

SUMMARY AND CONCLUSIONS

The enlargement of the EU in May 2004 was a historic moment in the fifty years of European integration processes, which influences Europe's spatial-economic development and creates new requirements and challenges for regional policies. It may be expected that Europe's economic map is going to change as there will appear new core zones and potential growth areas. One potential growth area is the Baltic Sea region. This region is playing an important role in the reintegration of the post-socialist countries into the European economic and political systems.

The results of an empirical analysis, based on factor analysis and other methodological approaches, indicate that the Baltic Sea region countries have a good competitive position among the leading world economies. The best competitive positions belong to the small countries of the region, such as Finland, Denmark and Sweden. Estonia, the smallest country of the region, has the best competitive position among the transitional economies of the Baltic Sea region. The globalization and EU enlargement processes require flexibility, openness and ability to adjust to quick changes and challenges. The big countries of the region, such as Poland, Russia and also Germany are less flexible and their governments' efficiency is lower.

It is possible to argue that the conditions created by the dynamic interdependence between the transition and integration processes have helped the Baltic Sea region countries to achieve good competitive positions among the leading world economies. This makes the region attractive to foreign direct investments, stimulates the movement of capital and cross-border flows of knowledge and technology, and supports economic growth.

To analyze the prospects of the BSR countries' economic growth, a panel data analysis is used. The choice of growth variables is based on long-term growth theories, taking into consideration the availability and quality of data. The growth models are estimated separately for the post-socialist and developed countries of the region. The modelling results indicate that these two groups of countries have differing growth factors. The estimation results for the transitional economies are mainly consistent with the theoretical viewpoints. Both the demand and supply side factors turned out to be statistically significantly correlated with economic growth. The model for the developed economies is different from what had been expected on the basis of growth theories. Surprisingly, contrary to theoretical understanding, the parameter estimates of the growth factors (capital accumulation, stock of human capital, growth of domestic and foreign demand) turned out to be negative, except for the stock of human capital.

During the period under observation (1994–2000), the transitional countries underwent the changes that had taken decades from the countries that currently have a high level of economic development. Therefore, the economic processes that are characteristic of long-term development were better revealed by the estimated growth model of the transitional than by that of the developed economies. Presumably, the modelling results also indicate that theoretical growth models need some revision. The analysis of the modelling results leads to the conclusion that the transitional countries have better growth prospects than the developed countries of the region.

The most expedient economic factor in pushing economies into integration is international trade. Therefore, in order to prove a hypothesis about the existence of the BSR as a regional economic cluster among the countries involved in the EU eastward enlargement processes, the gravity equations are estimated for the years 1998–2001. The estimation results confirm the validity of the hypothesis about the existence of traditional gravitational forces in

bilateral trade relations of the EU-25 countries. The larger and wealthier the countries, the more intensive the trade between them. Compared to closely located countries, distant countries have smaller trade flows.

From the three regions (the Baltic Sea region, Central Europe and the Mediterranean area), which all consist of both old and new EU member countries and for which dummies were switched into the gravity equation, only the Baltic Sea region can be distinguished. According to the estimations of the gravity equation for the year 2001, the BSR trade flows were on average 2.4 times larger than the trade flows outside the region, after controlling for the size of the economies, the level of economic development, distance and other dummies. In addition, the estimation results confirm the significance of cross-border cooperation between the EU-25 countries: the trade flows between neighbouring countries are approximately 1.6 times larger than those with third countries — it is a matter of course that neighbours are natural trading partners. Thus, the modelling results indicate the significant role of cross-border cooperation and regional integration of the countries around the Baltic Sea in the context of the EU eastward enlargement.

After the EU eastward enlargement, the new member countries have to join the EMU. The implementation of common economic and monetary policies within the enlarged EU requires that the countries that belong to the EMU should be sufficiently similar. This requirement is based on the optimal currency area theory. In order to explore asymmetric shocks within the countries involved in the EU enlargement processes and examine whether it is possible to distinguish the BSR cluster, structural VAR models, and correlation and cluster analyses are used. The application of these different methods of analysis yields the results indicating that the correlation of structural supply and demand shocks in the accession countries against other EMU members is positive but somewhat weaker than among the existing members of the euro zone. Neither the cluster analysis nor the correlation analysis con-

firm the hypothesis that the BSR countries form a distinguishable monetary policy based cluster within the EU-25, although in general the economic ties within the Baltic Sea region are deemed to be strong.

