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The Baltics: Three Countries, One Economy?

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The Baltics: Three Countries, One Economy?

By Aurélien Poissonnier

Summary

The Baltic countries - Estonia, Latvia and Lithuania - share common features and a similar history. These three countries at the EU border with Russia regained their independence from the Soviet Union in the early nineties before joining the EU in 2004 and more recently, the euro area. They display major similarities in terms of their geography, size, economic structure, development and demography; but also some differences, particularly with respect to Estonia, which is often considered ahead of its peers in some ways. So, do the Baltics form an integrated economic area, or are they just neighbours?

The present analysis takes a quantitative look at the question. In attempting to quantify the degree of economic integration between the three countries, this paper looks at the correlation of their main macroeconomic variables and a model for the joint dynamics of GDP growth in the area identifies the common shocks faced by the three Baltics and the linkages among them.

There indeed seems to be an integrated Baltic economy, i.e. an area driven for a sizeable part by common factors and economic links. Yet, there are also asymmetries, with Estonia being the most exposed to international developments, Latvia being less influenced by regional spillovers and Lithuania being a much less influential driver. However, even if the three Baltic countries can be understood as a single economic area, that does not mean that there are "one size fits all" solutions to their respective challenges. For policy purposes, country specificities and interlinkages should always be borne in mind.

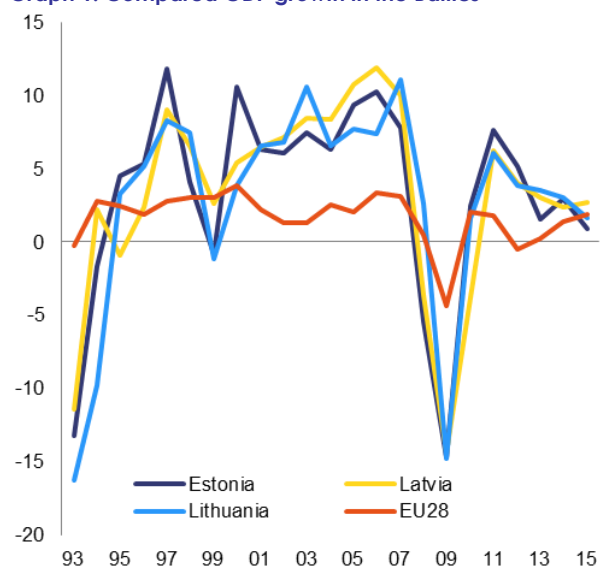
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The Baltics: an overview

The Baltics share common developments and key structural features: their overall economic situation and policies, their structure of production, their main trade partners and their population flows, underlining their similarities but also differences.

Among the conspicuous similarities between the Baltic countries are the synchronised economic cycles as well as the overall population decline over the past decades. (Graph 1, Graph 2). This situation contrasts with the EU as a whole where the economic cycle has been less pronounced and population has increased. The three Baltics also have a high level of inequality in common, together with Bulgaria for example, they have the highest Gini coefficients in the EU in 2014.

Graph 1: Compared GDP growth in the Baltics



Source: AMECO

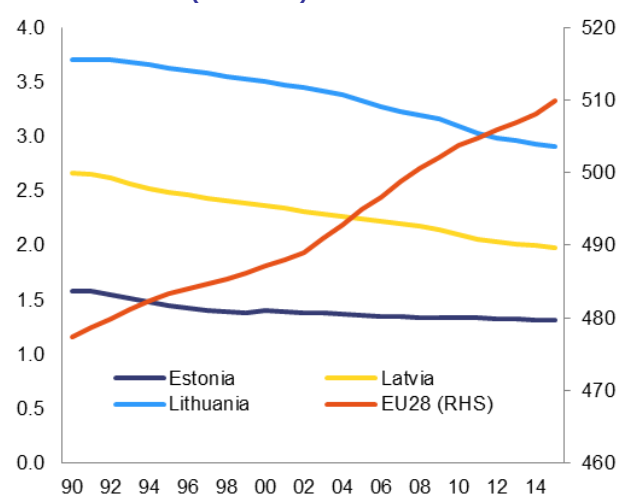
Their economic policies are very similar given their common recent history and competition. The adjustment to the market economy after regaining independence followed a similar pattern and all three countries shared a common goal of the EU accession and joining the monetary union. The Baltic states have relatively small government sectors and liberal economic policies. They compete to attract foreign investment and in trade. In practice, the foreign investors tend to view the Baltics as a single market and have a single local headquarter and sales policy for all three countries.

