different regions since the 1990s. Additionally, the estimated structural shocks are analyzed by means of cluster analysis. The latter enables us to assess whether the deemed high integration within the Baltic Sea Region allows distinguishing the Baltic Sea Region cluster empirically on the basis of Euro-zone enlargement processes.

Macroeconometric models are suitable tools for examining the influence of foreign shocks on a national economy. Therefore these models are built to simulate the shocks caused by changes in foreign demand and government sector consumption in Estonia (Chapter 5). By building the macroeconometric model for the Estonian economy, four blocks are distinguished between: the supply side of the model, the wages and prices sector, the demand side of the model, and the fiscal sector. The aim of Estonia's macroeconometric model construction is twofold. We want to analyze how the Estonian economy might react to possible foreign shocks. Concurrently, we want to test the suitability of various estimation methods to the macroeconometric models built for a small open transitional economy like Estonia.

For testing the hypothesis that the currency board arrangement (CBA) implemented in Estonia enables fulfilment of the Maastricht criteria at least as successfully as alternative monetary regimes, the macroeconometric model of the Bank of Estonia is used (Chapter 6). Alternative currency rate regimes are formulated in the model and their operation is analyzed by shock simulation exercises. A comparison of the simulation results forms the basis for either confirming or rejecting the research hypothesis about the suitability of CBA. Convergence of Estonia's monetary policy is taking place within a facilitating regional environment — in parallel with Estonia's integration into the EMU — the harmonization of the

monetary policies is carried out in the Baltic Sea region as a whole.[2]

The social consequences of transition and integration are considered by analyzing the increasing income inequality in Estonia (Chapter 7). The analysis of the chain that consists of capital (both physical and human) endowments, capital productivity and redistribution of capital income allows us to identify imperfection of the capital and labour markets as factors of increasing inequality, and the importance of the taxation system and social norms in reducing inequality. Different inequality measurement methods are discussed and implemented for decomposition of the inequality indicators in an attempt to clarify some main reasons for inequality in Estonia. The chosen methods are applied on the data of Estonian household budget surveys.

The efficiency of the industry sector is estimated on the example of the Estonian fishing industry, using Data Envelopment Analysis (DEA) and comparing the Estonian industrial fishing indicators with the respective indicators of the other BSR countries (Chapter 8). The efficiency of the fishing industry is estimated on the basis of different sets of input-output indicators and the information about the fishing quotas of some valuable Baltic Sea fish.

The last chapter of the book focuses on the environmental problems (Chapter 9). In Estonia, like in the whole region, the most severe environmental challenges are connected with the energy sector. This sector is mainly based on non-renewable resources, the

[2] Apart from Estonia, also Latvia, Lithuania and Poland are joining the EMU in addition to the Baltic Sea region's countries currently belonging to the EMU (Finland, Germany). Among the EU member countries in the Baltic Sea region, Sweden and Denmark do not belong to the EMU so far. But it cannot be ruled out that the public opinion in Sweden and Denmark will change and in the future they will decide to vote in a referendum in favour of becoming full members of the EMU. Thus, after Estonia, Latvia, Lithuania and Poland have joined the monetary union, it will be possible to speak about a homogeneous monetary policy environment in the Baltic Sea area.

use of which will cause depletion of the natural resources combined with pollution. The model elaborated in this chapter represents an example of internalizing the basic externalities of the energy sector. The aim of applying the modelling process is twofold: firstly, to provide an overview of the role of environmental costs in the formation of the prices for the oil shale resource and for the oil-shale-based electric energy, and secondly, to access scenarios by varying the levels of environmental costs. The environmental issues are analyzed in the context of the Estonian companies *Narva Elektrijaamad Ltd* (*NEJ*), generating electricity, and *Eesti Põlevkivi Ltd* (*EP*), mining oil shale.

This book represents a positive outcome of the BSR's successful cooperation in the fields of education and research. The majority of the authors are master and PhD students of the Chair of Econometrics at the University of Tartu. One major in their undergraduate studies was economic modelling. This subject has been offered by the BA programmes of the Faculty of Economics and Business Administration since 1993. When developing the programme and courses in economic modelling we got valuable support from the EuroFaculty, which was also established in 1993.

The EuroFaculty was founded by the developed countries of the BSR as a support programme to upgrade university education in economics, social science and law in the Baltic States. In 2001 a book of essays in honour of the former rector of the University of Kiel (1992–1996) and the initiator and supporter of the EuroFaculty programme, Professor Karin Peschel, was published. The editor of this book, Professor Johannes Bröcker, evaluated the success of the EuroFaculty programme in the book's preface with the words: "…the result in terms of a first generation of excellently educated young economists graduating in Tartu is impressive" (Bröcker, 2001, p. VIII). We are extremely grateful for this successful BSR cooperation and for the valuable support of the EuroFaculty network in developing our new study programmes and research.

When educating young researchers and carrying out research about the BSR economic development we also got valuable support from a multidisciplinary network — the *BaltSeaNet.* This network consists of eight partners, the universities of the BSR countries: Humboldt University in Berlin (project co-ordinator Professor Bernd Henningsen), the University of Copenhagen (Denmark), the University of Gdansk (Poland), the University of Helsinki (Finland), the University of Latvia in Riga (Latvia), Södertörn Högskola (Sweden), the University of Vilnius (Lithuania), and the University of Tartu (Estonia). The *BaltSeaNet* is a EU Research Training Network financed by the Fifth Framework Programme for Research and Technological Development. The network investigates the interrelationship of the concepts "Baltic Sea Region" and "Northern Dimension of Europe" and examines the preconditions and prospects for a further expansion of regional cooperation in the Baltic Sea area.

For doing research into the possible consequences of the recent transition and integration processes, and Euro-zone enlargement of the Baltic States, we got valuable support and feedback from another Fifth Framework Programme project that created the research network *Ezoneplus.* This network involves research teams from seven partner universities of EU15 and the new member countries: Germany, Italy, Finland, Portugal, Poland, Slovenia, and Estonia. The project coordinator is Professor Michael Bolle from the Jean Monnet Centre of Excellence at Freie Universität Berlin. The research carried out within this network analyzes the outcomes of the EU and EMU enlargement and possible short- and long-term impacts on different markets, regions and nations.

We are very grateful to the Hamburg Institute of International Economics (HWWA) and their programme "European Integration and Spatial Development" for an opportunity to attend their research seminars and get valuable feedback on our papers.

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We would appreciate comments and suggestions from readers. Please address them to the Institute of Economics, Chair of Econometrics, University of Tartu, 4 Narva Rd., Tartu 51009, Estonia, or electronically to Tiiu.Paas@ut.ee or Egle.Tafenau@ut.ee. For more information about us, please look at our web-page http://infutik.mtk.ut.ee/www/kodu/riqk/en/ or http://www.mtk.ut.ee.

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