

CORRELATION OF ESTONIAN BUSINESS CYCLE WITH THAT OF ITS MAIN TRADING PARTNERS AND THE SUSCEPTIBILITY OF THE ECONOMY TO ASYMMETRIC SHOCKS¹

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■ Business Cycles and the Single Monetary Policy ■

In connection with the enlargement of the European Union (EU), much attention has recently been paid to the question to what extent the business cycles of the EU applicant states correlate with the business cycle of the current Member States. Raising this issue is first and foremost related to the fact that a few years after joining the EU, the new Member States will take into use the single currency, the euro. Therefore, those countries will belong to the group of states implementing a single monetary policy. **For most of the applicant states this entails a significant change, as until then they can use their own monetary policies to reduce the cyclic fluctuation of the economy.**

What impact will the renouncing of independent monetary policy have on those states? How appropriate is the single monetary policy to new Member States? Answers to those questions depend partly on the interconnection of the business cycles of an applicant state and the current EU Member States, in other words on how synchronised these are. **If the cyclical development in an applicant state and the current Member States is similar, the single monetary policy will also be suitable for the applicant country; in the opposite case, it may amplify cyclical fluctuation.** In other words, the suitability of the single monetary policy for a specific country depends on whether the shocks to its economy resemble those in other Member States (symmetric shocks) or whether those are country-specific (asymmetric shocks). The bigger the share of symmetric shocks and the smaller the share of asymmetric shocks, the more suitable is the single monetary policy, and vice versa. However, it must be emphasised that in assessing the suitability of the single monetary policy the susceptibility of a state to asymmetric shocks is just one characteristic factor.

In comparison to the other countries that are on the verge of joining the EU, Estonia is in a somewhat different situation in this respect. The currency board system in use in Estonia does not enable us to actively influence the cyclic fluctuation of the economy through monetary

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policy. Consequently, implementing the euro and participating in the European Monetary Union (EMU) does not mean a significant change for Estonia in this respect. **Estonia is already influenced to a great extent by the monetary policy of the European Central Bank.** Therefore, the issue in question is not as topical for us as it is for many other applicant states. Nonetheless, this field must be studied in Estonia as well. Namely, analysing the connections between Estonian business cycles and those of our main trading partners will help in assessing how the state's susceptibility to asymmetric shocks will change in the future and to what extent the single monetary policy will even out the fluctuations of the business cycle.

■ **Current Assessments of the Correlations between** ■ **the Business Cycles of the EU Member States** **and Applicant Countries**

First studies on the links between the business cycles of the EU Member States and applicant countries were limited to the analysis of indicators from the first half of the 1990s. Although different analyses reached different results, those studies brought out the asymmetry in the business cycles of the countries joining the EU and the countries already in it. From time to time the reports demonstrate the same scepticism that was felt during the creation of the Monetary Union about the suitability of current members. At the same time, it is evident that **the main reason for the asymmetrical nature of business cycles is the strong impact of single shocks that accompany the transition process, especially in the Baltic States.**

More recent studies, covering the second half of the 1990s, reveal the similarity of the business cycles of some applicant countries to that of the European region. **The countries that are differentiated in this fashion are those characterised by successful economic reforms, the high level of foreign investments per capita, and economic openness** (eg, Estonia, Czech Republic, Hungary, Slovenia, etc). In addition, the synchronised nature of the business cycles of some applicant countries (eg, Estonia and Hungary) with that of the European region resembles the pre-accession business cycles of some current Member States of the EMU (eg, Spain and Portugal).

■ **The Economic Structure of Estonia and the** ■ **European Union**

One of the essential criteria for assessing the susceptibility of the economy to asymmetric shocks is the difference between a country's economic structure and that of its main trading partners. Similar structure guarantees a symmetrical reaction to shocks and facilitates the implementation of joint policies to alleviate the impact of economic fluctuations. In contrast, large disparities in economic structure signify the high probability of asymmetric shocks, which means that it is ineffective to implement joint policies.