In the Baltics, monetary policy and the banking sectors are also very similar. Since the early nineties, monetary authorities aimed at a stable exchange rate of their currencies. The Estonian

Kroon was pegged to the Deutsche Mark from its introduction in 1992. The Latvian Lats was initially pegged to the IMF special drawing rights. The Lithuanian Litas was pegged to the US Dollar from 1994. The three Baltic currencies later switched to a peg to the Euro and joined the European exchange rate mechanism (ERMII) in 2004 and 2005 before joining the Euro Area between 2011 and 2015. The banking sector is the main source of financing for the private sector in the three countries. It is dominated by Nordic banks. Swedbank (Sweden), SEB bank (Sweden), DNB (Norway), Nordea bank (Finland) which cover a large majority of the banking sector in three Baltics.

All three Baltics were severely affected by the great recession (Graph 1). The crisis was characterised by a housing bubble fuelled by credit supply in all three countries which burst in 2009. Latvia was the most severely affected and required specific assistance regarding its external imbalances. Yet all three countries rapidly experienced a creditless recovery and are now growing closer to their potential.

Graph 2: Compared population trends in the Baltic countries and EU (in millions)



Source: AMECO

The three countries slightly differ in their economic development and size. Estonia stands out as the most advanced of the three. Its population is only 1.3 million inhabitants in 2014 but its GDP per capita is the highest at EUR 21 400, i.e. 76 % of the EU28 average in purchasing power parity. The population in Latvia is almost 2 million inhabitants with a GDP per capita in PPP of EUR 18 500 (64 % of the EU28 average). Lithuania is the largest of the three with 2.9 million inhabitants and a GDP per capita similar to Estonia in PPP (EUR 21 200, 75 % of the EU28 average).

The Baltic countries have a similar economic structure and, despite their gradual convergence with western European countries,¹ are still specialised in the production of low-tech goods.² Their agricultural sector has a similar size and is well above the EU average. Production of goods is more specialised in wood and paper products as well as furniture and textile while machinery and transport equipment are significantly lower than the EU average. When looking at specific sectors one can discern differences in areas of specialisation. While Latvia and Lithuania both have a relatively sizeable food sector, Estonia is the only oil producer of the three and its electronic and electrical equipment industry is relatively more developed. Also, Lithuania has an important chemical sector, while Latvia specialises in the pharmaceutical industry.

Baltic services are mainly related to the major trade activities in the area. In 2014, trade openness was as high as 160 % of GDP in Estonia and Lithuania, while in Latvia it was around 120 % of GDP; all three far above the 83 % of GDP for the EU as a whole. Consequently, transportation and storage activities are well developed in the three countries and account for 9, 13 and 10 % respectively of the value added compared to only 5 % on average in the EU. On the other hand, financial services, business services and public administration are smaller sectors in all three countries.

Foreign trade by country of origin and destination provides the first picture of an integrated Baltic market (Table 1). Despite their small market size, trade within the Baltic area accounts for 10 to 30 % of each country's exports and imports. There is also a high coincidence of trading partners outside of the Baltics, such as Russia. At the same time, there are some marked differences: Finland and Sweden are more important trade partners for Estonia, while Lithuania and Latvia have larger trade links with Poland.

Migration data provide a similar picture of an integrated and open area. The Baltic countries account for 10 to 20 % of one another's European immigrants. Immigrants in the Baltic countries come primarily from non EU countries, first of which are Ukraine, Belarus and Russia. Yet again differences arise as the Estonian emigration figures are lower than the Latvian and Lithuanian figures (0.3 % of the Estonian population against more than 1.0 % in the other two countries in 2014).