In this context it is interesting to note that the chosen monetary policy strategies differ within the Baltic Sea region. Germany and Finland have already joined the euro area, whereas Denmark and Sweden have not. Among the accession countries of the region, Estonia and Lithuania are using currency boards, whereas Latvia is pegging its lat with the IMF special drawing right and Poland is following the inflation targeting regime with floating exchange rate. Thus, there is heterogeneity of the monetary policies in the BSR. Nevertheless, this heterogeneity has had no significant negative impact on the trade integration and FDI flows of these countries.

The positive integration effect of the countries around the Baltic Sea has been particularly significant in the case of the small Baltic economies in transition, the Baltic States of Estonia, Latvia and Lithuania. Needless to say that the Baltic States are the only former Soviet republics among the EU accession countries. In order to give an overview of some economic and social consequences of the BSR and EU integration processes for a transitional economy, Estonia is used as the example in the book.

Estonia's monetary policy is based on the currency board arrangement, which has created a framework for a reliable macroeconomic environment and sustainable economic growth. Accession to the EMU means that independent monetary policy will be abandoned and Estonia will be a part of the common monetary policy system coordinated by the European Central Bank. After joining the EU, Estonia has to participate in the exchange rate mechanism ERM-2. During the ERM-2 period, the legislation coordinating the fiscal, economic and monetary policies must be harmonized with the EU legislation and a readiness to integrate into the common currency zone has to be proved. The criteria for estimating the economic

stability of an accession country are provided by the Maastricht Treaty. The Maastricht criteria involve the requirements for a stable price level, a stable exchange rate, and a balanced government's budget. For Estonia, the most demanding criterion is the requirement that its annual inflation rate must not exceed the average level of three EU member states with the lowest inflation by more than 1.5 percentage points.

The possible outcomes of three exchange rate regimes (currency board, floating rate and fixed rate) in combination with four monetary rules are simulated using a macroeconomic model of the Bank of Estonia. These four monetary rules represent different goals — price level stability, economic growth stability, exchange rate stability, and monetary policy with no target in the case of Estonia. As the adaptation mechanisms differ across the monetary regimes, also prices react differently to the shocks occurring in the economy. The modelling results indicate that the currency board arrangement adopted by Estonia seems to be sufficiently reliable for ensuring stable price levels during ERM2 and reaching accord with the Maastricht criteria. At the same time, swift integration into the single currency zone would accelerate the convergence of monetary policies and support close economic relations in the Baltic Sea region.

In order to simulate the shocks caused by the changes in foreign demand and prices, and in the government sector's consumption, an experimental macroeconomic model of the Estonian economy is built, in the structure of which the long-term relations are mostly based on the European Central Bank's area wide model (AWM), short-term relations are found, considering the previous research results of the Estonian economy and the empirical fit between the data. The constructed model consists of 17 behavioural equations and 17 identities, with 34 endogenous and 13 exogenous variables.

The Estonian macroeconomic model was estimated by means of three different estimation methods: ordinary least squares (OLS), two-stage least squares (2SLS), and three-stage least squares

(3SLS). 3SLS should be theoretically the best estimation method, but it is very sensitive in terms of specification errors. Therefore, 3SLS should be used with caution for the CEE countries, because the theoretical properties of these economies are not clearly determined. On the basis of *ex post* simulations it was found that 2SLS should be preferable for estimating the Estonian macro-econometric model.

Two types of models were specified for the estimation: the models with adaptive and rational (model consistent) expectations. It was concluded that the adaptive expectations based specification of the model should be preferred. This result may be considered as anticipated, because the implementation of rational expectations in models assumes a stable economic environment — the property that Estonia did not have during the period under consideration (1996–2002).

Thus, the model with adaptive expectations was estimated by means of 2SLS on the basis of the 1996–2002 data, and *ex ante* simulations were made for the period from 2003 to 2010. Temporary and permanent 5% shocks were given on foreign demand, foreign prices and government expenditures. According to the simulation results, a permanent increase in foreign demand has a positive permanent effect on Estonia's GDP. A rise of foreign prices has a small negative impact on the GDP, but this effect is gradually wearing off and no permanent influence is left. A temporary increase in government expenditure has no permanent impact — the influence of the shock disappears from the economy after the expenditures have moved back to the initial level.

Economic growth has strong relationships with social development. But there is still no common understanding about whether inequality, for instance, as an expression of social and economic situation of a country, influences economic growth or vice versa and whether these relationships have a positive or negative sign. Based mainly on the differences between individuals, some extent of inequality is natural. Inequality in different forms can be easily ob-

served in every society but deciding whether the scale of inequality is small or large is not easy. This would require a proper measurement of inequality and an analysis of its causes and consequences.