Table 1. The structure of value added in the production of Estonian manufacturing as compared to the structure of weighted value added of our main trading partners* by 14 branches of industry

Branch of industry	Estonia (data of 2000)	Estonia's eight foreign trade partners (data of 1998)	Difference (in percentage points)
Manufacture of textiles and wearing apparel	12.5%	2.3%	10.2
Manufacture of wood	13.6%	4.4%	9.2
Manufacture of food and tobacco products	19.3%	10.3%	9.0
Manufacture of other non-metallic mineral products	5.1%	3.3%	1.8
Tanning and dressing of leather and manufacture of footwear	1.3%	0.4%	0.9
Manufacture of rubber and plastic products	3.0%	3.2%	-0.2
Manufacture of transport equipment	4.5%	5.5%	-1.0
Manufacture of coke and oil products	0.0%	1.2%	-1.2
Manufacture of fabricated metal products	8.1%	11.6%	-3.5
Manufacture of chemicals and chemical products	3.7%	8.0%	-4.3
Manufacture of electrical and optical equipment	8.5%	14.9%	-6.4
Manufacture of machinery and equipment	4.1%	11.8%	-7.7
Manufacture of paper and paper products, printing	8.1%	20.1%	-12.0
Other	8.2%	3.1%	5.1

* The structure of value added of Estonian manufacturing is compared to eight countries (Austria, Belgium, Denmark, Finland, Germany, Hungary, Japan and the Netherlands) to where 50% of Estonia's export went in 2001.

Differences in the value added of industrial production or in the structure of employment indicate that the state is more vulnerable to trade-specific shocks. Table 1 demonstrates the differences between the structure of value added in the manufacturing production of Estonia and its main export partners.

Comparing Estonia's structure of value added in the production of the manufacturing with that of our trading partners reveals that Estonia is characterised by greater specialisation in resource- and labour-intensive branches of industry; the share of technology-intensive branches of industry is below average. Therefore, Estonia is highly dependent on the developments on the international food, timber and textile markets. Considering that the cycle of those markets may differ significantly from the business cycle of our main trading partners, Estonia's susceptibility to asymmetric shocks is relatively large.

Nonetheless, many authors have suggested that **joining the Economic and Monetary Union may not bring about the levelling of economic structure but the deepening of specialisation.** In this case small countries have difficulties in achieving both objectives – a large growth in productivity based on specialisation and, owing to the existence of many economic sectors, the small impact of asymmetric shocks.

■ The Dynamics of the Business Cycles of Estonia ■ and its Main Trading Partners

A basic way of comparing the business cycles of states is to observe the correlations in the economic growth of trading partners. **A high correlation coefficient of the economic growth dynamics from one state to another indicates that they may have been hit by similar shocks; a small correlation between indicators, however, refers to the possibility of asymmetric shocks.**

In comparing the economic growth of Estonia and our main trading partners from Central and Eastern European countries (see Figure 1), a clear similarity with our southern neighbours, Latvia and Lithuania, can be seen; there is also a high correlation with Russia. The close connection between the economies of Estonia and Russia is, above all, based on the reaction to the former Russian crisis in a situation where Russia was one of Estonia's three main export partners. At the time, the reaction of our current trading partners in the European Union to the Russian crisis was modest.