All in all, the Baltics have many traits of an integrated economy. Workers mobility is high, with common outflows of workers, but also cross border flows in the area. There are a common market and sizeable trade linkages as well, reinforced on the side of capital flows by their membership to the EU since 2004. Finally, the business cycles of the three countries are quite well synchronised (Graph 1). Characterising this last aspect and investigating whether it is due to economic integration will be the main focus of the remainder of this paper.

Table 1: Export and import share by trading partners

	Estonia		Latvia		Lithuania	
	Exports	Imports	Exports	Imports	Exports	Imports
Baltics	13	11	30	26	16	9
Estonia	-	-	13	8	6	3
Latvia	9	5	-	-	10	7
Lithuania	5	6	18	19	-	-
Finland	14	10	3	5	1	2
Germany	4	10	8	12	8	11
other EA	9	12	10	15	14	18
Poland	2	5	6	9	8	9
Sweden	15	7	6	3	4	3
UK	2	3	4	2	5	2
other EU non EA	3	4	6	5	4	4
Russia	15	11	10	9	18	27
other CIS	2	2	3	4	8	4
USA	5	2	1	1	3	1
Japan	0	2	0	0	0	0
China	1	7	1	3	0	2
Rest of the world	14	14	13	6	13	6

Note: average 2010-2015

Source: UN Comtrade

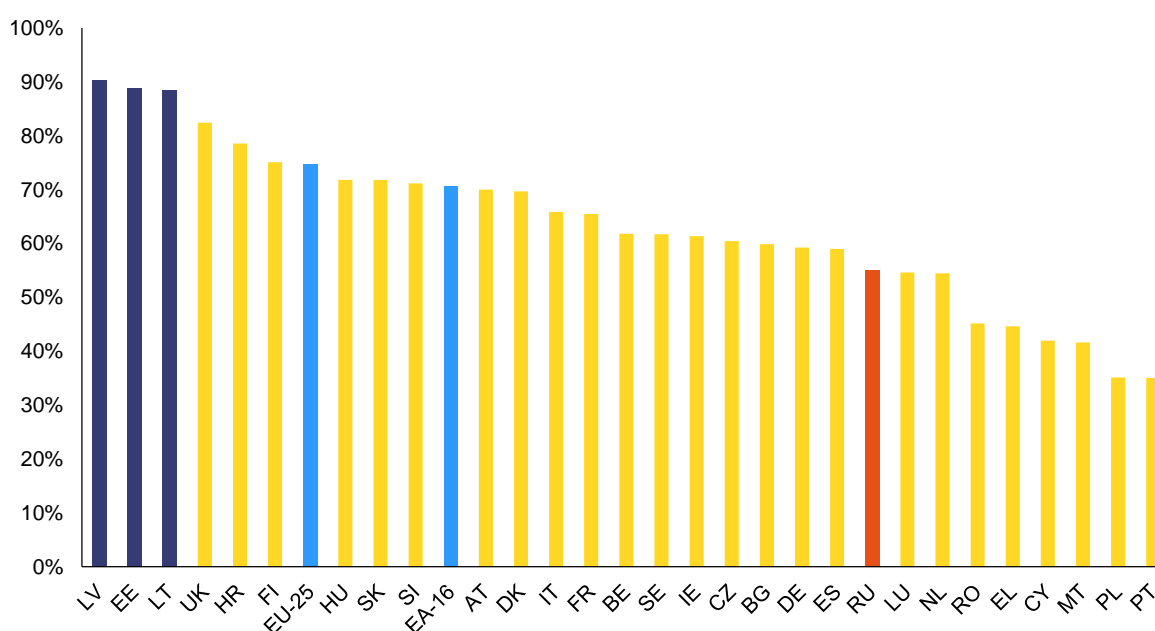
Assessing economic correlations

Trade, labour market, similar economic structure: all these links between the three Baltics should lead to synchronised economic evolutions.