Our empirical analysis of income inequality in Estonia was based on the data from the Household Budget Surveys (HBS) conducted by the Statistical Office of Estonia. It must be noted, however, that the data collection methods were somewhat different in the periods 1996–1999 and 2000–2002. Therefore, some bias might be found in the dynamics of inequality. Inequality measures were calculated using the equivalent income per household member over individuals. As different measures of inequality stress different aspects of inequality, several measures (Gini coefficient, Theil index, half the squared coefficient of variation and mean logarithmic deviation) were used to denote the dynamics of inequality in Estonia. All the measures indicate increasing income inequality in the period 1996–2002. The highest level of inequality was present in 2000, declining sharply in the next year and increasing again in 2002. A small decline also took place in 1999. Comparing Estonia with other European countries implies that the level of inequality in Estonia is one of the highest among the EU-25 and BSR countries. The assumption that this is caused by transition processes does not hold, for in several other transitional countries the level of inequality is considerably lower.

The empirical analysis also includes the decomposition of inequality measures, with the intention to clarify the main sources of inequality in Estonia. The variables, characterizing households or heads of households, reflected that the major causes concerned employment status and educational level. More generally, income inequality in Estonia results from educational and regional disparities, which is in accordance with the theoretical viewpoint on the causes of income inequality. The results of the inequality analysis in Estonia posed the question whether the social security system based on a liberal economic policy should be revised. The need to use proper value systems and social policy models (e.g., the

Anglo-Saxon model as a risk-taking approach versus the Continental European model as a social cohesiveness oriented approach) is increasing in order to improve competitiveness and avoid emigration of skilled labour force.

The efficiency of the Estonian industries is analyzed in the case of the Estonian fishing industry by means of Data Envelopment Analysis (DEA). As a reference group the Baltic Sea region countries Denmark, Finland and Sweden are used. The employment on board and the capacity of fleet were chosen as the inputs and the value and volume of landings as the outputs of DEA. Despite problems with the quality of data (representativeness, comparability, etc.), which can make the results of applying DEA somewhat questionable, the obtained results make sense. Thus, DEA is considered to be a proper method for comparative analysis of industrial efficiency in the regional context, particularly if the quality of data is improved.

The results of the calculations indicate that the Estonian fleet has been quite inefficient in using the labour by comparison with the use of its capacity. This conclusion is in accordance with the technical backwardness of the Estonian trawl fleet, which results in extensive use of the labour force. At the same time, the rapid technical progress supported by the EU subsidies may cause a rise in unemployment and consequently serious social problems in the country. Therefore Estonia has to apply for additional quotas of catching more valuable fish in the EU countries' fishery zones. Nowadays the quotas delivered by the EU are much smaller than those which would have equalized our efficiency indices for the value and capacity of landings with the respective indices of the reference group countries.

The BSR's environmental problems are considered in the case of the Estonian energy sector, as energy production is one of the most damaging industries for the environment in the Baltic Sea region. Currently the Estonian energy sector uses oil shale as its most important input. Oil shale, as generally known, is the energy source

with probably the most damaging consequences for the environment. The model elaborated for analyzing environmental issues represents an example of internalizing basic externalities of the energy sector. The results of the assessment of scenarios that differ in the levels of environmental costs show that the current energy prices do not reflect the true environmental costs. From that conclusion, several policy options could be designed. The environmentally most integral, but rather unrealistic, proposal would be to significantly increase the environmental charge rates. But evidently Estonia would have serious economic and social problems if very high energy prices were implemented in a short period of time. Other ways for achieving a long-term sustainable development would be prioritizing the alternative energy sources or introducing significant technological improvements.

In sum, the outcomes of using various models and methods (macro-econometric models, structural VAR models, gravity models, panel data analysis, factor analysis, DEA, etc.) for examining the integration processes in the Baltic Sea region and analyzing the economic and social development of Estonia are twofold. First, the modelling process allows us to test the suitability of various methods for analyzing regional integration of countries with different political and economic backgrounds. We should take into account that time series and other data characterizing these integration processes are rather limited and unstable. Second, we proved the hypothesis that among the countries that are involved in the EU eastward enlargement it is possible to distinguish the BSR as a regional economic cluster, which supports integration of the post-socialist and developed economies.

The results of the study indicate the significant role of cross-border cooperation and regional integration of the countries that are involved in the EU eastward enlargement processes. In developing regional cooperation, a high priority should belong to improving export and innovation based entrepreneurship, and encouraging research and development projects, and educational programmes.

Also the creation and development of networks and institutions that support cross-border cooperation should be encouraged by the national governments. Evidently these lessons are valuable for the development of EU regional policies and for adjustment to the challenges of globalization, taking into account the specific features and requirements of sub-regions and regional economic clusters.

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