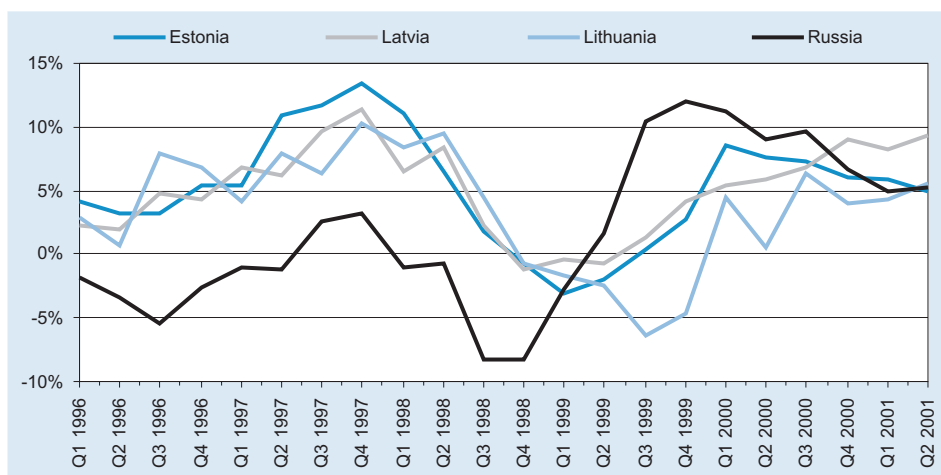


Figure 1. Annual growth of GDP in Estonia, Latvia, Lithuania and Russia (in constant prices)

In recent years, the role of Russia in Estonia's export has been over four times smaller than before the Russian crisis. Thus, the potential vulnerability of our economy resulting from the declining export demand from Russia is somewhat smaller.

Comparing the economic growth dynamics of Estonia and our main western trading partners reveals that the latter do not correlate as highly with the economic growth of Latvia, Lithuania, and Russia, as Estonia does. However, this is mainly due to the fact the Russian crisis had, as expected, only a modest impact on Finland and Sweden, but a strong one on Estonia. Thus, with respect to Estonia's western trading partners, the reaction of Estonia's economy to the Russian crisis can be considered to have been an asymmetric shock.

Another way to assess the similarity of business cycles is to study the correlations in the cyclical component of the economic growth of different states. Such treatment proceeds from the fact that **potential economic growth differs from state to state and, accordingly, comparing only the dynamics of growth indicators may not provide an adequate picture of the cyclical development of an economy.**

There is no single methodology for separating the component of cyclical economic growth. Typically, research into asymmetric shocks separates short- and long-term shocks with the help of structural vectorautoregressive models or separates the trend component by various statistical filters (eg, the Baxter-King and Hodrick-Prescott filters). The current case uses the Hodrick-Prescott filter to separate the cyclical component. This filter has been used in relation to the real GDP indicators of Estonia and its main export partners² within the timeframe of 1995–2001.

Studying the correlation of the business cycles of Estonia's main trading partners and the European Union (see Figure 2) reveals that the correlation between the current EU Member States is relatively high as expected. The only exception is Great Britain, which has a less synchronised business cycle with the aggregate EU cycle than other Member States. This is often explained with the fact that foreign trade with the United States and Canada plays a slightly larger role in Great Britain than in the EU on average. The correlation of the business cycle of Estonia and the other Baltic States with that of the EU is relatively small.

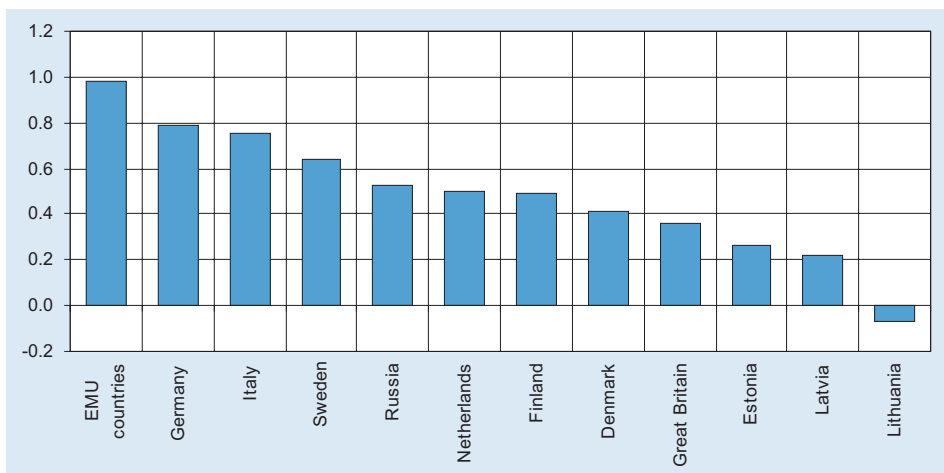


Figure 2. Correlation of the business cycles of Estonia and its main trading partners with that of the European Union

² The ten main export partners are given on the basis of data from 1995.