The above description of the similarities and interlinkages across the Baltics constitute a qualitative assessment of the integration of the Baltic economies. In this section a more quantitative approach is developed. As a first step, the co-fluctuations of the three Baltic economies are measured by the correlation of some of the main macroeconomic indicators.

The correlation of annual real GDP growth between the Baltic countries is significantly higher than with any other EU member state or with Russia (Graph 3). Correlation between Estonia and Latvia is as high as 91 % and is 87 % between Estonia and Lithuania. Correlation between Latvia and Lithuania real GDP growth equals 90 %. These correlations are also higher than with other countries for private consumption, investment and public consumption, as well as for the labour market variables and trade (Table 2).

Graph 3: Average correlation of annual GDP growth of the Baltics with other European countries



Note: EA-16 is EA-19 excluding the Baltic countries. EU-25 is EU-28 excluding the Baltic countries. Sample 1996-2015

Source: AMECO

Table 2: Correlation of macroeconomic variables between the Baltic countries and of the Baltic countries with European countries

	EE-LV	EE-LT	LV-LT	EE-Europe	LV-Europe	LT-Europe
GDP volume	91	87	90	60	60	59
GDP value	93	85	92	65	59	52
Private Cons.	85	84	81	43	36	44
Public Cons.	66	38	70	2	7	2
Investment	70	83	68	37	45	49
Exports	66	50	75	46	51	30
Imports	81	79	73	48	53	47
CPI	73	81	83	58	41	38
Unemployment	94	91	91	39	42	40
Wages	98	97	95	62	64	66
Real ULC	73	47	52	24	7	10

Note: Correlations are computed on annual growth rates or changes in the unemployment rate since 1996. Correlation with Europe is the average correlation with European countries including Russia.

Source: AMECO, author's calculations

On the links with third countries, the correlation analysis provides a different picture than the qualitative trade flows analysis. Links with close neighbours such as Finland are relatively high as expected, especially for Estonia. However, co-fluctuations with Sweden, home country of major banks in the Baltic countries, or Poland, a major market with a common border with Lithuania, are relatively weak. The decoupling of the Swedish economy from the Baltic area could be explained by the higher diversification of the former. Furthermore, during the Latvian crisis, the Swedish banks managed to limit contagion effects and stay sound. As for Poland it has most likely oriented its economy more to the west and in particular to Germany than the Baltic States.

Finally, correlation with Russia, though underlined as a major trade partner, is limited. This can be explained by the shift of the Baltic countries to a more EU oriented economy (as exemplified by the relative resilience of the Baltic countries to the recent rouble crisis) and by the relative size of the economies. In this respect, Russia is a larger economy, a large oil producer and as such subject to factors alien to the Baltic economies.

A joint dynamic analysis

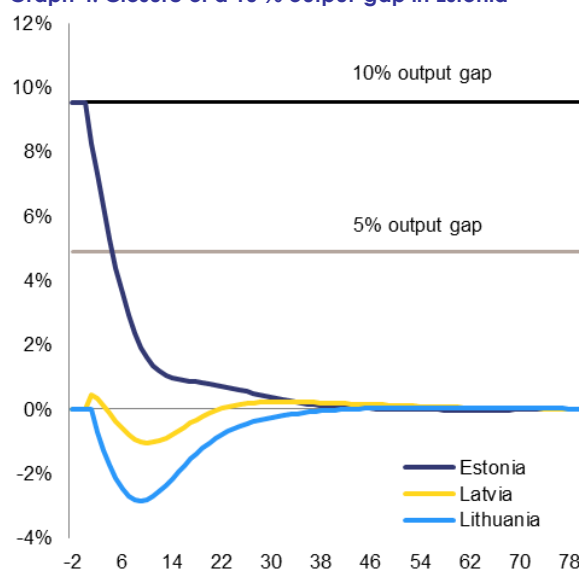
Common shocks or strong linkages can both result in high correlation but only the latter implies economic integration. Co-fluctuations of the main macroeconomic variables give a clear indication of the three Baltic economies having something in common. They do not necessarily support the existence of a high degree of economic integration. A VAR analysis³ can differentiate common shocks from internal linkages and reveal the degree of economic integration in the area.⁴

An augmented VAR model can isolate internal linkages which are specific to growth dynamics. Changes in the output gap and the catching-up process can be captured by including specific variables in a VAR model. In addition, the model isolates international developments through the effect of growth in the EU15 and Russia on growth in the Baltics. To capture the above mentioned effects, variables are included in the model that measure (i) closing the gap with the country's potential output, (ii) the Baltic average potential or the EU15 potential and (iii) catching-up with the other two, the Baltic average, or the EU15.⁵

Model dynamics

As expected, each country tends to return to equilibrium when its GDP is above or below potential output. For each of the three countries the model estimates a negative effect of the output-gap on growth, i.e. a tendency to slow down when output is above potential and *vice versa*. The model allows to estimate the speed at which each economy returns to equilibrium but also the effect of this adjustment on the other two countries as a measure of internal linkages in the area.

Graph 4: Closure of a 10 % output-gap in Estonia



Source: AMECO, author's calculations

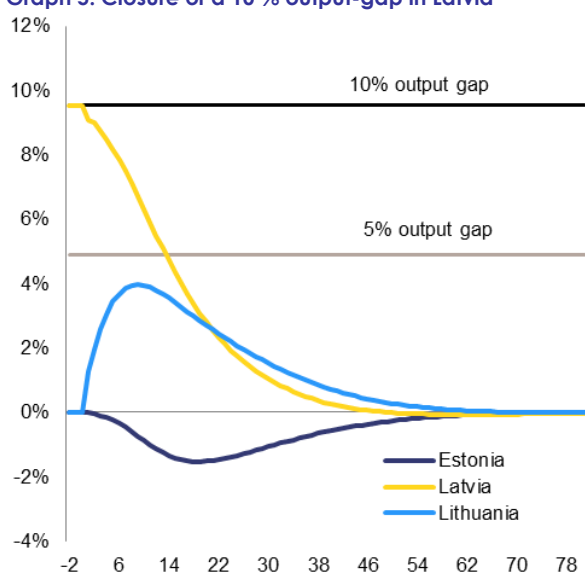
Note: The simulation starts for Lithuania and Latvia at the Baltic average potential output and Estonia with a 10 % positive output gap.

The Estonian economy has a relatively high adjustment speed and a relatively high impact on its peers. It takes the Estonian economy only four quarters to close half of its output gap (see Graph 4 displaying the closure of a 10 % output gap in Estonia)⁶. In addition the decrease in Estonian GDP when going back to equilibrium has a recessionary effect on its peers which both experience a transition below potential (with a trough almost 3 % below potential in Lithuania).

Latvia adjusts more slowly and attracts Lithuania in its convergence path. For Latvia, half of the output gap is closed after 13 quarters. Latvia has a lesser effect on Estonia than the other way around (with a trough for Estonia at less than 2 % below potential Graph 5). The effect of Latvia's transition on Lithuania is of opposite sign: in the

transition, the gap between the two countries closes and they return to equilibrium together. This is due to the catching-up mechanism identified in the Lithuanian GDP dynamics: Lithuania likely benefits from the positive situation in Latvia and grows until catching-up with its neighbour's output level.

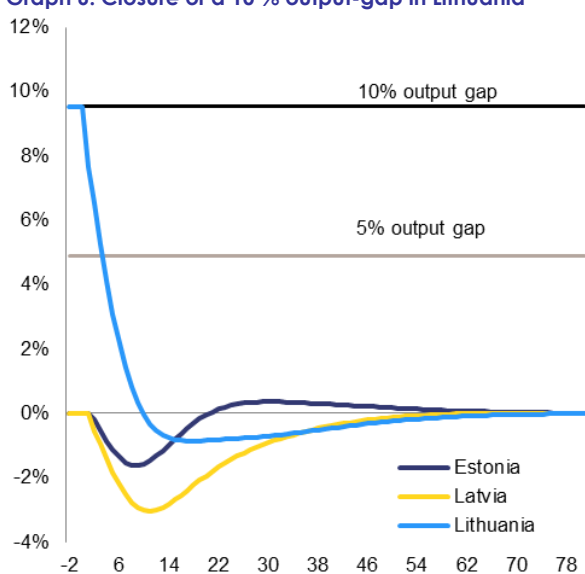
Graph 5: Closure of a 10 % output-gap in Latvia



Source: AMECO, author's calculations

Note: The simulation starts for Estonia and Lithuania at the Baltic average potential output and Latvia with a 10 % positive output gap.