Figure 3 reflects the interconnectedness of the business cycles of Estonia and our main trading partners. **A strong correlation between the business cycles of the Baltic States is clearly evident.** The high correlation coefficient results mainly from the influence of eastern trade. The correlation with the business cycle of Russia, which was significant at the lags of two quarters, was high in the first half of the period, and it was mainly caused by the reaction to the Russian crisis. **In recent years, the correlation between the business cycle of Russia and Estonia has decreased. Somewhat weaker, but nonetheless statistically significant, is the correlation in the business cycles of Finland and Estonia.** The correlation was strongest from 1996–2000. However, the negative correlation between the business cycle of Estonia and Sweden should be noted. This disparity can also be traced back to the Russian crisis, during which Sweden's economic growth, unlike that of Estonia, was higher than the average of the period.

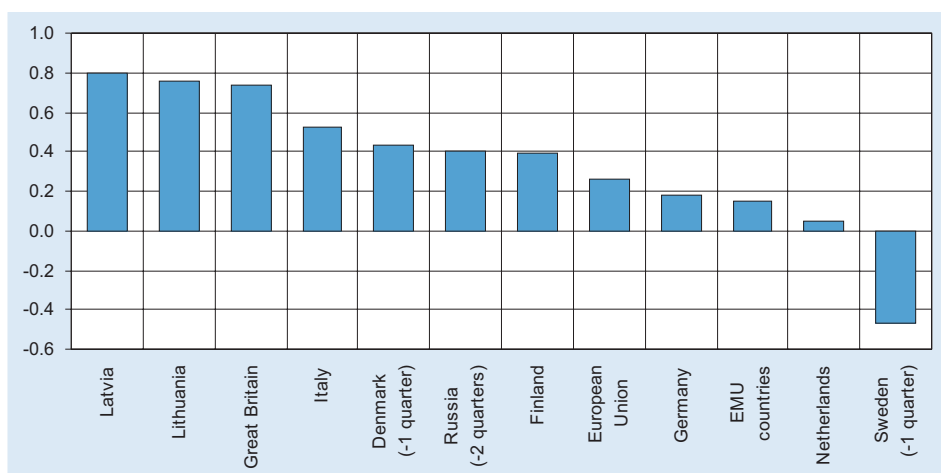


Figure 3. Correlation of Estonian business cycle with that of its main trading partners

The similarity of Estonia's business cycle to that of Italy and Great Britain is more a coincidence than related to intensive trade relations; the role of those countries in Estonia's export has been relatively moderate to date.

■ Conclusion ■

Despite the integration of Estonia's economy with that of the European Union Member States, the economic development cycle of Estonia differs in some respects from that of our main EU trading partners. The similarity of Estonia's business cycle with the cycles of several important Western-European trading partners (like Sweden) is relatively small. Equally, the value added of Estonia's industrial production, the structure of the labour force

and export destination countries differ from those of our main trading partners. Several studies on this topic have emphasised the fact that Estonia's business cycle is more highly correlated with the EU states than in the case of many other applicant countries. Therefore, it may be assumed that the deepening of economic integration will bring Estonia's business cycle closer to that of the EU Member States.

At the same time, it must be considered that the correlation between the stability of Estonia's economic development and the speed of economic growth may not be positive. That is to say, Estonia's economic growth depends largely on the extent to which we are able to make use of our comparative advantages in the international division of labour. In this respect Estonia's economy may have comparative advantages in areas where our main trading partners do not. In such a scenario the main factor of Estonia's rapid economic growth will be deeper specialisation, which inevitably means increased susceptibility to asymmetric shocks. For example, already in 1993 the renowned US economic expert, Paul Krugman, predicted that taking the euro into use might lead to higher specialisation of the EU Member States. Therefore, it must be emphasised that in interpreting the results presented in this article, the standard aspect of the stable development of economy must be accompanied by the analysis of issues related to the speed of economic growth.