Graph 6: Closure of a 10 % output-gap in Lithuania



Source: AMECO, author's calculations

Note: The simulation starts for Estonia and Latvia at the Baltic average potential output and Lithuania with a 10 % positive output gap.

Lithuania adjusts the most rapidly. Finally, the transition of Lithuania back to its potential output is halfway through in 3 quarters. As with Estonia, the return to potential output has a recessionary impact on its peers, mostly on Latvia with a through 3% below its potential GDP (Graph 6).

Identification of shocks

Country specific shocks and a Baltic wide shock can be extracted from the model's residuals. In addition to the adjustment dynamics, the model is informative on the share of common shocks affecting the three economies. Each country's residual is decomposed in a common factor⁷ (hereafter Baltic common shock) and a country specific shock. The Baltic shock captures the correlation across the countries' shocks and the country specific ones capture the idiosyncratic component for each of the three Baltics.

A historical decomposition explains GDP growth in the three countries by the cumulated effect of each shock through time. Combining the model's dynamic with these shocks it is possible to decompose GDP growth at each date and for the three Baltics into the contribution of each of the four shocks (country specific and Baltic wide), the contribution of international factors from the EU and Russia and the contribution of structural factors (in particular potential output). Graph 7 displays this historical decomposition of GDP growth (per capita) into the factors mentioned above: the structural component, the international component, the common Baltic shock, the country's specific shock and the effect from the other two country specific shocks (i.e. spillovers). The component labelled spillovers is the combination of the other two countries' specific shock which affect the dynamic of their neighbours as highlighted by the impulse response functions above (Graph 4 to Graph 6). Under this label are thus grouped many sources of fluctuations internal to each country and many channels of economic inter-linkages which cannot be isolated at this stage (mobility on the labour market, cross border consumption, trade, credit cycle...).

When looking more closely at the slump related to the 2008 crisis, the historical decomposition implies that the economic downturn was driven by international factors, but was aggravated by country-specific factors and spillover effects. The global downturn had an impact of -4 pps on growth in the three countries at its through, but the Baltic

shock contributed positively to growth over 2008-2010. At the same time, the country specific shock in Estonia in Q4-2008 had a large knock-on effect over Lithuania in Q1-2009. Lithuania was hardly hit by the crisis in Q1-2009 also through its country specific shock. As for Latvia, which entered a specific assistance program in late 2008, a more prolonged depressionary period is explained by its country specific shocks.

Sources of long-term growth and business cycle fluctuations

The model allows for a decomposition of long-term growth and the business cycle according to the different shocks and structural factors. The contribution to long-term growth is computed as the average contribution to growth (Table 3), while the contribution to the business cycle is computed as the contribution to the variance of GDP growth (Table 4).

Table 3 : Quarterly GDP growth mean decomposition

	Estonia	Latvia	Lithuania
Total growth	1.12	1.25	1.30
of which :			
Structural Factors	1.06	1.15	1.22
International Factors (EU+RU)	0.02	0.03	0.03
Country specific shock	0.02	0.11	0.01
Baltic common shock	-0.03	-0.06	-0.03
Spillovers from other Baltics	0.04	0.02	0.06

Note: sample 1995-2015

Source: AMECO, author's calculations

As expected, long-term growth can be explained by potential growth. The contribution to average growth of the four shocks is null and therefore long term growth can be explained by structural factors alone.⁸

At the same time, calculations show that the business cycle is due to shocks. The variance decomposition is quite different from the mean decomposition as the trend, by definition and contrary to the cycle, feeds less volatility in GDP growth. As small open economies, the three Baltics are influenced by international developments:

approximately one fourth of the volatility in the area is imported from the EU and Russia. The regional shocks (Baltic, country-specific and spillovers) are nevertheless the main contributors to the variance of GDP growth in each country.

Table 4: Quarterly GDP growth variance decomposition

	Estonia	Latvia	Lithuania
Total growth	4.29	4.25	4.32
of which :			
Structural Factors	0.24	0.27	0.19
International Factors (EU+RU)	1.33	0.75	1.03
Country specific shock	2.80	5.37	1.61
Baltic common shock	-1.69	-2.71	-0.95
Spillovers from other Baltics	1.61	0.58	2.45

Note: sample 1995-2015

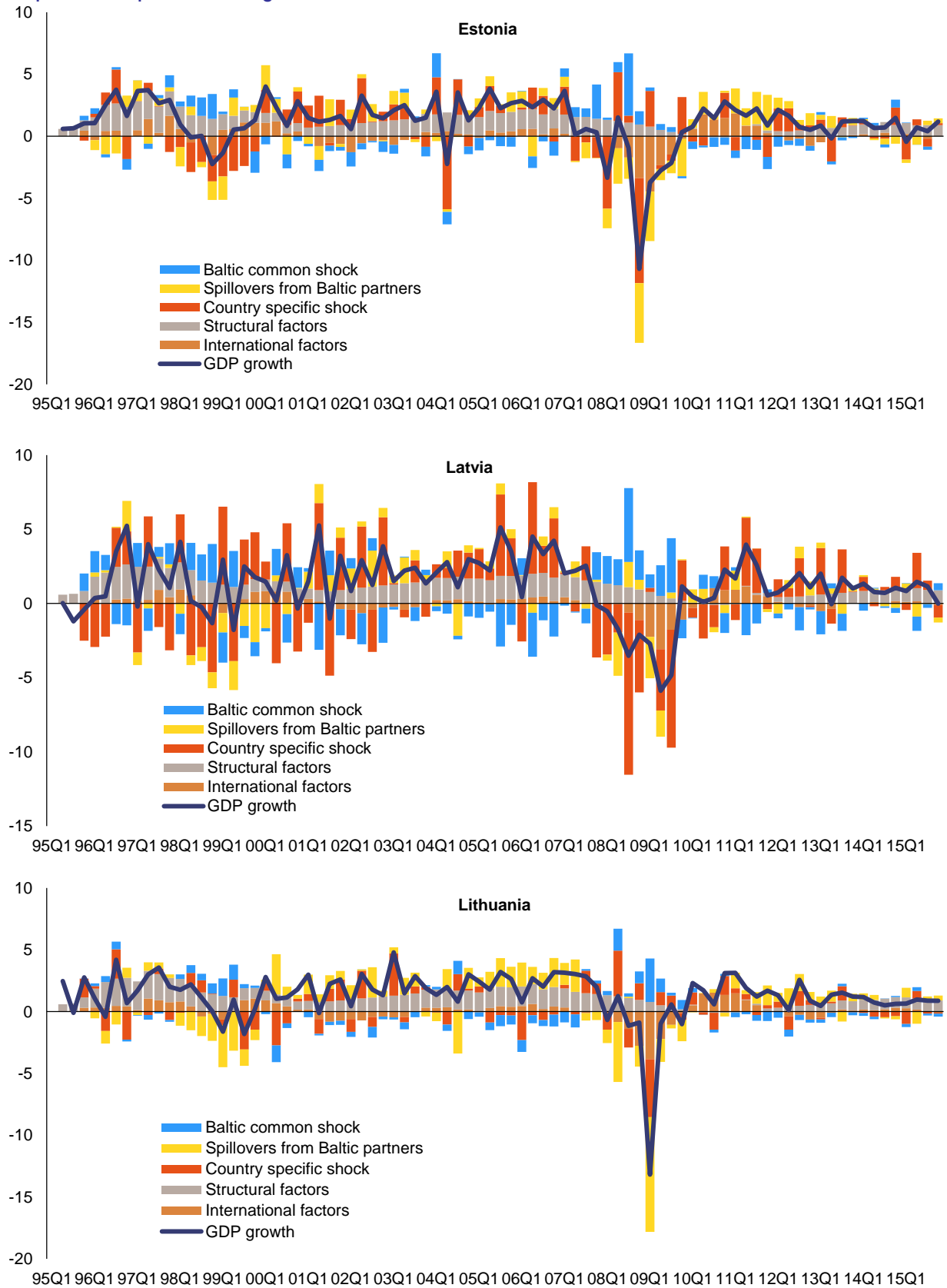
Source: AMECO, author's calculations

Estonia is the most influenced by international factors. These spillovers from non-Baltic countries as well as the relatively large share of volatility due to the regional factors in Estonia can be related to its smaller size.

Latvia is the most driven by its country specific shocks. Latvia stands out as the Baltic country with the smallest contribution of spillovers from the other two countries and the highest contribution of its specific shock. This is in part explained by the specificity of the crisis in Latvia, but not only as its volatility in the first part of the sample is relatively large and country specific. Latvia is nevertheless not isolated from the regional developments as the Baltic shock has a marked influence over its business cycle.

Lithuania is the less driven by its country specific factors. Lithuania contrasts with Latvia and Estonia by a large contribution of the spillovers from its peers and relatively lower contributions of the Baltic and country specific shock. Also, spillovers from the Lithuanian specific shock feed little volatility into Estonia and Latvia making Lithuania a less influential driver of the regional business cycle than its peers.

Graph 7: Decomposition of GDP growth in the Baltic countries



Source: AMECO, author's calculations

Conclusion

In all, the Baltic countries form a closely integrated economic area. Beyond being exposed to the same third parties (first of which the EU and Russia), the Baltics have direct economic bonds. These bonds are due to Baltic wide factors affecting the domestic markets altogether as well as cross border effects of country specific factors.

The analysis also reveals marked asymmetries in the area. Estonia is the most exposed to international fluctuations. On the contrary, Lithuania (the most populated of the three) is more resilient to common shocks but is notably influenced by the economic developments in the other two without having a strong impact vice versa. As for Latvia, it is the least exposed to its peers' country-specific shocks but the most exposed to the Baltic wide shocks.

The present analysis highlights the effect of economic links across the area for the three economies. These links have different effects on their dynamics such as growth spillovers, catching-up with neighbour or closing the output gap. While the specific channels conveying such spillovers cannot be isolated at this stage, the present analysis does suggest that in the long run, investments to foster potential growth in one of the three Baltics would benefit to the area as a whole as the three Baltics grow together. Also, from a macro prudential point of view, Estonia and Latvia generate more spillovers on their peers than Lithuania.

¹ Cross-country study: Economic policy challenges in the Baltics, European Economy. Occasional Papers 58. February 2010

² Aside some well-known high technology pockets

³ Technical details are available from the author

⁴ In the present analysis, internal linkages or spillovers are estimated but are not further specified. This means that it cannot be said whether they are explained by labour market links, common investment cycles or other channels.

⁵ Potential output is taken from the European Commission's measure. These variables introduce in an ad hoc way an error correction term for each GDP not to diverge from its potential.

⁶ The impulse response functions for a system of equations such as (1) is computed by setting one of the country specific shocks to 1 (and everything else to 0) in a first period and solving the system at each future date. This simulation will illustrate the propagation of each shock to the three economies through time. Given the specificity of the present model (mixing output gap and output growth), Graph 4 to Graph 6 represent a different dynamic where the output gap is assumed to be of 10% in the first period for one country and the system is solved for each consecutive date going forward. The potential output as well as international factors are assumed constant in these simulations and no shock is affecting the system.

⁷ The Baltic shock is the common factor of the residuals from the three GDP's dynamics. It is extracted by principal component analysis. The country specific shocks are the part of each residual not explained by this common factor.

⁸ This result is, however, tautological as structural factors capture potential outputs (GDP trend) while the other components capture the cycle.

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